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PRESENTACIÓN

The fourth international congress of Innovation and Sustainability is coorganized by the Red Iberoamericana para la Competitividad, Innovación y Desarrollo (REDCID), Universtat de Barcelona), Universidad Michoacana de San Nicolás de Hidalgo (México), Universidad Pedagógica y Tecnológica de Colombia (Colombia), Real Academia de Ciencias Económicas y Financieras (RACEF), Association for the Advancement of Modelling & Simulation Techniques in Enterprise (AMSE). The congress will provide a forum for researchers, academics and students to discuss research ideas and present recent advances in different topics

TÓPICOS DEL CONGRESO

Business Simulation	Economic applications Management theory	Innovation Management Social science theory Fuzzy sets	Marketing
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Schedule		24 October	Schedule		25 October
10:30	11:30	Keynote Speaker. Abdelrahman Hassan Almuaini Collaborative session Session 1. Sustainability 1 Session 2. Entrepreneurship Lunch Break	10:00	11:00	Keynote Speaker. Dr. Eesa Bastaki
11:30	12:00		11:00	11:30	Collaborative session
12:00	13:00		11:30	12:30	Session 4. Organizations 1
13:00	13:30		12:30	13:30	Session 5. Fuzzy 1
13:30	14:30		13:30	14:30	Lunch Break
14:30	15:30	Keynote Speaker. Dr. Adel Zairi	14:30	15:30	Keynote Speaker. Dr. Michele Scataglini
15:30	16:00	Collaborative session	15:30	16:00	Collaborative session
16:00	17:00	Session 3. Innovation	16:00	17:00	Session 6. Sustainability 2

Schedule		26 October
10:00	11:00	Keynote Speaker. Dr. Percy Marquina
11:00	11:30	Collaborative session
11:30	12:30	Session 7. Organizations 2
11:30	12:30	Session 8. Organizations 3
12:30	13:00	Closing words

Session 1. Sustainability 1		24 de Octubre de 2023	
Schedule			
Beggining	End	Title	Author
12:00	12:15	Correlation between happiness and the sustainable development goals: emerging vs developed countries	Pablo-Jose, Arana-Barbier
12:15	12:30	Environmental awareness, commitment of the school organization: an experience with basic education children	Angela María Segura-Vargas; Natalia Katherine Tarazona-Mahecha; Zahira Roselly Rodríguez-Bautista
12:30	12:45	Novel Similarity Measures for Pythagorean Fuzzy Sets	Shagun Bernwal, Manoj Sahni, Ernesto Leon Castro
12:45	13:00	Sustainable tourism in mountain biking events	Abraham Nuñez-Maldonado; Martha Beatriz Flores-Romero; José Álvares-García; Maria de la Cruz Del Río-Rama

Session 2. Entrepreneurship		24 de Octubre de 2023	
Schedule			
Beggining	End	Title	Author
13:00	13:15	Education and entrepreneurship from complexity.	Jenny Parada- Sandra Zambrano
13:15	13:30	Social entrepreneurship ranking of Mexican state governments: an analysis with the ordered weighted average operator	Brenda Dennís Valadez-Solana; Martín Isimayrt Huesca-Gastélum; Enrique Cruz-Domínguez; Blasa Celerina Cruz-Cabrera; Ernesto León-Castro

Session 3. Innovation		24 de Octubre de 2023	
Schedule			
Begginning	End	Title	Author
16:30	16:45	Toward creating a conceptual theoretical framework for innovability: An integrative review of the literature on the new global reset	Iván De la Vega
16:45	17:00	Business innovation and “spin off” technology transfer	Gladys Yaneth, Mariño Becerra, Eugenio, Paredes Castellanos
17:00	17:15	Innovation variables: pandemic effects and post-crisis recovery	Christian A., Cancino; Bruce, Lezana; Jorge J., Román
17:15	17:30	Impact of the formation of clusters, obstacles to innovation, and innovation effort on the innovative performance of the hotel sector in Colombia for the 2016–2017 period	Jorge Hernán Cifuentes Valenzuela; Edwin Leonardo Méndez Ortiz; Rodrigo Lombana Riaño; Jhony Alexander Barrera Liévano

Session 4. Organizations 1		25 de Octubre de 2023	
Schedule			
Begginning	End	Title	Author
11:30	11:45	Performance measurement of the investigations police of chile using the balanced scorecard	Christian A., Cancino; Sergio A., Muñoz; Erick, Menay; Mario, Morales
11:45	12:00	Operation center of economic crime- dubai police case study	Jorge J. Roman; Khalid Alhassan
12:00	12:15	Biohazard waste management cycle and its impact on social wellbeing: forgotten effects	Bayte Nares-Lara; Rubén Chávez-Rivera; José Manuel Brotons-Martínez
12:15	12:30	Approach to the dynamic capacities of institutions providing health services in colombia.	Héctor Adrian Castro Páez; Martha Cecilia Cruz Vargas

Session 5. Fuzzy 1		25 de Octubre de 2023	
Schedule			
Begginning	End	Title	Author
12:30	12:45	Measurement of work stress in gym trainers: design and validation of a new scale	Luis A. Pérez-Arellano; Martin I. Huesca-Gastélum; Luis F. Espinoza-Audelo; Ernesto León-Castro
12:45	13:00	Fuzzy second order change in home energy economy: photovoltaic cells for sustainability in mexico	Ruben, Chavez Rivera, Jose Manuel, Brotons Martínez, Jesús Ricardo, Ramos Sanchez
13:00	13:15	Digital inclusion ranking of state governments in Mexico: an analysis with the ordered weighted average operator.	Luis Alonso-Hernandez; Martin Huesca-Gastelum; Blasa Cruz-Cabrera; Ernesto Leon-Castro
13:15	13:30	Working capital in the recession crisis. An analysis pre and post covid.	Daniela Alcaraz-Ochoa; Ezequiel Avilés-Ochoa; Ernesto Leon-Castro; Juan Alejandro Gallegos-Mardones

Session 6. Sustainability 2		25 de Octubre de 2023	
Schedule			
Begginning	End	Title	Author
16:00	16:15	Fuzzy Logic and Sustainability: a bibliometric review 1997-2022	Luciano Barcellos-Paula; Anna María Gil-Lafuente; Aline Castro-Rezende
16:15	16:30	Organizational change promoted by digitalization. Case study in consulting companies	Marlén Suárez-Pineda; David Carrasco-Cocinero; Luri Suárez-Pineda
16:30	16:45	The great hazardous paradox	Alvaro Morales; Percy Marquina
16:45	17:00	Measuring the Global Innovation Index ranking through fuzzy methodologies	Delia Leon-Castro, Viviana Acosta-Gonzalez, Melany Hebles, Pablo San-Martin, Ernesto Leon-Castro

Session 7. Organizations 2		26 de Octubre de 2023	
Schedule			
Begginning	End	Title	Author
11:30	11:45	Fuzzy logic algorithms: a bibliometric overview	Victor G. Alfaro-García; Rodrigo Gómez Monge; Gerardo G. Alfaro-Calderón
11:45	12:00	Innovation management in SMEs: an analysis the sociodemographic factors of the manager.	Denisse Ballardo-Cardenas; Diego Gastelum-Chavira; Ernesto Leon-Castro
12:00	12:15	Content marketing performance measurement through OWA Operator	Martin I. Huesca-Gastélum; Alicia Delgadillo-Aguirre; Luis A. Pérez-Arellano; Claudia L. Tirado-Gálvez; Ernesto León-Castro
12:15	12:30	Strategic decision making in uncertain environments in tourism companies	Fabio Blanco-Mesa, Ernesto Leon-Castro, Dianny Fernandez-Samaca

Session 8. Organizations 3		26 de Octubre de 2023	
Schedule			
Begginning	End	Title	Author
12:30	12:45	Corporate sustainability and sustainable goals a forgotten effects analysis	Alfaro-García, Víctor G.; García-Orozco, Dalia; Moreno Espitia, Irma Cristina
12:45	13:00	Academic entrepreneurship: a bibliometric overview between 1972 and 2023	Beatriz M. Terán-Pérez; Denisse Ballardo-Cárdenas; Ernesto León-Castro
13:00	13:15	Ranking of educational innovation of the state governments of mexico: an analysis with the ordered weighted average operator	Claudia Tirado-Gálvez; Martin Huesca-Gastelúm; Brigido Medina-Larrañaga; Alicia Delgadillo-Aguirre; Ernesto León-Castro
13:15	13:30	Financial literacy and decision making: An impact on financial performance	Jorge Romero



CORRELATION BETWEEN HAPPINESS AND THE SUSTAINABLE DEVELOPMENT GOALS: EMERGING VS DEVELOPED COUNTRIES



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Abstract: *The research objective is to determine the correlation between the happiness of the world population and the evolution of the SDGs, since there is little literature that tries to corroborate if said evolution actually translates into progress for the world population. The study concludes that the evolution of the SDGs has an impact on happiness in the world. The individual effects are small, but collectively they make an important difference. Finally, developed countries have higher structural happiness than emerging ones.*

Keywords: *happiness; sustainable development goals.*

1 INTRODUCTION

In September 2015, the United Nation's General Assembly adopted the Sustainable Development Goals (SDGs) towards 2030 (United Nations, 2023). 17 goals were proposed, aiming at different fronts of development worldwide, encouraging several private, government and non-profit institutions to align their initiatives to the 2030 SDG Agenda (Rosati & Faria, 2019). Even though several organizations have proceeded this way, the main question remains: are the SDGs working to allow the world to enjoy

a much more equal and sustainable environment by 2030?

The previous question has caused some authors to wonder how to measure better the progress of sustainability among time, such as Costanza et al. (2016) who proposed an alternative Sustainable Wellbeing Index (SWI). Nevertheless, even if sustainability improves among time, the results should be reflected somewhere. A natural consequence of gaining a more equal and sustainable world should be humanity's happiness (Greve, 2017). Since the United Nation's 2030 Sustainable Development Agenda was implemented, are people happier? It is necessary not only to understand the evolution of the SDGs' implementation worldwide, but its relation with the evolution of how happy the world population is, and if the implementation is, or is not, generating differences in such happiness between countries.

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2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Sustainable development involves meeting basic human needs (Klarin, 2018). The main concerns about it have been focused on how to measure it, such as the Sustainable Wellbeing Index (SWI) (Costanza et al., 2016), or the SDG Reporting Score (Pizzi et al., 2020). Instead, research should concentrate on whether scoring better on SDGs metrics actually reflects an improvement in the quality of life of the world's population. Moyer and Hedden (2020) stated that, between 2015 and 2030, the world will have made little progress towards accomplishing the challenges associated to the SDGs. Particularly, they identified 28 most vulnerable countries (MVCs), and they suggested to focus the world's efforts on them.

If we put aside the measurement of SDGs, how can we be sure that meeting them will really generate well-being around the world? Real actions must be taken, such as focusing the imparted education in business schools on sustainable development to generate a positive impact on students (Kolb et al., 2017), but progress made on the SDGs scores should be reflected, to different extents, in actual progress worldwide. An associated term is inclusive development (Gupta & Vegelin, 2016). Happiness is a different but effective alternative for that, according to Greve (2017). Happiness can be landed through the World Happiness Report (WHR), an initiative that since

2015, offers the quantitative results of happiness for countries all around the world, through their 0 to 10 score. It involves six specific dimensions related to gross domestic product per capita (GDP per capita), social, health, freedom, generosity and corruption (World Happiness Report, 2023).

The objective of this research is to understand the correlation between the behavior of happiness and the 17 SDGs for the 40 developed and the 114 emerging countries included in this research.

3 METHOD

The main research question is: to what extent is the behavior of happiness explained through the behavior of the SDGs scores worldwide? We hypothesize that the relation will be strong, but not for all of the SDGs, and that probably some of them will be negatively correlated.

The study had a quantitative approach and a correlational scope, through a panel data multiple linear regression of the dependent variable (happiness measured through the WHR) and the 17 independent variables (the United Nations' SDGs). Three regressions were run: the first one for the whole database; the second one for developed countries, and the third one for emerging countries. The time horizon considered was from 2015 to 2021 (seven years) for 154 countries, although achieving the 1,078 observations was not possible because of

the lack of data for certain years inside the WHR, plus the fact that the analysis ended in year 2021 for that same reason. 1,034 observations were effectively processed, 279 for developed and 755 for emerging countries. The SDG database contained 163 countries, but the lack of information inside the WHR limited the analysis to 154 countries. Year 2015 coincides conveniently since both SDGs and the WHR started that year.

4 RESULTS

The regressions conducted for the whole database (WD), developed (D) and emerging (E) countries will be addressed to as their abbreviations. All regressions were statistically significant at a 95% confidence level with adjusted R^2 s of 0.7754, 0.7750 and 0.6348 respectively. Regression WD presented 11 statistically significant SDGs, six directly correlated (SDGs 3, 7, 8, 11, 14 and 17) and five inversely correlated to happiness (SDGs 10, 12, 13, 15 and 16). Regression D presented 10 statistically significant SDGs, five directly correlated (SDGs 3, 8, 9, 10 and 14) and five inversely correlated to happiness (SDGs 2, 4, 12, 15 and 16). Regression E presented 11 statistically significant SDGs, five directly correlated (SDGs 3, 6, 7, 8 and 17) and six inversely correlated to happiness (SDGs 9, 10, 12, 13, 15 and 16). In all cases, intercepts were statistically significant, with considerably high coefficients compared to those of the statistically significant SDGs. These findings reflect a strong structural effect of happiness around the

world, with a more partitioned but statistically significant impact of the SDGs over the population's happiness. This leads to not reject the stated hypothesis, since the regressions and correlations between happiness and the selected SDGs were statistically significant.

5 CONCLUSIONS

Structurally (intercepts), the world is 6.2/10 happy, developed countries are 7.6/10 happy, and emerging countries are 5.8/10 happy. The selected SDGs also contribute to the happiness of the world, only that they do so collectively, since their individual impacts are much smaller. However, they are still important as a group, which leads to the conclusion that it is still relevant to work on them to increase happiness in the world, only probably through initiatives that manage to have a greater impact on their scores to increase them further. speed happiness in the world.

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Economic Convergence Between the Municipalities of Michoacan from 1990 to 2010



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Abstract: *The objective is to evaluate the existence of convergence in the 113 municipalities of Michoacán, as well as its regions, during 1990 to 2010. The methodology is based on the Solow model and the technique for β -convergence and σ -convergence. The results of Linear regressions show that there is no single trend of convergence between municipalities nor between their regions, so it is proposed to apply endogenous economic growth models to explain the causes of economic growth in Michoacán.*

Keywords: *three keywords*

1 INTRODUCTION

Knowing the reasons why an economy grows more than another has been the objective of various countries and over several decades. Studies are multiplying from different approaches (Kong, Phillips and Sul, 2019; Kufenko, Prettnner and Geloso, 2019; Kremer, Willis and You, 2021; Patel, Sandefur and Subramanian, 2021). One of those approaches is the Neoclassical Theory of Economic Growth, especially, the economic convergence.

In Mexico, several studies have been carried out, such as the implications of trade liberalization in the convergence between states (Díaz et al, 2017; Rodríguez et al, 2021; Germán-Soto et al, 2017), the convergence from the analysis of the wage gap (Castro, Rodríguez and Ramos, 2021), convergence between regions (Mendoza-Velázquez et al., 2020), or between metropolitan area (Valenzuela-Vega et al, 2021).

In Michoacan, Montes de Oca et al (2015), finding differences in the pace of growth between the evolution of economic growth in the regions of Michoacán (1980-2010). Likewise, Kido-Cruz and Kido-Cruz (2015) concluded that there was no evidence of convergence in the southern region of Mexico. Navarro-Chávez et al (2018), analyzed the economic convergence of the GDP per capita of the municipalities of Michoacán.

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At the same level, Rodríguez-Gámez & Cabrera-Pereyra (2019; 2020) found evidence of convergence between poor municipalities towards affluent municipalities.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

The Neoclassical Theory of Economic Growth, led mainly by Robert M. Solow, who published a straightforward model to represent the general equilibrium of an economy from the neoclassical production function, considering as requirements the constant returns to scale, diminishing marginal returns of its factors and assuming that economies have equal population growth rate, depreciation rate, equal savings rate, capital elasticity parameters, and equal technology (Navarro-Chavez, Aybar and Garcia, 2018) .

This theory states that the higher the savings rate and the higher the per capita production, the higher the economic growth. Furthermore, the lower the rate of population growth and the lower the rate of depreciation, the higher the economic growth.

Solow's neoclassical model establishes two main predictions: that there will be no long-term growth, and that there will be convergence between countries. This second prediction is known as economic convergence and states that economies with lower initial capital per capita will grow faster than economies with higher per capita incomes, closing the initial gap until they reach the same equilibrium level in the long run (Rojas-Rivera and Rengifo-López, 2021). This allows to have a measure of the fluctuations in the economy to be studied, as well as a measure to know its evolution of income (Barro and Sala i Martin, 2009).

Moreover, according to the neoclassical theory of economic growth, in order to know if there is a convergence between the geopolitical regions. It seeks to identify the possible tendency of lower-income localities (GDP) to grow faster than those with higher income. It should be noted that this type of convergence could be more valid when the analysis is limited to a group of basically homogeneous economies, as is the case of municipalities of a single federal entity, or its regions.

3 METHOD

In this point, assuming that the initial variables of population growth, economic policy measures, and the savings rate, among other variables, remain constant, to identify absolute convergence, linear regressions were applied, seeking as a

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result the existence of a relationship between the growth rate and per capita income. The growth rate is represented by the following function:

$$y = f(Xt_0)$$

The latter is transformed into the logarithm of GDP per capita in the initial year:

$$y = \ln GDP_{t_0}$$

The calculation formula is expressed:

$$\log y_{it} = \alpha + (1 - \beta) \log y_{i,t-1} + U_{it} \quad (3)$$

Where

y_{it} is the dependent variable is the growth rate of per capita income between the initial period and t ,

$\log y_{i,t-1}$ is the logarithm of the level of per capita income at the starting point.

β represents the speed of convergence to the steady state.

U_{it} is the error term, it has zero means, and its variance is constant

In this sense, the parameter β predicts that the growth rate trend of the capital-labor ratio is inversely related to its initial level. The lower the relative capital, the higher the growth rate and, therefore, the faster the convergence. That is, there will be β conditional convergence if the per capita GDP growth rate is inversely related to income.

Therefore, if β takes negative values, there will be economic convergence,

while if it takes positive values, there will be economic divergence.

4 RESULTS

The analysis of the GDP per capita of the 113 municipalities of the State of Michoacán obtained from 1990 to 2010 shows that at the municipal level, there are significant distances between the lowest and the highest average income (Churumuco 2,905 dollars vs. Morelia 7,529 dollars). The difference in their averages was \$4,624, which is similar to the average income of 63% of the municipalities.

On the other hand, based on the results of the relationship between the levels of per capita income and the cumulative annual variation rate of this variable (convergence β) in the municipalities of the State of Michoacán, there is no evidence of convergence in the period 1990-1995, even though the value of the beta coefficient (-0.0075) could represent evidence of absolute convergence by yielding a t value with a t value of -.06985 does not represent a significant relationship between the variables.

Meanwhile, in the analysis and calculation of both its beta convergence and sigma convergence among the 10 regions, the results show no evidence of a uniform trend of convergence when such analysis is done for each period separately. The result is different when analyzing the trends of the regions during the total period (1990-2010), which

shows evidence of divergence for the 10 regions.

5 CONCLUSIONS

From the calculation, we obtained results that show empirical evidence of the existence of divergence between the municipalities of Michoacan. Similarly, no evidence was found of sigma convergence.

Meanwhile, in the analysis of convergence among the 10 regions, the results show no evidence of a uniform trend of convergence. The result is different when analyzing the trends of the regions during the total period, which shows evidence of divergence for the 10 regions.

In this sense, one of the lines of future research would be to apply endogenous economic growth models to explain the causes of economic growth in Michoacán.

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CONTINUOUS IMPROVEMENT DEPLOYMENT IN BUSINESS SCHOOLS



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Abstract

Continuous improvement promotes adaptability and responsiveness to changes and challenges in the environment, so in a constantly evolving context, organizations must continuously learn to remain competitive. Continuous improvement provides a framework and a mindset that foster innovation and the ability to anticipate the changing needs and expectations of consumers of goods and services, thus the continuous focus impacts efficiency, adaptability, and innovation in organizations. In this context, the research problem in this paper is to propose a replicable methodology for the deployment of continuous improvement in business schools in Mexico, based on an updated and relevant theoretical framework aligned with the guidance of a major international accrediting organization for higher education, in this case, the Accreditation Council for Business Schools and Programs. The methodology used in this research was documentary and descriptive, involving the collection, analysis, and synthesis of existing information on continuous improvement in business schools according to international standards to provide a solid foundation for further research in this field of study, and to accurately describe the characteristics and representation of the continuous improvement process in a business school in accordance with leadership guidelines, planning, stakeholder listening methods, learning assessment, human capital, and administrative processes.

Keywords: *Business schools, continuous improvement, guidelines.*

1 INTRODUCTION

Continuous improvement plays a crucial role in higher education institutions as it impacts the enhancement of educational quality by constantly proposing various ways to improve teaching and learning processes (Stracke, 2019). Furthermore, it is important to consider that continuous improvement may not be an option but rather an imperative in response to the need for adaptation to changes and advancements in both the environment and technology, as well as the demands and needs of students and society at large. Continuous improvement provides a framework that allows for the identification and response to these changes, ensuring that educational programs are up-to-date and fostering competitiveness within them. Continuous improvement facilitates the evaluation and accreditation of educational institutions by establishing internal and external assessment processes that identify areas for improvement and implement actions towards achieving desired quality standards. Another aspect to consider is that continuous improvement fosters innovation and excellence in educational institutions by

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opening the doors to new ways of teaching, researching, and serving the community, creating learning environments that promote the development of highly skilled and competent professionals.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

An important reference in achieving excellence in business school management is the organization ACBSP, which stands for Accreditation Council for Business Schools and Programs. Its mission is to create a better tomorrow by advancing and recognizing excellence in business education through continuous improvement based on seven standards to be implemented in business schools: leadership, strategic planning, stakeholder engagement, learning assessment, faculty, curriculum, and performance monitoring (ACBSP, 2021).

Brink and Smith (2012) argue that accreditation is a means by which business programs can ensure accountability and quality to their stakeholders; however, this can represent a costly endeavor. In this regard, the aforementioned authors emphasize the following aspects. The authors point out that the Accreditation Council for Business Schools and Programs (ACBSP), along with the Association to Advance Collegiate Schools of Business (AACSB), and the International Assembly for Collegiate Business Education (IACBE), are the three main global references that accredit business school management through compliance with standards of excellence, but they differ in terms of accreditation costs and the strictness and rigor of their accreditation guidelines.

George (2018) reiterates that in standards for excellence in business schools, the AACSB, ACBSP, and IACBE bodies are leaders in accreditation standards, recognized by both the Council for Higher Education Accreditation (CHEA) and the U.S. Department of Education.

Khatun, George, and Dar (2021) address quality assurance in higher education by affirming that higher education institutions are creators and disseminators of knowledge. These authors highlight the importance of knowledge management in higher education by designing a model that illustrates the key parameters of knowledge management in higher education institutions (Figure 1). This model encompasses three stages in terms of planning-organization-control in knowledge management, proposing a process that allows for the effective identification, acquisition, generation, storage, sharing, dissemination, and application of knowledge by individuals within the higher education entity. It also integrates them with operational and business processes within the organization to enhance competitiveness and ensure quality in the educational service offered. Therefore, in quality assurance efforts within higher education organizations, knowledge management is a process that fosters an environment for knowledge sharing, eliminates communication barriers, prioritizes tasks, and effectively manages time.

Nguyen, Ta, and Nguyen (2017) conducted a study on quality assurance in higher education based on their experience in Vietnam. The authors explain that quality assurance and accreditation in higher education were officially implemented in Vietnam since 2005. Over the years, this has led to the establishment of accreditation agencies that grant accreditation certificates to universities that meet the standards and criteria of quality. As a result, quality assurance is certified in both policies and practices in the country's higher education institutions. The study emphasizes the importance of leadership traits, management of the learning process and educational support, development of human resources for quality assurance, and the cultivation of a culture of quality in higher education institutions.

Subsequently, Nguyen and Ta (2018) conducted a study exploring the impact of accreditation in higher education for the benefit

of educational quality assurance in developing countries. The authors assert that the universities examined in the study embraced "quality as fitness for purpose" based on the following strategies:

1. Embracing a quality approach for study programs through accreditation activities and processes. In this regard, the results of self-assessment and recommendations from external evaluation teams were useful in adjusting programs and training strategies.
2. The objectives of the study programs were developed in accordance with the university's missions.
3. Faculties and departments planned, reviewed, and modified the objectives of their study programs to make them suitable for each stage of development and aligned with the university's resources.
4. The improvement in the quality assurance conditions of the programs, resulting from the accreditation processes, allowed for increased faculty resources and an increase in the number of enrollments in the study programs.
5. The quality assurance process through accreditations required the development of regulations for teaching and administrative operations, defining the functions and responsibilities of each area within the university. It even opened the possibility of establishing an operational unit to monitor the continuous improvement process of accreditations, called the "Quality Assurance Unit."

Nguyen, Vi Tran, and Nguyen (2020) analyze the impact of continuous improvement in business schools as a result of program accreditation. In their studies, the authors conclude the following. Firstly, business schools seek accreditation to obtain legitimacy benefits rather than performance

benefits. Despite the significant costs involved in achieving accreditation, business schools do not conduct any cost-benefit analysis to justify the decision to enter the process. Secondly, instead of identifying performance benefits such as increased enrollments, business schools prefer to focus on benefits such as improved reputation, enhancing the business school per se, supporting internationalization, and using it as a driver for change. Thirdly, the process of continuous improvement through accreditation provides business schools with intangible benefits that are considered more important than the costs involved in achieving accreditation. And fourthly, the legitimacy of continuous improvement achieved through the accreditation process in business schools is also perceived as a high priority in the absence of tangible benefits, enhancing the market's perception of their quality and contributing to ensuring their long-term survival.

Williams (2021), on the other hand, examines the impact of continuous improvement through business program accreditation, with a focus on rankings and enrollment. The author used Mann-Whitney U tests in their methodology to determine the association between accreditation and rankings, and an ANOVA test to determine if enrollments significantly differ among accreditation types. The findings are summarized below with respect to the three accrediting bodies considered leaders in accreditation standards for business schools, namely AACSB, ACBSP, and IACBE:

1. AACSB accreditation is associated with a statistically significant positive distinction in rankings and higher enrollments.
2. ACBSP accreditation is not statistically correlated with rankings or enrollment.
3. The effect of IACBE accreditation appears inconclusive in this study.

Therefore, the above findings support the conclusion that AACSB accreditation may improve rankings and increase enrollment, but this same conclusion does not apply to ACBSP accreditation, and further research is needed for IACBE accreditation. The author also acknowledges that the main limitation of their study was the lack of detailed analysis on how access to accreditation in each of the three accrediting bodies would lead to changes in rankings and enrollment of business schools in the medium and long term. This opens possibilities for future research in these areas.

3 METHOD

In the development of this study, the research methodology included a documentary and descriptive design. It involved collecting, analyzing, and synthesizing existing information on continuous improvement in business schools according to international standards in order to provide a solid foundation for further research in this field. The aim was to accurately describe the characteristics and representation of the continuous improvement process in business schools, following the guidelines of leadership, planning, stakeholder engagement methods, learning assessment, human capital, and administrative processes. The process established to achieve this research was carried out through the following stages:

1. Develop a theoretical framework related to the processes of continuous improvement in business schools.
2. Analyze the continuous improvement model, using The Accreditation Council for Business Schools and Programs as a benchmark or reference.
3. Create a proposal for a continuous improvement model to be used in business schools

4 RESULTS AND CONCLUSIONS

The results obtained according to the described methodology are summarized in the following table (Table 1).

Table 1. Methodology for implementing continuous improvement in business schools.

Standard	Process of continuous improvement
Leadership	The business unit should have systematic leadership processes that promote excellence in performance and continuous improvement. The mission, vision, values, and expectations should be integrated into the leadership process of the business unit to enable the unit to address its social responsibilities and community engagement.
Strategic planning	Describe the systematic process for developing the strategic plan and how the programs, budget, and strategic plan of the business unit align with the institutional mission and vision. A documented copy of the Business Unit's Strategic Plan should be included in the evidence file.
Focus on students and stakeholders	Business programs should identify the student segments to which they target their educational programs and other key stakeholders for the business program.
Student performance and learning	The business unit must have a systematic process for evaluating student learning outcomes and plans that lead to continuous improvement. Student learning outcomes should be developed and implemented for each accredited program, and the results should be communicated to stakeholders.
Focus on faculty and administrative staff	The business unit must have a human resources plan that supports its strategic plan. The Human Resources Plan identifies current and future human resource needs to achieve the

	goals. The plan should be linked to the Strategic Plan.
Academic program curriculum	Describe how the business unit manages key processes for the design and delivery of its programs and educational offerings. Describe how the information obtained from stakeholders of the business unit is used as a source of information for the curriculum.
Management of educational support processes and business operations	Describe the key processes for monitoring student performance on their achievements, including business students' performance, such as dropout and retention rates, graduation rates, licensure pass rates, job placement rates, career advancement, acceptance into graduate programs, successful credit transfer, etc.

Source: Own elaboration, based on the ACBSP model (2021).

After developing the methodology described in this study, it is possible to present some conclusions and recommendations that cover different aspects of designing a methodology for deploying continuous improvement processes for business schools. This study confirms that it is indeed possible to identify continuous improvement processes in business schools, and three important references are the accrediting bodies for business school programs: AACSB, ACBSP, and IACBE. Additionally, the continuous improvement model proposed by ACBSP is relevant, especially when referring to continuous improvement in privately-owned business schools with a focus on student education. Consequently, it is possible to design a continuous improvement model for business schools, and a valid and relevant reference is the one proposed by ACBSP for private universities that prioritize student education, while the AACSB model tends to be the reference for public universities that prioritize research.

