Contents

«Retos» is a bilingual scientific publication of the Salesian Polytechnic University of Ecuador, published since January 2011 without interruption, with a fixed bi-annual periodicity (April 1 and October 1), specialized in Development and its transdisciplinary lines as Public Administration, Social Economy, Marketing, Tourism, Entrepreneurship, Management, Administrative and Economic Sciences, among others. It is a peer-reviewed scientific journal, which uses the system of external evaluation by experts (peer-review), under the methodology of blind pairs (double-blind review), according to the publication norms of the American Psychological Association (APA). The fulfillment of this system allows guaranteeing the authors an objective, impartial and transparent review process, which facilitates the inclusion of the publication in databases, repositories and international reference indexes. The Journal is published in two versions: printed (ISSN: 1390-62911) and electronic (e-ISSN: 1390-8618), in Spanish and English. All articles are available on the journal's website (http: // retos.ups.edu.ec).

Domicile of the publication: Salesian Polytechnic University of Ecuador, post office box 2074, Cuenca-Ecuador. Telephone (+5937) 2050000. Fax: (+5937) 4088958. E-mail: revistaretos@ups.edu.ec

Printed in Ecuador

EDITORIAL

Editorial Abya-Yala (Quito-Ecuador)
Avenida 12 de octubre N422 y Wilson, Bloque A,
UPS Quito, Ecuador. Casilla 17-12-719
Telephones: (593-2) 3962800 ext. 2638
E-mail: editorial@abyayala.org.ec

UNIVERSIDAD POLITÉCNICA SALESIANA DEL ECUADOR

Javier Herrán Gómez, sdb
Rector

Turuhuayco 3-69 y Calle Vieja
Casilla postal 2074
Cuenca, Ecuador.
Telephone: (+593 7) 2 050 000
Fax: (+593 7) 4 088 958
E-mail: srector@ups.edu.ec
TRADE
Trade with other periodicals is accepted.
Go to:
Secretaría Técnica de Comunicación y Cultura
Universidad Politécnica Salesiana
Av. Turuhuayco 3-69 y Calle Vieja
Postal Code 2074
Cuenca, Ecuador.
PBX: (+593 7) 2 050 000 - Ext. 1182
Fax: (+593 7) 4 088 958
E-mail: rpublicas@ups.edu.ec
www.ups.edu.ec
Cuenca - Ecuador

Retos

Revista de Ciencias de la Administración y Economía
Year X, Issue 19, March-August 2020
Print ISSN: 1390-6291 / electronic ISSN: 1390-8618
The management of RETOS is carried out through the following parameters:

The journal uses the anti-academic plagiarism system Crossref Similarity Check Powered by iThenticate URKUND

The articles have an identification code *(Digital Object Identifier)* doi

The editorial process is managed through the OJS Open Journal Systems *Open Journal System*

The articles of the present edition can be consulted in: http: //magazines.ups.edu.ec/index.php/retos

ABYA YALA UNIVERSIDAD POLITÉCNICA SALESIANA

SALESIANOS DON BOSCO

Retos, 10(19), 2020
Journal of Administration Sciences and Economics | p-ISSN: 1390-6291| e-ISSN: 1390-8618
www.retos.ups.edu.ec

SEM model based on organizational values and intellectual capital: a study conducted in entities of the Peruvian financial system

Modelo SEM basado en valores organizacionales y capital intelectual: un estudio realizado en entidades del sistema financiero peruano

Luis Alberto Geraldo Campos is a professor at Universidad Peruana Unión (Perú), (luis.geraldo@upeu.edu.pe) (https://orcid.org/0000-0002-8366-689X)

Dr. Juan Jesús Soria Quijaite is a professor and researcher at Universidad Peruana Unión (Perú), (jesussoria@upeu.edu.pe), (https://orcid.org/0000-0002-4415-8622)

Dr. Pedro Leonardo Tito Huamaní is a professor and researcher at Universidad Nacional Mayor de San Marcos (Perú), (ptitoh@unmsm.edu.pe), (https://orcid.org/0000-0002-2989-9203)

Abstract

The research analyzes the effect of organizational values on the dimensions of intellectual capital: human capital, structural capital and relational capital. The importance of the study of constructs lies in the generation of knowledge, which has become a main resource for companies, leading them to worry about the intangible nature of the organization. Organizational values, as the fundamental basis of the organization, provide support for the business union, therefore, there is a need to address these constructs. The study was carried out under the methodology of structural equation models (SEM), where an exploratory and confirmatory analysis was performed with a sample of 207 organizations from 15 financial entities, and was based on the instrument of the profile inventory in organizational values. Similarly, the intellectual capital instrument was determined to see the effect that endogenous variables have on exogenous ones. The results that show organizational values have a significant causal relationship with intellectual capital and constructs; human capital (r=0.90), relational (r=0.63) and structural (r=0.89) with a mean square error of approximation (RMSEA) of 0.08 and a minimum discrepancy by degree of freedom (CMIN/df) of 2.398 which makes relevant the confirmatory model. Finally, a significant and positive causal relationship was found among the eight organizational values, which are positively influenced in human, structural and relational capital.

Resumen

La investigación analiza el efecto de los valores organizacionales en las dimensiones de capital intelectual: capital humano, capital estructural y capital relacional. La importancia del estudio de los constructos radica en la generación de conocimiento, esto se ha convertido en un recurso fundamental para las empresas, llevándolas a preocuparse por lo intangible de la organización. Los valores organizacionales, como base fundamental de la organización, brinda soporte para el gremio empresarial, por lo tanto, existe la necesidad de abordar estos constructos. El estudio se realizó bajo la metodología de modelos de ecuaciones estructurales (SEM), donde se realizó un análisis exploratorio y confirmatorio, con una muestra de 207 funcionarios de 15 entidades financieras, y se basó en el instrumento del inventario de perfil en valores organizacionales, de igual modo, el instrumento de capital intelectual, tuvo la finalidad de determinar el efecto que tienen las variables endógenas sobre las exógenas. Los resultados muestran que los valores organizacionales tienen relación causal significativa con el capital intelectual, y los constructos; capital humano (r=0.90), relacional (r=0.63) y estructural (r=0.89) con un error cuadrático medio de aproximación (RMSEA) de 0.08 y una discrepancia mínima por grado de libertad (CMIN/df) de 2.398 que hace relevante el modelo confirmatorio. Finalmente, se encontró una relación causal significativa y positiva entre los ocho valores organizacionales, los mismos que están influenciados de manera positiva en el capital humano, estructural y relacional.

Keywords | palabras clave

Organizational values, intellectual capital, human capital, structural capital, relational capital, Structural equations, SEM Model, financial system.
Valores organizacionales, capital intelectual, capital humano, capital estructural, capital relacional, Ecuaciones estructurales, Modelo SEM, sistema financiero.

Suggested citation: Geraldo Campos, L. A., Soria Quijaite, J. J., & Tito Huamaní, P. L. (2020). SEM model based on organizational values and intellectual capital: a study conducted in entities of the Peruvian financial system. *Retos Revista de Ciencias de la Administración y Economía, 10*(19), 5-27. https://doi.org/10.17163/ret.n19.2020.01

Received: 29/10/2019 | Reviewed: 17/11/2019 | Approved: 22/11/2019 | Published: 01/04/2020

Retos, 10(19), 2020

1. Introduction

Over the years, intense disruptive transformations driven by the demands of market competitiveness, information and economic globalization, have presented major challenges in the management of organizations, emerging new ways of diagnose in understanding business behavior. Because of the latter, new concepts such as intellectual capital (IC) have emerged, which provides important contributions for continuous improvement, with the aim of gaining sustainable and innovative competitive advantage, through the three dimensions of capital: human capital, structural capital and relational capital (Demuner *et al.,* 2017; Morales, 2017; Oro *et al.,* 2017).

The lack of knowledge in the different companies regarding the application of intellectual capital over the years showed marked deficiencies in South America. Developed countries in the world have given greater importance to the scientific study of knowledge management and intellectual capital, creating the need to be more competitive in the face of a market of constant change, because of competitiveness and the constant innovation through the management of intellectual capital, it has served as the basis for the development of organizations and the achievement of business success (Monagas, 2012; Osorio, 2003; Pérez & Coutín, 2005; Velásquez, 2015)

Under constant change and concern for market positioning, organizations retain in detail the intangible part of the company, which is part of their strategic plan involving intellectual capital and securities organization; the latter, is the support of the organization along with the policies, vision and mission of the company (Estivalete & Andrade, 2012; Oliveira & Tamayo, 2004). It is important to address these constructs, because financial firms do not emphasize the contribution of organizational values. In addition, Velasquez (2007) mentions that if organizations do not consider organizational values, they will have a negative effect on the achievement of objectives, such as the presence of conflicts, problems with the adaptability of employees, difficulties in implementing a strategy, difficulties in implementing an improvement program, implying low productivity and quality among other problems that will prevent the success of the company.

Camps (2015) state that companies would not complicate when values should be oriented through human behavior; however, the same happens with organizations, because the practice of values is not emphasized. In contrast to Camps, Siles (2013) found a preference of businessmen in seeking collaborators who promote and practice ethical values in the development of activities.

The preference of companies for collaborators with ethical values is increasing, because the practice of values influences the behavior of the members and orients the good performance of the company, in addition to acting as integrative elements and with knowledge of strategies for achieving objectives (Alcover, Martínez, Rodríguez & Domínguez, 2004; Oliveira & Tamayo, 2004). These profiles are considered by the authors as a bridge between the formal characteristics of the organization and individual behavior, since it is built through the perceptions and beliefs of the members of an organization.

The difficulties of intelligent organizations are caused by a lack of basic models for the orientation in the processes and alignments of structural capital, development of human capital and relational capital, which lead to the growth and fulfillment of the organization's vision. The research was conducted with a multiple correlational

methodology with structural equations based on theories (SEM) (Alaminos *et al.,* 2015; Brown, 2015; Byrne, 2010; Catena *et al.,* 2003; Hayes, 2013; Manzano & Zamora, 2009; Raykov & Marcoulides, 2006), with a sample of 207 officials from 15 financial institutions, with the aim of determining the effect of organizational values on intellectual capital. These constructs encompass the bonding degree of workers and the organization. Today, large institutions in the financial sector seek to be more competitive in all aspects. The interest of this investigation relies on the fact that they can determine the contribution they make to the organization, reason for which the study responds to the hypotheses that were raised based on the organizational values (Oliveira & Tamayo, 2004) and the three dimensions of intellectual capital (Martín *et al.,* 2009), human capital, structural capital and relational capital, from an intangible perspective.

1.1. Organizational values

Organizational values (OV) have always predominated in companies due to the way in which they can guide the behavior of the collaborator (Demo *et al*., 2017), as well as the convictions and attitudes of those who are part of the enterprise (Hassan, 2007). These organizational values are derived from some basic assumptions of human nature which work as the core of organizations, thus, allowing to cause a marked tendency direction, integrity and self-discipline in people (Chiavenato, 2009).

Organizational values are part of the strategic plan, where they must be clearly raised and explained to collaborators with the purpose that they are always present in the development of activities as in mechanisms, processes, behaviors and even in structure, since these allow to align strategies in the fulfillment of goals and objectives (Jaakson, 2010; Schein, 2004). In addition, organizational values play an important role in meeting the needs of individuals as well as meeting organizational objectives (Tamayo, 2007), for this purpose, it is important that companies have regulated and internalized the fundamental values for achieving the main goals (Velásquez, 2007).

Today, companies are constantly changing under a complex culture influenced by beliefs, lifestyles and the way people think and perceive when they interact (Revilla, 2013). These elements are basically agents of change that impact the organization, that is why Oliveira and Tamayo (2004) group the organizational values into four aspects.