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USE OF MULTIPLES TO IDENTIFY OVERVALUATION IN PUBLICLY TRADED COMPANIES ON STOCK EXCHANGES.



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Abstract

The development of quantitative tools to guide decision-making in capital markets is an element that can be innovated to optimize investment, based on the investor's risk profile. In this context, the research problem was to propose a methodology to identify the degree or speculative level in investments in the Mexican capital market, represented by the Price and Quotes Index of the Mexican Stock Exchange during the period 2015 to 2021. The methodology used in this research was quantitative, documentary, and descriptive, analyzing the historical performance during the period 2015 to 2021 of strategic market value multiples in the companies listed in the Price and Quotes Index of the Mexican Stock Exchange. The period from 2015 to 2021 was analyzed, obtaining information from the Reuters Eikon platform, quantitatively and graphically analyzing the behavior of market value to book value multiples, market value to earnings multiples, and market value to cash flow multiples in order to propose an innovative methodology to identify the speculative degree in the stock price of the analyzed companies, with the aim of encouraging the development of this methodology in other capital markets..

Keywords: Stock market, speculation, measurement, plausible.

1 INTRODUCTION

The measure of efficiency in markets and investments is typically given by the risk-return parity rule, based on the theoretical premise that the market should reward high-risk takers with higher returns than low-risk takers. However, a implicit element in the market is speculation (Samisek, 2021). In this context, it is incumbent upon the analyst when making decisions to try to answer the question of whether the market price of the stock is overvalued or assigned by the market due to a possible presence of speculation, and that the fundamental elements of the company do not reasonably validate such overvaluation. It is possible that the difference that may exist, for example, between the market value and the book value, results from speculation that investors have driven simply by following the behavior of other investors.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Behavioral finance is a branch of economics called "behavioral economics," and this field of study analyzes the psychological influences and biases that affect the decision-making process of

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buying and selling securities in financial markets. In this context, it is considered that investor behavior is the origin of anomalies in stock markets and volatility in prices. (Fernández, De Guevara & Madrid, 2017).

Financial markets theoretically operate based on the efficient market hypothesis, which states that all stocks have a fair price based on all public information. However, this thesis generates much controversy as decision-making can involve the manifestation of irrational emotional behaviors, opening the door to speculation. (Ahmed, 2021).

Fama (1998) analyzes market efficiency and its link to behavioral finance; the following are his key points summarized. Firstly, it is stated that market efficiency is a theory with perpetual validity, coexisting with the challenge of long-term return anomalies appearing in investments. According to the efficient market hypothesis, which assumes that anomalies are chance outcomes, the exaggerated reaction of investors as an apparent response to public information is as common as insufficient reaction or lack of decision-making. Secondly, Fama also argues that the apparent anomalies identified in market evolution could be due to the methodology used to identify them, and in theory, most long-term return anomalies tend to disappear with reasonable changes in measurement techniques. Finally, thirdly, Fama points out that despite inevitable volatility, evidence from historical analysis of financial markets does not suggest abandoning the efficient market theory. According to this hypothesis, anomalies are chance outcomes, and the overreaction of investors resulting in widespread price volatility based on available public information is as common as insufficient reaction.

In the context of financial markets, speculation involves utilizing short-term investment strategies in an attempt to outperform the traditional long-term expectation of investors. This behavior entails taking risks with the hope of achieving gains that are sufficiently higher to

compensate for the risk assumed (Brunetti, Büyüksahin & Harris, 2016).

Fattouh, Kilian, and Mahadeva (2013) analyze speculation in the oil market specifically, with findings that can be applicable to global markets. The following are their key points summarized. Firstly, the authors note that the increase in prices of financial instruments as a result of speculative factors cannot be explained by economic fundamentals. Instead, among the possible causes, one often finds the increasing financing of markets, which in many instances allowed investors to leverage themselves irresponsibly or without adequate safeguards.

The price-to-book ratio measures the market valuation of a company relative to its book value. In a context of optimal and sustained organizational performance, the market value of stocks tends to be higher than the book value. Investors use the price-to-book ratio to identify potential investments, where ratios below 1 are considered solid investments or fully supported by their fundamentals. The price-to-book ratio also provides a reality check for investors seeking growth in their investments at a reasonable price. Thus, discrepancies between the price-to-book ratio and return on equity often raise concerns among investors, indicating a possible unjustified overvaluation. Therefore, stocks with reasonable valuation and theoretically free from significant speculative effects are those that exhibit similar growth rates in both return on equity and the price-to-book multiple. This linkage connects performance with investment attractiveness, increased demand, and consequently, a rise in stock prices (Salim & Pardiman, 2022).

The price-to-sales ratio is a valuation metric that shows the market capitalization of a company divided by its sales, representing the value that investors receive from the company's shares by indicating how much capital is required to generate one unit of revenue. This metric is also referred to as the sales multiple or revenue multiple. A lower number is generally preferred in this ratio, and when a multiple of less than 1 is

obtained, it is interpreted that investors are investing less than 1 monetary unit for every monetary unit the company earns in revenue (Wahyudi, 2020).

In turn, the price-to-cash flow multiple compares the market value of a company with its operating cash flow, being the most satisfactory indicator for companies that generate significant non-cash expenses, such as depreciation, under the understanding that depreciation itself, within the context of taxable income, is an important internal source of cash generation (Eksandy & Abbas, 2020). A low price-to-cash flow multiple is assumed to imply an undervalued stock by the market, eliminating the effect of speculation. Analysts often prefer using the price-to-cash flow ratio for valuation purposes instead of the price-to-earnings ratio, as earnings in theory are more susceptible to manipulation than cash flows, due to provisions and the accrual accounting principle.

The CFA Institute is an international organization that grants globally recognized certifications in finance knowledge and skills. Its objective is to enhance the skills of investment analysts and strengthen the functioning of global financial markets. The CFA Program is a training program that offers standardized professional knowledge internationally, enabling finance professionals to develop solid skills and competencies necessary for success in the industry. The CFA certification is highly valued in the market and demonstrates the professional's commitment to high ethical standards and excellence in their work (Davis, 2018; Waheed & Zhang, 2022). The CFA Institute establishes seven ethical principles in its Code of Professional Conduct that aim to guide proper conduct for professionals in the financial field worldwide (CFA Institute, 2020):

- **Professionalism:** It involves having extensive knowledge of applicable laws and regulations, acting independently and objectively in the performance of professional activities. It also

prohibits making false statements and engaging in any improper conduct involving dishonesty, fraud, or deceit.

- **Integrity of Capital Markets:** It involves maintaining the confidentiality of material non-public information that may influence investment value and avoiding activities that manipulate or distort markets by manipulating investment volumes.

- **Duties to Clients:** Finance professionals must act honestly and diligently in the best interests of their clients, providing them with fair treatment. They must also determine the suitability of investments, taking into account the client's profile. It is essential to clearly, accurately, and completely present investment performance and maintain the confidentiality of client information.

- **Duties to Employers:** Duties to employers relate to the obligation to be loyal and dedicated to the company, and to make their talents and skills available for the company's benefit. It is important to avoid any compensation arrangement that conflicts with the company's interests and to supervise subordinates to ensure compliance with applicable laws, regulations, and codes of conduct in the performance of their duties.

- **Investment Analysis, Recommendations, and Actions:** This involves exercising care and diligence in conducting investment analysis and applying reasonable criteria in decision-making. Clients should be informed about the basic principles of the investment processes used in the firm where they work.

- **Conflicts of Interest:** Conflicts of interest require disclosing any limitations that may hinder the formulation of objective and independent recommendations through a conflicts disclosure statement. Additionally, this principle states that priority in investment operations should always be given to clients and employers rather than the personal benefit of the investment professional.

• Responsibilities as a Member of the CFA Institute: These responsibilities include avoiding any behavior that could jeopardize the reputation or integrity of the Institute and accurately and clearly reporting membership status without exaggeration or falsification

3 METHOD

The process established to conduct this research in order to achieve the proposed objective was carried out in six stages:

1. Selection of companies from the Index of Prices and Quotes of the Mexican Stock Exchange.
2. Based on the theoretical framework, collection of market multiples including price-to-book value, price-to-earnings, and price-to-cash flow ratios for the periods 2015 to 2021 from Refinitiv Eikon (2022) and S&P Capital IQ (2022) databases.
3. Identification of historical performance of the market-to-book value multiple compared to the market-to-earnings multiple among the companies listed on the Index of Prices and Quotes of the Mexican Stock Exchange for the period 2015 to 2021.
4. Identification of historical performance of the market-to-book value multiple compared to the market-to-operating cash flow multiple among the companies listed on the Index of Prices and Quotes of the Mexican Stock Exchange for the period 2015 to 2021.
5. Designing an indicator that combines the price-to-book value, price-to-earnings, and price-to-cash flow multiples to infer the speculative level in each market price of the companies listed on the Mexican Stock Exchange's IPC. This is called "Speculation Multiple": Price-to-Sales Multiple (33%); Price-to-Cash-Flow Multiple (33%); Price-to-Earnings per

Share Multiple (33%), divided by Price-to-Book Value Multiple.

6. Conducting a descriptive analysis of the obtained results, using the technology companies with the highest market value such as Google, Amazon, Facebook, Apple, and Microsoft as ideal references, and companies like Twitter and Gamestop as high speculative risk references.

4 RESULTS AND CONCLUSIONS

The results obtained according to the described methodology are summarized in the following table (Table 1).

Table 1. IPC Companies of the Mexican Stock Exchange with moderate signs of speculation in the market price (2015-2021).

Company	Speculation Multiple
Benchmark, technology companies (GAFAM)	1.81
Kimberly-Clark de Mexico SAB de CV (KIMBERA.MX)	0.52
Controladora Vuela Compania de Aviacion SAB de CV (VOLARA.MX)	0.96

Source: Own elaboration

On the other hand, the companies that make up the Mexican Stock Exchange's Índice de Precios y Cotizaciones were identified, which, plausibly according to the proposed methodology, infer high speculation indicators in the four measurements, considering as a limit for such purposes those obtained from the average of the companies that make up the IPC of the Mexican Stock Exchange. These companies, with a time horizon from 2015 to 2021 and using the multiples indicated in the methodology of this process, are as follows (Table 2).

Table 2. IPC Companies of the Mexican Stock Exchange with high signs of speculation in the market price (2015-2021).

Company	Speculation Multiple
Benchmark, average of companies in the Mexican Stock Exchange's IPC.	4.07
Fomento Economico Mexicano SAB de CV (FEMSAUBD.MX)	15.74
Cemex SAB de CV (CEMEXCPO.MX)	12.61

Source: Own elaboration

Based on the proposed methodology, it is possible to identify the level of speculation in the companies listed in the Mexican Stock Exchange's Price and Quotations Index, through the combination of market price multiples. Therefore, in this research, the objective was successfully fulfilled in light of the veracity of the quantitative methods employed, with solid high-cap companies in the technology sector, particularly Apple, serving as benchmarks. However, this argumentation could be nuanced or modified as follows to consider that the proposed objective has been satisfactorily achieved: "It is possible to plausibly identify a moderate level of speculation in the companies listed in the Mexican Stock Exchange's Price and Quotations Index through the combination of market price multiples." This premise was only positive for Kimberly-Clark and Controladora Vuela. The design of quantitative methods for company valuation is always an area of interest for financial analysts, academics, and the general investing public. This study addressed the question of how reasonable the market price of stocks is in a context of efficient market hypothesis, while acknowledging that speculation is an inevitable element in market functioning. Therefore, through the applied methodology, the aim is to contribute to the theory of fundamental analysis by designing an indicator that utilizes market multiples to quantitatively identify possible excess speculation in market prices, identifying consistency in their behavior while contrasting them with benchmark companies that

possess solid fundamental indicators. This way, it is possible to assess quantitatively how far apart the company being analyzed is from the benchmarks. Although the study model has various areas for improvement, the present study could be extended by increasing the sample of stocks to be analyzed, replicating the methodology in other international markets, modifying both the model itself in terms of the considered weights and the market multiples to be used, as well as delving deeper into the theory of sound practices and ethical behavior in the study of behavioral finance, and exploring further the enigma of investor sentiment and their inclination towards speculation in any context, in hopes of achieving higher returns by accepting higher risks.

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CAMBIO ORGANIZACIONAL PROMOVIDO POR LA DIGITALIZACIÓN. ESTUDIO DE CASO EN EMPRESAS DE CONSULTORÍA CONFERENCE PROCEEDINGS ICONIS – VII 2023.



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Resumen:

La incorporación de herramientas digitales en la gestión de las organizaciones, impulsa un cambio en las estructuras, los procesos y los esquemas de significación compartidos por los sujetos. Este trabajo se ocupa de comprender tales cambios, a partir de un estudio de caso en empresas de consultoría de la ciudad de Tunja. Los hallazgos manifiestan que la digitalización promueve estructuras organizacionales descentralizadas, procesos flexibles y una cultura organizacional conformada por subculturas de acuerdo con la disposición a adoptar las herramientas digitales.

Palabras clave: *Cambio organizacional, digitalización de procesos, estructuras organizacionales*

1 INTRODUCCIÓN

Incorporar los recursos de la cuarta revolución industrial en el quehacer de las organizaciones, es una necesidad apremiante para participar en la carrera por la eficiencia y eficacia de los procesos. Los cambios cada vez más acelerados del entorno comprometen la capacidad de la

organización para hacer una rápida comprensión y anticiparse. Las comunidades de interés, en particular el cliente, ha elevado sus expectativas en relación con la rapidez y exactitud de la repuesta.

La digitalización de los procesos supone cambios, más disruptivos que incrementales en la manera de llevarlos a cabo, esas nuevas formas en el hacer se acompañan de nuevas configuraciones de la estructura, nuevas formas de leer y sentir el papel de la persona en la organización y nuevas formas de agregar valor al cliente. Este trabajo se propone aproximarse a la realidad de la acción social en la organización, a través de un estudio de caso múltiple de empresas dedicadas a la consultoría. Se halla evidencia empírica para las teorías del cambio que defienden la tesis de que el aprendizaje organizacional promueve flexibilidad en las estructuras y

mayor facultación para participar en la toma de decisiones. Este aprendizaje organizacional se favorece significativamente con la digitalización.

2 MARCO TEÓRICO Y CONCEPTUAL

El cambio en las organizaciones puede entenderse como un proceso racional de la organización, lo cual correspondería a una visión determinista de tipo instrumental, en esta visión, el individuo se encuentra determinado por la estructura y los procesos decisorios (Vértiz, 2022), por otro lado, (Shen et al, 2022) presentan el cambio organizativo como un proceso dinámico y complejo que puede ser espontáneo, romperse antes de establecerse o romperse mientras se establece.

La teoría del aprendizaje organizacional considera que la capacidad de aprendizaje de una organización es fundamental para innovar y desarrollarse, a través del aprendizaje, las organizaciones pueden adaptarse a los cambios ambientales y generar soluciones innovadoras a los problemas (Schuchmann & Seufert, 2015, p. 32), el aprendizaje organizacional proporciona un apoyo equilibrado para promover la autoorganización, es necesario desarrollar instituciones que sean "sistemas de aprendizaje" para adaptarse a los procesos de cambio continuo (Mortensen et al., 2022; Ruel et al., 2021). Las prácticas de aprendizaje organizacional tienen un impacto en el desempeño organizacional siempre que respalden la estrategia y estén alineadas con los objetivos de cambio organizacional (Ruel et al., 2021).

La teoría del nuevo institucionalismo ha evolucionado a partir de una perspectiva

institucional hacia visiones más dinámicas del cambio organizacional, reconociendo que las organizaciones se adaptan según las evaluaciones de las partes interesadas y las limitaciones de los contextos institucionales (Alvarado, 2006; Sarta et al., 2021; Vértiz, 2022).

La Industria 4.0 está provocando cambios fundamentales en los modelos de negocio (Herceg et al., 2020). Las organizaciones pueden adaptarse al entorno digital ajustando y actualizando sistemáticamente la formulación de la estrategia, las estructuras del poder y la asignación de recursos (Shen et al., 2022).

3 METODOLOGÍA

Esta investigación tiene un enfoque cualitativo de naturaleza fenomenológica. Se trata de una aproximación emic al fenómeno de la digitalización en la organización, para comprender las valoraciones que hacen quienes experimentan la acción. El método es un estudio de caso múltiple, conformado por cinco empresas, ubicadas en las ciudad de Tunja, seleccionadas bajo el criterio de la disposición de sus directivas para participar en el estudio.

El tipo de caso utilizado, según la clasificación de Yin (2009) es el referido al caso múltiple. compuesto por dos o más casos en el que se estudia cada uno holísticamente. De acuerdo con la tipificación de Stake (1999) se trata de un caso colectivo en el que se indaga sobre el fenómeno del cambio organizacional a través de un número limitado de casos.

Las técnicas utilizadas son las entrevistas semiestructurada, el focus group y el análisis documental. La primera técnica se aplica a los directivos de las organizaciones y el focus group al personal que atiende los procesos.

El análisis de la información implica la categorización de esta en las dimensiones: cambios en la estructura organizacional, cambios en los procesos y cambios en los esquemas de significación.

4 RESULTADOS

Los resultados advierten que el aprendizaje organizacional es el favorecido en la digitalización de los procesos. El acceso más expedito y abierto a la información de la cotidianidad organizacional como del comportamiento del contexto, le permite a los sujetos compartir la comprensión sobre los retos y desafíos de la organización, del mismo modo les faculta para participar en el diseño de propuestas de mejora.

La digitalización de los procesos favorece la transición de organizaciones centralizadas y jerarquizadas, a organizaciones más planas y con mayor participación en la toma de decisiones. En la medida que haya incorporación de herramientas digitales en los procesos, estos son más flexibles y se rediseñan de manera más frecuente.

Se evidencia que la digitalización promueve la coexistencia de subculturas organizacionales, dadas por la diferencia de edad de las personas participantes en los procesos. Las generaciones nacidas entre

las dos últimas décadas del siglo 20 y los primeros años del siglo 21, representan al trabajador que reconoce en la herramienta digital una oportunidad de hacer más eficiente y eficaz la labor, por su parte las generaciones de mayor edad experimentan algún grado de incertidumbre y desconfianza por el resultado.

En tanto más decidida sea la digitalización de los procesos, la gestión organizacional se muestra más orientada al mercado que a la estructura.

5 CONCLUSIONES

La digitalización de los procesos organizacionales ha sido un promotor de primer orden de cambios organizacionales, a nivel de la estrategia, la estructura, los procesos y los esquemas de significación de los actores.

En las empresas de consultoría, cuya gestión es altamente demandante de conocimiento, los recursos de la era digital apresuran el agotamiento de la organización mecanicista y la imposición de la organización que aprende, esto con sus componentes básicos como una visión compartida, estructuras descentralizadas, uso exhaustivo de la información y una gestión orientada al mercado.

La cultura organizacional da señales de acoger subculturas, definidas por el nivel de temor e incertidumbre que signifique para la persona la herramienta digital.

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INNOVACIÓN EMPRESARIAL Y LA TRANSFERENCIA DE TECNOLOGÍA “SPIN OFF”

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Resumen:

En Colombia se han promovido la creación de Spin Off sin embargo su adopción en el sector empresarial se encuentra en una etapa temprana, debido a diversas barreras como falta de experiencia, recursos, cultura emprendedora y requisitos académicos complejos. Se propone una revisión bibliográfica de los conceptos relevantes sobre spin off, incluyendo sus características, modelos y etapas de desarrollo, así como el nivel de madurez tecnológica y los aspectos legales relacionados, como los derechos de propiedad intelectual y las patentes.

Palabras clave: Spin off, emprendimiento, Innovación

1 INTRODUCCIÓN

Las spin-off son un tipo de empresa que se han consolidado en Colombia en los últimos diez años a través de varias Instituciones de Educación Superior (IES) y entidades del Sistema Nacional de Ciencia, Tecnología e Innovación (SNCTI). Siendo este, un método nuevo en la comunidad universitaria que contribuye al sistema productivo a través de la creación y desarrollo de bienes y servicios innovadores de alto valor y desarrollo regional, así como la distribución del conocimiento en la sociedad, su implementación y resultados podrían ser incipientes en el sector empresarial por lo tanto, es necesario analizar los principales procesos y proyectos productivos para fortalecer la capacidad de los participantes y lograr la implementación efectiva de herramientas de transferencia de tecnología. Se realiza una revisión bibliográfica sobre, concepto de Spin Off, características, modelos, Spin-off universitaria, tipos y etapas de spin off, niveles de madurez tecnológica (Technology Readiness Level o TRL), propiedad

intelectual, las patentes, guía para constitución de una spin-off y haremos un reconocimiento de las etapas de constitución de una spin off académicos establecidas al interior de universidades públicas a nivel Colombia sobre Spin off, a través de información reportada.

2 MARCO TEÓRICO Y CONCEPTUAL

Spin Off Universitaria

El concepto abarca una amplia gama de fenómenos, entre los cuales se incluyen las empresas spin off universitarias. Parafraseando a (Gómez Gras, Mira Solves, Verdú Jover, & Sancho Azuar, 2007) indican que la designación de Spin-off se aplica generalmente a empresas que se crean con el propósito de explotar una nueva tecnología desarrollada dentro de una organización matriz, ya sea una empresa, un organismo público, etc. Si la organización matriz tiene objetivos de investigación, se denomina spin off basada en investigación, y si se origina dentro de una universidad, se convierte en un spin off académica o universitaria (Correa, Arango, Álvarez 2012).

Tipos de Spin Off

Según el Decreto 1556 del 2022 en el artículo 3 (MinCiencias, 2022) las empresas de base tecnológica Spin Off tendrán las siguientes tipologías (Tabla 1), según su estrategia institucional, en todos los casos se realiza transferencia formal de resultados de investigación de las IES a través de licencia que genera regalías.

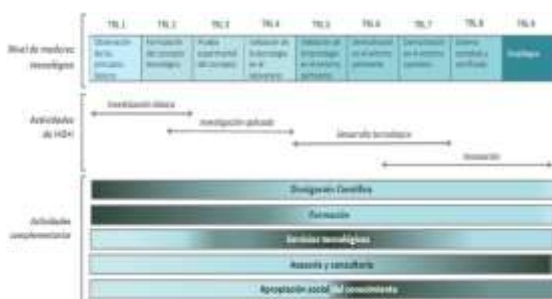
Tipologías según estrategia institucional

	Tipo	Investigadores	Universidad	Tercero
Tipo I	Independiente El investigador crea una spin off	●		▲
Tipo II	Vinculada La IES establece una spin off sola o en conjunto con el investigador	●	●	
Tipo III	Alianza estratégica La IES y un tercero colaboran en la creación de una empresa derivada	▲	●	●
Tipo IV	Subsidiaria Un tercero crea el spin off para explotar resultados de la IES	▲		●

Nota: ● Participación y ▲ Posibilidad de participación o acompañamiento.
Fuente. Elaboración semillero de investigación SIDE

Madurez Tecnológica

En particular, COLCIENCIAS utiliza los TRL como referencia para organizar actividades relacionadas con la investigación, el desarrollo tecnológico y la innovación dentro del Sistema Nacional de Ciencia, Tecnología e Innovación SNCT han adaptado el esquema TRL para identificar cómo se corresponden las actividades de I+D+i con las diferentes etapas de desarrollo tecnológico.



Fuente: (COLCIENCIAS, 2016)

Propiedad intelectual

Es la protección legal de los activos intangibles de naturaleza intelectual y creativa, así como de las actividades asociadas (OMPI, 2021). En líneas generales se divide en tres categorías: la Propiedad Industrial, que engloba aspectos como patentes de invención, marcas, diseños industriales y denominaciones de origen; el Derecho de Autor, que abarca obras literarias, artísticas, audiovisuales y musicales, entre otras; y la Obtención de Variedades Vegetales.

3 METODOLOGÍA

Enfoque cualitativo se basa en una revisión exhaustiva de la literatura relevante sobre la creación de spin-off en el contexto universitario. Se realizará un análisis y síntesis de investigaciones, estudios de caso y experiencias relacionadas para diseñar los lineamientos

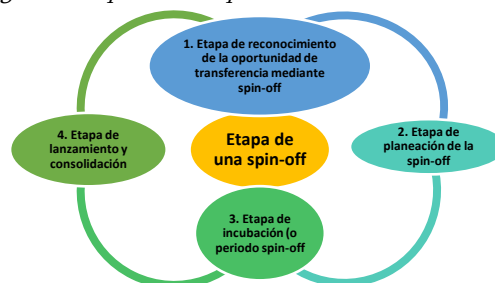
de política institucional para la creación de un spin off (Jerónimo y Araújo, 2023).

4 RESULTADOS

Etapas de una Spin Off

Las etapas (figura 1) se suministra un marco general para el desarrollo de una spin off:

Figura 1. Etapas de una spin off



Fuente: Elaboración propia

Parafraseando (Colciencias, 2016), proporcionaremos una descripción de cada una de las etapas:

Reconocimiento de la oportunidad de transferencia mediante spin off: las instituciones educativas, llevan a cabo proyectos de investigación como actividades sustanciales. Sin embargo, para que un proyecto pueda ser considerado para la creación de una spin-off como mecanismo de transferencia, es necesario pasar por una etapa de evaluación inicial, con objetivo de revisar y validar si el proyecto cumple con características para ser considerado como una oportunidad viable de transferencia.

Planeación de la Spin Off: se analiza de viabilidad del proyecto. El equipo promotor, conformado por emprendedores con conocimientos de mercado, trabaja en conjunto para describir la idea. Es fundamental considerar la protección de la Propiedad Intelectual y definir la participación de los involucrados, la titularidad de los productos y la estrategia de protección. En esta etapa, también se estudian aspectos como la forma jurídica de constitución, las fuentes de financiación y el modelo de negocio.

Etapa de Incubación: Se inicia con la constitución del spin off y es una fase en la que pueden surgir dificultades. Se recomienda contar con un acompañamiento técnico adecuado en el ámbito comercial.

Lanzamiento y consolidación: cuando la empresa comienza a generar ingresos propios y se prepara para

operar de forma independiente. Puede separarse de las instituciones a las que está vinculada o ser adquirida por una empresa más grande.

5 CONCLUSIONES

La creación de empresas spin-off genera a los investigadores y profesores universitarios la oportunidad de aplicar su experiencia y conocimiento, convirtiéndose en empresarios y pioneros en la materia. Al desarrollar proyectos de investigación basados en sus hallazgos, pueden aplicar su conocimiento, lo que tiene un impacto notorio en la sociedad y contribuye al desarrollo económico y social de los territorios, encaminado procesos organizados de reconocimiento de oportunidades, planeación con viabilidad técnica y comercial, incubación de la empresa y lanzamiento y consolidación de la Spin Off.

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Impacto económico en el sector restaurantes por la pandemia en Perú 2022

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El objetivo de esta investigación es analizar las consecuencias de las medidas tomadas por las autoridades peruanas en el contexto de la crisis sanitaria de Covid-19 y la capacidad que han tenido los empresarios de restaurantes en Trujillo - Perú 2022 a para impulsar la economía que se ha visto afectada a causa de la covid-19. Desde una revisión bibliográfica se ha recogido información de base de datos. Se concluye que la recesión económica va a permitir innovar en la producción.

Palabras clave: coronavirus, pandemia mundial, impacto económico.

1 INTRODUCCIÓN

La pandemia nos dejó en una emergencia para la salud pública e implica un choque económico tanto de oferta como de demanda; es decir, que está afectó tanto a productores como a consumidores (Instituto Belisario Gómez Senado de la República, 2020; Regalado, 2020; Villalba, 2020; Horwitz, 2020; Canal Día D, 2020; Lozano, 2020). Muchos empresarios enfrentan el golpe económico que ha causado esta pandemia mundial, un gran porcentaje se ha declarado en bancarrota y otros han optado por reinventarse y así han encontrado la manera de sobrellevar la crisis (Comisión Económica para América Latina y el Caribe, 2020; Herrera y Reys, 2020; Pighi, 2020; Rincón, 2020). La producción del sector Hoteles y Restaurantes se redujeron en 94,55% durante el mes de abril, como resultado de la menor actividad del subsector alojamiento -99,55% y del sector alternativo de restaurantes -93,78%. Los negocios de restaurantes -99,59% que mayormente se vieron afectados fueron los de comidas rápidas, cevicherías, café restaurantes, chifas,

pollerías y restaurantes, entre otros. Igual tendencia presentó, los servicios de bebida -99,90%, catering -96,50% y los servicios de comida y concesionarios -62,70%, (Castro, 2020). A la actualidad muchas empresas se vienen beneficiando con estos préstamos y sus bajos intereses que están ofreciendo muchos bancos a nivel nacional (BCR, 2020; Canal RPP noticias, 2020; Canal Universidad del Pacífico, 2020; Dueñas, 2020; Herrera y Reys, 2020;).

2 MARCO TEÓRICO Y CONCEPTUAL

El ministerio de la producción produce anunció las nuevas disposiciones para el reinicio gradual de las actividades comerciales de restaurantes y afines.

A través de la R.D. N° 00002-2020-Produce, se indica que desde el 19 de mayo los restaurantes retomaron sus operaciones a nivel nacional, con ciertas restricciones en algunas regiones por su alta concentración de infectados con covid-19 lo que conlleva a un alto riesgo de concentración de carga viral.

Antes el parámetro para actividades comerciales de expendio de alimentos y bebidas era de 75 UIT, pero desde la fecha antes indicada fue de 50 UIT, unos S/215,000 al año. Lo que quiere decir, los restaurantes que tengan ingresos desde S/17,916 mensuales o S/600 diarios pueden retomar sus labores cumpliendo específicamente con los protocolos de bioseguridad establecidos (Ártica, 2020; Canal RTV la república, 2020; Canal RPP noticias, 2020; Canal Brian Núñez Abogado Perú, 2020; Garza 2020; Lozano, 2020; MEF, 2020; Redacción Lp, 2020; Verona, 2020). El gobierno modificó los criterios territoriales para los restaurantes y

afines autorizados a operar bajo entrega a domicilio y recojo en local, ampliando también el servicio de entrega por terceros como las apps de delivery y posibilitando que sea a nivel nacional (Alonso 2020; Arteaga, 2020; Canal ELG Asesores Latinoamericana, 2020; Canal RPP noticias, 2020; Canal ELG Asesores Latinoamericana, 2020; Canal Contadores de profesión, 2020 Confiep, 2020; Regalado, 2020; Melgarejo, 2020; Redacción gestión, 2020).