Table 1. Aspects that group the organizational values

Types of aspects	Description
Cognitive aspects	They are the beliefs of collaborators within an organization and how they conceive the reality and response to the company's problems.
Motivational aspects	These aspects show the interests and wishes of the collaborators in a certain teamwork.
Function of values	The function of values allows to guide people's lives by delimiting the way they think and act
Hierarchy of values	As for the hierarchy, it implies the preference and distinction between what is important and what is secondary.

Source: Oliveira and Tamayo (2004)

Retos, 10(19), 2020

However, Oliveira and Tamayo (2004) for better accuracy of the values proposed by Schwartz's theory (1992), conducted a study with the aim of determining an inventory of profiles on organizational values, which are described in Table 2.

Table 2. Inventory of Organizational Value Profiles (IOVP)

Organizational values	Criteria
Execution (EX)	Based on the elements on competencies of the collaborators that are decisive to achieve success.
Compliance (COM)	Based on the elements on competencies of the collaborators that are decisive to achieve success.
Domain (DOM)	Based on the power, the obtaining of status, the control over people and the market resources.
Wellness of the collaborator (WELL)	Based on fostering satisfaction for its collaborators, especially their quality of life
Tradition (TRAD)	Based on the search for the preservation of the customs and practices of the organization.
Organizational prestige (PRET)	Based on the search for prestige and influence in the society due to the quality of its products.
Autonomy (AUT)	Based on constant improvement through the valorization of creativity, experience, competencies and curiosity.
Concern by the collectivity (CBC)	Based on the relationships the company has with individuals and the community.

Source Oliveira and Tamayo (2004)

These values are very important as other elements that make up the company, because they will always be reflected when trading in the market. In addition, companies in the financial sector must implement or adjust their organizational values according to the changes that have arisen over time, allowing to align collaborators in an effective performance (Villalobos, 2014), this will make it easier for the company to have workers able to better expand their skills and increase their contributions to the entity.

Organizational values are a key piece, and according to Ramírez, Sánchez, & Quintero (2005) these should be communicated, disclosed and adopted as individual values as they will be the basis for beliefs, attitudes, opinions, "perceptions" and organization's behaviors, producing an identity and a strong corporate image in the competent market (Estivalete & Andrade, 2012). Compared to (Ramírez *et al.,* 2005; Velásquez *et al.,* 2012) the authors argue that organizational values are basic principles for the fulfillment of the objectives, since when assumed by the company, they will have an effect on the behaviors of the collaborators, generating a support for the promoting conditions and guidelines for the company's success. For Romero & Izarra (2014), they are not only the basis or principles, but they are also the platform for the identity and understanding of workers, in turn, shared values are the root of the organization and generate help for people and companies when they are put into

practice. In addition, these must be present in each company and must be communicated during the early stages of staff incorporation, not forgetting to constantly train the old staff, starting with the leaders of the company, because they are the example for their collaborators (Hernández *et al.,* 2015; Javier & Quintana, 2017; Ramírez *et al.,* 2005; Yarce, 2000).

Finally, it is evident the great support and contribution that organizational values provide to the organization. The use is to communicate and promote them in a holistic way, resulting in a positive impact in the internal and external sphere, i.e., generating a spirit of commitment and differentiation in the collaborators with the values practiced in collaborators of other companies.

1.2. Intellectual capital and its dimensions

Intellectual Capital (IC), is a concept that has been used for several decades, allowing companies and researchers to better deepen on the subject (A. J. Sánchez *et al.,* 2007), since then, various definitions have been addressed (Villegas *et al.,* 2017), thus it is necessary to understand the concept and importance of this construct.

Some researchers tried to define the construct, as is the case of (A. J. Sánchez *et al.,* 2007) who indicate that intellectual capital is "the knowledge and it will become on benefit in the future, and it is made up of ideas, inventions, technologies, software, designs and processes" (p.3), doing all that the company counts as intangible (Rimbau-Gilabert & Myrthianos, 2014); and it is made up of skills and talents, applications, patents, suppliers, customer information and all the experience that can be built, recognized, value and defined (Sánchez, 2012; Vidal, 2017). In addition, (A. J. Sánchez et al., 2007) concludes that these elements include the ability to learn and adapt in the brands, product names and the capacity for innovation and development, i.e., intangible capital is that capital that involves internal elements such as those that allow it to link with the external of the company, for that reason it is divided into three dimensions, human capital, structural capital and relational capital.

Intellectual capital has evolved since the 1990s through various proposed models, starting from the dimensions and the elements that make it up, see Table 3.

Table 3. Type of intellectual capital

Models/Authors	Human capital	Strutural capital	Relational capital
Table of integral management (Kaplan and Norton, 1993)	Knowledge and growth perspective	Perspective of internal processes	Clients´s perspective
Skandia browser (Edvisson, 1997)	Human approach	Process approach	Client´s approach
Monitor of intangible assets (Sveiby, 1997)	Competences	Internal structure	External structure
Intelect (Euroforum, 1998)	Human capital	Structural capital	Relational capital
Intellectus (CIC, 2003)	Human capital	Technological capital o rganizational capital	Business capital Social capital

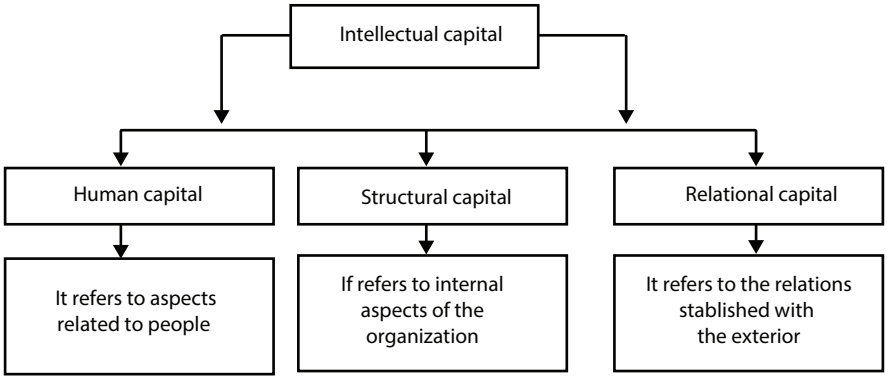
Retos, 10(19), 2020

Chen, Zhu, and Yuan, 2004	Human capital	Innovation capital Structural capital	Client capital
Bueno, Salvador and Rodríguez, 2004	Human capital	Technological capital Organizational capital	Business capital Social capital
Guthrie, Petty, Yongvanich, 2004	Human capital	Internal capital	External capital
Ordóñez Pablo, 2004	Human capital	Structural capital: Technological capital and Organizational capital.	Relational capital
Joia, 2004	Human capital	Structural capital: Internal capital, External capital and Innovation capital	

Source: (Yangali & Quiróz, 2018, p. 44)

According to the models proposed, the authors group based on three dimensions: human capital, structural capital and relational capital that contribute to intellectual capital (Brooking, 1996; Chahal & Bakshi, 2016; Edvinsson & Sullivan, 1996; Euroforum, 1998), these can be seen in Figure 1.

Figure 1. Dimensions of intellectual capital



Source: Own elaboration.

These dimensions allow employees to make the most of their ability to learn and innovate in the company, standing out the human capital, the element of which is the predominant over the other two intangible capitals, which must be used in their totality through the company's workforce (Rimbau-Gilabert & Myrthianos, 2014).

1.2.1. Human capital

Human Capital (HC), is the main dimension of the intellectual capital. Edvinsson and Malone (1998) emphasize that it consists of the skills, attitudes, and knowledge that each member of the company has, and that these cannot be owned by the company. Martin *et al.* (2009) indicate that this element is the basic knowledge of people that help improve the activity of the company, having as its own feature the impossibility of separating intangible assets from the people who develop them.

This type of capital usually focuses on the character of the employees through their knowledge, skills and efforts, increasing their productivity (Sen, 1998), this in turn, usually reaches the company individually when recruiting the new talents for the organization (Fernández, Montes, & Vázquez, 2010), some collaborators are relocated or promoted by the fact that they have invested in knowledge management through experience and training effectively and actively, allowing them to expand their capital reserves and have better opportunities, therefore, greater chance of achieving higher returns in the future for the company (Araujo, 2015; Marchante & Ortega, 2010).

However, in order for the company to increase its profitability, it must make the most of human capital, since employees concentrate a great innovative capacity (Pizarro *et al.,* 2011) not placing more emphasis on the value they have, because there is the risk that that human capital is transferable by easily taking the know-how to other companies. Thus, in order for this human capital not to be transferable, it is suggested that the company invest in its talent to increase productivity, profitability and greater employee innovation (Kido & Kido, 2015; Martín *et al*., 2009)

In the search for recent studies that link human capital to organizational values, only small content differences that link these constructs were found. Williams (2002) states that organizational values (...) serve as a mechanism of linkage between collaborators, i.e., with human capital. Fitzgerald and Desjardins (2004) indicate that if employees have well-defined and communicated organizational values, they will be more involved and more participatory in the decision-making of the organization.

Therefore, under the problem of studying these constructs together and corroborating with the scarce theory, the theoretical model of human capital and organizational values is raised based on the hypotheses:

H0ch: There is no significant effect between organizational values and human capital
H1ch: There is a significant effect between organizational values and human capital

1.2.2. Structural capital

Structural Capital (SC) is that dimension based on systems, procedures, databases and it constitutes the most explicit form of intellectual capital (Rimbau-Gilabert & Myrthianos, 2014); i.e., that knowledge that the company acquires and is responsible for analyzing, systematizing and internalizing (Euroforum, 1998), generating for itself differentiating competitive advantage in the company, whose capital remains in the organization (Fernández-Jardón & Martos, 2016; Ibarra-Cisneros & Hernández-Perlines, 2019).

Retos, 10(19), 2020

Then, as this capital remained within the organization, it will influence other intangible assets, allowing a flow of knowledge and perfecting efficiency by properly building the various work of the organization, therefore it will depend on the size and seniority to make this capital more profitable for the company (Edvinsson & Malone, 2004; Herrera & Macagnan, 2015), it will also be an essential resource to face the competition (Fernández-Jardón & Martos, 2016).

Various models of intellectual capital have been postulated, allowing some of the researchers in this line to divide structural capital into two types of capital.

Table 4. Types of structural capital

Types	It refers to
Organizational capital	The structural design, the coordinated process, the organizational routines, the culture and behavior of the teamwork, the planning and control of activities.
Technological capital	The patents, the know-how, the industrial property it owns, as well as the industrial secrecy and technical experience that the company has acquired.

Source: Navas and Ortiz (2002)

Structural capital is focused under these two capitals, and this capital is reflected in companies even though many of these are only operating on the internet (Eyzaguirre, 2017; Mercado-Salgado, 2016; Vidal, 2017). This allows the creation of new strategies of organizational and technological capital, motivating a continuous improvement by the business sector.

However, like human capital, there are few studies linking structural capital with organizational values. Human capital is an intermediary that allows to link structural capital with organizational values, the employees being the ones who intervene in the processes and tasks that demand social interaction (Arciniega, Woehr & Poling, 2008); in this sense, organizational values are reflected in the processes, mechanisms, behaviors and structures of the organization, with the purpose of achieving the planned objectives and goals (Jaakson, 2010; Navas & Ortiz, 2002; Rimbau-Gilabert & Myrthianos, 2014; A. J. Sánchez *et al.,* 2007; Schein, 2004). Then, OV with the SCwill also be linked to systems, procedures and databases (Rimbau-Gilabert & Myrthianos, 2014). Based on this, there is a link with the organizational capital and the technological capital (Navas & Ortiz, 2002), in order to be able to complement each other when carrying out any activity during the financial year of the organization.