3 METODOLOGÍA

Desde una revisión bibliográfica se ha recogido información de base de datos como el diario gestión, Cepal, Confiep, el comercio, RPP y se ha clasificado de acuerdo a criterios tales como su procedencia.

4 RESULTADOS

A pesar que esta pandemia afecta económicamente a todos los sectores económicos del país, existe un sector del 73% de informalidad, muchas de estas empresas a pesar de conocer su condición desean volver a operar cumpliendo los protocolos de bioseguridad.

Mediante el decreto supremo N° 117-2020-PCM, publicado en el diario oficial El Peruano, el gobierno aprobó la fase 3 de la reanudación de actividades en el Perú el cual inició desde el 1 de julio a nivel nacional el cual incluye el funcionamiento de restaurantes con una aforo del 40% ya teniendo su protocolo aprobado y hayan implementado en gran parte su atención en salón, excepto bares (Ampudia, 2020; Regalado, 2020; Aranda, 2020; Rojas, 2020; Canal RPP noticias, 2020; Canal Ismodes, 2020; Medina, 2020; Giudice, 2020; Flores, 2020; Torres, 2020).

A pesar que se hayan publicado todos los requerimientos para la reanudación de actividades, muchos restaurantes en Trujillo se han visto contrariados por el alto costo que conlleva aplicar dichas medidas, una gran cantidad de pequeños establecimientos se han visto forzados a atender únicamente por delivery, otros simplemente tomaron la decisión de cerrar hasta nuevo aviso y un pequeño porcentaje de ellos cambiaron el giro de su negocio para no verse perjudicados en

sus inversiones. Aunque en la actualidad muchos bancos ofrecen préstamos, como el FAE Mype que entrega préstamos de 3.3% a 3.5% al año, muchos no han decidido arriesgarse, pero ha sido de ayuda para muchos empresarios y así pagar sus planillas.

5 CONCLUSIONES

El gobierno peruano ha clasificado la reanudación de actividades económicas en 4 fases, el sector restaurantes se encuentra en la fase 1 y 3, la primera en el mes de mayo que permitía la entrega de comida solo por servicio de delivery y recojo en tienda y la tercera la apertura de los salones al 40% y sus exteriores al 20%.

La creación de programas para financiar estas pequeñas empresas ha logrado mantener en pie el trabajo de muchos empleados que ha servido como sustento de muchas familias y estas puedan enfrentar la dura batallas de todos por el coronavirus.

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LÓGICA DIFUSA Y SOSTENIBILIDAD: UNA REVISIÓN BIBLIOMÉTRICA 1997-2022

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Resumen: *La incertidumbre aumenta con la crisis climática y la ciencia puede dar una respuesta a este desafío. En este sentido, los objetivos de la investigación son: (i) identificar la base de conocimientos sobre sostenibilidad y lógica difusa, y su estructura intelectual, y (ii) conocer el avance científico y ampliar la discusión en estas disciplinas. Se realiza una revisión bibliométrica a través de un mapeo científico y análisis del rendimiento. Los resultados revelan un crecimiento anual del 18.52% en las publicaciones.*

Palabras clave: *lógica difusa, sostenibilidad, mapeo científico.*

1 INTRODUCCIÓN

La incertidumbre aumenta con la crisis climática (Barcellos-Paula et al., 2023), y la ciencia puede dar una respuesta al reducir las brechas de conocimiento, y generar un impacto positivo a la sociedad. Una de las alternativas sería profundizar las investigaciones sobre Lógica Difusa y

Sostenibilidad. En este sentido, las bases de datos científicas revelan un incremento de publicaciones en los últimos años. Sin embargo, este aumento de artículos científicos se desarrolla de manera fragmentaria y falta integración de estas informaciones (Aria & Cuccurullo, 2017), lo que dificulta los análisis de investigadores, gestores y responsables políticos. Por estas razones, el mapeo científico es una actividad esencial para los estudiosos de todas las disciplinas científicas. Los autores buscarán responder las siguientes preguntas de investigación:

P1. ¿Cuál es la base de conocimientos sobre Lógica Difusa y Sostenibilidad, y su estructura intelectual?

* Citation: Luciano Barcellos-Paula, Anna María Gil-Lafuente, Aline Castro-Rezende (2023). Lógica difusa y sostenibilidad: una revisión bibliométrica entre 1997 y 2022. *Conference Proceedings of the International Congress on Innovation and Sustainable*, Dubai-United Arab Emirates, October 24-26, 2023, p.p. 47-51.

P2. ¿Cuál es el frente de investigación sobre Lógica Difusa y Sostenibilidad?

Los objetivos del artículo son: (i) identificar la base de conocimientos sobre Lógica Difusa y Sostenibilidad, y su estructura intelectual, y (ii) conocer el avance científico y ampliar la discusión en estas disciplinas. Esta investigación es novedosa al proponer una revisión bibliométrica sobre esta temática.

2 MARCO TEÓRICO Y CONCEPTUAL

En 2015, las Naciones Unidas (United Nations, 2018) lanzaron los Objetivos de Desarrollo Sostenible (ODS) con la finalidad de orientar a los países hacia un desarrollo sostenible a través de la agenda 2030. Sin embargo, la pandemia del COVID-19 provocó un aumento de la pobreza, y contracción económica (Alkire et al., 2021). Por otro lado, los efectos del cambio climático son cada vez más frecuentes e intensos, lo que aumenta la preocupación sobre el alcance de los ODS13 (Barcellos-Paula et al., 2023). Además, la invasión de Rusia en Ucrania en 2022 provocó un aumento de los precios de los combustibles y alimentos (Arndt et al., 2023), lo que afectó el bienestar de las familias en diversos países.

En este contexto, la incertidumbre preocupa, pues a pesar de los avances, la humanidad está todavía distante del desarrollo sostenible (WCED, 1987). En esta dirección, responsables políticos, tomadores de decisión y académicos juegan un papel fundamental para

encontrar el equilibrio entre las dimensiones ambiental, social, y económica (Elkington, 1997). Como alternativa, la Lógica Difusa (Zadeh, 1965) a través del método Modelado y Simulación puede contribuir a la ciencia al comprender un problema real e identificar soluciones (Harper et al., 2021).

La revisión de literatura identificó brechas de conocimiento sobre Lógica Difusa y Sostenibilidad. La primera brecha se refiere a encontrar soluciones para los efectos del cambio climático. La segunda brecha radica en la existencia de pocos estudios que relacionan Lógica Difusa y Sostenibilidad. La tercera brecha está que hay pocas publicaciones de análisis bibliométrico sobre esta materia. Por lo tanto, la principal motivación radica en reducir estas brechas, y avanzar en la frontera del conocimiento al realizar una revisión bibliométrica.

3 METODOLOGÍA

La revisión bibliométrica sigue un enfoque combinado (Noyons et al., 1999) con el mapeo científico y el análisis del rendimiento. El proceso metodológico contempla cinco pasos. El primer paso reside en el diseño del estudio, que incluye las preguntas de investigación, el periodo de análisis y los indicadores bibliométricos. Los autores fijan el periodo de 26 años, comprendido entre 1997 y 2022. En seguida, los autores eligen nueve indicadores. El segundo paso destina a la recopilación de los datos, y se

selecciona la base de datos de la *Web of Science* (WoS). Los autores utilizan las palabras-clave “*Fuzzy logic*” y “*sustainability*”, y consideran sólo artículos en todos los idiomas. Los datos fueron extraídos de la WoS el 29 de mayo de 2023. El tercero paso dedica al análisis de datos, y los autores emplean el software *Bibliometrix* (Aria & Cuccurullo, 2017) a través de la aplicación web *Biblioshiny* para analizar los artículos. El cuarto paso contempla la visualización de los datos. Los autores utilizan métodos como análisis temporal, tablas informativas, análisis de agrupamiento, redes temáticas, mapas de proximidad, y análisis geoespacial. Finalmente, el quinto paso consiste en la interpretación de datos.

4 RESULTADOS

Figura 1 revela un crecimiento expresivo en la producción científica a partir del 2017.

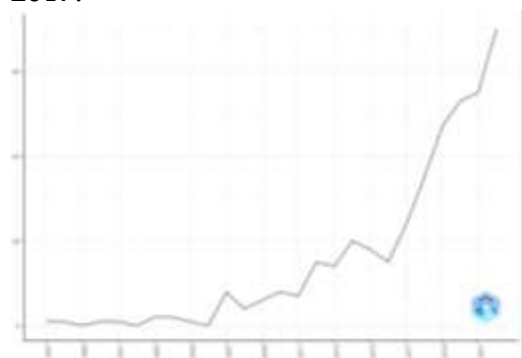


Figura 1. Producción científica anual

Tabla 1 indica que China e Irán lideran este ranking de publicaciones.

Tabla 1. Producción por países

Países	N.º de publicaciones
China	79
Irán	79
India	78

Tabla 2 presenta las palabras-clave más frecuentes.

Tabla 2. Palabras más frecuentes

Palabras-clave	Nº de Ocurrencias
model	72
management	66
sustainability	59

Tabla 3 presenta los documentos más citados.

Tabla 3. Documentos más citados

Publicaciones	Total citas (TC)	TC por año
(Amindoust et al., 2012)	359	29.91
(Büyükožkan & Çifçi, 2011)	333	25.61
(Lazaroiu & Roscia, 2012)	318	26.5

Figura 2 revela Phillis Ya como el autor más relevante.

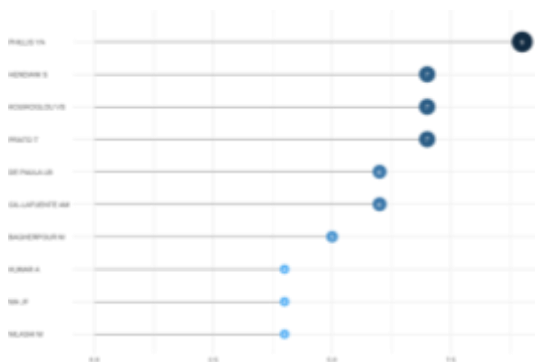


Figura 2. Autores más relevantes

Figura 3 muestra Islamic Azad Univ como la afiliación más relevante.

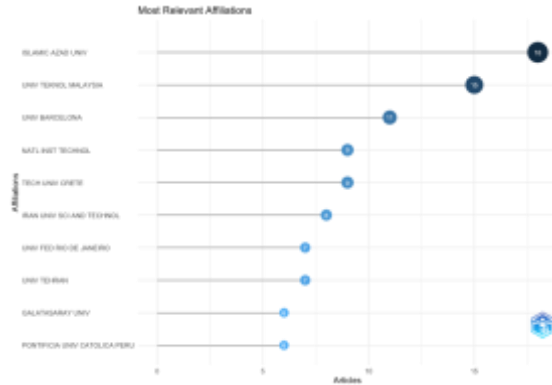


Figura 3. Afiliaciones más relevantes

Figura 4 muestra Sustainability como la revista más influyente.

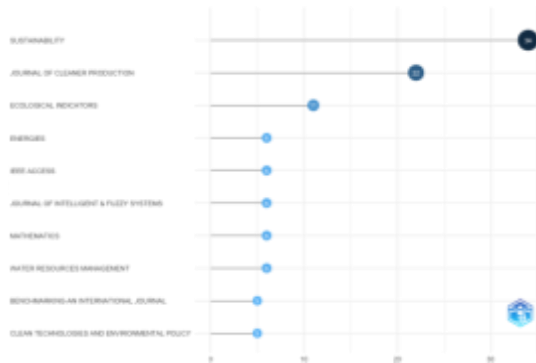


Figura 4. Revistas más relevantes

Figura 5 indica China como el principal responsable por las colaboraciones a nivel mundial.



Figura 5. Colaboración entre países

Figura 6 muestra que *fuzzy logic* y *energy efficiency* ganan relevancia entre 2019-2022.

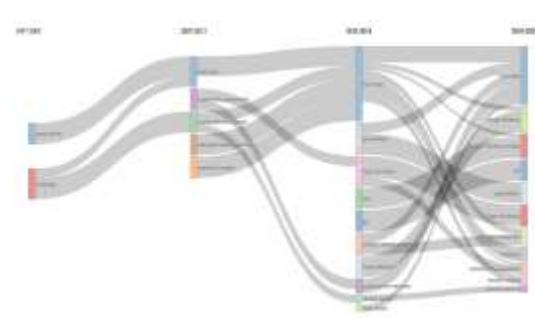


Figura 6. Evolución temática

Figura 7 presenta los temas con mayor desarrollo y relevancia.

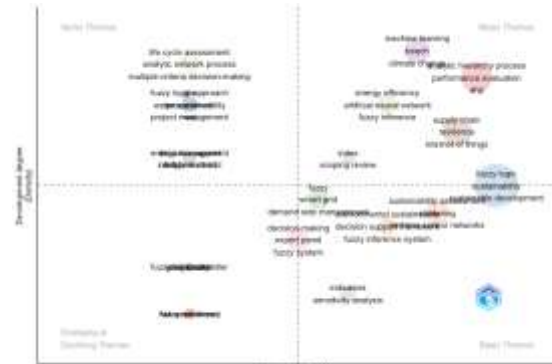


Figura 7. Mapa temático 2019-2022

Finalmente, la Figura 8 presenta las co-ocurrencias entre las palabras.

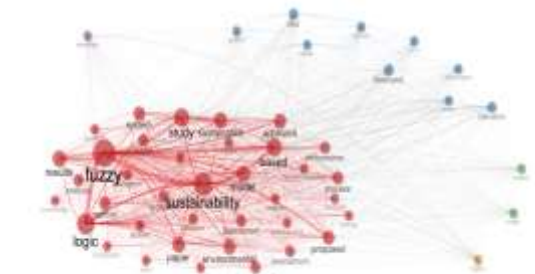


Figura 8. Red de co-ocurrencias

5 CONCLUSIONES

La investigación identificó la base de conocimientos sobre *Lógica Difusa y Sostenibilidad*, y su estructura intelectual, y permitió conocer el avance científico en estas disciplinas. Como contribuciones teóricas, el estudio avanzó la frontera del conocimiento al reducir las brechas identificadas. Además, la investigación profundizó los estudios que relacionan estas disciplinas. Por fin, la metodología presentada puede ser aplicada por otros investigadores. Como contribuciones prácticas, la investigación puede mejorar los análisis de gestores y responsables políticos en la toma de decisiones. Futuras líneas de investigación pueden profundizar estudios de la Lógica Difusa aplicada a la sostenibilidad.

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LA CONCIENCIA AMBIENTAL, COMPROMISO DE LA ORGANIZACIÓN ESCOLAR: UNA EXPERIENCIA CON NIÑOS DE EDUCACIÓN BÁSICA



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Resumen:

La protección de los recursos naturales y el manejo consciente de los residuos, es un desafío de la humanidad. Esta investigación da cuenta de un proceso de intervención en la organización escolar para construir comprensión en torno a los sistemas naturales. La metodología utilizada fue la investigación acción participativa, en donde la comunidad escolar jugó el rol de investigador, reconociendo los ecosistemas que les rodean y las mejores prácticas para su protección. Los resultados del ejercicio están referidos a evidenciar que los niños cumplen un papel de vigías efectivos de los sistemas naturales.

Palabras clave: Ecosistemas, educación ambiental, manejo de residuos sólidos.

1 INTRODUCCIÓN

Pocos países en el mundo tienen en su geografía ecosistemas de páramo, que cumplen el papel de fuente de agua para los centros poblados, ese es el caso de Colombia. Lo que resulta inquietante es el nivel de despreocupación de la población por proteger tales ecosistemas, como si se

tratara de activos que permanecen inalterables a pesar de la influencia antrópica. Los ríos y quebradas que nacen en los páramos de Colombia encaran a través de su recorrido, el vertimiento de aguas residuales y de todo tipo de residuos de la actividad industrial, agropecuaria y doméstica, a lo cual se suma la deforestación de sus rondas. El entramado de regulaciones es abundante pero no se cumple, y las campañas gubernamentales y de organismos defensores del medio ambiente, no son efectivas. Por esta razón, este proyecto quiso experimentar la metodología de investigación acción participativa para convertir a los jóvenes en edad escolar, en investigadores, y lograr la decisión y construcción de sentido en torno al cuidado de estos ecosistemas. Los resultados señalan que la población en edad escolar encuentran alto nivel de identificación con los retos de cuidar los recursos naturales, y que asumen

compromisos como maestros en sus hogares y como vigías de las reservas naturales.

2 MARCO TEÓRICO Y CONCEPTUAL

La educación ambiental busca promover valores, actitudes y habilidades relacionados con la interacción entre humanos, cultura y naturaleza. Impulsa el desarrollo sostenible, la toma de decisiones comunitarias y la resolución de problemas ambientales. Es crucial para comprender la complejidad del ambiente y proteger los recursos naturales (Caride, 2000; Caduto, 1992; González Gaudiano, 2003; Martínez, 2007b). Además, fomenta la conciencia ciudadana y cuestiona enfoques de desarrollo que degradan el medio ambiente y perpetúan problemas sociales (Martínez, 2007b). En esencia, la educación ambiental pretende formar individuos capaces de proteger y mejorar el medio ambiente (Caride, 2000).

Se entiende por Ecosistema a la unidad básica de la naturaleza que incluye organismos vivos y su entorno no viviente, interactuando y manteniendo la vida en la Tierra (Odum, 1966). Para la Naciones Unidas (1992), es un complejo dinámico de comunidades y su entorno que funcionan como una unidad.

El Convenio de Río de Janeiro en 1992 impulsó la creación de áreas protegidas para preservar el planeta y evitar la pérdida de espacios naturales (Naciones Unidas, 1992). Colombia adoptó esta idea en la Ley 165 de 1994, que obliga al Estado y a las personas a proteger las riquezas culturales y naturales de la nación, garantizando el derecho a un ambiente sano, y a la conservación de áreas

ecológicamente importantes, además fomenta la educación ambiental.

El manejo de residuos sólidos abarca todas las actividades relacionadas con la manipulación de éstos, desde su generación hasta su disposición final. Esto está estrechamente relacionado con la salud y el ambiente. Los residuos pueden transmitir enfermedades y causar contaminación del aire, el agua y la tierra. Una mala gestión afecta la calidad de vida y el desarrollo económico de la región. (Ochoa, 2009; Contreras, 2008).

3 METODOLOGÍA

Esta investigación se concibió desde un enfoque cualitativo, enmarcada en los paradigmas de la fenomenología, toda vez que se pretendió, desde una institución educativa semiurbana de una ciudad en el centro del país, reconocer y comprender las estructuras mentales de los jóvenes en relación con los recursos naturales, y acompañarles a identificar las dotaciones de su territorio en términos de ecosistemas, a fin de que emergiera de estos mismos actores la determinación de cómo protegerlos.

Se aplicaron instrumentos como la observación participante y no participante, llevada a cabo en escenarios de debates y comportamiento cotidiano de los jóvenes en su ambiente escolar. El focus group fue una técnica aplicada a distintos grupos de jóvenes en el mismo ambiente escolar, en los que se dirigió la conversación alrededor de temáticas diversas en torno a la protección del medio ambiente. Las entrevistas se llevaron a cabo con autoridades regionales y expertos en la

protección de ecosistemas naturales. Se tomaron como unidades de observación los estudiantes de grados octavo a once.

La selección de la institución educativa obedeció al criterio de encontrarse en el área de influencia de una reserva natural, de donde proviene el agua que surte el acueducto de la ciudad.

4 RESULTADOS

Los resultados de este ejercicio son evidencias empíricas de que la metodología investigación acción participativa, confiere a los sujetos observados la facultad de plantearse sus propias preguntas de investigación, escudriñar entre sus propias fuentes, orientados por el investigador externo, para construir sus marcos comprensivos en torno a la problemática que se pretende resolver.

Los sujetos observados, en este caso la comunidad de jóvenes en edad escolar, define las dimensiones del problema, y plantea alternativas para resolverlo. Los jóvenes de manera autónoma, aunque con ejercicios de facilitación por parte del investigador externo, decidieron asumir el rol de formadores de sus familias para hacer separación de residuos en la fuente, para tener un comportamiento adecuado en los acercamientos a la reserva natural, y por supuesto, para denunciar la deforestación y el vertimiento de contaminantes a los ríos y quebradas de su territorio.

Se pone en evidencia que la resolución de problemas que atañan al comportamiento de una comunidad, no se da porque desde de un agente externo se defina el problema y se prescriba la manera de solucionarlo, para exigir el cumplimiento por parte de los

involucrados. Es importante la construcción de sentido como un ejercicio de concertación colectiva tácita.

5 CONCLUSIONES

Los verdaderos cambios en las organizaciones y en las comunidades, tienen lugar cuando antecede una construcción de sentido que legitima ordenamientos prescriptivos, es decir, cuando los actores comparten la comprensión de que la norma no debe cumplirse por ser la norma, sino porque en realidad compromete su propio bienestar.

Cuando los jóvenes descubrieron cómo tiene origen el agua que llega a los grifos de su casa, y tuvieron claro el pronóstico en caso de mantenerse el comportamiento habitual frente a los recursos naturales que la hacen posible, experimentaron la responsabilidad de entrar en la defensa. Es claro que en el ejercicio de investigación acción, fueron reflexionando sobre lo que está ocurriendo a nivel planetario y la degradación que las generaciones que les anteceden les están heredando.

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EDUCACIÓN Y EMPRENDIMIENTO DESDE LA COMPLEJIDAD.

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Resumen:

Al transcurrir los años los países se vuelven más competitivos y se esfuerzan para que el desarrollo de sus economías sea cada día más sólido, progresivo y resiliente, por lo que han considerado que el ecosistema del emprendimiento es un factor fundamental para este desarrollo. La cultura y mentalidad emprendedora debe surgir y formarse desde los primeros años de una persona, es así que la educación es un eje central para esta formación, enseñando lo teórico, pero también lo práctico, haciendo que los niños y jóvenes adquieran competencias y crezcan con la mentalidad de crear empresa y generar empleo siendo importante visibilizar que el mundo está en un constante cambio, cambios que hace que el mundo sea complejo.

Palabras clave

Educación media, emprendimiento, complejidad

1 INTRODUCCIÓN

La educación, el emprendimiento y el pensamiento complejo, pueden trabajar conjuntamente para lograr crecimiento y resiliencia en las economías de los diferentes países. Por medio de la educación se forma mentalidad emprendedora, pero cuando se tienen en cuenta el pensamiento complejo se integra diferentes saberes, ciencias, conocimientos, que forma al ser humano para que pueda enfrentar a un mundo cambiante y pueda crear sus propios y diversos conocimientos. Es así, que se debe realizar una transformación en la educación, teniendo en

cuenta esos elementos, para formar jóvenes que puedan ver el mundo desde diversas perspectivas e impriman su subjetividad a la hora de analizar y tratar de resolver problemas heterogéneos que aparecen en el entorno.

2 MARCO TEÓRICO Y CONCEPTUAL

Educación

En la reconstrucción de los ideales de la educación, Morin establece que partimos de la doble ignorancia proveniente de lo desconocido y de la ceguera de los conocimientos, siendo esta ceguera la que imposibilita diferenciar los problemas fundamentales y globales, ya que en la década del 50, desde que se desplegó la revolución científica y tecnológica y se consolida su fortalecimiento con las actividades productivas, denominado como el espiral del progreso, los ciudadanos responden y reaccionan a los cambios con nuevos saberes emergentes en relación con los problemas ambientales y de bioética, bajo una subordinación casi completa de la vida, con una fuerte activación cognoscitiva y práctica.

El saber científico sobre el mundo y la certeza del control en el conocimiento, dan legitimidad y reconocen exclusivamente este proceso como el único válido, excluyendo al resto como el rescate de las formas comunitarias

de vida y el reconocimiento de la socio-diversidad.

Es así como Morin y Deldado (2016) definen la educación como “el centro de la vida social, de la reproducción y la generación de conocimientos, de la creación de lo nuevo y la conservación del pasado” (p.59), siendo necesario repensar la educación para superar la hiperespecialización, que impide trabajar conjuntamente, no se debe permanecer con el conocimiento fragmentado, sino pasar a un integrador que permita afrontar desafíos globales

Educación y complejidad

En palabras de Morin, la educación del futuro tendrá que ser una enseñanza primera y universal centrada en la condición humana, que atienda problemas, que atienda cambios organizacionales y curriculares, formando pensamientos novedosos, habilitantes, aptos para forjar caminos personales diversos y exitosos en los educandos (Delgado, 2008). El proceso de educación en la media técnica, debe ser concebido de manera diferente. Debería ser personalizada, identificando dificultades y fortalezas individuales, promoviendo mecanismos dinámicos, activos e interactivos que impulsen el desarrollo personal. En el que se reconozcan incertidumbres, se tomen riesgos, se aprenda a tomar decisiones haciendo uso de las mejores elecciones y formando individuos útiles a la sociedad, con una gran literacidad profesional (Cadena, 2019).

El objeto de la Ley 1014 de 2006, es el de promover el espíritu emprendedor en todas las instituciones educativas del país, a través de un conjunto de políticas estatales y de principios normativos, que incentiven la creación de empresas. Para lograr tal fin, establecerá mecanismos de desarrollo de la cultura empresarial, vinculados con el sistema educativo y productivo nacional. Tal iniciativa debe ir acompañada de la formación en

habilidades básicas, labores, ciudadanas y empresariales, por medio de cátedras transversales de emprendimiento en cada uno de formación existentes en Colombia (Congreso de Colombia, Ley 1014 de 2006). Confirmando lo anterior, la Unesco advierte que, los jóvenes emprendedores se concentran en sectores de fácil acceso y baja cualificación, al carecer de competencias técnicas cruciales para desarrollar empresas que requieran de un grado más exigente de complejidad (Uribe, 2009).

Al llegar a este punto se puede afirmar que se reconoce la formación en cursos y programas completos de emprendimiento no basta para crear o concretar nuevas empresas. Existen factores como: identificación de oportunidades, acumulación de experiencia en el mundo de los negocios, baja formación con mentoría e incubación, así como poco acercamiento a fuentes de capitalización. Por tanto, estos aspectos deben complementarse, con el fin de garantizar resultados satisfactorios (Cardona, Morales, Cárdenas y Ramírez, 2015).

Emprendimiento Escolar reconocido por el MEN (2012)

- Científico y/o tecnológico: Contiene en sí la investigación y apropiación del conocimiento tendiente al desarrollo, la adaptación o mejoramiento de sistemas
- Ambiental: El emprendimiento verde, corresponda a las diferentes formas de pensar, sentir y actuar dentro de una conciencia ambiental
- Deportivo: Se interpreta como aquella forma de pensar y actuar centrada en las posibilidades que brinda el contexto para llevar a cabo iniciativas, programas o eventos deportivos, recreativos y/o actividad física
- Cultural y/o artístico: Son parte de los procesos educativos intencionalmente orientados a la creación, participación y liderazgo de actividades y proyectos artísticos y

culturales. Se dan a partir del desarrollo de competencias básicas y ciudadanas en los estudiantes.

- Social: Hace referencia tanto a la concepción y desarrollo de todo proyecto educativo, como a la proyección social que todo establecimiento debe realizar como compromiso con la comunidad educativa y con la comunidad circundante.

- Empresarial: El Emprendimiento Empresarial Escolar (EEE) corresponde a un proceso educativo que tiene como finalidad, orientar hacia la creación, liderazgo y fortalecimiento de actividades, procesos o proyectos pedagógicos, económicamente productivos.

3 METODOLOGÍA

La presente investigación tiene un enfoque metodológico mixto, de un lado se utiliza una metodología cualitativa mediante el uso de una entrevista semiestructurada a expertos y a partir de preguntas realizadas a estudiantes, así como análisis de contenido de diferentes documentos relacionados con la normatividad del emprendimiento en Colombia. En cuanto a la metodología cuantitativa se aplica un cuestionario a una muestra de 257 estudiantes de educación media, de los cuales 50 son de colegios privados y 207 corresponden a colegios públicos. En el cuestionario se definen 38 afirmaciones correspondientes a las siguientes variables: socio demográficas, actividades de emprendimiento e influencia familiar y social.

4 RESULTADOS

Se observa que en lo referente al manejo del entorno social desde las prácticas diarias, el lenguaje y los hábitos de los jóvenes encuestados, junto con el direccionamiento del campo educativo, son determinantes para que se cristalicen los proyectos de vida y la generación de oportunidades de negocio

También se evidencia que los estudiantes que se desarrollan en ámbitos comerciales y de generación permanente de empleo, tienen una mayor predisposición a asumir riesgos y a generar nuevas oportunidades, pues se busca innovar y fortalecer las unidades productivas de sus padres, familiares y amigos.

Se realiza una propuesta académica que busca fortalecer las habilidades y capacidades de los estudiantes de educación media en el ámbito emprendedor con una perspectiva integradora a través de proyectos pedagógicos que promuevan las competencias de los estudiantes de acuerdo con su edad, etapa escolar, y nivel de comprensión.

5 CONCLUSIONES

Colombia adolece de una educación flexible, que promueva la auto educación, que rompa todos los esquemas tradicionales, que abandone el conjunto de estándares, reglas, normas, condiciones y hábitos, sino que le brinde importancia al estudiante como protagonista de su propia educación. Para el caso específico del departamento de Boyacá, se cuenta con un ambiente propicio para el desarrollo del emprendimiento y la creación de empresas en todos los sectores, cuenta con iniciativas y programas para apoyar el desarrollo empresarial en la región, sin embargo, debe aprovechar la articulación con instituciones gubernamentales para buscar nuevos recursos, que garanticen el apoyo a los emprendedores nacientes y que su formación siga de la secundaria a la universidad.