Therefore, the theoretical model of structural capital and organizational values is established based on the following hypotheses:

H0ce: There is no significant effect between organizational values and structural capital
H1ce: There is a significant effect between organizational values and structural capital

1.2.3. Relational capital

One of the three capitals is relational capital (RC), which consists of the company's relationship with suppliers, customers and external agents who have been able to contact the company over time. Since it is transcendental in the decision-making through technological tools and since it is supported by human capital and structural capital, it directly influences relational capital supported by brand, loyalty and the same relationships with suppliers (Kogut & Zander, 1996; Martín *et al.,* 2009; Martínez & Cegarra, 2003; Navas & Ortiz, 2002; Rimbau-Gilabert & Myrthianos, 2014).

In the same way, it influences those intangible assets that the company obtains when it maintains relationships with agents from its environment such as customers, suppliers and allies (Alzate Ortiz, & Jaramillo Arenas, 2015), producing a superior knowledge that arises in coordination and combination of some of the knowledge of each of the actors involved in the relationship. In addition, it provides information about the interests shown by the actors in the environment, which are decisive in detecting technological or market opportunities that guide the process of developing new knowledge (Martín *et al.,* 2009).

Based on the interests of the agents, Navas and Ortiz (2002) classified agents into two types, external agents and internal agents, not leaving aside the so-called market capital, which collects the external relations of the company, considered from a wide point of view. It should be emphasized that companies will always seek to establish links with companies in other sectors, including those of the competition. The human capital plays an important role, which will expand the network of contacts with these companies and that will allow it to fulfill its established strategic purposes.

In the search to link relational capital with organizational values, Revilla (2013) indicates that organizational values have a link to the moment when relating to people, and this is reflected when coming into contact with internal and external customers (Navas & Ortiz, 2002; Revilla, 2013; Santos *et al.,* 2011), i.e., in the relationship with customers, suppliers and allies (Kogut & Zander, 1996; Martín et al., 2009; Martínez & Cegarra, 2003; Navas & Ortiz, 2002; Ortiz & Arenas, 2015; Rimbau-Gilabert & Myrthianos, 2014).

To corroborate these theoretical postulates, this research focuses on the problem of establishing the theoretical model of relational capital and organizational values based on the following hypotheses:

H0cr: There is no significant effect between organizational values and relational capital
H1cr: There is a significant effect between organizational values and relational capital

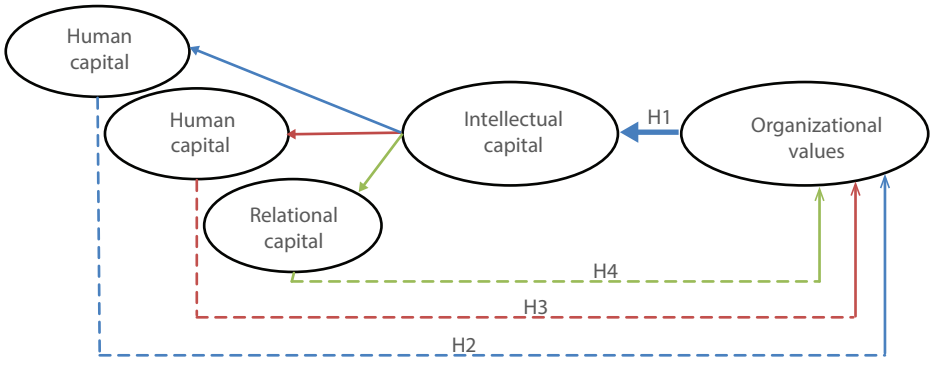
2. Materials and methods

In this study, the effect of organizational values on the dimensions of intellectual capital is analyzed. To determine the effect of organizational values on human capital, structural capital and relational capital, a multivariate analysis with Structural Equation Models (SEM) was used according to (Alaminos *et al.,* 2015; Brown, 2015; Byrne, 2010; Catena *et al.,* 2003; Hayes, 2013; Manzano & Zamora, 2009; Raykov &

Retos, 10(19), 2020

Marcoulides, 2006; Saboya *et al.,* 2019). This type of analysis examines simultaneously a series of dependency relationships with the aim of developing more systematic and holistic perspectives of the problems addressed, as well as leading to deeper reflection (Alaminos *et al.,* 2015; Hair *et al.,* 2007; Manzano & Zamora, 2009). The theoretical model depicted in Figure 2 was raised.

Figure 2. Graphical sequence of relationships of the constructs



Source: Own elaboration

The Structural Regression Model was raised for Model Analysis (SEM), which allows the association between latent variables (Manzano & Zamora, 2009).

Structural model:

$$\eta = B\eta + \Gamma X + \zeta \quad (1)$$

Measurement model:

$$Y = \Lambda_X \eta + \varepsilon \quad (2)$$

$$X = \Lambda_Y \xi + \delta \quad (3)$$

The study population consists of objects or individuals that have a quantity or characteristics (Ghozali, 2006). In the research the study population were 15 organizational entities, as shown in Table 5, which are part of the Peruvian financial system between Banks, Cooperatives, Financials, Rural and Municipal Funds, which applied the instrument of organizational values (Oliveira & Tamayo, 2004) and intellectual capital (Martín *et al.,* 2009) to 207 senior, middle-command and operational officials with a link of no less than 6 months. The instruments were applied by the researchers, with 15 requests submitted to the organizations under study and upon authorization, with a duration of 05 months, starting from January 12 to May 04, 2019.

Table 5. Sampling of financial institutions

N°	Financial institution	Surveyed
1	Banco de Crédito del Perú	16
2	Scotiabank	13
3	Financiera Crediscotia	20
4	Caja Maynas	18
5	Mibanco	20
6	Caja Trujillo	16
7	Cooperativa San Martin de Porres	18
8	Financiera Confianza	13
9	Banco de la Nación	1
10	Interbank	15
11	BBVA Banco Continental	10
12	Caja Metropolitana	3
13	Caja Paita	16
14	Caja Piura	15
15	Cooperativa de Ahorro y Crédito la Progresiva	13
Total		207

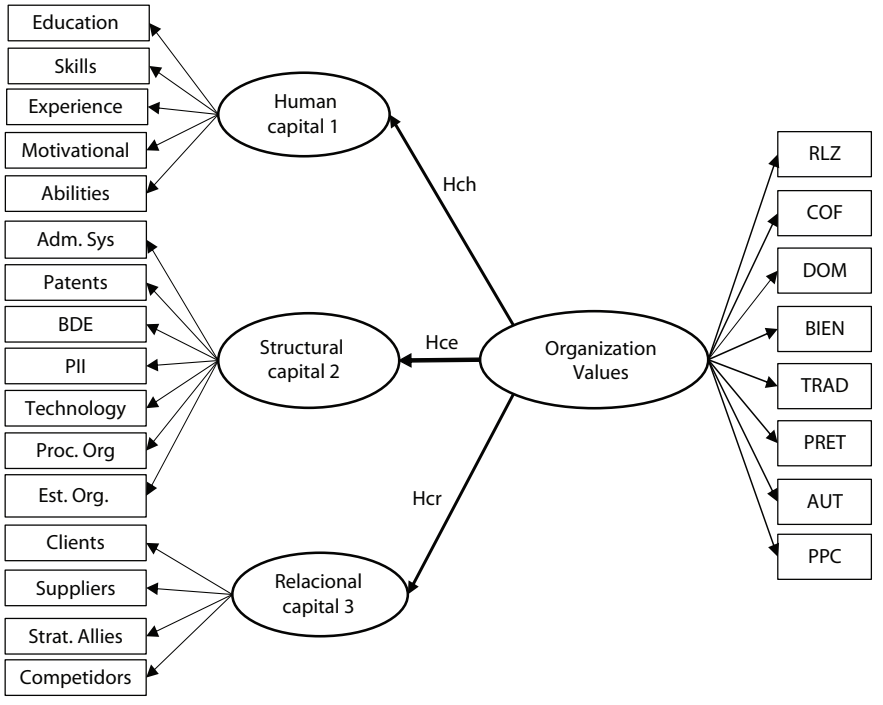
Source: own elaboration

As suggested by Westland (2019) before the descriptive and positive tests, it is important to analyze the data, because of the nature of the variables in this study that are ordinal with Likert scale responses. Westland points out that the selection will help isolating the characteristics of the data and will allow the data to be adjusted before an additional multivariate analysis. In addition, it is considered what was suggested by Tabachnick, Fidell, and Ullman (2007) to pre-review the data, i.e. assumptions for prior analysis.

The data analysis used the Statistical Product and Service Solutions (SPSS) companion tool called AMOS version 25 to compile the theoretical model proposed by the researchers (see Figure 3), seeking the validation to theoretical hypothesis raised.

Retos, 10(19), 2020

Figure 3. General model of theoretical hypotheses



Source: own elaboration

3. Results

3.1. Characterization and evaluation of the SEM model

The SEM model in Figure 4 identifies the standardized estimated values of the complex general model, giving sufficient conditions for its estimation. According to (Alaminos *et al.,* 2015; Bollen, 1989; Browne & Cudeck, 1992; Byrne, 2010; Catena *et al.,* 2003; Manzano & Zamora, 2009; Raykov & Marcoulides, 2006; Schumacker & Lomax, 2010) the SEM model used global adjustment measures to validate the theoretical model shown in Figure 8.

According to Figure 4 a standardized factorial load of 0.88, 0.84 and 0.64, respectively was obtained where surface variables provide a causal relationship to exogenous variables influenced by endogenous variables, equivalent to the results of Table 6. It was determined that the SEM model of Organizational Values and the three types of intellectual capital without modification as shown in Table 6, showed a Chi-square value at 710.970 and a probability level $\rho = 0.000$ with 249 degrees of freedom.

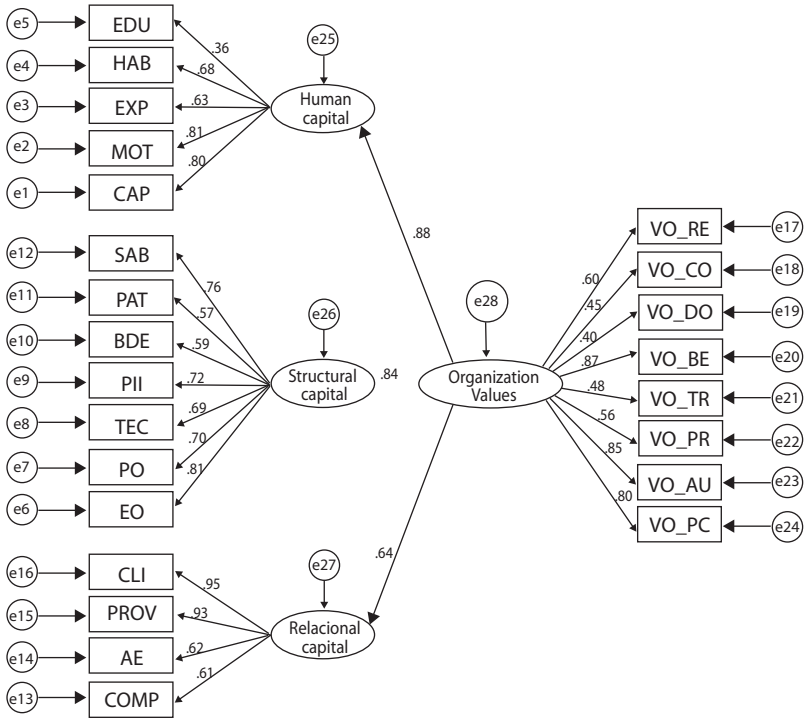
Table 6. Global adjustment measures without modification

Adjustment measure	X^2	df	NP	CMIN/df	CFI	RMSEA
	710.970	249	0.000	2.855	0.815	0.103

X^2= Chi-square; *df* = freedom value; NP = Probability value; CMIN/df = Chi-square/freedom degree; GFI = Goodness of fit index; RMSEA = Quadratic mean approximation error.

Also, the overall adjustment measures have a CMIN/df equal to 2,855 which is relevant and a CFI equal to 0.815 which is also significant as opposed to RMSEA equal to 0.103, which is significant but not within the allowed parameters according to (Browne & Cudeck, 1992; Schumacker & Lomax, 2010).

Figure 4. SEM organizational model values and intellectual capital types without modification



Source: own elaboration

In Table 6 where RMSEA that is not within the allowed parameters is shown, a reset of the SEM model errors was made, obtaining the model in Figure 5. A SEM model of organizational values and the three types of intellectual capital (Human Capital, Structural Capital and Relational Capital) was confirmed as shown in the

Retos, 10(19), 2020

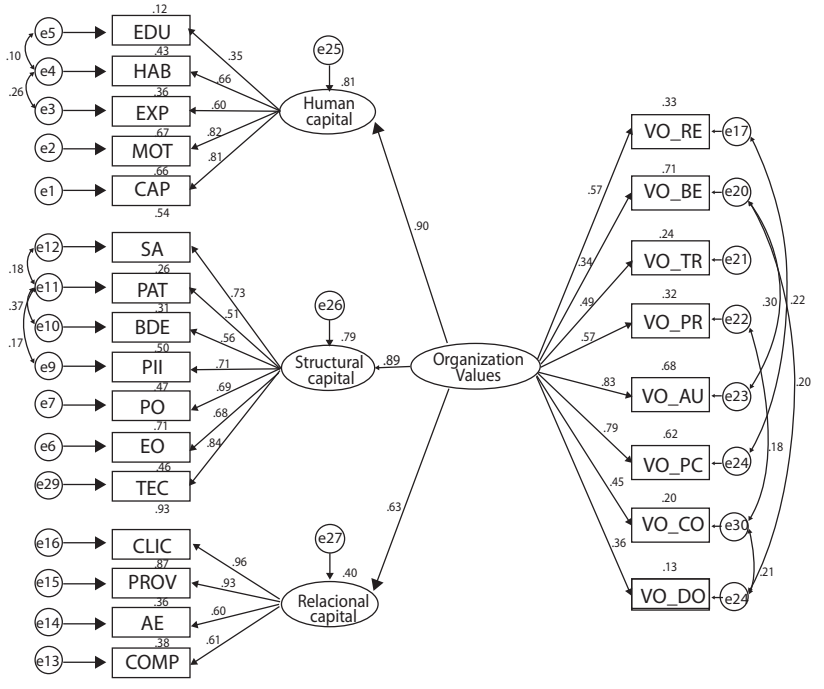
figure above. In addition, a Chi-square was obtained at 516.186 and a probability level $\rho = 0.000$ that even though is lower than the significance level of α = 0.05 allowed to validate the SEM model with *df* = 199. In addition, the modified global fit model (Table 7) yielded a CMIN/df equal to 2,594 that is relevant, a GFI equal to 0.805, a CFI equal to 0.868, a PCFI of 0.748, which are all significant. It should be emphasized that the result of the modified global adjustment model obtained a RMSEA equal to 0.079, being within the established parameters (the value from .05 to .08 indicates a perfect fit) according to (Browne & Cudeck, 1992; Schumacker & Lomax, 2010), the new SEM model in Figure 5 is accepted.

Table 7. Modified Global Adjustment Model

X^2	df	NP	CMIN/df	GFI	CFI	PCFI	RMSEA
570.688	238	0.000	2.398	0.798	0.867	0.748	0.08

X^2 = Chi-square; *df* = Degrees of freedom; NP = Probability Level; CMIN/df = Chi-square/ degrees of freedom; GFI = goodness-of-fit index; CFI = comparative adjustment index; PCFI = Adjusted Parsimony Measures; RMSEA = Quadratic mean approximation error.

Figure 5. SEM model of organizational values and the three types of intellectual capital with modifications



Source: Own elaboration.

In Figure 5 it can be observed that the endogenous variable and the human capital have a causal relationship to superficial variables, abilities (CAP) with a standardized estimator (causal relationship) of 0.812, motivations (MOT) with a standardized estimator of 0.816, skills (HAB) with a standardized estimator of 0.659, and experiences (EXP) with a standardized value of 0.600 of the study partners. In addition, the Education Indicator (EDU) has a standardized value of 0.346, and by looking at the p-value it can be observed that this value provides a causal relationship to human capital, which must be reinforced with training and other indicators related to education.

The second endogenous variable, structural capital, has a causal relationship with its most significant indicators such as the organizational structure (EO) with a causal relationship of 0.843, the administrative system (SA) with a causal relationship of 0.733, the intellectual property (PII) with a causal relationship of 0.708, the organizational process (PO) with a correlation of 0.688, technology (TEC) with a causal relationship of 0.676, the strategic database (BDE) with a correlation of 0.557, and finally patents (PAT) with a causal correlation of 0.507.

In the third endogenous variable, relational capital, has a causal relationship with its most significant indicators such as customers (CLI) with a causal correlation of 0.963, suppliers (PROV) with a causal relationship of 0.933, competitors (COMP) with a causal relationship of 0.613 and finally the allies (AE) with a causal correlation of 0.598.

On the other hand, the exogenous variable of organizational values shows the most relevant loads of exogenous surface variables, where the categorization concentration is well-being (VO_BE) with a causal correlation of 0.840, autonomy (VO_AU) with a causal correlation of 0.825, concern for collectivity (VO_PC) with a causal correlation of 0.787, compliance (VO_RE) with a causal relationship of 0.575, the prestige of the company (VO_PR) with a causal relationship of 0.567 and the least significant tradition (VO_TR) causal relationship of 0.491, conformity (VO_CO) with a causal relationship of 0.446 and the domain (VO_DO) with a causal relationship of 0.491 causal relationship of 0.358, which has not placed much emphasis on these values, respectively.

3.2. Testing and validation of the hypotheses raised

Figure 3 is made of assumptions (Hch, Hce and Hcr) with the theoretical structural model of SEM structural equations, Figure 4 confirms that there are causal correlations of influence and prediction between exogenous and endogenous variables under study, but modifications were made because goodness-of-fit indices were not within the parameters established according to the theory (Browne & Cudeck, 1992; Catena *et al.,* 2003; Schumacker & Lomax, 2010), a modified adjusted SEM model was obtained and was presented in Figure 5.

It is seen under the modified confirmatory SEM structural model in Figure 5 and the results of standardized estimates as shown in Table 8, that the estimators are higher than 0.5 with the exception of education (EDU) with 0.346 with a significant p value. In this sense, the first theoretical hypothesis raised by rejecting the null hypothesis H0ch and accepting the alternating H1ch is corroborated, confirming that there is a significant effect between the organization values and the human capi-

Retos, 10(19), 2020

tal with an effectiveness index of 0.902. The second hypothesis, H1ce, raised in the theoretical model confirms that there is a significant effect between the exogenous variables, organizational values and the endogenous structural capital variable with an effectiveness index of 0.887. In addition, the third hypothesis in the structural equations model confirms that there is a significant effect between organizational values and relational capital variable with an effectiveness index of 0.633.

Table 8. Regression and Standardized Weights of the Default Model

Causative relation			Estimate	S.R.W.	S.E.	C.R.	P
Human Capital_	<---	Organizational Values	.743	.902	.100	7.429	***
Structural Capital_	<---	Organizational Values	4.645	.887	.615	7.553	***
Relational Capital_	<---	Organizational Values	.601	.633	.109	5.534	***
CAP	<---	Human Capital	1.000	.812			
MOT	<---	Human Capital	1.753	.816	.149	11.728	***
HAB	<---	Human Capital	1.823	.659	.202	9.006	***
EDU	<---	Human Capital	.718	.346	.163	4.416	***
EXP	<---	Human Capital	1.828	.600	.227	8.064	***
EO	<---	Structural Capital	1.000	.843			
PO	<---	Structural Capital	.174	.688	.017	10.002	***
PII	<---	Structural Capital	.515	.708	.050	10.399	***
BDE	<---	Structural Capital	.087	.557	.011	7.680	***
PAT	<---	Structural Capital	.097	.507	.014	6.799	***
SA	<---	Structural Capital	.219	.733	.020	10.902	***
TEC	<---	Structural Capital	.110	.676	.011	9.785	***
COMP	<---	Structural Capital	1.000	.613			
AE	<---	Structural Capital	1.004	.598	.099	10.144	***
PROV	<---	Structural Capital	1.357	.933	.142	9.555	***
CLI	<---	Structural Capital	2.514	.963	.262	9.609	***
VO_TR	<---	Organizational Values	1.598	.491	.287	5.563	***
VO_PR	<---	Organizational Values	1.237	.567	.199	6.206	***
VO_PC	<---	Organizational Values	4.482	.787	.520	8.614	***
VO_AU	<---	Organizational Values	4.255	.825	.537	7.922	***
VO_RE	<---	Organizational Values	1.000	.575			
VO_BE	<---	Organizational Values	3.298	.840	.412	8.003	***
VO_CO	<---	Organizational Values	.855	.446	.166	5.137	***
VO_DO	<---	Organizational Values	.546	.358	.129	4.249	***

S.R.W. - Standardized Regression Weights; S.E.-Estimate Standardized

4. Conclusions and discussion

The results of the study reveal a significant and positive causal relationship between the eight organizational values (RLZ, COF, DOM, BIEN, TRAD, PRET, AUT and PPC), which are positively influencing the human capital, structural capital and relational capital, respectively.

In the first instance, the causal relationship of organizational values over the human capital makes it possible to emphasize that there is good practice of organizational values on the part of officials, this is because the values have been shared (Alcover, C., Martínez, D., Rodríguez, F. and Domínguez, 2004; Oliveira & Tamayo, 2004), disclosed (Ramírez *et al.,* 2005) and internalized (Velasquez, 2007). In this sense, human capital has great respect for preserving the brand and practicing good customs (Oliveira & Tamayo, 2004), this will be mentioned when it is linked to the very structure of the entity (CE2) (Jaakson, 2010; Schein, 2004), i.e., the company's administrative systems, patents, database and intellectual property (Navas & Ortiz, 2002; Rimbau-Gilabert & Myrthianos, 2014), influencing in the relation of their members with the external agents (CR3) (Kogut & Zander, 1996; Martín et al., 2009; Martínez & Cegarra, 2003; Navas & Ortiz, 2002; Rimbau-Gilabert & Myrthianos, 2014), and respecting the practice of values (Hassan, 2007) as the traditional culture policies of the company.

The effect of the organizational values exposed in the modified SEM model against the human capital in the causal relationship is higher than in the structural and relational capital, because this human capital predominates over other capitals (Rimbau-Gilabert & Myrthianos, 2014) and it cares about paying attention and interacting with individuals in meeting organizational goals (Tamayo, 2007). These statements confirm that the human capital is influenced by the values of the organization, as long as they are disseminated (Velásquez, 2007), shared and practiced by all members of the entity (Alcover, C., Martínez, D., Rodríguez, F. and Domínguez, 2004; Oliveira & Tamayo, 2004).

The effect of the constructs shown in Table 7 and the SEM model in Figure 10, allows to emphasize that organizational values are oriented towards a better life and behavior of officials (Camps, 2015; Demo *et al.,* 2017), delimiting the way of thinking and acting (Oliveira & Tamayo, 2004), reflecting in them the capacities (A. J. Sánchez *et al.,* 2007), attitudes, skills and knowledge (Edvinsson & Malone, 2004; Hassan, 2007) that each official of the financial institution owns and contributes to it. In this sense, because there is a link between organizational values and human capital, it is observed that officials are valued, and they develop professionally within the financial institution, contributing with their skills and abilities (Edvinsson & Malone, 2004; León & Mancheno, 2017; Sarur, 2013; Valencia, 2005), to achieve the goals of the financial institution where they have been working.