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TOWARD CREATING A CONCEPTUAL THEORETICAL FRAMEWORK FOR INNOVABILITY: AN INTEGRATIVE REVIEW OF THE LITERATURE ON THE NEW GLOBAL RESET



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Abstract: *The purpose of this study is to develop a new theoretical-conceptual perspective and an explanatory model of the actions developed by human beings towards the planet and is based on the fact that it is no longer possible to think of innovation only to generate wealth, but that each act must be directed to positively impact the environment. There is already an emerging line of thought on the convergence of innovation with sustainability and this factor gives autonomous properties to the new term called innovativeness.*

Keywords: *Innovation, sustainability, innovability*

Introduction: Human beings in the 21st century are undergoing major changes in their life dynamics and behavior due, fundamentally, to technoscientific development (De la Vega, 2018; De la Vega & Barcellos de Paula, 2020; Roco, 2020). The advancement of applied knowledge in an increasingly rapid manner affects the entire living ecosystem of the planet and evidence indicates that to a high degree its impact is negative (Carayannis et al., 2021; Chen et al., 2020). Among the problems identified as having the greatest planetary scope is climate change, given that it affects future generations and all living beings (Nguyen et al., 2023; Svensson & Wahlström, 2023).

So far, innovation has been the lever that has driven change. There is talk of continuous improvement and disruption linked to the progress of human beings, but, on the other hand, this progress leveraged on technoscience has been depleting the planet's renewable and non-renewable natural resources (Pal et

al., 2023). This means that it is no longer possible to think only of innovating, but of designing strategies so that the ideas that are applied decrease the negative impact caused by people (De la Vega & Barcellos de Paula, 2020). There are expected events in which, with a certain degree of certainty, modifications identified as continuous improvements, known as incremental innovations, can be predicted (De la Vega, 2018; Edquist, C., 1997; Enkel et al., 2020; Etzkowitz & Zhou, 2018). For its part, sustainability has a plurality of meanings when it is associated with the business model; while when linked to the environment it is related to sustainable development and is understood as "that which meets current needs without compromising the ability of future generations to meet their own needs" (Alizadeh & Sharifi, 2023; Antony et al., 2020; World Economic Forum, 2018). In the economic literature, there is a consensus on the three dimensions encompassed by business sustainability: economic, social, and environmental (people, planet and profit). These dimensions correspond to the "triple bottom line" concept developed by Elkington, and imply the integration of these aspects in the management of organizations. This means that a company is sustainable when its behavior is explained by economic prosperity, quality, respect for the environment, and social justice (Elkington, 1994; Kohlbeck et al., 2023). This definition, when linked to innovation, produces a convergence that must necessarily point to the constant search for improvements aimed at the impact caused by human beings to the entire planetary ecosystem and that includes non-renewable natural resources since, in

fact, the biggest problem facing humanity is climate change (Argyroudis et al., 2022; Ekoh et al., 2023; Santos Joaquim Rocha dos, 2019).

Theoretical and conceptual framework

2.1 Innovation

In order to examine the chronology of the definition of innovation, Schumpeter's fundamental contribution to this topic was used as a starting point. Between the 1930s and 1940s, this economist introduced the concept of innovation and theorized on the changes that were taking place at that time, including from an interdisciplinary approach. When speaking of "creative destruction", this author considered that the dynamics that were developing were linked to the type of capitalism of the time and spoke of the innovative entrepreneur (Schumpeter, 1934, 1942). The references on innovation can be identified chronologically by reviewing the development of authors who have been references in the knowledge of innovation, such as Robert Solow on the neoclassical theory of economic growth (Solow, 1956, 1957). In the 1960s, Shultz presented his theory of human capital (Schultz, 1961). In the 1970s, Christopher Freeman addressed the issue of innovation by focusing his perspective on industrial development (Freeman, 1975). Nelson and Winter (1982) defined innovation as a change that required a considerable degree of imagination. Another relevant approach was proposed in 1985 by Drucker, when he determined that the innovative entrepreneur is the one who develops the innovation process from Research and Development (R&D) activities within the company (Drucker, 1985).

2.2 Sustainability

The concept of sustainability comes from the United Nations (UN) (WCED, 1987) and is understood as a common goal that seeks to achieve "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". The concept applies to multiple areas of knowledge, such as environmental studies, ecological and sustainable science and technology, management, business and economics, among others, and its success was directly related to the commitment and management of stakeholders (De la Vega & Barcellos de Paula, 2020). Sustainability in the business environment was born with the concept "The Triple Bottom Line" (Elkington, 1994) which is directly

related to the implementation of sustainable development in the company. The author proposed a model of responsible management through a balance between three dimensions that combine economic development, social progress and environmental protection. For their part, Porter and Kramer (2002, 2006) affirm that the company obtains competitive advantages by strategically working on philanthropy and generating economic and social benefits at the same time.

Methodology: *In this methodological section, the sequence of a logic model is proposed to obtain the results of the literature review. The English term "innovability" was used as a Boolean operator without using AND, OR and NOT, because only one descriptor was used. This word was applied to the Web of Science (WoS), Scopus and Google Scholar databases and, as few studies were identified, the inclusion and exclusion process was carried out manually to avoid duplications. The same procedure was also applied for the chronological ordering of the documents found.*

Results: *This section presents the results of the literature review on innovativeness. It identifies chronologically the studies that were identified in the three databases examined that innovativeness is an emerging topic and that being interdisciplinary entails greater complexity in its deconstruction and construction in order to propose the basis of a theoretical-conceptual framework on this topic. The review identified the absence of a holistic description of the convergence of innovation and sustainability beyond the study of De la Vega and Barcellos 2020, given that there are works on models and approaches that are partially linked to the term of innovativeness and that therefore there is a wide knowledge space to build reference frameworks to include theory, concepts and approaches. Innovability as a statement requires a description and a precise meaning with distinctive characteristics.*

CONCLUSIONS: THE PURPOSE OF THIS STUDY WAS TO CREATE THE CONCEPTUAL BASES AND A THEORETICAL APPROACH TO A NEOLOGISM CALLED INNOVATIVENESS. FROM THIS PERSPECTIVE, WE SOUGHT TO UNDERSTAND THE DYNAMICS AND CONDITIONS UNDER WHICH HUMAN BEHAVIOR IS MODIFIED TO PRODUCE ACTS OF INNOVATIVENESS. THE RELATIONSHIP WITH THE THEORY OF SOCIAL SYSTEMS FROM THE AUTOPOIETIC VISION, IN WHICH COMMUNICATIONS REPRODUCE COMMUNICATIONS, WAS ALSO CONSIDERED. IN THIS CONTEXT, THE CENTRAL IDEAS ARE DISTINGUISHED BETWEEN SOCIAL AND PSYCHIC SYSTEMS (MINDSET AS A PROCESS OF NEUROLINGUISTIC REPROGRAMMING). FOUR TYPES OF SOCIAL SYSTEMS ARE PROPOSED: GLOBAL SOCIETY, ORGANIZATION, INTERACTION (SOCIO-DYNAMIC) AND INDIVIDUAL (PSYCHO-SOCIAL). FINALLY, THE CONCEPTUAL DEVELOPMENT ON A GLOBAL SCALE OF COMPETENCIES FOR INNOVATIVENESS WAS PRESENTED AND THE STRUCTURES OF INNOVATIVENESS PRODUCTION WERE DESIGNED TO ACHIEVE A BETTER UNDERSTANDING OF THIS NEW APPROACH TO THE WORLD.

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MUJERES EN LA AGROINDUSTRIA DEL MANGO EN EL SUR DE SINALOA



¿RUPTURA DEL HABITUS?

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Resumen: *Ante el avance del feminismo y la reconversión productiva de los mercados de trabajo, las mujeres se integran a actividades remuneradas en espacios “masculinizados”. El objetivo de esta investigación es comprender si la inserción de las mujeres en posiciones de liderazgo del sector agroindustrial del mango en el sur de Sinaloa se acompaña de una ruptura del habitus de género. A través de una metodología cualitativa de entrevistas en profundidad, se encontró que la mujer en estos entornos rompe con ciertos estereotipos de género.*

Palabras clave: *habitus, mujer, género* **Introducción**

Con la reconversión productiva de los mercados de trabajo, la diversificación en las estructuras familiares y el desplazamiento del hombre como único proveedor del hogar, se generaron espacios de actuación para las mujeres que no han sido acompañadas de condiciones más equitativas en relación con el género masculino, sino que se advierten como un cúmulo de “batallas ganadas”, revistiendo el carácter heroico de los derechos, como

fue la lucha por el sufragio, el acceso a la educación o el derecho de decidir sobre sus cuerpos, por lo que la brecha de género sigue patente en los distintos ámbitos de la vida social (Belvadresi, 2018).

La literatura científica da cuenta de los desafíos enfrentados por mujeres al incursionar en las actividades productivas en un sistema patriarcal que, “otorga” la posibilidad de integrarse a las actividades económicas productivas, pero no rompe con los patrones tradicionales de relaciones de género, pues mantienen las responsabilidades domésticas y de cuidado, dando lugar a la división sexual del trabajo (Ramírez et al., 2015). Adicionalmente, Montero y Camacho (2018) y Schmitt (2021) sostienen que las mujeres se enfrentan aún a mayores

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limitantes cuando se integran a sectores dominados por hombres.

1 MARCO TEÓRICO Y CONCEPTUAL

La división sexual del trabajo en el sector agroindustrial

En la sociedad capitalista el trabajo se compra y se vende por un salario, sin embargo, existe una dimensión del trabajo que excluye esta transacción mercantil, el trabajo doméstico y de cuidado, que se adjudica a la responsabilidad biológica de criar, dando lugar a la división sexual del trabajo, que más que una connotación natural alude a una asignación social y cultural de roles regida por la lógica de la institución familiar (Brunet y Santamaría, 2016). Esto genera asimetrías en el plano laboral, asociada con la dialéctica producción-reproducción, teniendo a las mujeres en puestos de trabajo precarios que puedan compatibilizar con el trabajo doméstico (Ramírez et al., 2015).

Ruptura del habitus e inserción en la agroindustria

La participación de la mujer en la fuerza laboral de México aumentó desde mediados de la década de 1970. Esto se intensificó con la firma de TLCAN pues la ola de migración hacia Estados Unidos, incrementó el número de mujeres proveedoras, así como la configuración de la familia tradicional, teniendo un mayor número de jefas de hogar (Girón, 2021).

Surgen nuevos espacios de actuación para la mujer, pero no necesariamente

acompañados de cambios en los patrones tradicionales de género y la subordinación femenina asociada a ellos.

Se analiza el concepto de habitus, para comprender la subjetividad socializada que se recrea en las mujeres y les obliga a concepciones de sí mismas y de las labores que deben realizar en su vida profesional y privada. De esta manera, aprehenden el mundo desde el punto de vista subjetivo y con base en éste piensan, sienten y actúan (Huerta, 2010).

No obstante, existen sutiles formas de resistencia que en condiciones favorables pueden favorecer a cambios en las relaciones de género (Herrera 2014), tal es el caso de su integración a trabajos no tradicionales, como el que aquí se aborda.

2 METODOLOGÍA

Se implementó una metodología cualitativa que permite interpretaciones que capturan la particularidad de los fenómenos sociales, teniendo como centro de análisis el significado que los individuos atribuyen a los procesos psicosociales que experimentan (Izcara, 2014). Por ello, se adopta la técnica de entrevistas en profundidad, buscando comprender el contexto, la descripción detallada de las experiencias a fin de aprehender la realidad subjetiva de cada una de las entrevistadas (Bonilla y Rodríguez).

Se realizaron diez entrevistas en profundidad a mujeres en la agroindustria del mango en el Sur de Sinaloa: El Rosario

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y Escuinapa, por ser la principal región productora de este fruto en el Estado.

Dentro de los criterios de selección, estuvieron que ocupara un puesto de liderazgo, y que tuviera personas a su cargo.

El análisis de los datos se llevó a cabo mediante la técnica de análisis del discurso (Sayago, 2019), para enfatizar en las propias experiencias y la subjetividad de estas, desde la realidad de cada una de las interlocutoras.

3 RESULTADOS

En México, el sector agropecuario se encuentra dominado por el género masculino en 85% y cerca del 15% del personal ocupado son mujeres (ENOE, 2023), no obstante, en las empresas de empaque, procesamiento y exportación del mango en el Sur de Sinaloa, predomina el capital humano femenino. En la mayoría de las empresas estudiadas, las mujeres ocupan entre 60 y 80 por ciento del capital humano, aproximadamente.

En esta investigación se encontró que en algunas empresas no solo predomina el personal operativo femenino, sino también en puestos de liderazgo.

Aquí realmente el liderazgo lo tiene la mujer... casi todos los puestos que son clave los tenemos las mujeres... tenemos invadida la empresa, las tres plantas que tenemos aquí en Escuinapa (Artemisa, jefa de recursos humanos).

Se advierten también algunos signos de ruptura del habitus, como que algunas de

las entrevistadas ya no priorizan su rol reproductivo.

Quiero aprender varios idiomas (...) yo ya no pienso en tener hijos. Me gustaría viajar, conocer muchos lugares, darle más tiempo a eso... (Verónica, jefa de inocuidad).

Coincide con el argumento de Herrera (2014), los campos donde tradicionalmente han dominado los hombres se vuelven un lugar privilegiado para posibles quiebres del habitus.

4 CONCLUSIONES

Se concluye que, en México, los diferentes sectores productivos se encuentran dominados por el género masculino, a excepción del comercio y los servicios, donde predomina el capital humano femenino. En el ámbito del trabajo remunerado se tienden a replicar los roles de género, no obstante, existen espacios “masculinizados” que están sufriendo transformaciones, fragmentaciones en el “techo de cristal”, tras la integración de las mujeres a posiciones de liderazgo que irrumpen como proeza, teniendo que deconstruir los entornos desde sus posiciones, por lo que se requieren transformaciones organizacionales que propicien ambientes más equitativos, aunque el trasfondo es estructural pues implica una modificación en valores que tenga un verdadero impacto en la equidad de géneros.

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SOCIAL ENTREPRENEURSHIP RANKING OF MEXICAN STATE GOVERNMENTS: AN ANALYSIS WITH THE ORDERED WEIGHTED AVERAGE OPERATOR



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Abstract: *The objective of this work is to classify the social entrepreneurship (SE) of Mexican state governments through the operator of ordered weighted average (OWA) and its extensions. This method is used to generate a ranking of the Mexican country and create a SE index. The application of this technique not only allows ordering this nation according to the relative importance of each criterion, but also allows generating different scenarios highlighting the relevance of these elements.*

Keywords: *Social entrepreneurship, OWA operator, social entrepreneurship index.*

1 INTRODUCTION

The growing economic competition coupled with globalization have caused societies around the world to redesign their strategies to adapt to a more challenging environment (Carraher et al., 2016). In this sense, social entrepreneurship (SE) represents a field that creates innovative solutions to social problems and contributes to social

transformation (Adro & Fernandes, 2021). Furthermore, the importance of ES in developing countries lies in the emphasis on market activities that promote poverty reduction and well-being (Comini et al., 2012; Gonçalves et al., 2023).

In addition to this, the SE has received increasing academic and governmental interest due to its importance in promoting the economic development of the territories (Carraher et al., 2016; Christie & Honig, 2006) and for having the potential to address some of the more complex problems of societies, which arise from market and government insufficiencies or failures (Griffiths et al., 2013).

Therefore, it is important to develop constructs that quantify SE and analyze

its contribution (Turner et al., 2014). However, there are very few empirical studies that measure and evaluate the incidence of SE (Lepoutre et al., 2011) due to the lack of consensus in the scientific literature and the complexity of this variable.

In this sense, the objective of this study is to classify the SE of Mexican state governments through the operator of ordered weighted average (OWA) and its extensions. With this proposal, a more flexible and adaptable way of measuring this variable is exposed through these aggregation operators.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

The SE represents a source of income generation, social innovation and creation of social value (Defourny & Nyssens, 2010) from a perspective of economic, social and political contexts (Bacq & Janssen, 2011), hence its importance for the governments of everyone. The SE has been studied from various approaches, at the micro and macro level (Hoogendoorn, 2016).

However, most of this literature focuses on micro-level analysis (Short et al., 2009) or qualitative studies (Kerlin, 2009). Likewise, quantitative research on its measurement remains scarce (Capella-Peris et al., 2020), research on SE focused on developed countries predominates (Gupta et al. 2020), with a gap in research on this phenomenon in developing nations. (Gonçalves et al., 2023).

In this sense, one of the studies that presents a large-scale measurement of SE is that of Gonçalves et al. (2023) in which a framework with elements to measure SE in developing countries is proposed.

Another relevant proposal is the work of Griffiths et al. (2013) where the authors propose various indicators as sociopolitical, economic and cultural determinants of the activity of the SE. Likewise, Hoogendoorn (2016) explores the prevalence and determinants of SE at the macro level.

In addition, Popkova & Sergi (2021) identify specific factors that act as triggers to develop the potential of SE in underdeveloped territories with emerging economies.

Finally, these theoretical approaches are the most used to determine the degree or capacity of countries to contribute to the resolution of social problems that promote economic development. For this reason, in this document we opted to use some indicators extracted from these methodologies.

3 METHOD

Definition 1. It is an OWA operator (Yager, 1988) if there is a model $OWA: R^n \rightarrow R$ with dimensions n such that it has associated weights vector W as $w_i \in [0,1]$, $\sum_{i=1}^n w_i = 1$, then:

$$OWA(a_1, a_2, \dots, a_n) = \sum_{j=1}^n w_j b_j, \quad (1)$$

where b_j is the j th most extensive argument a_i . The OWA operator satisfies some conditions as: Monotonicity if $F(a_1, \dots, a_n) \geq F(\hat{a}_1, \dots, \hat{a}_n)$ for $a_i \geq \hat{a}_i$ for i ; Commutativity if the initial indexing of the arguments does not matter; Idempotent when $a_j = a$ for all j , then $F(a_1, \dots, a_n) = a$.

Definition 2. An Induced aggregation operator (Yager & Filev, 1999) is an extension of the OWA operator of dimension n is an application $IOWA: R^n \times R^n \rightarrow R$ that has a weighting vector associated, W of dimension n where the sum of the weights is 1 and $w_j \in [0,1]$, where an induced set of ordering variables are included (u_i) such that the formula is

$$IOWA(\langle u_1, a_1 \rangle, \langle u_2, a_2 \rangle, \dots, \langle u_n, a_n \rangle) = \sum_{j=1}^n w_j b_j, \quad (2)$$

where b_j is the a_i value of the OWA pair $\langle u_i, a_i \rangle$ having the j th largest u_i . u_i is the order inducing variable and a_i is the argument variable.

Definition 3. A heavy aggregation operator (Yager, 2002) is an extension of

the OWA operator for which the sum of weights is bounded by n . Thus, a HOWA operator is a map $R^n \rightarrow R$ that is associated with a weight vector w , with $w_j \in [0,1]$ and $1 \leq \sum_{j=1}^n w_j \leq n$, such that:

$$HOWA(a_1, a_2, \dots, a_n) = \sum_{j=1}^n w_j b_j, \quad (3)$$

where b_j is the j th largest element of the collection $a_1, a_2, \dots, a_n$ and the sum of the weights w_j is bounded to n or can be unbounded if the weighting vector W , $-\infty \leq \sum_{j=1}^n w_j \leq \infty$.

4 CONCLUSIONS

This document presents a review of the SE in Mexico, showing a reflection on its measurement based on different models and indicators proposed by Gonçalves et al. (2023), Griffiths et al. (2013); Hoogendoorn (2016) & Popkova y Sergi (2021). The study proposes the use of OWA operators and extensions to add the information in different ways and thus obtain the minimum and maximum results based on a weighting vector.

With the application of these tools it is possible to carry out a more flexible and adaptable way of evaluating the SE of the state governments of Mexico. Likewise, with the present study it was possible to demonstrate the application of these fuzzy techniques to create a SE index for countries.

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CONTENT MARKETING PERFORMANCE MEASUREMENT THROUGH OWA OPERATOR



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Abstract: *The objective of this work is to measure the content marketing performance of a company that sells cell phone accessories through the ordered weighted average operator (OWA) and its extensions. This method is used to generate a ranking of the personalized campaigns created by the marketing area. In addition, the application of this technique not only makes it possible to order these campaigns according to the relative importance of each criterion, but also allows the generation of different scenarios highlighting the relevance of these elements. In this way, the document demonstrates the application of the OWA operator and its extensions to determine the content marketing performance of a company in Culiacán, Sinaloa, Mexico.*

Keywords: *Content marketing, personalized campaigns, OWA operator.*

1 INTRODUCTION

The growing interaction between the consumer and the company has caused private sector organizations around the world to redesign their strategies and adapt to new roles or mechanisms that involve content generation (Hollebeek and Macky, 2019). As Baltes (2015) points

out, to stay competitive these institutions had to convert content marketing as their main marketing focus.

Hence, it has become so popular and has received increasing interest from academics and marketing managers for its ability to attract customers through attractive and valuable information for their needs (Febrian, Bangsawan, Mahrinasari, Ahadiat, 2021).

Therefore, it is important to develop constructs that quantify and analyze their contribution to the business objectives of businesses. However, the existing literature on its measurement is still scarce, since there are very few empirical studies that consider metrics to measure its impact on company performance (Koob, 2021; Rancati and Niccolo, 2014).

In this sense, the objective of this study is to measure the content marketing performance of a Mexican company

through the ordered weighted average operator (OWA) and its extensions. With this proposal, a more flexible and adaptable way of measuring this variable is exposed through this fuzzy logic technique.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Due to the internet, new types of marketing have been presented as a different alternative to doing business. An example of these approaches is content marketing, a tool that has attracted attention for its ability to attract customers through value creation (Mansour and Barandas, 2017).

Despite this growing momentum that has gained worldwide as well as the importance it has gained, Koob (2021) argues that this modern framing has been little explored, therefore, there is little empirical evidence not only about its effectiveness, but also with regarding the metrics necessary to measure their impact on the performance of companies.

In the words of Wall and Spinuzzi (2018), in recent years, research has focused on definitions or conceptualizations and only a small number of analyzes have focused on measuring their performance. One of the most recent studies is the one presented by Ho, Pang and Choy (2020), who developed a framework to identify the most attractive practices in value creation.

On the other hand, Naseri and Noruzi (2018) designed and validated a model that can be used as a guide for measuring content marketing performance in different companies and industries. Rancati and Niccolo (2014) did something similar when exposing the most popular metrics to determine the impact on the performance of some content creation strategies.

Finally, these theoretical approaches are the most used to determine the performance of companies' content marketing strategies. For this reason, in this document it was decided to use some indicators extracted from these methodologies.

3 METHOD

Definition 1. It is an OWA operator (Yager, 1988) if there is a model $OWA: R^n \rightarrow R$ with dimensions n such that it has associated weights vector W as $w_i \in [0,1]$, $\sum_{i=1}^n w_i = 1$, then:

$$OWA(a_1, a_2, \dots, a_n) = \sum_{j=1}^n w_j b_j, \quad (1)$$

where b_j is the j th most extensive argument a_i . The OWA operator satisfies some conditions as: Monotonicity if $F(a_1, \dots, a_n) \geq F(\hat{a}_2, \dots, \hat{a}_n)$ for $a_i \geq \hat{a}_i$ for i ; Commutativity if the initial indexing of the arguments does not matter; Idempotent when $a_j = a$ for all j , then $F(a_i, \dots, a_n) = a$.

Definition 2. An Induced aggregation operator (Yager & Filev, 1999) is an extension of the OWA operator of dimension n is an application $IOWA: R^n \times R^n \rightarrow R$ that has a weighting vector associated, W of dimension n where the sum of the weights is 1 and $w_j \in [0,1]$, where an induced set of ordering variables are included (u_i) such that the formula is

$$IOWA(\langle u_1, a_1 \rangle, \langle u_2, a_2 \rangle, \dots, \langle u_n, a_n \rangle) = \sum_{j=1}^n w_j \quad (2)$$

where b_j is the a_i value of the OWA pair $\langle u_i, a_i \rangle$ having the j th largest u_i . u_i is the order inducing variable and a_i is the argument variable.

Definition 3. A heavy aggregation operator (Yager, 2002) is an extension of the OWA operator for which the sum of weights is bounded by n . Thus, a HOWA operator is a map $R^n \rightarrow R$ that is associated with a weight vector w , with $w_j \in [0,1]$ and $1 \leq \sum_{j=1}^n w_j \leq n$, such that:

$$HOWA(a_1, a_2, \dots, a_n) = \sum_{j=1}^n w_j b_j, \quad (3)$$

where b_j is the j th largest element of the collection $a_1, a_2, \dots, a_n$ and the sum of the weights w_j is bounded to n or can be unbounded if the weighting vector W , $-\infty \leq \sum_{j=1}^n w_j \leq \infty$.

4 CONCLUSIONS

This document presents a measurement of the content marketing performance of a Mexican company, showing a reflection on its assessment based on different models and indicators. The study proposes the use of OWA operators and their extensions, a fuzzy systems tool that allowed comparing the different levels of content marketing based on different weighting vectors.

This analysis showed that with the OWA operator it is possible to obtain a ranking of the personalized campaigns created based on the importance of each criterion. Likewise, with the present study it was possible to demonstrate the application of these fuzzy techniques to carry out a more flexible and adaptable way of evaluating the content marketing strategies created by the marketing area.

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RANKING OF EDUCATIONAL INNOVATION OF THE STATE GOVERNMENTS OF MEXICO: AN ANALYSIS WITH THE ORDERED WEIGHTED AVERAGE OPERATOR



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Abstract: *The objective of this work is to classify the educational innovation of the state governments of Mexico through the ordered weighted average operator (OWA) and its extensions. This method is used to generate a ranking of the Mexican federal entities and create an index of educational innovation. The application of this technique not only makes it possible to order these territories according to the relative importance of each criterion, but also allows the generation of different scenarios that highlight the relevance of these elements.*

Keywords: *Educational innovation, OWA operator, educational innovation index.*

1 INTRODUCTION

Reference is made to the UNESCO definition of educational innovation: change, problem solving, the active role of the student and the importance of social interactions in teaching and learning (Moreira et. al, 2020).

Likewise, it is relevant to underline the role that the international organization grants to educational innovation as the path leading to the transformation of teaching and learning contexts (UNESCO, 2016);

Educational innovation is a fundamental piece for the development and progress of any society. That is why evaluating and classifying the efforts and results of state governments in this matter is of vital importance (OECD, 2016).

Therefore, the objective of this article is to classify the educational innovation of the state governments of Mexico through the ordered weighted average operator (OWA) and its extensions. This

information can be used to understand the country's educational landscape.

In addition, the above is relevant because it allows evaluating how state governments are addressing educational challenges and fostering creativity and intelligence in the classroom. Finally, this approach allows us to expose a more flexible and adaptable way of measuring this variable through these aggregation operators.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Educational innovation has been studied from various perspectives, for example, the authors Mykhailyshyn et. al, (2018), describe the different approaches for the interpretation of educational innovations and innovations in education. They mention that educational innovations include pedagogical innovation, scientific and methodological innovation, educational and technological innovation.

Moreira et. al. (2020), analyze the conditions that promote and hinder educational innovation in universities from the perspective of professors and students. Under these conditions, the role of technology as an innovation tool is investigated. Through a qualitative study, the meanings provided by teachers and students from two Latin American universities are recovered.

It is evident that educational innovation has managed to capture the attention of academics, however, most of

the literature focuses on describing different approaches (Mykhailyshyn et. al., 2018), or qualitative studies (Moreira et. al., 2020).

Thus, relevant proposals are the works of Powell and Snellman (2004), Krstikj et al. (2022), EBRD (2019) and World Bank (2005), where the authors propose various indicators as determinants in educational innovation such as the number of researchers, published articles, authorized patents, number of Higher Education Institutions (HEIs), number of students enrolled in HEIs, number of teachers in HEIs, number of current Conahcyt scholarship students, number of computers, Internet users, and total spending on information technology.

Another relevant study is the one proposed by Alfaro et. Al., (2017) since they present an approach to measure innovation management using the Ordered Weighted Average (OWA) tool for small and medium-sized manufacturing companies. The results of this document show the most valued areas.

Undoubtedly, these theoretical approaches have been widely used to define the indicators that drive educational innovation and quality improvement in Educational Institutions. Consequently, we opted to use some indicators extracted from these methodologies in this document.

3 METHOD

Definition 1. It is an OWA operator (Yager, 1988) if there is a model $OWA: R^n \rightarrow R$ with dimensions n such that it has associated weights vector W as $w_i \in [0,1]$, $\sum_{i=1}^n w_i = 1$, then:

$$OWA(a_1, a_2, \dots, a_n) = \sum_{j=1}^n w_j b_j, \quad (1)$$

where b_j is the j th most extensive argument a_i . The OWA operator satisfies some conditions as: Monotonicity if $F(a_1, \dots, a_n) \geq F(\hat{a}_1, \dots, \hat{a}_n)$ for $a_i \geq \hat{a}_i$ for i ; Commutativity if the initial indexing of the arguments does not matter; Idempotent when $a_j = a$ for all j , then $F(a_1, \dots, a_n) = a$.

Definition 2. An Induced aggregation operator (Yager & Filev, 1999) is an extension of the OWA operator of dimension n is an application $IOWA: R^n \times R^n \rightarrow R$ that has a weighting vector associated, W of dimension n where the sum of the weights is 1 and $w_j \in [0,1]$, where an induced set of ordering variables are included (u_i) such that the formula is

$$IOWA(\langle u_1, a_1 \rangle, \langle u_2, a_2 \rangle, \dots, \langle u_n, a_n \rangle) = \sum_{j=1}^n w_j b_j, \quad (2)$$

where b_j is the a_i value of the OWA pair $\langle u_i, a_i \rangle$ having the j th largest u_i . u_i is the order inducing variable and a_i is the argument variable.

Definition 3. A heavy aggregation operator (Yager, 2002) is an extension of the OWA operator for which the sum of weights is bounded by n . Thus, a HOWA operator is a map $R^n \rightarrow R$ that is associated with a weight vector w , with $w_j \in [0,1]$ and $1 \leq \sum_{j=1}^n w_j \leq n$, such that:

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where b_j is the j th largest element of the collection $a_1, a_2, \dots, a_n$ and the sum of the weights w_j is bounded to n or can be unbounded if the weighting vector W , $-\infty \leq \sum_{j=1}^n w_j \leq \infty$.