Additionally, organizational values influence the structural capital, being the human capital a link of these constructs, i.e., collaborators influenced by organizational values intervene on processes and tasks that demand social interaction (Arciniega *et al.,* 2008). In addition, the organizational values driven by human capital are reflected in the processes, mechanisms, behaviors and structures of the organization,

in order to achieve the planned objectives and goals (Jaakson, 2010; Navas & Ortiz, 2002; Rimbau-Gilabert & Myrthianos, 2014; A. J. Sánchez *et al.,* 2007; Schein, 2004). The results of the SEM model make it possible to confirm that organizational values will be linked to systems, procedures and databases (Rimbau-Gilabert & Myrthianos, 2014), i.e., there is a link with capital organizational and technological capital (Navas & Ortiz, 2002), in order to be able to complement each other when carrying out any activity during the financial year of the organization.

As it was verified that organizational values have a causal relationship in relational capital and this in turn present high values in surface variables, customers, suppliers, strategic allies and competitors, these are similarly driven by the relational capital, relying on the structural capital. It is corroborated with the authors (Kogut & Zander, 1996; Martín *et al.,* 2009; Martínez & Cegarra, 2003; Navas & Ortiz, 2002; Rimbau-Gilabert & Myrthianos, 2014) that the above-mentioned organizational values directly influence the brand, loyalty, and the relationships with the suppliers, and according to (Ortiz & Arenas, 2015) these directly influence customers, suppliers and allies at the time agents relate to the organizational environment.

The results indicate that the relational capital, moved by the human capital and the values it carries, plays an important role in relating to external and internal agents; i.e., with customers, suppliers, strategic partners and even with competitors, since it allowed to expand the network of contacts of the company, therefore, to fulfill its established strategic purposes. According to the results presented in the SEM model, it is corroborated with (Navas & Ortiz, 2002; Revilla, 2013; Santos et al., 2011) that organizational values will have a significant effect on relational capital when they are related to external and internal agents of the organization.

This study makes it possible to determine that organizational values are practiced, disseminated and internalized by employees. These values are the support for the management that promote conditions and guidelines to achieve financial success. In addition, they make it possible to affirm that organizational values are the fundamental basis of the organization. Values make sense in the organization when they are communicated, disseminated and promoted sufficiently (Ramírez *et al.,* 2005). A positive causal relationship between the two constructs occurs by maintaining organizational values, and it is stated that financials make the most of human capital through the creation of knowledge and innovation, embodied in new processes, patents, models branding, technologies and leveraging databases that improve relationship mechanisms with suppliers, customers, state entities, and even competition.

Organizational values such as intellectual capital become similar, both in causal correlation and in the collection of information, indicating that organizational values are the support for the organization (Ramírez *et al.,* 2005; Romero & Izarra, 2014; Velásquez *et al.,* 2012), and they are created as part of their structure and processes (structural capital), practiced by human capital and disclosed by the relational capital of the financial entity (Ramírez *et al.,* 2005). Greater investment in intellectual capital improves efficiency, value creation and influences the performance of banks (Vidyarthi, 2019; Wang *et al.,* 2018).

From a broader perspective, organizational values are in all the processes performed inside and outside the organization, whether at the moment of monitoring a

system, planning a project, working as a team, engaging with people inside and outside the organization entity, when establishing a contact with an organization or supplier, it will always be necessary to keep the values of the organization in mind. In short, organizational values need human capital to be shared, disseminated, internalized in all processes involving structural capital and relational capital that allow to achieve the objectives and goals posed, determining the entity to achieve the business success.

References

Alaminos, A., Francés, F. J., Penalva, C., & Santacreu, Ó. A. (2015). *Introducción a los Modelos Estructurales en Investigación Social* (1st ed.). PYDLOS ediciones.

Alcover, C., Martínez, D., Rodríguez, F. y Domínguez, R. (2004). *Introducción a la psicología del trabajo*. McGraw-Hill.

Araújo, A. (2015). La desigualdad salarial de género medida por regresión cuantílica: el impacto del capital humano, cultural y social. *Revista Mexicana de Ciencias Políticas y Sociales*, *60*(223), 287–315. https://doi.org/10.1016/S0185-1918(15)72139-2

Arciniega, L., Woehr, D., & Poling, T. (2008). El Impacto de la Diversidad de los Valores en los Equipos Sobre las Variables de Proceso y el Desempeño de la Tarea. *Revista Latinoamericana de Psicología*, *40*(3), 523–538. http://www.redalyc.org/pdf/805/80511493009.pdf

Bollen, K. A. (1989). *Structural Equations with Latent Variables*. Wiley. https://doi.org/10.2307/2289630

Brooking, A. (1996). *Intellectual capital. Core asset for the third millennium Enterprise* (1st ed.). International Thomson Business Press.

Brown, T. A. (2015). *Confirmatory Factor Analysis for Applied Research* (2nd ed.). The Guilford Press.

Browne, M. W., & Cudeck, R. (1992). Alternative Ways of Assessing Model Fit. *Sociological Methods & Research*, *21*(2), 230–258. https://doi.org/10.1177/0049124192021002005

Byrne, B. M. (2010). *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming* (2nd ed.). Routledge. https://doi.org/10.1080/10705511.2014.935842

Camps, V. (2015). Los valores éticos de la profesión sanitaria. *Educación Médica*, *16*(1), 3–8. https://doi.org/10.1016/j.edumed.2015.04.001

Catena, A., Ramos, M. M., & Trujillo, H. M. (2003). *Análisis multivariado. Un manual para investigadores*. Biblioteca Nueva. https://vdocuments.mx/analisis-multivariado-un-manual-para-investigadores.html

Chahal, H., & Bakshi, P. (2016). Measurement of Intellectual Capital in the Indian Banking Sector. *Vikalpa: The Journal for Decision Makers*, *41*(1), 61–73. https://doi.org/10.1177/0256090916629253

Chiavenato, I. (2009). *Gestión del talento humano* (4th ed.). The McGrau-Hill Companities.

Demo, G., Fernandes, T., & Fogaça, N. (2017). A influência dos valores organizacionais na percepção de políticas e práticas de gestão de pessoas. *REAd. Revista Eletrônica de Administração (Porto Alegre)*, *23*(1), 89–117. https://doi.org/10.1590/1413-2311.093.57040

Demuner, M. del R., Saavedra, M. L., & Camarena, M. E. (2017). Medición del capital intelectual en el sector bancario: Aplicación de los modelos Skandia y VAIC. *Innovar*, *27*(66), 75–89. https://doi.org/10.15446/innovar.v27n66.66712

Edvinsson, L., & Malone, M. (2004). *Capital Intelectual: Cómo identificar y calcular el valor inexplorado de los recursos intangibles de su empresa* (19th ed.). Editorial Norma.

Edvinsson, L., & Sullivan, P. (1996). Developing a model for managing intellectual capital. *European Management Journal*, *14*(4), 356–364. https://doi.org/10.1016/0263-2373(96)00022-9

Estivalete, V. de F. B., & Andrade, T. de. (2012). A influência dos valores organizacionais na percepção de suporte organizacional com base na concepção dos colaboradores do setor bancário. *RAM. Revista de Administração Mackenzie*, *13*(3), 214–244. https://doi.org/10.1590/S1678-69712012000300010

Euroforum. (1998). *Medición del capital intelectual: modelo Intelect*. Euroforum Escorial.

Eyzaguirre, L. de F. (2017). *Influencia del capital intelectual en la mejora de la producción científica de la universidad pública peruana* [Universidad Nacional Mayor de San Marcos]. http://bit.ly/2ZtjjEz

Fernández-Jardón, C. M., & Martos, M. S. (2016). Capital intelectual y ventajas competitivas en pymes basadas en recursos naturales de Latinoamérica. *Revista Innovar Journal*, *26*(60), 117–132. https://doi.org/10.15446/innovar.v26n60.55548

Fernández, E., Montes, J., & Vazquez, C. (2010). Los recursos intangibles como factores de competitividad de la empresa. *Departamento de Administración de Empresas y Contabilidad*, *1*(1), 20–98. http://ww.revistadyo.com/index.php/dyo/article/view/318

Fitzgerald, G. A., & Desjardins, N. M. (2004). Organizational Values and Their Relation to Organizational Performance Outcomes. *Atlantic Journal of Communication*, *12*(3), 121–145. https://doi.org/10.1207/s15456889ajc1203_1

Ghozali, I. (2006). *Structural equation modeling. Metode alternative dengan partial least squares*. Diponegoro University Publishing Agency.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (2007). *Análisis multivariante* (A. Otero (ed.); 5th ed.). Pearson Prentice Hall.

Hassan, A. (2007). Human resource development and organizational values. *Journal of European Industrial Training*, *31*(6), 435–448. https://doi.org/10.1108/03090590710772631

Hayes, A. F. (2013). *Introduction to Mediation, Moderation and Conditional Process Analysis: A Regression-Based Approach* (9th ed.). The Guilford Press. https://doi.org/10.1017/CBO9781107415324.004

Hernández, J. A., Espinoza, J. de J., & Aguilar, M. (2015). Diferencias en los motivadores y los valores en el trabajo de empleados en empresas maquiladoras. *Contaduría y Administración*, 1–26. https://doi.org/10.1016/j.cya.2015.09.003

Herrera, E. E., & Macagnan, C. B. (2015). Revelación de informaciones sobre capital estructural organizativo de los bancos en Brasil y España. *Contaduría y Administración*, 1–22. https://doi.org/10.1016/j.cya.2015.09.007

Ibarra-Cisneros, M. A., & Hernández-Perlines, F. (2019). La influencia del capital intelectual en el desempeño de las pequeñas y medianas empresas manufactureras de México: el caso de Baja California. *Innovar*, *29*(71), 79–96. https://doi.org/10.15446/innovar.v29n71.76397

Jaakson, K. (2010). Management by values: Are some values better than others? *Journal of Management Development*, *29*(9), 795–806. https://doi.org/10.1108/02621711011072504

Javier, D. R., & Quintana, A. M. C. (2017). *Competencias y valores organizacionales de consejeros y corredores de seguros en la ciudad de Arequipa en el año 2016* [Universidad Nacional de San Agustin de Arequipa]. http://bit.ly/competenciasyvalores

Kido, A., & Kido, M. T. (2015). Modelos teóricos del capital humano y señalización: un estudio para México. *Contaduría y Administración*, *60*(4), 723–734. https://doi.org/10.1016/j.cya.2014.06.001

Kogut, B., & Zander, U. (1996). What firms do? Coordination, identity, and learning. *Organization Science*, *7*(5), 502–518.

León, A., & Mancheno, M. (2017). Componentes del capital intelectual un enfoque hacia la innovación de las organizaciones. *Revista Publicando*, *12*(2), 302–314.

Manzano, A., & Zamora, S. (2009). *Sistema de ecuaciones estructurales: una herramienta de investigación. Cuaderno técnico 4* (Cuaderno t). Centro Nacional de Evaluación para la Educación Superior, A.C. (Ceneval).

Marchante, A. J., & Ortega, B. (2010). Capital humano, desajuste educativo y productividad del trabajo: Un estudio para la industria hotelera. *Cuadernos de Economía y Dirección de La Empresa*, *13*(44), 79–100. https://doi.org/10.1016/S1138-5758(10)70020-7

Martín, G., Alama, E. M., Navas, J. E., & López, P. (2009). El papel del capital intelectual en la innovación tecnológica. Un aplicación a las empresas de servicios profesionales de

España. *Cuadernos de Economía y Dirección de La Empresa*, *12*(40), 83–109. https://doi.org/10.1016/S1138-5758(09)70043-X

Martínez, I. M., & Cegarra, J. G. (2003). Gestion dinámica del capital intelectual desde la perspectiva de los indicadores externos. *Congreso Nacional de la Asociación Científica de Economía y Dirección de la Empresa*, 1–21. http://repositorio.upct.es/handle/10317/619

Mercado-Salgado, P. (2016). Validez Inicial de una Escala de Medición del Capital Intelectual en Universidades. *Universitas Psychologica*, *15*(2), 109–120. https://doi.org/10.11144/Javeriana.upsy15-2.viem

Monagas, M. (2012). El capital intelectual y la gestión del conocimiento. *Ingeniería Industrial*, *33*(2), 142–150. http://bit.ly/2X6o7i7

Morales, L. E. (2017). Contribución del capital intelectual como fuente de ventaja competitiva de las organizaciones. *Revista Multi-Ensayos*, *3*(5), 29–37. http://bit.ly/2X9dtXY

Navas, J. E., & Ortiz, M. (2002). El capital intelectual en la empresa. análisis de criterios y clasificación multidimencional. *Economia Industrial*, *346*(4), 163–171. http://www.minetur.gob.es/Publicaciones/Publicacionesperiodicas/EconomiaIndustrial/RevistaEconomiaIndustrial/346/14 EMILIO NAVAS.pdf

Oliveira, A., & Tamayo, A. (2004). Inventário de perfis de valores organizacionais. *Revista de Administração*, *39*(2), 129–140.

Oro, I. M., Tonidandel, É. D., Müller, C. M., & Sott, V. R. (2017). Divulgação do capital intelectual e a relação com o desempenho das melhores empresas para você trabalhar. *Revista de Finanças e Contabilidade Da Unimep - REFICONT*, *4*(1), 38–54. http://reficontunimep.com.br/ojs/index.php/Reficont/article/view/63/77

Ortiz, F. A. A., & Arenas, A. J. (2015). La gestión del conocimiento un desafío para las instituciones educativas en Colombia: emergencias y tensiones desde la teoría del capital intelectual. In *Gestión de la educación* (Vol. 5, Issue 2, pp. 137–150). http://revistas.ucr.ac.cr/index.php/gestedu/article/view/19974/21431

Osorio, M. (2003). El capital intelectual en la gestión del conocimiento. *ACIMED*, *11*(6). http://bit.ly/2X393BL

Pérez, Y., & Coutín, A. (2005). La gestión del conocimiento: un nuevo enfoque en la gestión empresarial. *Acimed*, *13*(6). http://bit.ly/2J7vili

Pizarro, I., Real, J. C., & Dolores de la Rosa, M. (2011). La incidencia del capital humano y la cultura emprendedora en la innovación. *Cuadernos de Economía y Dirección de La Empresa*, *14*(3), 139–150. https://doi.org/10.1016/j.cede.2010.09.001

Ramírez, F., Sánchez, M., & Quintero, H. (2005). El papel de los valores en el desarrollo de la identidad corporativa. *Revista Negotium*, *1*(1), 35–54. http://revistanegotium.org.ve/pdf/1/1Art3.pdf

Raykov, T., & Marcoulides, G. A. (2006). *A First Course in Structural Equation Modeling* (2nd ed.). Lawrence Erlbaum Associates.

Revilla, E. (2013). *Los valores organizacionales. el caso de un instituto pedagógico público de Lima* [Pontificia Universidad Católica del Perú]. http://bit.ly/2J6rYqq

Rimbau-Gilabert, E., & Myrthianos, V. (2014). Contratación de la mano de obra y desempeño en los servicios intensivos en conocimiento: una visión del capital intelectual. *Intangible Capital*, *10*(2), 376–399. http://upcommons.upc.edu/handle/2099/14613

Romero, A. T., & Izarra, K. (2014). Valores organizacionales de la responsabilidad social empresarial en las empresas del sector inmobiliario en el Municipio Maracaibo. *Revista Electrónica de Gerencia Empresarial*, *6*(1), 30–41. http://publicaciones.urbe.edu/index.php/coeptum/article/view/3122/4629

Saboya, N., Loaiza, O. L., Soria, J. J., & Bustamante, J. (2019). Fuzzy Logic Model for the Selection of Applicants to University Study Programs According to Enrollment Profile. In *Advances in Intelligent Systems and Computing* (Vol. 850, pp. 121–133). Springer Verlag. https://doi.org/10.1007/978-3-030-02351-5_16

Sánchez, A. J., Melián, A., & Hormiga, E. (2007). El concepto de capital intelectual y sus dimensiones. *Investigaciones Europeas de Dirección y Economía de La Empresa*, *13*(2), 97–111. https://doi.org/ISSN:1135-2523

Sánchez, M. (2012). El capital intelectual y su relación con diferentes gestiones: estudio teórico-conceptual. *Ciencias de la Información*, *43*(3), 3–13. http://www.redalyc.org/html/1814/181424691001/index.html

Santos, H., Figueroa, P., & Fernández, C. (2011). El capital estructural y la capacidad innovadora de la empresa. *Investigaciones Europeas de Dirección y Economía de La Empresa*, *17*(3), 69–89. https://doi.org/10.1016/S1135-2523(12)60121-X

Sarur, M. S. (2013). La importancia del capital intelectual en las Organizaciones. *Ciencia Administrativa*, *1*, 39–45. http://www.uv.mx/iiesca/files/2014/01/05ca201301.pdf

Schein, E. H. (2004). *Organizational Culture and Leadership* (3rd ed.). Jossey-Bass. http://bit.ly/2J7lXty

Schumacker, R. E., & Lomax, R. G. (2010). *A Beginner's Guide to Structural Equation Modeling* (3rd ed.). Routledge.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology*, *25*, 1–65. https://doi.org/10.1016/S0065-2601(08)60281-6

Sen, A. (1998). Human capital and human capacity. *Cuadernos de economía (Santafé de Bogotá)*, *17*(29), 67–72. http://bit.ly/2J6POlX

Siles, M. M. (2013). Competencias profesionales requeridas por las empresas en Tarapoto. *Apuntes Universitarios*, *3*(2), 19–38. http://bit.ly/2J7utsI

Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using Multivariate Statistics* (Allyn & Bacon (ed.)). Pearson Education.

Tamayo, A. (2007). Impacto dos Valores da Organização sobre o Estresse Ocupacional. *RAC Eletronica*, *1*(2), 20–33. http://bit.ly/2ZUqIh1

Valencia, M. (2005). El capital humano, otro activo de su empresa. *Entramado*, *1*(2), 20–33. https://doi.org/DOI: 10.1590/1413-82712016210105

Velásquez, Y. (2015). *Modelo explicativo de la relación entre productividad y valores organizacionales, en la PYME del sector metalúrgico y minero de Venezuela* [E.T.S.I. Industriales (UPM)]. http://bit.ly/2FCjshQ

Velásquez, Y. (2007). Modelos de Productividad basado en Valores Organizacionales. *XI Congreso de Ingeniería de Organización*, 677–686. http://adingor.es/congresos/web/articulo/detalle/a/674

Velásquez, Y., Rodríguez, C., & Guaita, W. (2012). Los valores Organizacionales: Referencia para la evaluación de la productividad. *6th International Conference on Industrial Engineering and Industrial Management.*, *6th*, 840–846. http://bit.ly/2LlIkOM

Vidal, C. R. (2017). Modelo de capital intelectual para la investigación en las universidades públicas de la Costa Caribe colombiana. *Actualidades Investigativas En Educación*, *17*(1), 1–27. https://doi.org/10.15517/aie.v17i1.27332

Vidyarthi, H. (2019). Dynamics of intellectual capitals and bank efficiency in India. *Service Industries Journal*, *39*(1), 1–24. https://doi.org/10.1080/02642069.2018.1435641

Villalobos, J. (2014). Valores organizacionales en la filosofía de gestión para instituciones educativas Bolivarianas. *REDHECS: Revista electrónica de Humanidades, Educación y Comunicación Social*, *9*(16), 35–48. http://bit.ly/2xda3sJ

Villegas, E., Hernández, M. A., & Salazar, B. C. (2017). La medición del capital intelectual y su impacto en el rendimiento financiero en empresas del sector industrial en México. *Contaduría y Administración*, *62*(1), 184–206. https://doi.org/10.1016/j.cya.2016.10.002

Wang, Z., Cai, S., Liang, H., Wang, N., & Xiang, E. (2018). Intellectual capital and firm performance: the mediating role of innovation speed and quality. *International Journal of Human Resource Management*, *0*(0), 1–29. https://doi.org/10.1080/09585192.2018.1511611

Westland, J. C. (2019). *Structural Equation Models: From Paths to Networks* (2nd ed.). Springer. https://doi.org/10.1007/978-3-030-12508-0

Williams, S. L. (2002). Strategic planning and organizational values: Links to alignment. *Human Resource Development International*, *5*(2), 217–233. https://doi.org/10.1080/13678860110057638

Yangali, J. S., & Quiróz, V. S. (2018). Valuación del capital intelectual, su contabilización y presentación como activo intangible en los estados financieros. *INNOVA Research Journal*, *3*(11), 35–61. https://doi.org/10.33890/innova.v3.n11.2018.889

Yarce, J. (2000). *Los valores son una ventaja competitiva* (Ágora Editores Ltda (ed.)). Instituto Latinoamericano de Liderazgo (ILL). http://bit.ly/2J7MAyr

Retos, 10(19), 2020
Journal of Administration Sciences and Economics | p-ISSN: 1390-6291| e-ISSN: 1390-8618
www.retos.ups.edu.ec

Local good governance and accountability in Spain

Buen gobierno local y rendición de cuentas en España

Dr. Roberto Fernández Llera is a PhD who works at Universidad de Oviedo and President of the Public Audit Office of Asturias (España) (robertofll@sindicastur.es) (http://orcid.org/0000-0003-3096-1905)

Abstract

Accountability is one of the fundamental requirements within the general parameters of good governance and transparency. Local government in Spain offers a particularly interesting case study, due to the breadth of the sample to be analyzed and the regulatory changes of recent years. For this, the Spanish regulation of good governance is examined, with special attention to local government and the effective degree of compliance with the duty of accountability to external audit institutions. The methodology used combines legal and budgetary analysis of the main indicators of the budget cycle. The main conclusion points out the low degree of compliance with legal obligations in Spanish local government, mainly municipalities. The causes are multiple and varied, some of which are trying to combat the recent legislation on transparency and good governance, both central and regional. In the local government, greater clarity is needed in the internal rules and procedures that make it possible to comply more effectively with legal requirements, adapting in particular to the size of each administration concerned, given the municipal atomization in Spain. The dissemination and communication of results is another fundamental variable to promote compliance with these obligations. Ultimately, in the face of serious and repeated breaches, coercive measures and sanctions would be an effective measure, as the audit institutions have recommended.

Resumen

La rendición de cuentas es una de las exigencias fundamentales dentro de los parámetros generales del buen gobierno y de la transparencia. El sector público local en España ofrece un caso de estudio especialmente interesante, por la amplitud de la muestra a analizar y por los cambios normativos de los últimos años. Para ello, se examina la regulación del buen gobierno en la normativa española, con especial atención al sector público local y al grado efectivo de cumplimiento del deber de rendición de cuentas ante las instituciones de control externo. La metodología empleada combina el análisis jurídico con el de los principales indicadores del ciclo presupuestario. La principal conclusión señala el bajo grado de cumplimiento de las obligaciones legales en los municipios españoles. Las causas son múltiples y variadas, algunas de las cuales está tratando de combatir la reciente legislación de transparencia y buen gobierno, tanto estatal como autonómica. En el sector público local se precisa una mayor claridad en las normas y procedimientos internos que permitan cumplir con mayor eficacia las exigencias legales, adaptándose en particular al tamaño de cada administración concernida, dada la atomización municipal. La difusión y la comunicación de los resultados es otra variable fundamental para impulsar el cumplimiento de estas obligaciones. En última instancia, antes graves y reiterados incumplimientos, podrían ser eficaces las medidas coercitivas y sanciones que han recomendado las instituciones de control externo.

Keywords | palabras clave

Good governance, transparency, accountability, external control, local government, Spain, audit, Court of Auditors.
Buen gobierno, transparencia, rendición de cuentas, control externo, gobierno local, España, fiscalización, Tribunal de Cuentas.