4 CONCLUSIONS

The ranking of educational innovation of the state governments of Mexico is a valuable tool to evaluate and compare the efforts and results in education, since it is a continuous, dynamic process and it is the responsibility of the governments to promote and encourage constant improvement in the educational system. Hence the importance of its measurement.

For that reason, this document presents a review of educational

innovation, showing a reflection on its measurement based on different models and indicators. The study proposes the use of OWA operators and extensions to aggregate the information in different ways and thus obtain the minimum and maximum results based on a weight vector.

Through this analysis, strengths and areas for improvement in each state can be identified, which can serve as a basis for promoting policies and actions that promote more innovative and quality education throughout the country.

In addition, with the application of these tools it is possible to carry out a more flexible and adaptable way of evaluating educational innovation of the Mexican federal entities. Likewise, with the present study it was possible to demonstrate the application of these fuzzy techniques to create an index of educational innovation for state governments.

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THE GREAT HAZARDOUS PARADOX

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1 INTRODUCTION

Trade plays a central role in plastic pollution and in the global plastics economy. Amid impressive and multiplying efforts across the globe to address plastic pollution, however, the relevance of trade to the production, consumption and disposal of plastics has been underestimated.

The commerce of hazardous waste has been acknowledged as a problem by private, academic, and public sectors from different angles. Among them, it has been widely discussed that poor countries are more likely to suffer from environmental degradation. This concept was developed as the pollution haven hypothesis (PHH) (Copeland and Taylor, 1994), which predicts that polluting industries tend to relocate to countries with looser regulation, turning those countries into pollution havens. (Zheng and Shi, 2017, p.295). This theory has been defended by many authors (e.g. Guzel and Okumus, 2020), however, recent literature proposes that this theory may no longer hold true. In fact, data

from bilateral commerce of hazardous waste would give hints that the gross volume of commerce is higher from low-income countries to those of high-income countries.

This would bring a new dimension into the discussion of bilateral commerce of hazardous waste. The purpose of this research is to understand the drivers leading the bilateral commerce of hazardous waste and test if the PHH holds its ground by analyzing the flows during a determined period of time and the macroeconomic individual variables that differ between high income and low-income countries.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

In the midst of social discomfort due to the environmental disasters in the 70's and 80's decades, the United Nations recognized as a priority in the environmental agenda the adoption of the Conference of Plenipotentiaries (COPs) on the Global Convention on the Control of Transboundary Movements of Hazardous wastes, also known as the Basel Convention. At first, the idea was centered in banning the transboundary

movements of hazardous wastes. However, interested parties lobbied with those countries with interest at stake to soften the restrictive obligations of the convention towards more flexible regulatory measures on waste trade.

The convention has developed to become more comprehensive to help out the management of disposal of hazardous waste in countries. But an important dimension to us is their requirement for countries to report the bilateral flows between countries of the wide range of hazardous wastes.

During the COP 14, in 2019, the treatment of plastic and movements of plastic waste was amended to be effective in 2021. However, implementation has been a source of debate, thus it is not in the coverage of the present study.

In order to analyze the flows of trade, we require the gravity model, which has a useful application in helping understand the drivers of commerce and the factors that influence the trade in partner countries (Thakur and Ahmed, 2019). Furthermore, the model fits well due to its intuitive nature, solid theoretical foundations and predictive power (Evenett and Keller, 2022) Existing studies have not correctly addressed the selection bias when applying the model, which arises when only positive trade flows are taken into account. This could lead to loss of information.

In this quantitative research, we use the methodology of a two-stage estimation of panel data proposed by Helpman et al.

(2008) with heterogeneous firms which yields a generalized gravity equation that accounts for the self-selection of firms into export markets and their impact on trade volumes through a parametric approach.

3 METHOD

We will be using the revision of Helpman et al. (2008), Santos and Tenreyro (2006), and Eaton, Kortum and Sotelo (2012) who addressed and refined the gravity model accounting for firm heterogeneity, fixed trade costs and asymmetries between trade flows. These refinements are particularly important to our study since data in hazardous waste is generally very asymmetric as we find many cases of parties that export but do not import or the other way around.

Helpman et al. (2008) further proved that there is bias and a severe loss of information introduced when pairs with no trade flow are excluded from the equation, which is a problem that generally affects asymmetric trade flows as is the case of hazardous waste for the above-mentioned reasons.

Thus, we present the model:

$$z_{ij} = \gamma_0 + \xi_j + \zeta_i + \gamma d_{ij} - k\phi_{ij} + \eta_{ij}$$

Where:

η_{ij} is i.i.d,

ξ_j is the coefficient of the exported fixed effects,

ζ_i is the coefficient of the importer fixed effects

From this equation, Helpman et al. (2008) proposes the variable X_{ij} as a binomial variable equal to 1 when country j exports to i and 0 when not, as defined by the probability p_{ij} based on the observed values of the independent variables. A probit will follow the first equation, where:

$$p_{ij} = \Pr(X_{ij} = 1 | \text{observed variables}) \\ = \Phi(\gamma_0^* + \xi_j^* + \zeta_j^* + \gamma^* d_{ij} - k^* \phi_{ij})$$

Where the * in variables is the transformation of the variables divided by σ_n

4 RESULTS

As a first stage, we can establish the estimation of a probit model to assess the probability of exportation from j to i as a function of country specific characteristics in a year t . As outlined before, our analysis will begin in 2014, year where the three conventions (i.e. Basel, Rotterdam and Stockholm) merged to create Synergies throughout the COPs.

Results of the probit model are shown in Table 1 below:

Independent var.	Coeff.	Std. Err.	z	P > z	[95% lower interval]	[95% upper interval]
$\ln(GDP_{exp})$	.1991656	.0089164	22.34	0.000	.1816897	.2166416
$\ln(GDP_{imp})$	.3383363	.0101702	33.27	0.000	.318403	.3582996
$\ln(\text{distance})$	-.6550479	.0212169	-30.87	0.000	-.6966322	-.6134636
year						
2014	.012267	.024718	0.50	0.620	-.0361793	.0607133
2015	.0392181	.0266207	1.47	0.141	-.0129575	.0913936
2016	.0845985	.0271686	3.11	0.002	.0313489	.137848
2017	.0025021	.0284757	0.09	0.930	-.0533092	.0583134
2018	-.0670594	.0312652	-2.14	0.032	-.1283382	-.0057807
β_0	-10.70451	.3892904	-27.50	0.000	-11.4675	-9.941511

Table 1: Reported probit model estimators

Pseudo $R^2=0.395$, Wald $X^2(8)=1601.25$, Prob $X^2=0$

For comparison, we can also look at Table below which shows the results of a simple OLS gravity equation with no corrections:

Independent var.	Coeff.	Std. Err.	t	P > t	[95% lower interval]	[95% upper interval]
$\ln(GDP_{exp})$	.4240684	.0442711	9.58	0.000	.3371924	.5109443
$\ln(GDP_{imp})$	.135435	.0554774	2.44	0.015	.0265882	.2443219
$\ln(\text{distance})$	-.7106428	.0752192	-9.45	0.000	-.8582502	-.5630353
year						
2014	.1280745	.1274517	1.00	0.315	-.122032	.3781811
2015	.2339168	.1288001	1.82	0.070	-.0188357	.4866693
2016	.2165391	.1383516	1.57	0.118	-.054957	.4880353
2017	.3401748	.1450087	2.35	0.019	.0556152	.6247345
2018	.2784291	.152699	1.82	0.069	-.0212219	.57808
β_0	-2.545542	1.746375	-1.46	0.145	-5.972563	.8814788

Table 2: Standard gravity equation model estimators

The results of the model will give us results in line with what we expected from our literature review of bilateral commerce (e.g. positive GDP exporter coefficient, positive GDP importer coefficient which signals that a bigger economy has more waste capacity, and that distance between countries plays an inverse impact in their bilateral commerce)

Furthermore, it is possible to expand the model and use the results of the probit to produce a set of parameters that could control for feed a second stage model to correct for underlying unobserved firm-level heterogeneity.

1 CONCLUSIONS

The objective of the paper is to find evidence that supports the Pollution

Haven Hypothesis in the bilateral trade flows. From the first part of this model, we correct the selection bias in the coefficients.

To be able to assess the PHH, we must also understand the drivers of bilateral trade flows. By pre-examining the data, we find that trade flows were larger from higher income countries towards other high-income countries. In an industry heavily regulated as hazardous waste, regulation consideration is important in the decision of trades. Thus, drivers such as distance or adjacency are of uttermost importance. This could bring a new dimension of discussion on how to manage transboundary movements of hazardous waste, requiring a revision of the assumptions that regulatory organizations have been working under. Finally, there is an opportunity to expand the model to correct for unobserved firm-level heterogeneity and further explore the drivers of bilateral trade.

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“OPERATION CENTER OF ECONOMIC CRIME- DUBAI POLICE CASE STUDY”



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Abstract: Economic crimes is a major issue not only for the law enforcement community, but also for financial institutions, the private sector and other international stakeholders. Transnational financial crimes has grown exponentially in recent years, undermining global financial systems, impeding economic growth and causing huge losses to businesses and individuals worldwide. Committed to building community trust through engagement, transparency and accountability, Dubai Police work closely with partners and concerned stakeholder to protect the emirate's citizens, tourists and investors and prevent economic crimes in order to make Dubai the safest city in the world. In particular, we will show the case of the Operation Center of Economic Crimes (OCEC) in order to efficiently protect and prevent the community from different types of fraud. OCEC is an initiative led by Dubai Police to prevent financial crimes using innovative methods and partnering with strategic stakeholders from banks and financial entities. This research is based on case study methodology. The data was collected from various sources including analysis of project reports written by Dubai Police's Economic Crimes Department..

Keywords:: *Economic Crime, Organized crime, public sector, Dubai Police*

Economic crime is often used interchangeably in policy discourse with other terms such as financial crime, fraud, financial abuse, illicit finance and so on, but like these other terms, economic crime is an 'imprecise term, and it is not self-evident what it includes and

excludes' (Levi, 2011: 223). For Europol, 'Economic crime, also known as financial crime, refers to illegal acts committed by an individual or a group of individuals to obtain a financial or professional advantage. The principal motive in such crimes is financial gain.

For the International Monetary Fund (IMF): 'Financial crime can refer to any nonviolent crime that generally results in a financial loss, including financial fraud. It also includes a range of illegal activities such as money laundering and tax evasion.' (IMF, 2001). While it has long been recognised that corporate financial crimes generate financial advantages that substantially exceed those of other serious crimes, such as counterfeiting, illicit drugs, prostitution, and gambling (McGurrian & Friedrichs, 2010), research on corporate crimes has mainly focused on their nature and size, their explanations or determinants, their harms and victims, or their regulation and enforcement (for an overview see (Levi & Lord, 2017).

Economic crime is a global and largescale problem that has a widespread and devastating impact. This is why combatting financial crime matters. Such crimes have severe consequences for individuals, businesses, and society. According to the United Nations Office on Drugs and Crime (UNODC), the scale of global financial crimes is estimated to be around 2-5% of the world's gross domestic product (GDP), which translates to trillions of dollars annually.

In order to respond to the highly developing criminal activities Dubai Police systematically search for new effective economics crimes approaches to enhance their management capabilities such as awareness campaign, community engagement trough, public and private sector partnerships.

1 MARCO TEÓRICO Y CONCEPTUAL

It is an extensive literature on the subject of criminal activity in respect to economic crimes. Economic crime, is defined as any "illegal act committed by an individual or a group of individuals to obtain a financial or professional advantage" It has been defined by some scholars as "fraud in its various manifestations", as well as including money laundering, bribery and corruption (Grabosky (1998: 44-48). Likewise, Kolham and Mezei (2015: 36-39) list typical forms of economic crime as including capital investment frauds, misleading consumers, fraudulent bankruptcy, tax evasion, credit and

insurance fraud, credit card fraud, cybercrime, corruption and money laundering.

Dadalko and Protasov have formulated definition of a concept economic organized crime. In a general view it is possible to understand the crime as socially dangerous phenomenon consisting in creation of steady criminal system for the purpose of making criminal acts

directed to the establishment of control over different areas of life in the society for extraction of the illegal income and regulation of public processes in own interests (Dadalko and Protasov, 2015; Thalassinios, 2008). The development of economic crimes heavily depends on the economic system and development of a society. Hence, economic crimes are dependent on the economic system of a country in which they are committed (Supriyanta, 2007, p. 42).

Organized crime typically consists of coordinated illegal activity for financial gain by a group of agents over a significant period of time. The group of agents exhibits a division of labour related to the component specialties involved in e.g. armed robberies or drug importation and dealing. Organized crimes exclude spontaneous, short-term looting during a riot involving people who do not know each other, and it may even exclude a

MUJERES EN LA AGROINDUSTRIA DEL MANGO EN EL SUR DE SINALOA

¿RUPTURA DEL HABITUS?

one-off- coordinated criminal act (a bank robbery, say) carried out jointly by people who know each other but who will never act together again. (Albanese J. & Reichel P., 2014).

2 METODOLOGÍA

There are different ways to develop a new hypothesis regarding a specific question and one of the most common approaches is called case study. Yin (2011) defines case study as an empirical enquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. They are different ways to testing a theory or to develop a new hypothesis regarding a specific question and one of the most common approaches is called case study.

Case studies have been widely used in many areas of knowledge (Yin 2011, 2013), and based in some different authors, general conclusions can be extrapolated to other cases of similar features to those observed in the study (Maxwell, 2008).

3 RESULTADOS

OCEC went through a pilot stage in 2022 where some main indicators (KPI's) where set to measure the performance of the project. The focus of the project to create an operation room where all partners from the banking sector through their representative work within in an interactive atmosphere to solve crimes

and share information privately with Dubai police. The main target of the project is to focus on the response time from banks to police and assets and money recovery. The Pilot stage provided positive impact on the quality of cases, and has helped Dubai Police to retrieve vital information and better catch criminals in short period of time.

Some of the main tangible results achieved in only 10 months of the pilot projects are:

<i>Main Indicators (KPI's)</i>	<i>Before OCEC</i>	<i>Result of the OCEC Pilot Project</i>
Response Time	14-30 days	1-3 days
Restricted Amounts	Asset recovery challenges	Temporary Restricted Amount +13M
Criminal Intelligence Sharing	Data protection law	Legal Protocol
Working Hours	5 days (Monday to Friday)	24\7.
Central Operation Room	Official letters	Smart platform OSS
Private Sector Role	Segregated Social Awareness Campaigns	7 joint securiy initiatives
Suspicious Identified Accounts	Lack of analysis	+450 incoming \ +265 outgoing
Cost Reduction	Dubai Police HR	Specialized HR from the Private Sector

4 CONCLUSIONES

The success of Dubai Police highlighted in this article demonstrates the great potential for OCEC with deployment of prevention and protection to the citizens of Dubai, approaches in Police forces & Law enforcement agencies globally.

Dubai Police show in this study case that Public-Private-Partnership (PPP) notion with strategic stakeholders can enable Dubai Police to reduce and prevent economic crimes more efficiently, and would provide them with more capabilities through utilising the private sectors enablers and capabilities for the sake of crime prevention. In addition to that it will increase the social responsibility on the stakeholders where they can contribute to the joint efforts in the society.

Dubai Police will continue improving the relationship with the community in order to keep protecting them from the economic crime and tailored approaches to harnessing community and organize crime prevention capabilities

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APLICACIÓN DE IA PARA ESTABLECER LA CORRESPONDENCIA DEL PERFIL DE EGRESO EN UNA IES.



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Resumen: *Una extensión máxima de 80 palabras*

Se muestra la aplicación de inteligencia artificial para establecer la correspondencia del perfil de egreso de un programa educativo de formación turística, con respecto a las funciones laborales y al contenido de otros perfiles de egreso una entidad federativa de México. El empleo de estas herramientas permitió trabajar con información no estructurada para identificar la orientación del perfil de egreso respecto a ciertos patrones y tendencias identificadas, así como áreas no cubiertas respecto a lo marcado en el campo disciplinar.

Palabras clave: *tres palabras clave*

1 INTRODUCCIÓN

La oferta educativa es uno de los elementos que afianza la competitividad de las instituciones de educación superior (IES). Medir su alineación con respecto al avance tecnológico y el desarrollo del mercado laboral supone un proceso que puede representar severas dificultades de tipo técnico y económico.

El perfil de egreso representa la confluencia del proceso educativo con los elementos requeridos en el campo profesional (Icarte y Labate, 2016).

Determinar cuáles debieran ser los componentes del campo laboral que deben incluirse en el programa educativo puede representar una tarea compleja, en ocasiones irrealizable, que supone la consulta de fuentes externas para tratar de identificar tendencias y otros elementos disciplinares que debieran incorporarse en los programas educativos.

Convencionalmente, se han empleado técnicas de corte cualitativo como entrevistas o grupos de enfoque que, por su propia naturaleza y costo, pueden representar serias limitaciones para el análisis que se busca profundizar.

El objetivo de este trabajo es establecer la concordancia del perfil de egreso con el campo laboral y con la oferta educativa circundante, mediante el empleo de inteligencia artificial. Se busca comprobar si este tipo de implementaciones, vuelve más eficiente la medición de la pertinencia de los planes de estudio.

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2 MARCO TEÓRICO Y CONCEPTUAL

En el ámbito educativo, una gran parte de la información significativa para evaluar el desempeño de las IES, se encuentra de forma no estructurada y esto llega a representar desafíos vitales para el aprendizaje este tipo de instituciones (Ranjeeth, et al., 2020). Estudios recientes muestran cómo el enfoque de aprendizaje automático sobre sistemas de análisis de contenido puede ayudar al modelado de temas de interés para las IES (Gencoglu et al., 2023). Aunado al empleo de big data, se pueden encontrar tecnologías innovadoras para comprobar los efectos educativos (Yuhuan et al., 2023).

La educación superior está enfrentando los desafíos que representa la implementación de la inteligencia artificial (IA) para la detección y tratamiento de las necesidades educativas (Yun Dai et al., 2023).

En este sentido, enfoques como la minería de datos y el machine learning (ML) se constituyen como mecanismos para analizar el desempeño de las entidades escolares (Kishan Das Menon y Janardhan, 2021).

La técnica de minería de datos (knowledge discovery in datasets) se fundamenta en la preparación, consolidación de registros que permiten tratamientos estadísticos orientados hacia la predictibilidad y prescripción. Por otra parte, los sistemas de aprendizaje automático han permitido transformar datos no estructurados e información subjetiva, en datos organizados con identificación de jerarquías y patrones

para ganar mayor efectividad en los procesos decisorios.

La introducción de la IA, así como la ciencia de datos, han permitido que los entornos educativos ganen mayor dinamismo y puedan solventar aspectos contextuales de diversa índole (Aguilar-Esteva, 2023); ganando atinencia en las intervenciones que corren a lo largo de sus procesos, tanto primarios como de soporte.

La adaptación de tecnologías emergentes ha permitido abordar el tratamiento de información, que anteriormente resultaba inviable económica y asequiblemente.

3 METODOLOGÍA

Se revisaron los perfiles de egreso publicados en las páginas oficiales de diez IES con programas educativos relativos a la gestión turística. Con el empleo de AI Coding Beta, se generó una primera codificación tipo abierta para comenzar a establecer tendencias o patrones en la oferta educativa. Sobre esta lista de códigos, se generó una nueva revisión de las unidades semánticas, que redujo de 84 a 46 códigos identificados. A partir de estos, se generó el *force-directed-graph*, para diagramar la estructura relacional de los nodos (códigos identificados).

Complementariamente, para el análisis del campo laboral, se consultó el Sistema Nacional de Clasificación de Ocupaciones (SINCO, 2019) que contiene un listado exhaustivo y estandarizado de las ocupaciones en México. De aquí, fueron considerados los grupos funcionales 1412,

Did Mexico lose the fight of tomatoe exports in the times of USA tariff, facing the UMSCA?

1422 y 2111, correspondientes a directores y gerentes en establecimientos turísticos, así como a profesionistas en recursos humanos y sistemas de gestión.

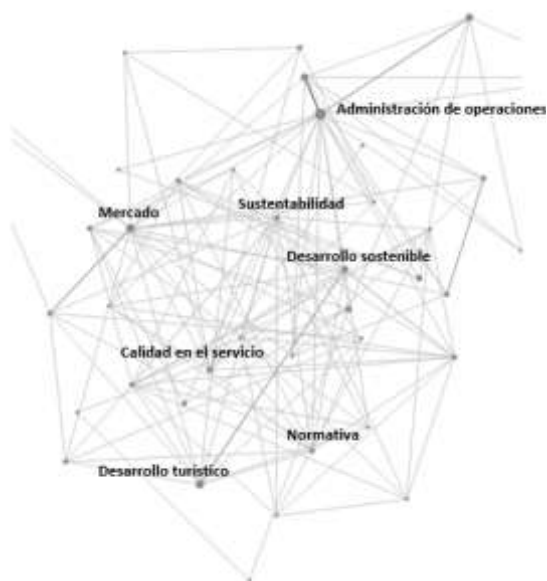
Los códigos generados a partir del SINCO fueron trabajados a través del diagrama tipo Sankey, para analizar los flujos de conexión entre la categorías principales que fueron identificadas en las tendencias de estos grupos ocupacionales.

Finalmente, el perfil de egreso de la IES analizada fue contrastado contra las tendencias para establecer su alineación.

4 RESULTADOS

En la oferta educativa se identificó una marcada tendencia a la *administración de operaciones* relacionada con aspectos de *sostenibilidad* y *mercado*. El *desarrollo turístico* muestra alta co-ocurrencia y una arquitectura relacional hacia contenidos de *normativa* y criterios de *sostenibilidad*.

Figura 1. Force-directed graph de los perfiles de egreso.



En el campo ocupacional, se identificó una tendencia en aspectos relativos a la *gestión administrativa*, esto en el grupo de *profesionistas*. La gestión de procesos de soporte es un elemento de fuerte relación con las características de la ocupación que se ejerce en este campo profesional.

Figura 2. Tendencias en el grupo ocupacional de profesionistas.



A nivel de gerencia y dirección, además de aspectos operativos, se destacan flujos relacionados con los niveles de planificación y estrategia dentro de la funciones que se describen en este grupo ocupacional.

Figura 2. Tendencias en el grupo ocupacional de directores y gerentes



Los hallazgos obtenidos a partir de esta minería de texto revelaron fortalezas del programa educativo en contenidos de desarrollo turístico, sobre todo en aspectos de mercado y administración de operaciones. Se mostraron falencias relativas a la administración de establecimientos de servicios turísticos complementarios, así como conocimiento sobre normativa y legislación para la

operación y desarrollo de entidades turísticas.

5 CONCLUSIONES

El empleo de IA permitió identificar patrones y tendencias en el abordaje de determinadas competencias en perfiles de egreso de la oferta educativa afín.

En términos de indicadores, permitió mayor economía y exhaustividad en el análisis de información en comparación con las técnicas que se emplean actualmente para medir la alineación del perfil de egreso.

Añadir técnicas de scraping-web podría complementar la alimentación de información, de forma que la actualización pueda hacerse de forma permanente y no tan sólo en los cortes cíclicos en que se dan, por ejemplo, las revisiones curriculares de los programas.

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“IMPACT OF THE FORMATION OF CLUSTERS, OBSTACLES TO INNOVATION, AND INNOVATION EFFORT ON THE INNOVATIVE PERFORMANCE OF THE HOTEL SECTOR IN COLOMBIA FOR THE 2016–2017 PERIOD



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***Abstract:** This article estimates the impact on innovative performance, the formation of clusters, obstacles to innovation, and innovative effort in the hotel sector in Colombia for the 2016–2017 period. According to the National Administrative Department of Statistics (DANE), the innovative performance of companies in this sector is classified as intention to innovate, potential innovation, and broad innovation. The estimation was carried out using an ordered multinomial logit, for which data from the technological development and innovation survey, considering 56 companies.*

***Keywords:** Cluster, innovative effort, hotel industry.*

Among the Sustainable Development Goals (SDG, 2015), the United Nations Development Program member states included innovation as a determining factor for compliance and human development. In the 2030 agenda, SDG 9 mentions the promotion of innovation; therefore, it is important to understand its

operation within the country, specifically at the business level. This study aims to analyze the determinants of performance of business innovators in activities related to the hotel services sector in Colombia for the 2016–2017 period.

This study is quantitative, correlational, and cross-sectional; it uses the ordered multinomial logit model, where the impacts of each independent variable on firms' innovative performance are obtained for each innovation category defined in Colombia by the National Administrative Department of Statistics. It is essential to clarify that this study focuses on the entire population of companies belonging to the hotel sector that responded to the EDITS VI survey, and not a smaller

sample. For this reason, the estimators obtained are the true ones and will not vary according to the samples; the calculated impacts come from the marginal effects caused in each of the different innovative effort types defined for Colombia.

1 THEORETICAL AND CONCEPTUAL FRAMEWORK

Regarding innovation activities, the Frascati Manual 2002, mentions that “technological innovation activities are all of the scientific, technological, organisational, financial and commercial steps, including investments in new knowledge”. Additionally, the OECD (EUROSTAT) (2006) warn that there is a correlation between the number of knowledge-intensive industries and advanced economies. When resources are scarce, the innovation process is insufficient, so companies must explore collaborations with other organizations in search of disruptive innovations (Ayneto, 2019).

In the words of Bouncken, “under high levels of perceived competitive intensity, the expert power of partners turns out to be negative for the creation of value related to innovation” (2020). In summary, belonging to a cluster or clusters generates competitive advantages for companies compared to those that do not belong to it. According to López. (2016), these benefits are economic advantages derived from externalities.

These advantages can be seen reflected in innovative performance; Jacob, Tintoré, and Torres (2001), quoting Preissl (1998), mention that “there are factors that prevent companies from introducing innovations, so identifying these barriers or impediments would open up the possibility of improving innovation activities and the international competitiveness of service industries.” Cifuentes, Méndez, and Valenzuela (2021) found that “the less important the obstacles that a company faces when it reaches information, the better the effects of innovation”. Likewise, Galia, Mancini, and Morandi (2015) mention that the main obstacles for a company with innovative capacity are internal financial restrictions associated with the costs of innovation regulated in the market and the uncertain demand for innovative performance.

Clusters must be created because the information collected from organizational networks enables companies to understand how the market is progressing and take actions with it, that is, not letting technological progress exceed it or lose competitiveness with other companies in the sector. Competitiveness is what, as Londoño and Ballesteros (2016) note, helps maintain a country’s development and economic sustainability, so innovation becomes the optimal mechanism that guarantees it. According to Martínez, Pérez, and Vicente (2018), “the ability to develop and absorb knowledge from abroad

jointly is a valuable and difficult ability for competitors to imitate in agile environments”.

2 METHOD

This study focuses on the quantitative to the extent that it is sequential and probative, responding to its objectives of estimating the determinants of innovation and measuring their effects on the phenomenon examined. This study examines decision-making in national public policy and in the management of companies to understand the phenomenon of innovation in the country's hotel sector based on the formation of clusters and other determinants; therefore, when finding the effects of the determinants of innovation, it will allow the results to occur in two orientations: the result of firms and national results with the capacity to produce growth and economic development. Notably, “decision-makers must have innovative behavior and take risks to make strategic decisions” (Díaz, Martínez, and Morandi, 2015, p. 92).

The scope of the research is exploratory because from the perspective of innovation, it investigates how through the application of an ordered multinomial model, innovative performance is categorized. In turn, it is correlational because relationships are established with quantifiable variables by associating them with established concepts, which gives the possibility of involving the element of prediction.

Lastly, it has an explanatory scope because it generates a sense of understanding from the determination of the causes of innovation.

3 RESULTADOS

The variables that represent the greatest impact on the type of performance are those of scarce possibilities of cooperation, compliance with regulations and technical regulations, and access to external financing, while those that generate the least impact are the ease of imitation by third parties, receiving information from chambers of commerce, and the uncertainty caused by the demand for innovative goods and services.

In business terms, it is recommended that companies in the sector that want to develop or make innovations pay more attention to avoiding imitation by third parties and emphasize compliance with regulations and technical regulations. In the same way as strengthening access to external financing, these elements may help the innovative process. Notably, companies that do not have access to external financing make it difficult to access and develop innovative projects. (Cuevas and Cortes, 2020).

It is recommended to give less importance to the scarcity of own resources and to the few possibilities of cooperation with other companies; likewise, because of the information received from the chambers of commerce and the uncertainty caused by the market demand for innovative products and services, these elements can

be solved with external financing, assuming some risk and relying on the work developed by them.

4 CONCLUSIONES

Companies in the hotel service sector, to a large extent, innovate for the domestic market but not for the international market—an element that can be considered an alternative for growth, meanwhile, a majority of companies in this sector do not innovate; however, because of their nature such companies were excluded from this investigation. It is recommended that public policymakers direct these results to strengthen innovative performance in the country, considering that this phenomenon is an engine of growth and economic development capable of improving society's common well-being, achieving better results not only for organizations but for all members of society.

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BIOHAZARD WASTE MANAGEMENT CYCLE AND ITS IMPACT ON SOCIAL WELLBEING: FORGOTTEN EFFECTS



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Abstract: *Urban sector is considered one of the main generators of biohazard waste, due to the concentration of population. In Mexico, the generators of biohazard waste have increased due to the growing number of tattoo stores, beauty treatments and COVID-19 pandemic, which makes management and control difficult. The objective of this document is to identify the actions of waste generators and the impact on sustainability through two analyses; first, by principal components rotated to a survey applied to 205 generators, the factors that impact the control of biohazard waste are identified. Second, through the supervision by experts, the relationships of sets of factors such as: I) the actions of waste generators, II) compliance with regulations and III) changes that impact the strategies towards social wellbeing to subsequently, in a single matrix of incidences apply the model of forgotten effects. In both analyses it was identified that biohazard generators store waste for more than one month, there is poor classification, waste delivery periods are not respected, legislation is violated and accidents are caused throughout the process of handling and collection of waste.*

Key words: *change-order, biohazard waste, sustainability.*

1 INTRODUCTION

The growth and the aging population cause a greater demand for medical

services and consequently, there is a greater generation of biohazard waste as it's generated mainly in the phases of diagnosis, treatment or immunization of people (WHO, 2022).

It's estimated that one third of the world's countries do not have a safe way to treat waste from healthcare activities. Which has become a public health problem after going through a pandemic (COVID-19) that has left many victims (Windfeld and Brooks 2015; Geng et al., 2013; Kalantary et al., 2021, WHO, 2022). According to WHO (2018) 15% of the waste generated has strong toxicity corrosivity and pathogenicity.

Worldwide, during the COVID-19 pandemic, it's presumed that 3 million masks per second were generated, which has a direct impact on the environment (Duong, 2023).

Studies about biohazard waste and their impact on wellbeing, as well as

strategies for changing the order are scarce. In the case of China, according to its demographic density, Hou et al. (2023) explain that there are not enough hazardous waste control services, which leads to a series of questions for Mexico.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

In Mexico, due to the risks to health and environment, the process of regulating generators has caused concern among authorities. There are several publications regarding these risks due to direct contact with medical waste and the diseases derived from inappropriate handling. However, few of them refer to the environmental impact or its effect on the entire waste management cycle, from its generation to its final disposal (Campos, 2011).

Change-order processes are oriented to generate new strategic actions to improve response conditions (Winter, 1982; Nelson, 1991; Huff & Oran, 2002; Echevarría, 2009). In Mexico, the strategies to combat the COVID-19 pandemic left a large sector of the population unsatisfied. The lack of planning and government commitment caused more deaths than expected. Therefore, the motivation of this research focuses on knowing the capacity of waste generators to establish strategies for change with society and environment, these strategies should be assessed in order to know the level of response of the generators with respecting the law,

especially NOM-087-ECOL-SSA1-2002 to achieve the transformation of social welfare. From this, the following hypotheses are derived:

Hypothesis 1: Change-order in generators impacts the management and control of biohazard waste for social welfare.

Hypothesis 2: The identification of new strategies impacts social welfare.

3 METHOD

The methodology seeks to identify variables to ensure certainty about uncertain environments in welfare. Considering vectors of the generator of biohazard waste in the handling, classification, access to containers, collection periods, accident prevention and identification of generating sources, the incidence with the knowledge of the normativity and the evolution of strategies for wellbeing.

The structure of the analysis was elaborated according to the following steps:

1) Application of factor analysis to extract the most relevant indicators from the general survey carried out among the medical waste generators.

2) From the general survey, the factor analysis of dimension reduction for experts is applied, which is grouped into three sets: I) the actions of waste generators, II) compliance with the law, and III) changes impacting strategies for

social welfare, with the objective of answering the first hypothesis.

3) All sets of variables are taken in a single assignment matrix, then the forgotten effects model is applied to identify the variables that have been underestimated. The forgotten effects (variables) are confirmed again with experts.

4) New strategies for change are established for the management and control of RPBI.

4 RESULTS

1. From the factor analysis of the general survey, was obtained the reduction of dimensions with 64.92% of the variance, divided into three rotated principal components:

The first set of components: {supervise handling of LLWW=0.833, separation of LLW=0.828, know timing of disposal bags and cans=0.820, avoidance of bag and can waste accidents=0.817, access to containers=0.705, compliance with law=0.699, know collection periods=0.636};

Second: {obligations of the authority=0.869, knowledge of legislation=0.816, understanding of legislation=0.779, obligations of the generator=0.772, know generator level=0.433}

Third: {delivery to authorized collector=0.783, mixed waste=0.776, storage for more than one month=0.695, bulking=0.652, unsorted delivery=0.610}

2. From the principal components and based on the consultation with the experts was created the matrix $C = [c_{WG_iWS_h}]$ and the integral assignment matrix applying forgotten effects.

So that, 1. and 2. present coincidence in the following points:

A) There is a forgotten effect with deviation of 1 between the variable *knowing the legislation*, NR₃ and the *delivery of RPBI to the authorized company*, WS₅.

B) There is a forgotten effect with a deviation of 0.7 between the variable *identification of RPBI*, WG₁ with the variable accident avoidance, WG₅.

C) There is a forgotten effect with deviation of 0.6 between the variable *knowing the legislation*, NR₃ and covering collection periods WG . 6.

D) There is a forgotten effect with deviation of 0.6 between the variable: *know the legislation*, NR₃ and the set of variable access to containers, WG₄,

5 CONCLUSIONS

Lack of knowledge about the law causes a lot of problems that directly affect social wellbeing.

A) Know that de law exists does not imply understanding it, which leads to waste not being delivered to authorized collectors.

B) Ignorance of the law in the identification of waste is likely to lead to accidents, which impacts social welfare.

C) When storing for more than one month, it is evident that the generators do not want to pay for a monthly collection, not complying with the periods established by law. Any type of generator (dentists, veterinarians, tattooists, etc.) does not comply with the established collection periods.

D) Storage for more than one month causes the capacity limit of the RPBI bags and cans to be exceeded.

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DIGITAL INCLUSION RANKING OF STATE GOVERNMENTS IN MEXICO: AN ANALYSIS WITH THE ORDERED WEIGHTED AVERAGE OPERATOR



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Abstract:

This article explores the application of the Ordered Weighted Average (OWA) operator to create a specific Digital Inclusion Index for the diverse states of Mexico. The aim is to provide a comprehensive assessment of digital inclusion by using a combination of indicators to measure different dimensions of access and usage of Information and Communication Technologies (ICTs). The OWA operator allows the integration of multiple indicators with varying degrees of importance, offering a flexible and adaptable measurement approach. The results provide insights into the relative strengths and weaknesses of digital inclusion efforts in each state, highlighting areas for improvement and policy intervention.

Keywords: *Digital inclusion, OWA operator Digital inclusion index.*

1 INTRODUCTION

The term "digital inclusion" encompasses not only the provision of

access to ICT but also the empowerment of individuals and households to effectively utilize these technologies for various purposes, such as civic engagement, education, employability, and improving quality of life (Hargittai, 2021; Sabri et al., 2023).

In the current technological landscape, digital inclusion has become an integral part of promoting economic growth and social well-being, reshaping the way we communicate, learn, and interact (Castells, 2009; World Bank, 2016). With the increasing reliance on digital technologies for communication, education, healthcare, and governance, it is imperative to ensure equitable access and utilization of digital resources across

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all segments of the population (ITU, 2019; UNICEF, 2020).

Therefore, the significance of digital inclusion goes beyond technology access and emphasizes the ability to harness its benefits for comprehensive well-being and societal advancement (Prom Tep et al., 2023).

As we progress in this digital era, delving into the nuances of digital inclusion becomes increasingly essential, exploring its dimensions, impact, and potential avenues for improvement (Hargittai, 2021; Van Deursen, 2015). In this regard, the objective of this study is to provide a comprehensive assessment of digital inclusion using a combination of indicators to measure different dimensions of access and usage of ICT.

To achieve this goal, we employ the Ordered Weighted Average (OWA) operator, which acts as a powerful mathematical tool to summarize the interactions between multiple indicators (Yager, 1988). This operator has found application in recent years in various contexts, mainly due to its ability to integrate multiple indicators (León Castro et al., 2020), considering their levels of importance and helping in the creation of a composite index (Yager, 1988) that allows a nuanced evaluation of digital inclusion in Mexico.

In particular, the OWA operator stands out for its flexibility in accommodating indicators of different importance, thus improving both the

precision and completeness of the index evaluation (Yager, 1988).

The findings of this study hold significant implications for policymakers, researchers, and stakeholders involved in advancing digital inclusion. By identifying the strengths and weaknesses of state-level digital inclusion initiatives, specific interventions can be designed to address challenges and capitalize on existing opportunities.

This effort consistently aligns with the Agreement for the Issuance of the National Digital Strategy published in the Official Gazette of the Federation (DOF), aimed at propelling Mexico towards a more inclusive digital future, narrowing gaps, and fostering a society where everyone effectively harnesses the potential of digital resources (DOF, 2021).

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Digital inclusion, defined as the extent to which individuals and households have access to ICTs and the ability to use them effectively, has become a crucial element in the context of the growing digital environment (Prom Tep et al., 2023). This multidimensional concept encompasses both the availability of access to digital technologies and the ability to use them meaningfully in various areas.

Scholars such as DiMaggio, Eszter Hargittai, Van Deursen, and Van Dijk have highlighted the importance of

specific indicators related to technology access, skills, and usage in measuring digital inclusion. The presence of ICT equipment in households, access to the internet, computers, and mobile phones is essential for evaluating a society's digital inclusion (DiMaggio, 2004; Hargittai, 2021). Likewise, digital competencies and the ability to navigate the digital environment have been emphasized as critical factors for equitable participation in the digital era (Hargittai, 2015; Van Deursen, 2019).

Van Deursen and Van Dijk (2019) underscore the significance of internet skills in closing the digital divide. Mossberger, on the other hand, discusses how digital citizenship and engagement with online services contribute to digital inclusion (Wright, 2008).

In other words, digital inclusion translates into the capacity of individuals and communities to fully leverage the opportunities offered by the digital world. The availability of internet access, digital skills, and possession of technological devices are fundamental aspects that determine a society's digital inclusion and its ability to progress toward an equitable future (DiMaggio, 2004; Hargittai, 2021; Van Deursen, 2015).

3 METHOD

Definition 1. It is an OWA operator (Yager, 1988) if there is a model $OWA: R^n \rightarrow R$ with dimensions n such

that it has associated weights vector W as $w_i \in [0,1]$, $\sum_{i=1}^n w_i = 1$, then:

$$OWA(a_1, a_2, \dots, a_n) = \sum_{j=1}^n w_j b_j, \quad (1)$$

where b_j is the j th most extensive argument a_i . The OWA operator satisfies some conditions as: Monotonicity if $F(a_1, \dots, a_n) \geq F(\hat{a}_1, \dots, \hat{a}_n)$ for $a_i \geq \hat{a}_i$ for i ; Commutativity if the initial indexing of the arguments does not matter; Idempotent when $a_j = a$ for all j , then $F(a_i, \dots, a_n) = a$.

Definition 2. An Induced aggregation operator (Yager & Filev, 1999) is an extension of the OWA operator of dimension n is an application $IOWA: R^n \times R^n \rightarrow R$ that has a weighting vector associated, W of dimension n where the sum of the weights is 1 and $w_j \in [0,1]$, where an induced set of ordering variables are included (u_i) such that the formula is

$$IOWA(\langle u_1, a_1 \rangle, \langle u_2, a_2 \rangle, \dots, \langle u_n, a_n \rangle) = \sum_{j=1}^n w_j b_j, \quad (2)$$

where b_j is the a_i value of the OWA pair $\langle u_i, a_i \rangle$ having the j th largest u_i . u_i is the order inducing variable and a_i is the argument variable.

Definition 3. A heavy aggregation operator (Yager, 2002) is an extension of the OWA operator for which the sum of weights is bounded by n . Thus, a HOWA operator is a map $R^n \rightarrow R$ that is associated with a weight vector w , with $w_j \in [0,1]$ and $1 \leq \sum_{j=1}^n w_j \leq n$, such that:

$$\begin{aligned} HOWA(a_1, a_2, \dots, a_n) \\ = \sum_{j=1}^n w_j b_j, \end{aligned} \quad (3)$$

where b_j is the j th largest element of the collection $a_1, a_2, \dots, a_n$ and the sum of the weights w_j is bounded to n or can be unbounded if the weighting vector W , $-\infty \leq \sum_{j=1}^n w_j \leq \infty$.

4 CONCLUSIONS

The use of the OWA operator to create a Digital Inclusion Index provides a valuable tool to assess the state of digital inclusion across Mexican states. The resulting index will enable a comprehensive evaluation of digital inclusion, considering multiple indicators of access, skills, and usage. The results offer valuable insights that allow policymakers and stakeholders to implement specific interventions to enhance digital inclusion efforts for individuals and communities.

As the digital landscape continues to evolve, this approach can serve as a robust tool for ongoing assessment and improvement of digital inclusion

strategies. By utilizing the OWA operator to generate the Digital Inclusion Index, a more comprehensive, flexible, and adaptable approach is achieved for evaluating the state of digital inclusion, contributing to progress toward a more equitable and accessible digital future for all.

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FUZZY SECOND ORDER CHANGE IN HOME ENERGY ECONOMY: PHOTOVOLTAIC CELLS FOR SUSTAINABILITY IN MEXICO



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Abstract: *In Mexico, energy savings with photovoltaic (PV) cells have not been as expected, due to deficiencies in maintenance, insufficient number of PV or obsolete equipment, etc. (collateral factors). The study consists of analyzing the fuzzy relationship of these factors with cognitive status and the indirect relationship with energy-environmental sustainability. Evaluating first-order to second-order learning with Hamming distance and homeostatic sensitivity of change of order by means of the mean square error and the application of the backpropagation algorithm. The emulation of the algorithm indicates that older installations do not save energy due to poor electricity consumption practices and low maintenance. However, there is a positive disposition of the users towards technological changes, the recommendation and influence to decrease excessive electricity consumption is weak affecting the savings.*

Keywords: *Change-order, Fuzzy, Home Energy Economy, Neural Networks, sustainability*

1 INTRODUCTION

Mexico is lagging behind in energy development because of the lack of

awareness in public policies that promote clean energies (Espejo, 2004); however, in spite of this, there are currently 119,388 PV users (CFE & CRE, 2019). Although generating renewable energies for residual use is moderate (Canales, et al., 2015; International Solar Energy Society, 2005).

The study of human behavior often requires stimulation of cognitive factors to generate a change. which are associated with new strategies and are often not easy to interpret. However, by integrating structure and cognition, managers can provide a better and more complete description of strategic actions (Nelson, 1991; Bar-On R, 2006).

There is no evidence about cognitive behavior regarding the second order

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change (SOC) theory in relation to knowledge management and good practices in electricity consumption. The proposal of the work is profitability of photovoltaic installations and the identification of the variables that have a bearing on energy consumption, by analyzing the collateral, cognitive-emotional, and strategic factors, and the relation between them. Finally, through neural networks we will be able to study the evolution of learning in the fuzzy relation between collateral factors and strategic changes.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

The study has been carried out in Ciudad de Victoria (Mexico), where 28% of the total population of the city live at risk of high temperatures (Cenapred, 2014). To do so, a survey of 77 clients from two PV supply companies was carried out between March and November 2018. Given that temperatures range between 30 and 35°C for 9 months of the year, PV users require air conditioning and other high consumption appliances in their homes during this period.

3 METHOD

In this paper, we will perform a second-order analysis, divided into six stages: 1) an investment and profitability comparison between two groups of solar panel clients, 2) creation of a second-order change questionnaire through the relation between three sets of fuzzy

factors which enable the construction of a pattern assignment matrix, 3) the identification of indicators in the survey 4) establishing which indicators relate to the fuzzy sets 5) construction of an assignment matrix of the patterns between interrelated sets 6) application of neural networks using the gradient descent algorithm and mean squared error to verify learning between the interrelated sets.

4 RESULTS

1. Confirmatory analysis is conducted to verify reliability of the survey, obtaining a value of 0.763 with KMO and Bartlett's test of sphericity, and Chi-square of 672.78 with 21 degrees of freedom and 0 significance. This verifies the certainty of the expert survey to gather information about the variables. The rotated components matrix gives a summation of accumulated variance of 99.15% in 6 components. This makes it possible to establish the indirect matrix.

2. Obtaining the indirect matrix between the collateral factors and the strategic change, the elements closest (Size of the investment improves the environment, reduces electricity consumption, and generates a positive attitude in users and allows them to compare the results with other technologies, etc.) and furthest from the unitary matrix (the user's attitude is not sufficient to reduce energy consumption, or preference for comfort prevents energy savings) are identified.

3. The Hamming distance can be used to measure these proximate and distant factors. The element closest to the ideal matrix refers to the fact that users of solar panels can make strategic changes to reduce electrical consumption, such as, for example, not having certain high-consumption appliances connected, such as air conditioning, when it is not essential.

4. The homeostatic coefficients (α) in the training process in order to minimize mean squared error and training efficiency is measured for the different values of α according to MathLab for the neural outputs. A high coefficient indicates that we want a drastic change in strategy, which implies a level of forced learning, while a low coefficient produces a gentle modification. The best results are obtained with low coefficients. That is, a small learning generates little improvements in the short term, but it provides the best results in the long term.

5 CONCLUSIONS

We have reached the following conclusions according to the methodology design:

Confirmatory analysis has allowed the use of factor analysis. The use of the rotated matrix has made it possible to identify the collateral, cognitive, and strategic factors to be considered in the study.

The indirect matrix has allowed us to identify that the size of the investment

improves the environment, reduces electricity consumption, and generates a positive attitude among users and allows them to compare the results with other existing technologies.

The element that most affects energy savings is the change in attitude regarding consumption, such as disconnecting high-consumption equipment when its use is not essential.

Finally, learning processes must provoke smooth changes, since otherwise, there may be a risk that an immediate change will occur and will not last in the long term.

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WORKING CAPITAL IN THE RECESSION CRISIS. AN ANALYSIS PRE AND POST COVID



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Abstract:

Working Capital Management (WCM) refers to the short-term financial decisions that are made by companies for their day-to-day operations. This work analyzes WCM policies adopted on Latin American manufacturing companies and its impact with firm financial and market performance, focusing on the recent COVID period (C19) and the 2008 financial crisis (2008FC). Data panel analysis results suggest that during 2008FC, conservative WCM policies improved financial performance, while non-significant relationship is found between WCM and any performance proxy during the C19.

Keywords: *Working Capital Management, Financial and Market Performance, Cash Conversion Cycle.*

1 INTRODUCTION

Financial crisis has highlighted the importance of Working Capital Management (WCM) strategies since the lack of liquidity has been the trigger for financial problems of organizations in

these periods (Kayani, De Silva, & Gan, 2019). Drastic changes in firms' operations, characteristics during crisis periods, affecting WCM requirements for companies (Enqvist, Graham, & Nikkinen, 2014) and reinforcing its role as a financial strategy (Gonçalves, Gaio, & Robles, 2018).

This paper aims to fill the existing gaps in the empirical evidence about WCM policies during recession periods, focusing on the 2008 financial crisis (2008FC) and the Covid-19 pandemic period (C19), thru the analysis of manufacturing companies, which are known for exhibit a high level of investment in current assets and a greater reliance on short-term financing (Nastiti, Atahau, & Supramono, 2019). Moreover, the analysis is focused on Latin American companies, since emerging economies are

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characterized for being strongly influenced in their financial position by macroeconomic conditions (Soukhakian & Khodakarami, 2019). This attempt can enlarge the scope of evidence in this matter.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

WCM policies define the posture about the trade-off between the liquidity-profitability objectives of companies (Smith, 1980); they can be understood in two directions: aggressive (optimized inventories and credit period to clients, while account payables are maximized) or conservative (wider inventories and credit terms to clients while suppliers are prioritized).

Cash conversion cycle (CCC) is the most popular measure for WCM among its components: days accounts receivables (DAR), days inventories (DINV) and days accounts payables (DAP) (Jaworski & Czerwinka, 2021; Lyngstadaas, 2020); while Return on Assets (ROA) the most frequent financial performance proxy (Prasad et al., 2019). Recently, Tobin's Q (TOBINQ) has been incorporated as in the WCM literature as reference for market performance (Gallegos Mardones, 2021; Tingbani et al., 2020).

The empirical evidence about WCM policies during crisis periods suggest that during 2008FC, companies adopted conservative WCM policies constituted

by longer DAR, shorter DAP, and therefore a longer CCC respect with non-crisis periods (Akbar, Akbar, & Draz, 2021); in contrast with C19, when the adoption aggressive WCM policies is suggested, mainly based on longer DAP, leading a shorter CCC (Zimon & Tarighi, 2021).

Moreover, during 2008FC, a negative relationship is expected between DAR, DAP and ROA; inversely, a positive relationship is observed between DAR, DAP and TOBINQ of companies. In addition, a negative relationship of CCC on ROA and TOBINQ is expected during this crisis period (Ahmad, Bashir, & Waqas, 2022; Akbar, Akbar, & Draz, 2021; Gonçalves, Gaio, & Robles, 2018).

Regards C19, no previous research is identified regards WCM components (DAR, DINV and DAP) and firm performance relationship; instead, a positive relationship between CCC and ROA is expected, while a negative relationship between CCC and TOBINQ is suggested during this period (Ahmad, Bashir, & Waqas, 2022).

3 METHOD

The present study uses a sample of 81 manufacturing companies from Chile, Mexico and Peru, data is obtained from fundamental analysis of companies consulted by the Thomson Reuters Eikon database during the 2002-2021 period. A total 17, 677 observations are considered for to conform the data sample. Multiple

regression panel data analysis by fixed effect models as the Hausman (1978) hypothesis tests confirm to be the analysis technique that fits the available data. STATA 17 software was used for processes the data.

Variables regards WCM policies and company performance were considered as independent and dependent variables, respectively. Control variables were also considered as reference of companies' characteristics such as size (SIZE) leverage (LEV) and sales growth (GROWT); while proxies related to macroeconomic conditions, such as gross domestic product growth (GDP) and lending interest rate (INT) were also including.

To estimate the relationship between WCM components and company performance during 2008FC and C19, the following regression model is proposed:

$$ROA_{i,t}(TOBINQ) = \beta_0 + \beta_1 DAR_{i,t} + \beta_2 DINV_{i,t} + \beta_3 DAP_{i,t} + \beta_4 (2008FC * DAR)_{i,t} + \beta_5 (C19 * DAR)_{i,t} + \beta_6 (2008FC * DINV)_{i,t} + \beta_7 (C19 * DINV)_{i,t} + \beta_8 (2008FC * DAP)_{i,t} + \beta_9 (C19 * DAP)_{i,t} + \beta_{10} SIZE_{i,t} + \beta_{11} LEV_{i,t} + \beta_{12} GROWT_{i,t} + \beta_{13} GDP_{i,t} + \beta_{14} INT_{i,t} + \varepsilon_{i,t} \quad (1)$$

To estimate the relationship between overall WCM policies and company performance during 2008FC and C19, the following regression model is proposed:

$$ROA_{i,t}(TOBINQ) = \beta_0 + \beta_1 CCC_{i,t} + \beta_2 (2008FC * CCC)_{i,t} + \beta_3 (C19 * CCC)_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 GROWT_{i,t} + \beta_7 GDP_{i,t} + \beta_8 INT_{i,t} + \varepsilon_{i,t} \quad (2)$$

4 RESULTS

Descriptive analysis during 2008FC identifies longer DAR, DINV and shorter DAP respect non-crisis periods, leading to a longer CCC. During C19, a shorter CCC is identified based on a considerably longer DAP; both results are in line with Akbar, Akbar, & Draz (2021) and Zimon & Tarighi (2021). Moreover, regression results from model 1 suggest that during 2008FC, agile DAP is related with the improvement of ROA, while the reduction of DAR and longer DAP is related with better TOBINQ, partially in line with Akbar, Akbar, & Draz (2021). Regards C19, only the optimization of DAR is positively related with ROA, while the reduction DAP improves TOBINQ.

Model 2 results suggest a positive and significant relationship between CCC and ROA, and a negative but insignificant relationship with TOBINQ during 2008FC. In addition, during C19, a positive but insignificant effect was found between CCC, ROA and TOBINQ, contrasting previous research (Ahmad, Bashir, & Waqas 2022; Gonçalves, Gaio, & Robles, 2018). Regards control variables, both regressions models coincide on a negative and significant relationship between SIZE, LEV, and ROA, as well a positive and significant relationship between LEV and TOBINQ; while GDP, appears positive and significant with TOBINQ for both regressions' models.

5 CONCLUSIONS

Results identifies conservative WCM policies adopted during 2008FC, in contrast, aggressive WCM policies are identified during C19 pandemic. Regression analysis suggest that during 2008FC, agile payment to suppliers improved financial performance, in contrast with shorter credit terms to clients and longer payments to suppliers improved market performance. Moreover, conservative WCM policies improved financial performance, but WCM policies didn't influence market performance during this crisis period.

Regards the C19 period, results suggest that the optimization of accounts receivables improved financial performance, while the reduction of accounts payables improved market performance; furthermore, results suggest non-significant influence of WCM policies on companies financial and market performance.

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Abstract: *This article presents a structural equation model of mountain biking events on sustainable tourism and the effect that the marketing mix and sustainability of the different events have on it. The analysis was carried out through a survey applied to different participants of mountain biking events in the different municipalities of the state of Michoacán, to later analyze the answers in Rstudio through the proposed model, resulting in the positive influence of both variables on the development of sustainable tourism in the state..*

Keywords: *Structural equation model, marketing mix, sustainable mountain biking events*

1 INTRODUCTION

In recent years, mountain tourism has been increasing its position among the preferences of tourists at the international level (Del Río-Rama,

Maldonado-Erazo, Durán-Sánchez, & Álvarez-García, 2019), and as mentioned by Gutierrez (2016), cycling as a tourism product is not an exploited component in this and other countries with growth potential in the sector, since physical-sports activities become a complementary tourist offer that gives a strong differentiating character to the area where they are carried out (Lisbona, Medina, & Sánchez, 2008).

Outdoor sporting activities, such as mountain biking, can also contribute substantially to the recognition and appreciation of the value of ecosystem services (Kuwaczka, Mitterwallner, Audorff, & Steinbauer, 2023), as participation in this type of outdoor recreational activity involves not only an accessible natural area, but generally also the use of infrastructure,

including trails and associated facilities (Nowak & Heldt, 2023), where mountain biking is expected to involve an effort for the renovation and maintenance of trails, huts, signage and other infrastructure facilities of the event site (Pröbstl-Haider, Hödl, Ginner, & Borgwardt, 2021).

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

According to the World Tourism Organization (2019), sustainable tourism is defined as "tourism that takes into account its current and future economic, social and environmental impact, addressing the needs of visitors, the industry, the environment and host communities". In Mexico, the main tourist activities are related to leisure, conventions, business, congresses, sporting events, medical procedures, visiting acquaintances, religious beliefs, as well as shopping and studying (Coordinación de Asesores del Secretario de Turismo, 2018).

The variety of forms of events, which are often invented in order to attract tourists, depends on the cultural characteristics of the host community, which may include sporting, artistic and cultural elements, or any other type of hybrid performances (Ziakas & Costa, 2010), currently, groups seeking to develop mountain bike tourism are hampered by an inconsistent body of empirical knowledge to effectively articulate the size and economic value of the market that mountain bike tourism represents (Buning & Lamont, 2021).

Among the variables that were observed in this work are the marketing mix, which is the set of tools that the organization must combine to achieve the planned objectives, and is materialized in four instruments: product, price, place and promotion (Martínez, Ruíz, & Escrivá, 2014), which is nothing more than the complete offer that the organization makes to its consumers (Rodríguez Santoyo, 2014), where this marketing program transforms the strategy into real value for customers (Kotler & Armstrong, 2013).

The second variable we studied was sustainability, since studies on sport are increasingly exploring the issues involved

The second variable we studied was sustainability, since studies on sport are increasingly exploring the issues involved in it (Hinch, Higham, & Moyle, 2016), where according to several authors there are four dimensions which are economic, environmental, social and public policies (Brito & Cànoves, 2019), in this study we decided to add a fifth dimension, the brand, although we could include it within the social part, as mentioned by Paganonni (2012); the brand identity of an event helps to contribute to legitimize or question social structures and cultural practices, we believe it is important to see how much visualization mountain biking events give to the places where they are held.

3 METHOD

In the present study, we opted to use the CB-SEM technique, as it has an advantage over PLS-SEM in terms of

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model evaluation, stating that covariance-based techniques have more statistical methods with which to assess model reliability and validity (Agyeiwaah, Pratt, Iaquinto, and Suntikul, 2020). In which IBM SPSS Statistics 26 software was used to perform the database, as well as to obtain basic data, such as Cronbach's Alpha, and IBM SPSS Amos 24, which is a powerful structural equation modeling (SEM) software, which uses a graphical user interface, facilitating the user experience (Soriano and Mejía-Trejo, 2022), having as initial model the one found in Figure 4, for the model calculations Rstudio was used with the R lavaan package, which has been developed to provide researchers and statisticians, a free, open source, but commercial quality package for latent variable modeling (Rosseel, 2012).

Questionnaires were conducted electronically to different groups of cyclists on WhatsApp and to participants of the following events: Reto Morelia Tafetán XIV edition, international cycling race Armado Zacapu Martínez 52nd edition, round the lake of Patzcuaro and 9th Reto Miradores, from the results obtained Cronbach's alpha analysis, giving the results that are observed in Table 1

Table 1 Cronbach's alpha

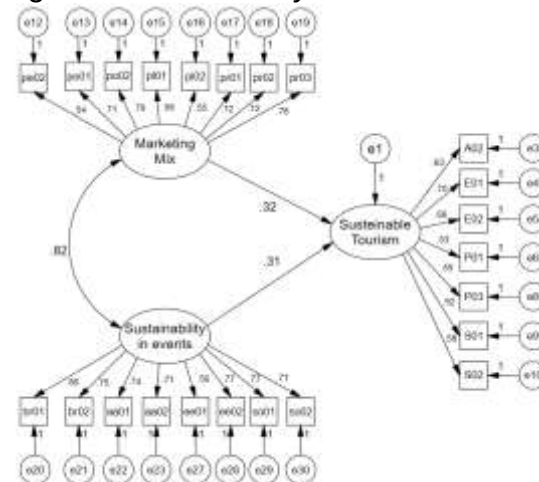
Cronbach's alpha	Cronbach's alpha based on standardized items	N of items
0.86	0.87	29

Source: Own elaboration in SPSS 26

4 RESULTS

In the theoretical model analysis, the weighted least squares robust or WLSMV estimator was used, having as a starting point the maximum likelihood or ML estimator and not being able to obtain acceptable results in any of the models performed, we proceeded to perform the calculations with the initial model, using the first mentioned estimator, then proceeded to eliminate the variables that had the lowest partial correlation (<0.39) with the latent variable. After having excluded the first variable, the model is tested and the variable with the lowest correlation is eliminated and so on (IBM SPSS Statistics, 2013). In our case, the variables were eliminated in the following order A01, pe01, pp02, pe02, pp01, pl02, PO02 and PO01, leaving our structural equation model or CB-SEM as shown in Figure 1, which has all the variables with correct values ($>.50$), as shown in detail in Table 2 called latent variables.