Suggested citation: Fernández Llera, R. (2020). Local good governance and accountability in Spain. *Retos Revista de Ciencias de la Administración y Economía, 10*(19), 29-43. https://doi.org/10.17163/ret.n19.2020.02

Received: 28/10/2019 | Reviewed: 13/11/2019 | Approved: 04/12/2019 | Published: 01/04/2020

Retos, 10(19), 2020

1. Introduction

The Dictionary of the Spanish language defines ethics in one of its meanings as the "set of moral norms that govern the conduct of the person in any aspect of life". In legal terms, responsibility refers to the "existing capacity in every active subject of law to recognize and accept the consequences of a freely event". A third notion, which is governance, is the "art or way of governance that aims to achieve lasting economic, social and institutional development, promoting a healthy balance between the state, civil society and the market of the economy". Synthesis within the public sector leads to the principle of transparency, the duty of accountability and, by extension, the broad concept of good governance and the need to promote institutional quality.

Although there is more updated literature (Villoria Mendieta, 2014), an allusive starting point would be the aspiration of good governance that was reflected seven centuries ago in Italian painting, an excellent example being the allegory of Lorenzetti, located in the Palazzo Comunale de Siena[1], described by García Pelayo (2009, p. 1239):

> Justice, enlightened by wisdom, integrates men into harmony, and from it into the corporation or mystical body of the commune under the impersonal and abstract rule of the common good, which, constantly inspired by political virtues, ensures a peaceful order from which all violence, except evildoers, is excluded without pressure, the taxes of citizens and the submission of the lords of the camp.

Jumping almost 500 years since that pictorial reference, the tenor of article 6 of the Spanish Constitution of 1812 is also remarkable for its symbolism, when in its literality Spanish citizens were forced to "love the homeland" and to "be fair and beneficial".

The European Commission (2001) opened a wide-ranging path under the concept of governance, under which ideas such as openness (transparency and communication of public actions), participation (systematic involvement of citizenship), responsibility (clarification of the role of each agent), effectiveness (decisions at the appropriate scale and at the appropriate time, producing the desired results) and coherence (between different policies) are taken into account. At present, and once surpassed some historical moments and even passing fads (Irwin, 2013), it is clear the general framework in the United Nations[2] Sustainable Development Goals, which advocates a comprehensive and cross-cutting conception of ethics, the transparency and good governance, being an explicit goal (number 16.6) to "create at all levels effective and transparent institutions that are accountable".

Regarding transparency, it must refer to the one that is sufficient and useful, avoiding the areas of darkness or impunity, but also the excessive flow of information without order, systematization or control. In Spain, the numerous information gaps and the dispersion of valuable information have been traditional sources of fiscal indiscipline (Barea Tejeiro, 1997). Even today, data from the International Monetary Fund (Wang *et al.,* 2015, p. 10) show that Spain remains being one of the countries in the world where the degree of completeness and comprehensibility of its public finance statistics is lower. Therefore, it is not about transparency referring to a multitude

1 Also see Skinner (2009) and González García (2016).

2 For more information, check the United Nation´s website: http://bit.ly/2MSghqh.

of data, figures and reports of low added value, reduced accessibility and low target interest (except for certain minority groups), if so, transparency could degenerate into what has been called information overload or —using bastard neologisms— infoxication and cheating.

In Spain, the 2001 budgetary stability legislation provided a wake-up call on public transparency, placing this principle as one of the keys to the service of budgetary stability. It is not true that it was not an absolute novelty either, since this general principle had already been included for two decades in basic administrative legislation and in some sectoral rules related to urban planning, subsidies, personnel, the environment or government procurement, among others. However, all of this legislation had a partial approach and even suffered from excessive voluntarism, without providing sanctions or measures for non-compliance, and without the citizen having fully guaranteed their right of access to the national information, within the framework of Article 105 of the Spanish Constitution and the concordant European supranational legislation. That gap would cover two fundamental rules.

On the one hand, the first big change would come in 2012 with the Organic Law 2/2012, of April 27, on Budgetary Stability and Financial Sustainability (LOEPSF), which was an undoubted reinforcement of transparency as a paradigm of public management, within the broader framework of the new constitutional principle of budgetary stability, mandatory for all levels of government and for all members of the public sector.

The second major change was given by Law 19/2013 of December 9 on transparency, access to public information and good governance (LTAIBG), whose three aspects are already clear in the same title. Its introduction[3] recognizes the Spanish regulatory delay in the areas of transparency and the right of access to public information ("Spain could not stay on the sidelines any longer"), although at the same time it is stated that the new law "does not part of nothingness or fill an absolute void, but delves into what has already been achieved, addressing its shortcomings, remedying its shortcomings and creating a legal framework commensurate with the times and citizens". The fact is that the combined effect of LOEPSF and LTAIBG has meant a substantial improvement in the degree of transparency of public institutions in Spain, among which local government has not been an exception. Some recent empirical studies have found this significant progress, particularly in the area of economic-financial and budgetary information, also investigating the determinants and differential causes of such transparency with mixed results. [4]

The general legislator also incorporated in the same legal body the rules on good governance, so that, again citing its introduction, "purely programmatic principles and without legal force are incorporated into a rule with the rank of law

3 The complete text can be consulted on https://bit.ly/36ff9ok (October 1st, 2019).

4 These Works can be cited Serrano-Cinca *et al*. (2009), Cárcaba García and García-García (2010), Guillamón *et al*. (2011), Esteller-Moré and Polo Otero (2012), Albalate del Sol (2013), Caamaño-Alegre *et al*. (2013), Frías Aceituno *et al*. (2013), García-Sánchez *et al*. (2013), Vila i Vila (2013), Campos Acuña and Caamaño Alegre (2015), Suárez Pandiello and Fernández Llera (2017) and Tejedo-Romero and Ferraz Esteves Araujo (2018). Likewise, Arapis and Reitano (2018) provide a useful international reference (59 countries) and Bearfield and Bowman (2017) of the local level

Retos, 10(19), 2020

and move to inform the interpretation and application of a sanctioning regime to which all public leaders are subject", also referring to the "exemplariness" in their conduct. In this way, a traditional approach to public worker ethics based on the so-called "soft law", blurred in codes of conduct or ethics, recommendations of good practices or even the use of pure practice as a source is left behind. Since then, it will be the hard law that obliges senior officials and assimilated to modify behaviors (Descalzo González, 2017), in a similar application to what had been happening for public employees by their own official regulations, statutory (García Jiménez, 2018). Otherwise, new specific sanctions may be imposed for conflicts of interest, inadequate economic-budgetary management or disciplinary offences.

It should be emphasized that at the beginning of 2019, almost all autonomous communities had in force their laws of transparency and/or good governance, [5] with the intention to extend the requirements of basic state regulations, although in some cases with little effective improvement and not always with application to the respective local public sector (Ridao Martín, 2014; INAP, 2016). Other regulatory and development rules, as well as "soft right" provisions in the various entities or groupings in the regional or local field, are added to them. It could be said that, having been Spain one of the last countries of the European Union to have specific transparency legislation, as well as one of the few that merge it into the same legal text with the rules on good governance, the opposite situation of legislative inflation is currently just occurring (Bassols Coma, 2015).

The objective of this work is to analyze good governance in Spanish regulations, with special attention to the local public sector and one of its most concrete manifestations, such as accountability. Section 2 reviews the regulation of good governance in basic state legislation, applicable throughout Spain. Section 3 discusses the state of accountability of local entities, from a regulatory point of view and their effective compliance. The last section shows the conclusions.

2. Development of good governance in Spanish basic legislation

The LTAIBG establishes two preconditions listed with principles of good governance (general and action), enforceable of people who hold the status of high office or assimilated at all levels of government. Those who are considered high-ranking or assimilated under the regional or local implementing regulations, even members of the governing boards are included, but without affecting the status of elected office. The subjects shall adapt their activity to those principles and, at the same time, shall inform the interpretation and application of the penalty regime for non-compliance. A major criticism of these legal principles of good governance is because of its vagueness, at least for three reasons. First, by the idle reference to mandatory observance with regard to the provisions of the Spanish Constitution and in the rest of the legal system, with particular respect for fundamental rights and public freedoms. Second, by the no less obvious reference to those principles of good governance on

5 The Transparency Board and Good Government (https://bit.ly/2MU6vEr) publishes disaggregated and updated information.

the interpretation and application of the sanctioning regime. Third, by the intrinsic indeterminacy of the principles set out, some of which were already in the legal order (including transparency) or were part of elementary rules or codes of good conduct.

The main novelty of the LTAIBG is in the criminalization of very serious financial and budgetary management violations, which by simplicity could be called "good economic governance" (Palomar Olmeda, 2014). The list does not appear to follow a particular order, although many of these blaming conduct directly causes for non-compliance with general budgetary regulations or LOEPSF. Non-existent or flawed accountability would be one more infringement for violations of general budgetary regulations, although because of its special status it seems appropriate to place it with its own category.

Violations will be punished with the declaration of non-compliance and its publication in the corresponding official newsletter for general knowledge, as well as with the non-collection of compensation in the event of termination of the charge, if scheduled. In addition, people sanctioned shall also be dismissed from the office they hold and for any position of high office or assimilated for a period ranging from five to ten years. In addition, the amounts received or improperly paid shall be refunded and the Treasury shall be obliged to compensate. Liability shall be required in an administrative procedure, further letting know the Court of Auditors in case of the proceedings of accounting liability procedure, all without prejudice to the referral to the judicial or timely prosecutors, if evidence of crime or violation of any special administrative rule is found. All sanctions shall be measured according to the principle of proportionality and additional criteria, such as the seriousness of the danger caused, the intensity of the damage caused, the adverse consequences for the Treasury or, in the reverse sense, the will for remediation and reparation.

According to Campos Acuña (2014, p. 23) basic legislation of good governance, originated in response to a noticeable social demand, has resulted in a sanctioning regime of complex practical application, further aggravated by the entry into force of the subsequent autonomic legislation. Among other execution problems, the author cites the possible perverse or abusive use of the citizen complaint procedure "in personal or political key" (sic), issues of a jurisdictional and procedural nature, or the role of elected officials when committing punishable offences. In recent years, this regulation has been supplemented by rules related to the exercise of high office, both at the state level and in several autonomous communities, almost always to the exclusion of the local public sector. The effective impact on local government is not absolute, although assumptions are found in Law 7/1985, of April 2, Regulatory of the Bases of the Local Regime. Thus, for members of the full-time local corporations and for the management, limitations are established on the exercise of private activities during the two years following the end of their term of office, authorizing compensation in the first case where they are unable to carry out their professional activity, nor receive economic remuneration for other activities. Another example of intended good governance is the limits on the retribution of local corporation members and staff serving local entities, as well as limitations on the number of public office that can be dedicated.

Retos, 10(19), 2020

Table 1. FEMP Code of Good Local Government

Objectives	• Integrate the ethical dimension in the functioning of local entities • Incorporate the strategies of citizen participation and open government • Define the basic lines that should preside the local public management • Strengthen the standards of conduct in the exercise of public responsibilities • Delimit guidelines for the appropriate relationship between the areas of government and administration
Structure	• Principles of good local government (11) • Standards of conduct for the improvement of local democracy (14) • Ethical commitments on conflicts of interest (6) • Regime of incompatibilities and remuneration • Government and administration: relations between elected officials and public employees • Measures for the improvement of participatory democracy • Framework for citizen participation 2.0

Source: FEMP, 2015.

In the local public sector, the continuity of good governance legislation should be sought in the codes of ethics, conduct or good governance that have been approved by the entities or their most representative associations, in particular, the Spanish Federation of Municipalities Provinces (FEMP) and territorial counterparts. As the basic reference, Table 1 has summarized the FEMP Code of Good Local Government, whose main objective is to establish the principles to be respected in the performance of government and administration political responsibilities, as well as those of local management, setting commitments that reflect recommended standards of conduct and reinforcing the democratic quality of local institutions. Undoubtedly, the local world moves every day from the "soft right" to the law, and vice versa.