Figure 1: CB-SEM Cyclists



Source: Own elaboration in IBM SPSS Amos 24

Table 2: Latent variables

	Estimate	Std Err	z- value	P(> z)	Std.l v	Std.al l
TS =~						
A02	1.00				.63	.63
E01	1.12	.11	9.98	.00	.70	.70
E02	1.09	.13	8.30	.00	.68	.68
P01	.84	.13	6.56		.53	.53
P03	.94	.11	8.47	.00	.59	.59
S01	1.47	.14	10.55	.00	.92	.92
S02	.93	.10	8.97	.00	.58	.58
MM =~						
pe02	1.00				.54	.54
po01	1.34	.12	11.57	.00	.71	.71
po02	1.47	.12	12.56	.00	.79	.79
pl01	1.08	.12	9.02	.00	.58	.58
pl02	1.03	.13	7.88	.00	.55	.55
pr01	1.35	.12	11.51	.00	.72	.72
pr02	1.34	.11	12.04	.00	.72	.72
pr03	1.46	.13	11.47	.00	.78	.78
SE =~						
br01	1.00				.80	.80
br02	.94	.05	18.51	.00	.75	.75
aa01	.93	.03	24.12	.00	.74	.74
aa02	.89	.04	19.5 3	.00	.71	.71
ee01	.70	.06	10.98	.00	.56	.56
ee02	.96	.04	21.86	.00	.77	.77
so01	.96	.04	22.53	.00	.77	.77
so02	.88	.04	20.68	.00	.71	.71

Source: Own elaboration in Rstudio

5 CONCLUSIONS

In general, the research model explains positive proportions of the

covariances in the outcome measures, obtaining in sustainability in events ($\beta = .31$) and in marketing mix ($\beta = .32$), which indicates that the increase in these variables has a positive impact on sustainable tourism, and there is also a positive relationship in the covariance (.82) of the variables studied with structural equations.

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APROXIMACIÓN A LAS CAPACIDADES DINÁMICAS DE LAS INSTITUCIONES PRESTADORAS DE SERVICIOS DE SALUD EN COLOMBIA



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Resumen: Esta investigación identifica y analiza las capacidades dinámicas de las instituciones prestadoras de servicios de salud IPS – colombianas, y su utilidad desde el enfoque estratégico para este tipo de organizaciones de salud. En ella se enmarcan los recursos internos y sus capacidades dinámicas con los que cuentan, para actuar en el mercado. El método que se utiliza es de tipo mixto, tomando como base los estudios científicos y sectoriales. Se analizan según el contexto donde operan siendo relevantes aquellas capacidades para detectar, capturar, aprovechar y reconfigurar los elementos tácticos y estratégicos para actuar en su entorno competitivo.

Palabras clave: Estrategia, recursos, capacidades dinámicas, salud.

1 INTRODUCCIÓN

Se pretende con este documento, Evaluar como las capacidades dinámicas influyen desde lo individual (habilidades, motivaciones, experiencias, estímulos) y desde lo grupal (Confianza, relaciones, comunicación, co-creación), en el desarrollo de las capacidades de

innovación y la generación de redes de conocimiento en las IPS colombianas. SE contribuye a la identificación de prácticas, métodos y herramientas para la gestión de las IPS Colombianas desde el ámbito estratégico, es de carácter descriptivo, donde se tiene en cuenta el estudio de las fuentes documentales y los resultados de gestión de algunas de estas instituciones.

2 MARCO TEÓRICO Y CONCEPTUAL

En Colombia se cuenta con un sistema de seguridad social, que se determina desde las necesidades particulares de la comunidad y las condiciones de vida de la población de los diferentes sectores sociales. En el año 1990 se crea la ley 10 (1990), en la que establece la organización y administración del servicio público de salud, fundamentado en la descentralización directa o indirecta; mediante la Constitución Política de

(1991), en su artículo 48, se establece que la salud es un servicio público de carácter obligatorio que se prestará bajo la dirección, coordinación y control del Estado, en sujeción a los principios de eficiencia, universalidad y solidaridad.

De las anteriores normativas, se constituye la Ley 100 de (1993) y el Decreto 1876 de (1994), mediante las que se crean y reglamentan las Empresas Sociales del Estado (ESE) Instituciones públicas de salud del orden Nacional, Departamental o Municipal. Esto obliga a las Instituciones prestador de Salud (IPS) públicas, a autofinanciarse con la venta de servicios, bajo un esquema de libre competencia regulada por el Mercado, en igualdad de condiciones con el sector privado, regulación ejercida por el Estado que busca mejorar la calidad en la prestación de servicios de salud, atado a la gestión estratégica.

Teniendo en cuenta la estratégica, las capacidades dinámicas son aquellas competencias de nivel superior que determinan como la organización logra integrar, crear, ajustar o reconfigurar recursos y aquellas competencias internas y externas para abordar el entorno cambiante (Teece, 2007), desde un enfoque innovador que intervenga en la realidad, mediante soluciones acordes a las nuevas oportunidades, requerimientos o problemáticas del mercado; éstas permiten crear, implementar y proteger nuevos conocimientos que, a largo plazo, van a mejorar o desarrollar ventajas competitivas, permitiendo hacer

evolucionar a las organizaciones y así, adaptarse mejor a las dinámicas del mercado (Teece, 2018).

Se pretende evaluar la importancia de las relaciones externas entre las IPS en Colombia, desde la comparación de las relaciones organizacionales competitivas, buscando valorar las distintas integraciones en la generación de nuevos elementos para el desarrollo de la estrategia, estudio que hasta ahora no se ha realizado desde estos conceptos y el respectivo campo de acción.

3 METODOLOGÍA

Para el desarrollo de esta investigación, se tienen en cuenta fuentes secundarias, en especial las normas de gestión hospitalaria, algunos estudios de las IPS, y las diversas fuentes académicas relacionadas, teniendo en cuenta los autores en el ámbito de la gestión de la estrategia; así mismo, publicaciones del sector público colombiano, normatividad y otros elementos teóricos al respecto.

La principal técnica de recolección es la revisión normativa, bibliográfica y documental, apoyados de herramientas de software para su compilación y análisis, acorde a la información cualitativa.

4 RESULTADOS

las capacidades dinámicas influyen en la gestión estratégica de las instituciones prestadoras de servicios de salud en Colombia, es decir, la información aporta en el aprendizaje permanente de conocimientos, desarrolla habilidades, genera capacidades para la construcción de competencias, construye la cultura de confianza y la estructura flexible para su desarrollo; y a partir de ello, se construye una gestión estratégica que permita desarrollar el conocimiento y las capacidades de innovación.

CONCLUSIONES

Se explica los criterios generales y específicos para el desarrollo e implementación de la estrategia a partir de las capacidades dinámicas.

Se define la estructura para la gestión estratégica de las IPS.

Se integran los referentes teóricos con los resultados de análisis para el desarrollo de la gestión estratégica.

Se podrían realizar futuros estudios, para validar la gestión estratégica en el contexto de IPS de colombianas, desde el ámbito de otras organizaciones del sistema de salud y las capacidades dinámicas.

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MEASUREMENT OF WORK STRESS IN GYM TRAINERS: DESIGN AND VALIDATION OF A NEW SCALE



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Abstract:

Undoubtedly, work stress represents a risk factor in most occupations because it alters the performance of workers, but also their health, safety and integrity. However, few validated tools exist to measure stress and other dangerous issues affecting employees. In this way, the objective of this work is to generate a new instrument for measuring work stress. For this, a Likert-type scale questionnaire was applied to 58 gym trainers from the city of Culiacán. The results suggest that the new 22-item scale is reliable for measuring work stress in gym trainers.

Keywords: Work stress, measuring work stress, gym trainers.

1 INTRODUCTION

Currently in the year 2020 in the middle of the pandemic, high stress indicators have been seen, due to Latin American studies, these investigations show data where a greater amount of stress is observed (Robinet & Perez, 2020), which can generate physiological stress reactions. or psychological in the

individual (Ivancevich & Matteson, 1992; Melgosa, 2006). The stress related to work activities is professional burnout or Burnout, as highlighted by Martínez (2004), this is considered the most serious level of stress, suffered by individuals in demanding situations, in response to the goals to be met in a company. Consequently, stress has been said to be one of the characteristic ills of the 21st century (López, 2005; Tapia, et al, 2010). Although it is true that its effects are not exclusive to work environments, it is also true that they represent considerable discomfort for the worker, for the institution that employs him and for society in general (Becerril, 2015). Both "pathologies" have been related to the appearance of psychosomatic diseases and behavioral, emotional, family and social disorders (Boada and Ficapal, 2012; Sandín, 2003) associated with work

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absenteeism, addictions, job dissatisfaction and deterioration in quality of life. Given this circumstance, there are different tools that help detect stress, as well as different diagnoses to identify this problem in collaborators, as a way to identify it to reduce it and thereby increase its production.

In this vein, this article aims to provide a questionnaire to identify work stress. The methodology that will be applied in this survey will help to detect the type of stress that is generating problems in the collaborators since this in turn is affected and decreases the service capacity as mentioned by Gil-Monte & Moreno-Jiménez (2005). ; Sarria et al. (2011), since it represents a threat to the economies of industrial and developing countries by affecting productivity (Chiang Vega, Et. Al., 2018). Said questionnaire generates benefits since it is versatile for any organization, since the existing surveys have a non-probabilistic sample, which implies that there is an attempt to make the sample representative, but it is not chosen with a rigorous method. The fact that it is a non-probabilistic sample indicates that the results obtained from it cannot be calculated with precision, since its reliability level cannot be calculated (Nicholls-Marín, Et. Al., 2021).

Said questionnaire was carried out after the analysis of five scales used to detect stress in collaborators, these scales are: The applied survey is "The Nursing Stress Scale" Psychosomatic Problems Questionnaire; Maslach Burnou Inventory

(MBI); Hamilton Anxiety Rating Scale (HAM-A) and the Work Stress Questionnaire, which served as a reference to draw up a versatile questionnaire for all types of organization. With this questionnaire, organizations will be able to detect if there is any type of stress in their staff and thus be able to implement an action plan to reduce this situation, since this impacts performance and ability to fulfill tasks and functions. assigned, leading to procedural errors and lack of deficiency; which can affect the rest of their work team (Gilboa et. Al, 2008).

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Work stress occurs when people are subjected to pressures and work demands that demand beyond their abilities and skills (Ramdan, 2019). Some authors express that this situation increases the vulnerability of individuals because it encourages depression and reduces job satisfaction, but it also generates job fatigue (Rose, Seidler, Nübling, Latza, Brähler, Klein, & Beutel, 2017).

For Vernekar and Shah (2018), this type of stress must be well managed to stimulate the work capacity of employees, otherwise, the results could be adverse effects for individuals and organizations. For these reasons, the application of tools that allow the measurement of work-related stress levels is relevant.

In the words of Thompson (2015), one of the first techniques used was the

Hamilton Anxiety Rating Scale (HAM-A) published by Hamilton (1959). In addition, it has become one of the most popular evaluation instruments. However, for Singh, Gupta, and Yadav (2020), this scale only focuses on some anxiety disorders and consists of 14 psychological and physical items related to anxiety, qualifying them at three levels: low, medium, and high.

According to Ramdan (2019), the literature on the application of this technique is still limited, despite its growing popularity. Hence, the author decided to implement this scaling to determine the degree of work stress to which nurses in Indonesia are subjected. The study was carried out through stratified random sampling in 98 nurses and the results demonstrate the application of the scale.

Similarly, Sharma and Srivastava (2020) conducted research on organizational stress among female garment workers in India. The exploration consisted of a scaling regarding the factors that determine stress. To achieve this application, the authors executed a questionnaire to the employees of a garment factory, which consisted of 23 items. The results show the reliability to use this tool in the measurement of those aspects that generate vulnerability to workers.

Another measurement scale was presented by Siji and Aneena (2019), with

this instrument the work stress generated in 45-year-old working women was evaluated. To determine these parameters, the authors applied some indicators focused on psychological disasters that are generated by organizational work. The most relevant findings highlight that the workers are exposed to a moderate level of stress, but also highlights the application of this scale to examine the degrees of work anxiety.

On the other hand, Bora and Rani (2022) conducted a study with the intention of measuring the level of job stress and mental health of nursing staff. The Perceived Stress Scale (PSS) method was used, applying more than 40 surveys to workers in India during 2020 and 2021. The results indicate that nurses suffer a moderate degree of stress and only 10% showed high levels. Therefore, it is necessary for these employees to discuss issues related to their workplace, but they should also seek mental support and adequate training to manage these stressful emotions.

Consequently, it is important to continue generating new paradigms and questions, thereby creating the need to generate new methodological models to address the issue of health (Becerril, 2015). Since, in terms of existing methodologies, it has led to numerous criticisms and reflections on its factorial structure and definition as a multidimensional or unidimensional, specific or global variable (Maslach, Et. Al., 2008).

For example, the Maslach survey is made based on self-reports, which undoubtedly limits and could perhaps bias the data used to generate conclusions (Becerril, 2015). As in cross-sectional designs, statistical tests, Pearson's correlation, regression analysis, Student's t-test, analysis of variance (ANOVA), have limitations of the reported studies, due to the fact that the design used limits its possibilities of interpretation, particularly for establish cause and effect relationships between the measured variables, since they are dynamic enough to change recurrently, depending both on the interaction with society and on the psychological processes inherent to human nature. (Becerril, 2015).

Therefore, the need to vary the design is essential to find the causes of said situation to be investigated.

3 METHOD

This research used a Likert-type scale questionnaire made up of 22 items, of which 10 were focused on anxiety and depression, while the other 12 items were related to stress. In addition, this instrument was administered to gym trainers located in the city of Culiacán, with a total of 58 employees.

For the descriptive analysis of the data, the IBM SPSS software (version 21) was used. Likewise, for the validity of the scale, the Pearson correlation coefficient was calculated using the applied sample. This also allowed us to measure the association between the variables. Lastly,

the reliability of the scale and its items was measured through Cronbach's alpha coefficient.

4 CONCLUSIONS

This study supports the reliability of this new scale to measure job stress in gym trainers. In addition, there is evidence that this instrument can be useful for researchers and occupational professionals who study issues related to stress from the perspective of human factors because it allows a diagnosis of work stress levels to be made, but also allows interventions to be designed based on evidence aimed at improving the environmental conditions of work, as well as the results of health, safety and integrity of workers.

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INNOVATION MANAGEMENT IN SMEs: AN ANALYSIS THE SOCIODEMOGRAPHIC FACTORS OF THE MANAGER



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Abstract: *The objective of this article is to know the relationship that exists between the sociodemographic characteristics of managers with the levels of innovation capacity of the key area of knowledge management of small and medium-sized companies in the restaurant sector in the city of Culiacan. To achieve this, the Correspondence Analysis technique was used to represent the relationship between the categories of two non-metric variables, in a reduced multidimensional space. The results indicate lack of association.*

Keywords: *Innovation Management, Knowledge management, Sociodemographic factors.*

1 INTRODUCTION

The study of innovation management (IG) is essentially multidisciplinary and is nourished by the dialogue established between managers, consultants, and academics from different backgrounds. The managers of most companies know that carrying out innovative activities contributes to improving the competitiveness of their organizations and, consequently, to obtaining higher

income (Igartua and Errasti, 2007). In this way, these managers become aware of the importance that innovation plays in the future of companies due to the need to obtain a high level of competitiveness.

The purpose of this research is to determine the innovation management capabilities of SMEs in the food and beverage preparation services sector in the city of Culiacan, Sinaloa; in such a way that it allows knowing the levels of innovation capacity of the (GC) area of SMEs and the relationship of said level of capacity with the sociodemographic characteristics of the manager.

This article is organized as follows: Section 2 describes the theoretical and conceptual framework. Section 3 presents the methodology. Section 4 the results. Finally, Section 5 presents the main conclusions of the article.

This paper is organized as follows: Section 2 describes theoretical and conceptual framework. Section 3 presents the methodology. Section 4 the results. Finally, Section 5 presents the main conclusions of the paper.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Managers understand that innovation is key to the survival of the organization in both the private, public, and social sectors that need to improve their services (Eveleens, 2010). The IM can play a central role in the change process of organizations, facilitating organizational adaptation to the external environment and increasing the efficiency and effectiveness of internal processes (Walker, Damanpour and Devece, 2011).

2.1 Knowledge management

Knowledge management can be defined as a process of transforming information and intellectual assets into lasting value (Tasmin and Yap 2010). This key area includes the management of the organization's explicit and implicit knowledge (Davis 1998; Nonaka 1991), as well as the processes for collecting and using information.

2.2 Sociodemographic factors

Sociodemographic factors have an important influence on the creation and development of companies. In this sense, Álvarez and Valencia de Lara (2008), consider that age, education, and experience influence the start-up of

companies. They state that some researchers indicate that the age of the entrepreneur can be used to determine two forces related to business performance; experience and vitality, where in the first case, there is the belief that older people have an advantage due to the accumulation of experience. However, younger people have the energy, vigor and enthusiasm that allow them to search for, recognize and develop more innovative business opportunities and, therefore, with greater potential for economic growth.

3 METHOD

To know the relationship between the innovation management area and the sociodemographic characteristics of the managers, the Correspondence Analysis technique was used, which is a statistical technique used to represent the relationship between the categories of two non-metric variables, in a reduced multidimensional space. Correspondence analysis is generalizable to contingency tables of more than two variables.

In correspondence analysis, the Chi-square statistical test is used to test the null hypothesis between the two variables that make up the contingency table in question. The null hypothesis states that there is no relationship between the two variables in the contingency table. That is, the frequencies observed in the table are the same as those that would be expected if the two variables were independent. The alternative hypothesis, on the other hand,

states that there is a significant relationship between the two variables in the contingency table.

4 RESULTS

To facilitate the analysis of the results of the associations between the sociodemographic characteristics Age, Academic Level and Seniority with the levels of innovation capacity of the key area of Knowledge Management, Table 4.1 presents a summary of the results of the correspondence analysis.

Table 4.1 Summary of the Correspondence Analysis between the sociodemographic characteristics and the levels of innovation capacity of the key area of KM.

Sociodemographic characteristic	Correspondence Analysis Result
Age	There is not enough evidence to affirm that there is a significant association between the Age Intervals and the KM Key Area.
Academic level	There is not enough evidence to affirm that there is a significant association between Academic Levels and the KM Key Area.
Antiquity	There is not enough evidence to affirm that there is a significant association between the Antiquity Intervals and the KM Key Area.

Source: own elaboration.

5 CONCLUSIONS

Through It is concluded that the Age of the managers is a significant factor in determining the levels of innovation capacity of the key area KM of SMEs. In

the same way, it is concluded that the Academic Level of the managers does not present a significant association with the levels of innovation capacity of the KM area either. Likewise, it is concluded that the Seniority of the managers did not have a significant association with the levels of innovation capacity of the KM area.

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ACADEMIC ENTREPRENEURSHIP: A BIBLIOMETRIC OVERVIEW BETWEEN 1972 AND 2023



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Abstract: *This article aims to provide an overview of the main contributions to Academic Entrepreneurship. To accomplish this, a bibliometric analysis of the literature extracted from the Scopus database was carried out, involving a wide range of bibliometric indicators such as productivity, citations, and h-index. Moreover, it also uses the VOSviewer software to graphically map of the references in this field. The results indicate that there is a limited production concerning the number of publications on the topic, with upward trend.*

Keywords: *academic entrepreneurship, bibliometric analysis, Scopus.*

1 INTRODUCTION

Academic entrepreneurship (AE) has been recognized as catalyst for innovation, generating competitive advantage and economic development in the region. Research in the field of AE has attracted hundreds of researchers from

diverse knowledge areas, which has led to an increasingly widespread body of literature. Thus, it is necessary to understand both the structure and the importance of classifying the literature of a research area based on the main trends in the discipline.

The purpose of this study is to provide a bibliometric overview considering articles, leading journals, authors, affiliations, and countries in the topic of AE, through bibliometric indicators and bibliographic mapping.

According to Martínez-López et al. (2022) the bibliometric method is increasingly used as a tool for research performance evaluation, its advances, and

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trends. Peer review is typically a qualitative assessment of research performance, but bibliometric indicators represent the quantitative side.

This paper is organized as follows: Section 2 describes theoretical and conceptual framework. Section 3 presents the methodology. Section 4 the evolution of the AE topic, and the 30 most influential journals, papers, authors, institutions, and countries and develops a graphical visualization of the results using the VOSviewer software. Finally, Section 5 presents the main conclusions of the paper.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Entrepreneurship has been considered a key factor for growth economy, employment, and innovation (Etzkowitz et al. 2022). An entrepreneurial society generates scenarios in which its members can identify and exploit economic opportunities and knowledge to promote new business phenomena that have not been previously visualized (Audretsch & Belitski, 2018).

Particularly, academic entrepreneurship (AE) has been recognized as a catalyst for innovation, generating a competitive advantage and economic development in the region (Huynh et al. 2022; Wang et al. 2023). For this reason, in recent decades, universities have expanded entrepreneurial activities that value technology transfer and support the

commercialization of research results through patents, licensing, and spin-off creation (Abootorabi et al. 2021; Siegel et al., 2023).

AE is defined as the creation of new businesses based on university-developed knowledge (Fini et al. 2018). Also, Hayter et al. (2018) argue that AE refers to the activities carried out to establish of new spinoff companies by faculty, postdocs, students, or affiliated personnel based on university technology.

The importance of AE has been widely recognized in the literature evidenced by the notable increase of publications the past years, the field has attracted hundreds of researchers from diverse knowledge areas, which has led to an increasingly widespread body of literature (Skute, 2019). Thus, to decrease the risk of the field's fragmentation and to support the systematic generation of relevant and interesting knowledge on AE, it is necessary to understand both the structure of the current body of literature and the importance of classifying the literature of a research area based on the main trends in the discipline (Walsh et al. 2021; Caputo et al. 2022).

3 METHOD

This analysis is performed with the bibliographic search, where the database of the main Scopus collection is used. The Scopus database has been used in different academic research as the main source (Valenzuela-Fernandez et al. 2019; Faisal, 2023).

The research methodology process includes the following steps: Step 1. Starts with the selection of the keywords that help to determine the study sample. The keyword in the topics section is "academic entrepr*" OR "academic spin*" OR "universit* spin*" OR "academic start-up" OR "universit* start-up" for this study it is labeled as AE. Quotation marks and the logical operator OR were used to guarantee the results and the coincidence in titles, abstract and keywords of the publications.

Step 2. The initial search is performed in August 2023, and the analysis considers all the documents published by AE in a time range from 1972 to 2023. The Scopus has published 2,107 documents during this period.

Step 3. A refined search is performed for the type of document considering articles, reviews, note and letter. Therefore, the search is reduced to 1,563.

Step 4. Finally, are obtained bibliometric indicators and graphic maps of the extracted bibliography, this using VOSviewer software.

4 RESULTS

AE research has increased significantly in recent years. Most of the papers have been published in the last decade, with 1092 papers that are dated between 2013 and 2023, which represents 69.9% of the total volume.

In the development of a research field, journals have a prominent role as the

main disseminator of the process in AE studies. It is observed that the most productive journal in AE research is the Journal of Technology Transfer, but the Research Policy is the most influential journal in the field because it has 64 papers, with the largest number of citations and the highest H-index.

The paper most cited is "Academic engagement and commercialization: A review of the literature on university-industry relations" published by Perkmann et al. in 2013, with 1410 cites in Scopus and generates 141 citations per year.

The most important researcher in the field of AE, Wright is the most productive and influential author to have the highest number total of publications in AE field, 44 papers, 8358 cites and H-index in the topic 31.

5 CONCLUSIONS

This study allows to identify that there is a limited production concerning the number of publications on the topic of AE, but with an upward trend, which, indicates the interest of the scientific community in the subject; most of the papers were written from 2013 to 2023.

Finally, It should be noted, even though Scopus database used to extract the literature is complete and prestigious, the documents reviewed only respond to the applied search criteria; therefore, there is a possibility that, when modified,

the results will be different from the information presented here.

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INNOVATION VARIABLES: PANDEMIC EFFECTS AND POST-CRISIS RECOVERY

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Abstract: *This paper assesses how innovation-related variables impact a country's economic growth, measured by per capita GDP, across three periods: pre-Covid-19, during Covid-19, and post-Covid-19. The study unveils changes in variable behavior, especially the shift from negative to positive effects during the pandemic, followed by non-significance post-pandemic. Regional analyses for Asia, America, and Europe mirror these trends, indicating temporary influences that eventually return to pre-pandemic patterns.*

Keywords: *GDP, Covid19, Recovery*

1 INTRODUCTION

The relationship between economic growth and innovative development has been extensively explored in academic literature to understand the determinants that drive higher GDP levels in each country (Guloglu & Tekin, 2012; Petrariu *et al.*, 2013; Pradhan *et al.*, 2016).

Using data from the latest Global Innovation Index (2022) report, it is possible to gain insights into the innovation ecosystem performance of 132

economies and track the most recent global innovation trends. Previous report focuses on measuring and analyzing a wide range of innovation-related indicators, including aspects of the digital economy and technology. In a regional analysis, the top three innovation economies by region in 2022 are as follows:

- Latin America and the Caribbean: Chile, Brazil, Mexico.
- Northern America: United States, Canada.
- Sub-Saharan Africa: South Africa, Botswana, Kenya.
- Europe: Switzerland, Sweden, United Kingdom.
- Northern Africa and Western Asia: Israel, United Arab Emirates; Türkiye.

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- Central and Southern Asia: India, Iran (Islamic Republic of), Uzbekistan
- South-East Asia, East Asia, and Oceania: Republic of Korea, Singapore, China.

However, how has the performance of the world's economies compared when considering the pre-pandemic, during the pandemic, and post-pandemic scenarios? What distinctive factors explain the growth potential of each country in terms of GDP for these three periods?

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Measuring key variables that drive innovation and economic growth is paramount for understanding and enhancing a country's GDP. These variables encompass factors like human capital development (Pelinescu, 2015), technological innovation (Feki & Mnif, 2016), efficient institutions, and market sophistication (Wong & Zhou, 2011). Monitoring and optimizing these factors can foster a conducive environment for innovation, attracting investments, fostering entrepreneurship, and ultimately leading to substantial economic expansion, resulting in an increased GDP. Examples of these variables or factors are:

Institutions: This refers to the quality of a country's political, legal, and economic systems. Strong institutions, like the rule of law and property rights protection, encourage investment, reduce uncertainty, and promote economic growth.

Human Capital: It represents the skills, education, and health of a country's workforce. A well-educated and healthy workforce is more productive and adaptable to new technologies.

Infrastructure: Good infrastructure, including utilities, transportation and communication, is crucial for economic development. It reduces production costs, facilitates trade, and attracts businesses and investments.

Market Sophistication: This refers to a country's consumer and business markets' maturity and complexity. Sophisticated markets offer more opportunities for innovation and entrepreneurship.

Business Sophistication: It relates to the level of business sophistication, including the quality of business networks, local supplier quality, and the extent of competitive advantage.

Intangible Assets: These encompass non-physical assets like intellectual property, patents, copyrights, and brand value. A strong presence of intangible assets indicates a knowledge-based economy, which can drive innovation, foster entrepreneurship, and lead to higher GDP.

Finally, **Online Creativity:** it involves the ability to generate innovative ideas and content on digital platforms. This fosters digital entrepreneurship, encourages e-commerce, and enhances a country's competitiveness, ultimately contributing to GDP growth.

It is crucial to analyze the influence of the aforementioned variables before,

during, and after the Covid-19 crisis to assess their degree of impact on both crisis and post-crisis periods.

3 METHOD

Using data from the latest Global Innovation Index report from 2016 to 2022, it is possible to assess the innovation ecosystem performance of 111 economies and monitor the latest global innovation trends. This report primarily focuses on measuring and analyzing a wide range of innovation-related indicators, including aspects of the digital economy and technology.

In this paper, an Ordinary Least Squares (OLS) panel regression model is used to analyze the dependent variable, GDP per capita, in relation to all the independent variables listed in the Introduction of this paper. The analysis is conducted for three development periods: 2016-2019 (pre-Covid), 2020-2021 (Covid), and 2022 (post-Covid).

Table 1. Variables information

Intangible assets
Intangible asset intensity, top 15, %
Trademarks by origin/bn PPP\$ GDP
Global brand value, top 5,000, % GDP
Industrial designs by origin/bn PPP\$ GDP
Online creativity
Generic Top-Level Domains / th pop. 15-69
Country-code TLDs / th pop. 15-69
GitHub commit pushes received/mn pop.15-69
Mobile app creation/bn PPP\$ GDP
Institutions
Political environment

Regulatory environment
Business environment
Human Capital
Education
PISA scales in reading, maths and science
Pupil-teacher ratio, secondary
Tertiary education
Research and development (R&D)
Infrastructure
Information and communication techn. (ICTs)
General infrastructure
Ecological sustainability
Market Sophistication
Credit
Investment
Trade, diversification, and market scale
Business Sophistication
Knowledge workers
Innovation linkages
Knowledge absorption

4 RESULTS

The following Table 2 presents the regression results.

Table 2. Regression results

VARIABLES	(1) Before Covid PIB Per capita	(2) During Covid PIB Per capita	(3) After Covid PIB Per capita
PIB per capita			
Institutions	95.47** (2.412)	-49.25 (-1.473)	602.3*** (2.934)
Human Capital	47.69 (1.128)	17.64 (0.590)	108.1 (0.501)
Infrastructure	263.3*** (3.775)	-28.79 (-0.621)	977.8*** (3.344)
Market Sophistication	184.9*** (4.376)	52.02 (1.527)	-212.4 (-1.095)
Business Sophistication	234.4*** (3.789)	-33.13 (-1.041)	148.7 (0.475)
Intangible Assets	-17.35 (-0.869)	131.5*** (3.297)	-32.28 (-0.299)
Online Creativity	-91.64*** (-4.573)	331.2** (2.346)	346.7 (1.591)
Constant	-8,181** (-2.485)	18,388*** (4.134)	-52,387*** (-4.342)
Observations	444	222	111
R-squared			0.746
Number of ID	111	111	

Robust z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results indicate that the explanatory variables for per capita GDP growth before the Covid-19 pandemic were entirely different from those determining growth during the pandemic. Of particular note are the variables "Intangible Assets" and "Online Creativity," which, before the pandemic, exhibited a significant but negative associated parameter. In contrast, during the pandemic, this effect was in the opposite direction, significant but positive. Naturally, all sectors intensive in "Intangible Assets" (non-physical assets) performed better in terms of per capita GDP than sectors intensive in physical assets. This aligns with the fact that mobility restrictions and online service consumption gained significant traction. Furthermore, the results also show that after Covid-19, in the period post-2022, both variables exhibit parameters associated with negative values for "Intangible Assets" and positive values for "Online Creativity," but neither are statistically significant. This may imply that the valuation effect of sectors intensive in "Intangible Assets" was merely a reaction to mobility restrictions, while online creativity continued to play a role in household consumption.

5 CONCLUSIONS

This paper explores the impact of key innovation-related variables on the economic growth of countries, as measured by per capita GDP. It analyzes these variables across three distinct periods: pre-Covid-19, during Covid-19,

and post-Covid-19. The findings reveal variations in variable behavior between pre-pandemic and pandemic periods. Particularly noteworthy is the shift in some variables' effects from negative to positive during the pandemic, returning to non-significant levels post-pandemic. Additionally, region-specific analyses for Asia, America, and Europe highlight similar trends, signifying transient effects that revert to a pre-pandemic norm.

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PERFORMANCE MEASUREMENT OF THE INVESTIGATIONS POLICE OF CHILE USING THE BALANCED SCORECARD



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Abstract:

Strategic management is not the exclusive domain of private firms; it also applies to governmental organizations striving to advance the achievement of long-term goals. This is exemplified by the Investigations Police of Chile (PDI), which has implemented planning processes employing the Balanced Scorecard (BSC) to inform and align its personnel towards the attainment of common goals. The result of this strategic management approach has led PDI to transition from a poor reputation in the 1990s to being the most reputable government institution in Chile today.

Keywords: PDI, Chile, Strategy

INTRODUCTION

Changes in the environment necessitate organizations to adapt their processes for enhanced efficiency in meeting the requirements of both internal and external stakeholders.

Therefore, since 1995, through various strategic plans (Fenix I and II Plans, Minerva I and II Plans, PEI 2017-2022, and PEDP 2023-2028), the PDI has undertaken the responsibility of modernizing itself. This involves enhancing its management practices and incorporating external perspectives to gain a deeper understanding of how to observe, analyze, describe, and proactively drive future changes.

The PDI has embraced the challenge of monitoring and executing the goals of each Strategic Plan, employing the Balanced Scorecard (BSC) management tool (Kaplan and Norton in 1996). The utilization of various key performance indicators (KPIs) within each strategic plan, aligned with distinct objectives in the BSC, not only shapes the conduct of individual police officers but also

facilitates progress toward the envisioned long-term goals.

Over three decades, this shared vision among each PDI leader has endowed the institution with adaptive capabilities and a flexible, transformative outlook. Through the implementation of strategies and performance improvements, it has garnered social recognition and improved conditions for its most valuable asset: police personnel and staff.

1 THEORETICAL AND CONCEPTUAL FRAMEWORK

The Balanced Scorecard (BSC) tool has been successfully implemented across various organizations, driving motivation and enhancing the pursuit and monitoring of medium to long-term organizational goals (Kaplan and Norton, 2008).

In these organizations, the BSC serves as a comprehensive framework for performance measurement and management. It integrates key performance indicators (KPIs) across different aspects of the organization, including financial, customer, internal processes, and learning and growth perspectives (Niven, 2003). By aligning these KPIs with strategic objectives, the BSC provides a clear roadmap for achieving organizational targets over an extended period.

One of the significant advantages of the BSC is its ability to translate strategic goals into tangible actions and results (Cancino *et al.*, 2012). It breaks down overarching objectives into departmental or individual-level targets, creating a sense of ownership

and accountability among employees. As employees see how their daily activities contribute to the larger organizational mission, they become more motivated to excel in their roles.

Furthermore, the BSC offers a continuous feedback mechanism. Regularly tracking KPIs allows organizations to identify performance gaps and make timely adjustments. This real-time visibility not only ensures that objectives stay on course but also fosters a culture of adaptability and responsiveness.

In its last three strategic planning processes, the PDI has opted for the BSC tool to delineate diverse objectives, establish cause-effect relationships, and associate them with KPIs for tracking their progress over time. The literature has examined other cases of global law enforcement agencies using BSC to monitor strategies (Gomez *et al.*, 2006; Elefalk, 2001).

The implementation of the BSC in the PDI has proven to be a powerful tool in driving motivation and facilitating the achievement of medium and long-term organizational goals. It aligns actions with strategy, fosters accountability, and provides ongoing performance insights, making it a valuable asset for organizations committed to sustained success.

2 METHOD

In this paper, we employ the case study methodology (Yin, 1993, 1994). This methodology has been pivotal in academic papers due to its capability to thoroughly analyze specific situations (Cancino and La Paz, 2010). While it

provides valuable insights, its primary limitation is the lack of generalizability. According to Maxwell (1998), the case study methodology is indispensable in the academia because of its capacity to delve into specific situations.

Through the case study of BSC implementation in the PDI in Chile over the past three strategic planning cycles, this paper aims to illustrate the opportunities and challenges faced by a law enforcement and criminal investigation organization in tracking its strategy to enhance community reputation. This case study encompasses the identification of how key performance indicators (KPIs) align with strategic objectives and how their success is measured over time. Additionally, it highlights how they address challenges such as the appropriate selection of KPIs, alignment with organizational goals, and data interpretation for strategic decision-making, providing a comprehensive understanding of BSC implementation and monitoring.

3 RESULTS

At the beginning of the 1990s, public opinion surveys indicated the lowest levels of trust and reputation among the public towards the PDI, reflecting a significant decline in public confidence. Through a long-term commitment by the leadership to change this perception, over the past three decades, the PDI has developed various strategic plans, each with specific strategic focuses:

- Fenix Plans I and II (1997-2004) aimed to recover equipment and infrastructure resources.
- Minerva Plan I (2004-2010) aimed to enhance quality management and improvements in administrative and operational areas.
- Minerva Plan II (2004-2010) aimed to consolidate the professional development of police officers and advance innovation through criminal analysis centers for decision-making.
- Institutional Strategic Plan (PEI 2017-2022) aimed to position the PDI as leaders in criminal investigation.
- Recently, the PDI has launched the new Police Development Strategic Plan, named PEDP 2023-2028. The main objectives of the new plan are to focus on demonstrating effective results and meeting the high levels of trust currently held by the public.

Figure 1: PDI Strategy Map 2023-2028



Source: www.pdichile.cl/pedp

Using a Strategy Map (see Figure 1) and its associated KPI system to track the strategy, the PDI aims to promote actions, initiatives, and monitor goal achievement, positioning itself as a top-tier government institution.

4 CONCLUSIONS

The new plan 2023-2028, begins in a context vastly different from the 1990s, with the PDI now ranking among Chile's two most trusted and respected governmental institutions. Over the years, the primary objectives of the different strategic plans have centered on enhancing the image of a modern institution, emphasizing digital transformation and innovation. The KPI framework in use aims to advance professional, modern, specialized investigations of intricate crimes based on criminal evidence. The long-term goal, by 2033 (the PDI's centenary), is to solidify its status as a regional leader in the investigation of highly complex crimes and transnational organized crime.

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FUZZY LOGIC ALGORITHMS: A BIBLIOMETRIC OVERVIEW



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Abstract: *This bibliometric study offers an analysis of scholarly production on fuzzy logic algorithms. The main results show that China stands out as the most prolific country in producing research, followed by the USA and India. Authors such as Castillo O, Pedrycz, W, and Melin P have significantly impacted the field's direction. Computer science, engineering, mathematics, and medicine are some of the characteristic areas of study. These findings provide valuable insights into research productivity, influential authors, and application areas, fostering further innovation in fuzzy logic algorithms worldwide.*

Keywords: *fuzzy logic, fuzzy algorithms, bibliometry*

1 INTRODUCTION

Fuzzy logic algorithms (Zadeh, 1968) have emerged as a powerful tool in dealing with uncertainty and imprecision in various domains, ranging from engineering and control systems to artificial intelligence and data analysis (Blanco-Mesa et al., 2016). Their adaptive and flexible nature has garnered significant interest from researchers, leading to a substantial body of literature in recent years (Alfaro-García et al., 2020). In this bibliometric research paper,

we aim to provide a comprehensive overview and analysis of the scholarly output pertaining to fuzzy logic algorithms.

The primary objective of this study is to identify the key trends, patterns, and evolution of research in the field of fuzzy logic algorithms. By employing bibliometric methods (McBurney & Novak, 2002), we intend to analyze a vast collection of scientific papers, conference proceedings, and journal articles to unravel the most influential authors, prolific institutions, and prolific countries in this domain.

Using various techniques and software, we seek to explore the various application areas where fuzzy logic algorithms have been utilized, such as control systems, pattern recognition, decision-making, and optimization. Additionally, we will investigate the emergence of hybrid approaches,

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combining fuzzy logic with other computational techniques.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Fuzzy logic algorithms are computational tools that handle uncertainty and imprecision in decision-making processes (Hooda & Raich, 2017). These mechanisms are particularly useful in situations where data or variables are vague, ambiguous, or subject to subjective interpretation. They excel in domains with complex and uncertain real-world scenarios, such as control systems, expert systems, pattern recognition, and decision-making processes. By employing fuzzy logic, these algorithms can handle and process imprecise information more effectively, leading to better adaptability and robustness in various applications (Zadeh, 1965).

The strength of fuzzy logic lies in its ability to model human-like reasoning, allowing for more natural and flexible solutions in problems where conventional binary logic may not be suitable. As a result, fuzzy logic algorithms have found widespread applications in fields ranging from engineering and automation to artificial intelligence and data analysis (Alfaro-García, 2020).

Bibliometrics is a quantitative research method used to analyze and measure various aspects of scholarly literature (Zhu & Liu, 2020). It involves the statistical examination of publications, such as articles, books, and conference

papers, to assess factors like author productivity, citation patterns, journal impact, and research trends.

3 METHOD

This bibliometric study aims to analyze the scholarly literature on fuzzy logic algorithms using the Scopus database. The chosen query is designed to retrieve publications that contain the term "fuzz*" in the title, abstract, or keywords, in conjunction with the term "logic," and further filtered to include only those focusing on "Algorithms" as an exact keyword. The primary data source for this study is the Scopus database, known for its comprehensive coverage of academic publications across various disciplines. The search query used is TITLE-ABS-KEY (fuzz* AND logic) AND (LIMIT-TO (EXACTKEYWORD, "Algorithms")). This query ensures the retrieval of relevant publications that specifically address fuzzy logic algorithms.

4 RESULTS

The search query is executed on the Scopus database, in total 8,520 and all relevant publications from the inception of the database up to 2022 are retrieved. The obtained publications are filtered to include only those that meet the inclusion criteria: research articles, conference papers, and journal papers focused on fuzzy logic algorithms.

China's dominant role as the primary contributor to the production of fuzzy

logic algorithms is a testament to the country's proactive involvement and substantial investment in research and development of emerging technologies. The high rankings of the USA and India also highlight their substantial contributions to the advancement of this field, underscoring the strength of their academic and research communities.

The acknowledgment of influential authors like Castillo O., Pedrycz, W., and Melin P. highlights their significant impact and contributions to the progress of fuzzy logic algorithms. It is highly probable that their work has played a crucial role in shaping the research landscape and inspiring novel advancements in the field.

The recognition of computer science, engineering, mathematics, and medicine as distinctive fields of study emphasizes the interdisciplinary essence and extensive practicality of fuzzy logic algorithms. The incorporation of fuzzy logic into these various domains showcases its versatility and capacity to address intricate challenges in diverse industries and academic fields.

The results of this bibliometric analysis provide valuable knowledge about the worldwide panorama of fuzzy logic algorithms, uncovering trends in research output, influential authors, and prominent application domains. These observations establish a basis for future exploration and collaboration in the field, ultimately promoting innovation and

advancement in the global development and utilization of fuzzy logic algorithms.

5 CONCLUSIONS

The objective of this bibliometric study is to conduct a comprehensive analysis of scholarly publications based on fuzzy logic algorithms. By utilizing bibliometric methods and leveraging the Scopus database, we have obtained valuable insights into the trends, patterns, and contributions within this field. A total of 8,520 documents were retrieved.

The findings reveal China's prominence as the leading country in terms of research output on fuzzy logic algorithms, followed by the USA and India. Furthermore, influential authors such as Castillo O., Pedrycz, W., and Melin P. have emerged as key figures in shaping the direction and advancement of the field.

The interdisciplinary nature of fuzzy logic algorithms is evident, as they find applications in computer science, engineering, mathematics, and medicine. This underscores the adaptability of fuzzy logic algorithms, enabling them to address complex problems across diverse domains.

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CORPORATE SUSTAINABILITY AND SUSTAINABLE GOALS A FORGOTTEN EFFECTS ANALYSIS



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Abstract: *This study focuses on the impact of corporate sustainability and Sustainable Development Goal 1 (SDG1) - End poverty in all its forms everywhere. Employing the Forgotten Effects Theory and insights from 10 academic experts, it explores the impact of specific variables on corporate sustainability and poverty eradication. The research reveals substantial correlations between economic and social indicators and the quest for poverty eradication, with a particular focus on income and pricing factors. This underscores the vital role of businesses in addressing poverty through sustainable practices.*

Keywords: *sustainable development goals, corporate sustainability, forgotten effects*

1 INTRODUCTION

In the quest for a better and more sustainable world, the United Nations adopted the 2030 Agenda for Sustainable Development, a transformative initiative that outlines 17 Sustainable Development Goals (SDGs) (Nations, 2021). These goals serve as a comprehensive blueprint to

address the pressing global challenges facing humanity, ranging from eradicating poverty and hunger to promoting environmental preservation and social inclusivity (Hák, T.; Janoušková, S.; Moldan, 2016).

The pursuit of sustainability has emerged as a defining principle in contemporary society, as nations and organizations recognize the intrinsic link between economic growth, social progress, and environmental stewardship (Griggs, D.; Stafford-Smith, M.; Gaffney, O.; Rockström, J.; Öhman, M.C.; Shyamsundar, P.; Steffen, W.; Glaser, G.; Kanie, N.; Noble, 2013). The SDGs offer a coherent framework, guiding stakeholders worldwide to embrace collective action in an era characterized

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by interconnectedness and interdependence.

The objective of this paper is to address corporate sustainability indicators and evaluate their impact on SDG 1, "End poverty in all its forms everywhere". To achieve this, we will use the Forgotten Effects Theory (Garcia-Orozco et al., 2021), assessing 10 academic experts' opinions and valuations.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

The theoretical framework for this research paper on SDG 1, "End poverty in all its forms everywhere," draws from a comprehensive analysis of factors influencing poverty eradication (Caiado, R.G.G.; Leal Filho, W.; Quelhas, O.L.G.; de Mattos Nascimento, D.L.; Ávila, 2018). Grounded in the principles of sustainable development, socio-economic dynamics, and policy drivers, this framework seeks to understand the root causes of poverty in all its forms. It incorporates concepts of equitable economic growth, social inclusion, and sustainable resource management, exploring the interconnections between policy interventions, economic practices, and societal well-being (Schmidt-Traub, G.; De la Mothe Karoubi, E.; Espey, 2015). By examining the role of technology, governance, and community engagement, this research aims to propose evidence-based strategies for achieving the end of poverty in all its forms, fostering economic sustainability,

and ensuring a prosperous and equitable future.

Corporate sustainability (Van Marrewijk, 2003) is grounded in the integration of environmental, social, and economic dimensions, aligning business practices with long-term ecological and societal well-being. The principles of sustainable development as articulated by Brundtland serve as a fundamental pillar, emphasizing the need to meet present needs without compromising future generations' ability to meet their own needs (Giovannoni & Fabietti, 2013). By synthesizing these ideas, this research explores how corporations can adopt sustainable practices, engage with stakeholders, and contribute to the global pursuit of economic prosperity.

The Forgotten Effects Theory (FET) offers a comprehensive method to identify both direct and indirect relationships without errors. All events in our surroundings are interconnected within a larger system or subsystem (Linares-Mustarós et al., 2020), implying that any issue can be attributed to a set of "causes" and "effects". The innovative and efficient approach of the forgotten effects theory considers multiple aspects of these relationships, enabling the reduction of errors in various processes (Gil-Lafuente, 2005).

3 METHOD

In this study, we analyze two sets of elements: causes and effects (Kaufmann & Gil-Aluja, 1986). We define a

membership function for the feature pair (a_i, b_j) estimated at $[0, 1]$ based on an endecadary (11 equidistant points) linguistic assessment where 0 is no incidence and 1 is total incidence.

In this study, the corporate sustainability indicators consist of 18 variables that encompass economic, social, and environmental corporate actions. Additionally, the analysis includes 13 specific indicators designed to evaluate the company's contributions toward achieving zero poverty goals. These indicators serve as essential metrics to assess the organization's efforts in addressing poverty-related issues and promoting sustainable practices in alignment with its corporate social responsibility objectives.

In the process of information retrieval, we engaged with 10 esteemed academic experts specializing in sustainability. Each expert provided their evaluations for the FET required matrices, specifically: M matrix (direct incidence), A matrix (cause-cause matrix), and B matrix (effects-effects matrix). To consolidate the findings, a simple average function was applied to aggregate the results.

With the information obtained we calculate rest of the FET matrices. The specific procedures follow a series of max-min compositions of the initial matrices, obtaining M^* matrix (indirect effects) and D matrix (total forgotten effects).

4 RESULTS

The results of the study reveal the extent of forgotten effects concerning the selected variables on both corporate sustainability and zero poverty. Initially, the assessment of the indicators highlights a series of logical connections. Notably, the economic and social-based indicators exhibit a strong direct correlation with the zero poverty indicators, particularly in the evaluation of income and prices. These findings emphasize the interdependence of economic and social factors on poverty alleviation efforts, shedding light on the potential impact of corporate actions in tackling the challenge of eradicating poverty and promoting sustainable development.

When examining the indirect impact among the selected variables, a notable observation emerges, highlighting the significant role of social indicators in influencing poverty eradication variables, especially in the income inequality reduction indicator. Sustainable companies contribute to reducing income inequality by paying fair and equitable wages, implementing gender equality policies, and promoting fair business practices. This impact is also evident in the indicators related to investment in local communities and access to basic services. Sustainable companies often engage in corporate social responsibility (CSR) programs that benefit local communities. These programs may include investments in basic

infrastructure, education, and healthcare, thus improving people's living conditions and reducing poverty.

These findings underscore the critical importance of integrating social sustainability measures into corporate practices and poverty eradication initiatives, emphasizing the need for companies to adopt socially responsible approaches to effectively address global challenges.

5 CONCLUSIONS

This paper highlights the paramount significance of corporate sustainability in contributing to the achievement of Sustainable Development Goals (SDGs). By integrating economic, social, and environmental actions, businesses can play a transformative role in addressing global challenges such as poverty, hunger, and climate change. The analysis of forgotten effects emphasizes the need to consider interconnected relationships for effective decision-making. Our findings underscore the potential of sustainable practices, stakeholder engagement, and responsible governance to drive positive impacts on society and the environment. As we navigate an ever-changing world, embracing corporate sustainability becomes imperative for fostering a resilient, equitable, and sustainable future in harmony with the SDGs.

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EVOLUTION OF INNOVATION AND SUSTAINABILITY RESEARCH AMONG THE ARAB WORLD'S UNIVERSITIES



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***Abstract:** The objective of this study is to investigate publications focusing on innovation and sustainability using a bibliometric approach. The study analyzes WoS data from 1995 to 2023. Findings reveal that the scientific production in innovation and sustainability in the Arab region has grown significantly more than the average in other disciplines, undoubtedly due to the influence of global agreements such as the SDGs of United Nations and the Paris Agreement.*

***Keywords:** Arab research, Innovation, Sustainability*

1 INTRODUCTION

In different universities around the world, scientific research on topics of innovation and sustainability has shown continuous growth in recent years (Merigó et al., 2016; Cancino et al., 2017). This trend has also been observed in Arab world universities, an important region whose countries have actively sought ways to promote sustainable development and innovation in various sectors, including energy, agriculture, technology, and business management.

To understand the trends in academic research on innovation and sustainability

in Arab world universities, this paper aims to investigate publications with a specific focus on these topics using a bibliometric approach.

The discussion and analysis of the results presented in this paper may be of significant interest to academics in the region who wish to deepen their studies on innovation and sustainability in the Arab world.

This is especially relevant at a time when each country is formulating its long-term strategy to address a post-oil world, where new forms of development and competitiveness are crucial to confront emerging global challenges and competitive scenarios.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Academic literature in the Arab Middle East is not only increasing in productivity but also in influence (Jamali et al., 2023), offering an opportunity to drive innovation and

entrepreneurship in the region, ultimately leading to potential transformation of its economies and enhancement of its quality of life (Zahra, 2012).

Numerous academic research has been undertaken to comprehend the dynamism in scientific publications across diverse knowledge domains in the Arab world.

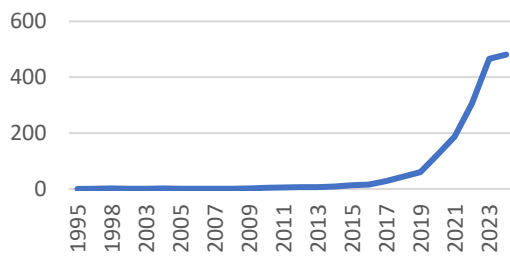
Some focal areas of scientific research in innovation and sustainability among Arab world universities may encompass subjects such as food waste as a valuable resource to produce chemicals, materials, and fuels (Lin et al., 2013). Also, topics about green innovation and organizational performance aims to analyze the influence of big data with a focus on the moderating role of management commitment and human resources practices (El-Kassar & Singh, 2019). Others explore comprehensive reviews of challenges and potential applications of integrated systems in the realm of renewable energy-driven desalination technologies (Ghaffour et al., 2015). A broader perspective is provided by studies that examine the linkages between natural resources, human capital, globalization, economic growth, financial development, and ecological footprint (Jahanger et al., 2022). In this latter work, the moderating role of technological innovations is particularly analyzed. In addition to these themes, diverse scientific studies are being conducted in Arab world universities to analyze the effects and opportunities of innovation and sustainability in the region, their impact on productive development, and their influence on business performance.

As with various studies on publications in the field of innovation within universities worldwide and their diverse regions (Roman et al., 2017; Cancino et al., 2017, 2023), it is pertinent to examine the progress that has been made in scientific publications in the Arab world concerning innovation. Today, more than ever, this analysis is crucial, especially in its connection with sustainability (United Nations, 2015).

3 METHOD

In recent years, in the Arab context bibliometric analysis has gained increasing popularity among scholars as a powerful and adaptable quantitative tool for examining bibliographic data (Román et al., 2023; Jamali et al., 2023). This paper utilizes the Web of Science Core Collection database to analyze bibliometric data from January 1995 to September 2023. The focus is exclusively on countries within the Arab world. The keywords employed in the database to select the papers were 'innovation' and 'sustainability,' for the specified time and countries mentioned. Only academic papers were taken into consideration, excluding conference papers or research notes. A total of 1,769 academic papers are analyzed.

Figure 1. Evolution of innovation and sustainability research in Arab universities.



Source: Own elaboration

Figure 1 displays a conspicuous surge in the publication of papers focused on innovation and sustainability within Arab countries, particularly following two momentous events in 2015.

4 RESULTS

The following Table 1 presents the results of the analysis.

Table 1. Ranking of countries on innovation and sustainability research in Arab universities.

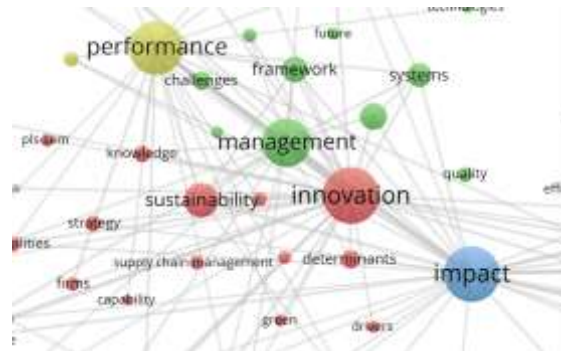
R	COU	TP	TC	H	TC/TP
1	SAUDI ARABIA	645	10,245	50	15.88
2	UAE	313	4,687	33	14.97
3	EGYPT	297	4,909	30	16.53
4	TUNISIA	130	1,461	20	11.24
5	MOROCCO	122	2,506	26	20.54
6	QATAR	120	2,199	21	18.33
7	JORDAN	102	934	17	9.16
8	LEBANON	94	1,425	16	15.16
9	IRAQ	92	1,026	15	11.15
10	ALGERIA	50	774	10	15.48
11	BAHRAIN	34	343	9	10.09
12	OMAN	30	199	9	6.63
13	PALESTINE	26	260	8	10.00
14	YEMEN	17	75	5	4.41
15	SYRIA	15	194	8	12.93

Note: R = ranking; COU = country; TP = total number of publications; TC = total number of citations; H = h-index.

Source: Own elaboration

Table 1 reveals that Saudi Arabia, the UAE, and Egypt stand out as the countries with the highest number of university researchers publishing research on innovation and sustainability. Saudi Arabia stands out with over 30% of the publications and more than 33% of the citations on the subject being analyzed. In the case of the UAE and Egypt, both countries contribute 15% of the research effort in both aspects, respectively. Undoubtedly, these three economies among Arab countries exhibit the most significant scientific research efforts in innovation and sustainability.

Figure 2. keywords used in innovation and sustainability Arab research.



Source: Own elaboration

According to Figure 2, three major clusters of topics of interest to researchers can be observed. Firstly, there is a cluster related to the management of innovation and sustainability, encompassing the analysis of determinants, strategies, and systems, among other factors. Secondly, a second cluster pertains to topics concerning impacts, whether in terms of economic growth, consumption,

renewable energy, climate change, and more. Finally, a third cluster focuses on everything related to performance, involving the examination of challenges, barriers, and issues associated with the implementation of actions that promote innovation and sustainability in various markets.

5 CONCLUSIONS

In the wake of global agreements, such as the 17 Sustainable Development Goals (SDGs) set by the United Nations and the Paris Agreement with its environmental targets, academic discourse has seen a significant surge in scholarly papers concerning innovation and sustainability within the Arab countries. The year 2015 marked a pivotal point when universities in the Arab world began expressing a heightened interest in exploring the implications of sustainable business practices, placing innovation at the core of this discourse. This academic trend mirrors the growing concern about global environmental issues and the need for innovative solutions.

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Abstract: *El impacto económico del COVID 19 afectó al sector turístico; con la cancelación de las salidas y el inicio de lo que se conoce como paralizando la actividad de este sector. De esta forma, conocer qué acciones estratégicas se deben implementar para recuperarse económicamente es vital. tiene como objetivo identificar las acciones estratégicas en las agencias de viajes de Boyacá post crisis COVID-19 utilizando operadores de agregación y técnicas difusas.*

Keywords: *tourism, fuzzy logic, aggregation operators*

1 INTRODUCTION

El sector turístico fue uno de los más afectados por la crisis de COVID-19. Esta situación denota la vulnerabilidad del sector ante crisis y desastres naturales, por lo que las decisiones son cambiantes y deben adaptarse a las necesidades del mercado, lo que desencadena importancia en la comunicación, coordinación y cooperación de las diferentes áreas en la organización (Pforr & Hosie, 2010).

Esta investigación tiene como objetivo identificar las acciones estratégicas en las agencias de viajes de Boyacá post crisis

COVID-19 utilizando operadores de agregación y técnicas difusas.

2 THEORETICAL AND CONCEPTUAL FRAMEWORK

Es importante señalar que la toma de decisiones en entornos inciertos ofrece resultados válidos a partir de la subjetividad y el razonamiento, que se infunde con la lógica difusa (Zadeh, 1965). El conjunto difuso es un marco que proporciona una forma natural de tratar los problemas en los que la fuente de imprecisión es la ausencia de juicios definitivos sobre la pertenencia a una clase en lugar de variables aleatorias (Zadeh, 1965). Así, la toma de decisiones en un entorno difuso se describe como un proceso de decisión en el que las restricciones son difusas (Bellman & Zadeh, 1970).

3 METHOD

Para el tratamiento del conjunto de datos se utilizan el método experton, el

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método OWAAC de Bonferroni, las sub-relaciones de máxima similitud, el algoritmo de Pichat y el método de análisis de incidencia relativa. El método experton permite realizar dos análisis del conjunto de datos principal. En primer lugar, la importancia de las sub-relaciones de similitud máxima del ámbito de las acciones estratégicas, que se determina utilizando el método OWAAC de Bonferroni, las sub-relaciones de similitud máxima y el algoritmo de Pichat. El segundo es el análisis de la incidencia relativa de las acciones estratégicas, que se determina utilizando el valor propio dominante, el vector propio dominante, la matriz difusa cuadrada y la composición difusa.

4 RESULTS

Los resultados muestran que se consideran de baja importancia cuando se gestionan enfocándose esencialmente en los aspectos de ejecución estratégica para mejorar la actividad económica de las agencias y la gestión del personal.

Es importante mejorar la gestión con los clientes, formar y preparar el talento humano, proyectar las nuevas oportunidades de negocio, desarrollar protocolos de bioseguridad, y optimizar la implantación de tecnología.

5 CONCLUSIONS

Entre los principales resultados fue posible visualizar tres grupos diferenciados donde las actividades que se relacionan con finanzas y mercadotecnia

tienen la mayor incidencia relativa, en contraste, con las actividades relacionadas con la transformación organizacional como modelo de negocio, formalización y sustentabilidad. Así, los hallazgos de este estudio consideran que el uso de métodos difusos permiten parametrizar las posibilidades subjetivas que tiene la continuidad de un negocio en tiempos de crisis.

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