3. Non-compliance with the accountability obligation

Local accountability in Spain has its historical roots in the primal supervisory institutions of medieval Europe, which included, among others, the Chamber of Comptos of Navarra or the *Mestre Racional* within some peninsular kingdoms. With the end of the Old Regime, the Declaration of the Rights of Man and Citizen of 1789 recognized that "the Society has the right to hold all its public agents accountable for its administration". Already at the contemporary stage, this generic duty was to be modulated and concrete in the accountability of public external control institutions[6] (ICEX), not only as an ethical and democratic demand, but also as one of the great citizen concerns and political priorities, even more so in recent years, on the occasion of the so-called Great Recession. Consequently, this public duty has ended up mutating into obligation, within the ordinary parameters of budgetary management, transparency and good governance, as the Court of Auditors has clearly stated (2014):

> Accountability is the mechanism through which the managers of the entity respond to the economic and financial management developed to those who provide their resources and

6 Under this name, the Court of Auditors – the supreme auditing body – and the regional external control bodies are jointly appointed in Spain (https://bit.ly/2MTOKoI)..

> respond to the information needs of users [of such information...]: the national parliament, the Court of Auditors, the autonomous legislative assemblies, the regional external control bodies, the managers, the internal supervisory bodies, the users of public services, the political representative bodies, the economic and financial analysts, rating services, national or international public organizations, taxpayers and citizens in general.

In short, accountability is not a simple administrative procedure, but a conduct required of every public manager and political manager, with legal consequences, even personal – arising from non-compliance (Teré Pérez, 2015).

Accountability begins with the provision of systematized and reliable economic-financial information on the origin and use of public resources in a given temporal area. Obviously, accountability does not begin or be exhausted in this act of handing out figures and documents, but it is associated with the continuous and loyal collaboration between the controller and the controlled, both in the pre-stage and after-stage, in order to facilitate the proper examination (through audit evidence) and the issuance of an assessment allocated judgement (with opinion and recommendations) by ICEX, based on the evidence obtained.

Thus, the main function of ICEX is auditing, understood as the "set of actions of the Court of Auditors [or other ICEX] to verify the submission of public sector economic and financial activity to the principles of legality, efficiency, economy and, where appropriate, other well-managed individuals" (Tribunal de cuentas, 2013). Following this criterion, the term "supervision" is used in the International Standards of Higher Audit Institutions adapted to Spain[7] to designate the constitutional, statutory or legally assigned function to ICEX, reserving the term "audit" to one of the techniques— not the only one—to perform this function. [8]

Table 2. Compliance with legal deadlines in municipalities (% of the total)

	Budget*1	Settlement*2	General account*3	Accountable*4	Municipalities considered
2009	11.8%	46.5%	42.5%	10.1%	6.897
2010	12.4%	53.7%	51.0%	29.6%	7.147
2011	13.8%	66.0%	63.5%	40.6%	7.291
2012	13.9%	74.3%	76.1%	52.7%	7.355
2013	26.7%	78.9%	75.0%	51.2%	7.382
2014	32.7%	71.7%	69.7%	47.9%	7.367
2015	34.1%	66.6%	66.0%	42.5%	7.274
2016	32.2%	71.8%	70.3%	50.9%	7.035
2017	33.3%	80.1%	80.8%	59.0%	5.850
Mean	**23.3%**	**67.6%**	**66.0%**	**42.6%**	**7.066**

*1. Budget approved before 31/12/(t-1). *2. Remission of budget settlement before 31/03/(t+1). *3. General account approved in plenary before 01/10/(t+1). *4. General account paid before 15/10/(t+1). Source: Development and Accountability Portal (https://bit.ly/2BMn4vs) [February 22, 2019].

7 Known as ISSAI-ES an available on https://bit.ly/346vs56.

8 The exact delimitation can be found in the introduction of ISSAI-ES 100 to 400. On this terminological precision also see Fernández Llera (2009).

Retos, 10(19), 2020

Despite the relevance of the above, the effective degree of accountability of local authorities in Spain and the fulfilment of the legal deadlines for processing the general account and the annual budget remain very unsatisfactory, as shown by the figures in Table 2, referring exclusively to the municipal level.[9]

On average, in the period 2009-2017 the annual budget was approved in time by less than a quarter of the Spanish municipalities, although in recent years the improvement has been substantial, but it is still very insufficient. As a sign of this broad and recurrent non-compliance, the 2014 financial year can be cited: only 34% of the municipalities approved the budget in a timely period; 60% did so out of time (with an average delay exceeding four months); another 4% approved the annual budget with the year already expired (which, in addition to being illegal, is useless); and the remaining 2% did not even approve any budget (Tribunal de cuentas, 2016). By extrapolating these proportions to the whole of the Spanish municipal plant, the reality would be showing that about 500 municipalities are placed in a situation of blaming illegality every year, another 5000 work with budgets diminished in their validity 12-month validity, and just over 2500 – out of a total of 8000 – show accurate compliance with the annual budget timeframe. The damage to transparency and good governance is evident, as automatic extension operates in thousands of cases, many of them repeated year after year, which makes this legal institution of an extraordinary nature a regular thing, undermining planning, control and accountability.

For its part, the approval of the budgetary settlements shows a greater degree of compliance with the deadline, something that has undoubtedly been able to influence the restriction imposed by Law 2/2011 of March 4 on the Sustainable Economy, which could retain the fundamental revenues from participation in State taxes to non-compliant local entities. This restriction has imposed an added cost for non-compliance, since until its entry into force the remission of the budgetary settlement was very neglected in the management priorities. However, the best data in the series is slightly over 80% (in 2017), which points to a wide margin of improvement to achieve full compliance.

Thirdly, the fulfilment of the duty of approval of the general account in the municipal plenary have showed high and increasing values in recent years, with a profile almost identical to that of the liquidation referral, but without a mediation sanction added for non-compliance. Other works (Fernández Llera, 2015) have advocated the opportunity for the plenary debate of the general account not to cease to be substantive under the democratic principle, but at the same time the requirement of majority approval is eliminated, with the need for an approval and subsequent *referral*, which is not *accountable* to ICEX by the Mayor-Presidency). It should be recalled that the general account, as a true image of management, previously formed and validated by the local internal control body, should not allow a vote against, if not for spurious political reasons. Even clearer, the political opposition should be able to vote against the management carried out by the local government (censorship motion

9 The local public sector in Spain consists of municipalities, commonwealths of municipalities, minor local entities (sub-municipal) and others of a higher or lower nature. In any case, the significance of the data of the municipalities is very high, since they represent about 80% of the local public sector budget.

or trust issue) or against planned management (strategic plans or annual budgets), but not against the management recorded in the accounting documents, under the obvious premise of their technical correction.

Finally, the index of term accountability to ICEX is quite low, which is better understood after finding the degree of compliance in the previous phases of the budget cycle. In this respect, progress has been substantial in recent years, but the 100% rate is still very far away. The coercive and sanctioning measures adopted in recent years (including the aforementioned serious infringement for lack of accountability, or the requirement of accountability for a local entity to be able to access subsidies, among others) appear to have had some effect, but not all that would be expected. The key issue lies in self-conviction about the fulfilment of all legal obligations throughout the budget cycle, as well as reliable internal control. However, where persuasion is not sufficient, proven mechanisms, such as specific audit reports or disclosure of breaches, should be used as a reputational or political sanction. And, if it is not already sufficient, then additional steps will need to be taken towards coercive mechanisms, enforcement or sanction, without prejudice to the requirement of administrative or criminal responsibilities for political and/or technical leaders (Fernández Llera, 2015).

Table 3. Synthetic indexes of overall compliance of municipalities (% of the total)

	Simple Average*1	With external weights*2	With internal weights*3	Municipalities considered
2009	27.7%	19.5%	33.4%	6.897
2010	36.7%	30.1%	42.8%	7.147
2011	46.0%	38.4%	53.7%	7.291
2012	54.3%	46.1%	63.3%	7.355
2013	57.9%	50.2%	65.6%	7.382
2014	55.5%	49.0%	61.4%	7.367
2015	52.3%	45.9%	57.5%	7.274
2016	56.3%	50.2%	62.2%	7.035
2017	63.3%	56.3%	70.4%	5.850
Media	**49.9%**	**42.7%**	**56.6%**	**7.066**

*1. Each compliance item weighs the same (25%). *2. Compliance items weight 31.25%, 18.75%, 6.25% and 43.75%, respectively, *3. Compliance items weight 11.67%, 33.92%, 33.07% and 21.35%, respectively Source: Own elaboration and Accountability website (https://bit.ly/2BMn4vs) February 22, 2019].

Taking a simple index of global compliance by fiscal year (table 3), bypassing the population size of municipalities – as the law does – and weighing each of the four items identically, it is observed that the average for the period 2009-2017 does not reach even 50%, although since 2012 it is already above that threshold, obtaining the best mark in the last year considered. However, it seems plausible that not all

Retos, 10(19), 2020

compliances have the same importance to the local manager, either because of their differential political importance or because of the seriousness of the institutional, financial and personal consequences arising from the breach. Therefore, two alternative synthetic indices have been constructed, modifying the weights of each item.

In the first, *ad hoc* has been incorporated to the lowest weighting for plenary approval of the general account, since non-compliance has no consequence. The referral of the last settlement (in case of non-compliance, there could be withholding of basic funds), the timely approval of the budget (as a strategic annual planning document) and, finally, as the most relevant, the accountable of the general account on time (as the culmination of the budget management cycle, in addition, with serious consequences for non-compliance) are still important. The overall index drops to 42.7% and it only exceeds 50% in three exercises in the series.

In the second, to circumvent the possible criticism for the discretion or manipulation of the previous one, internal weights, calculated from the respective historical averages of compliance (period 2009-2017) were used in each of the four items. In this way, the revealed preference on the importance attributed to each of them is incorporated robustly. With this ordination, the referral of the settlement is placed as the most important issue, almost at the same level as the plenary approval of the general account (in the latter case, probably, for its greater ease, not so much by its subjective assessment), followed by the overall account and, finally, the approval of the annual budget, thus becoming the least relevant compliance item. Thus, the overall index rises to 56.6%, with only two exercises below 50% and with a top in the last year considered to be 70.4%.

Inquiring into the causes of low accountability, ICEX often conclude in their horizontal reports that this gap does not always respond to a single pattern, not even objective parameters related to the size of the jurisdiction. Rather, as shown in Table 4, the reasons alleged are multiple, which suggests rather a lack of established culture of transparency and accountability, presenting excuses, apologies or pretexts[10] that do not reach the concept of allegation, as understood in the latter concept in audit. In most local entities, the lack of human resources is the main motivation exposed, although its relative importance has declined in favor of a more diversified profile of reasons, including the delay due to the lack of approval of the accounts of entities (9% in 2016), computer incidents arising from the use of new telematics platforms or renewed accounting plans (9% in 2016), and even the absence of any concrete cause (14% in 2016). On the other hand, the problems of lack of plenary agreement of approval of the general account, along with the absence or change of the local auditor as in charge of forming the general account, are easily solved if this political procedure is dispensed with and/or support and assistance is available at all times for local internal control tasks.

10 When there were attacks to the ICEX by the prosecutor, on an alleged lack of empathy (https://bit.ly/2PpAmpR).

Table 4. General causes of non-accountability on time

	2014	2015	2016
Computer incidents	3%	10%	9%
Lack of approval of dependent entity accounts	3%	6%	9%
Lack of human resources	72%	53%	48%
Lack of material resources	0%	0%	2%
Lack of full agreement / Absence or change of local intervention	7%	19%	13%
Delay in budget settlement	7%	4%	5%
No specific cause	7%	8%	14%

Note: the figures refer to all local entities, not just local councils, although the differences are very small, since the latter account for 80% of the local public sector. Source: Tribunal de cuentas (2018).

As a culmination of this heading, it is necessary to recall a compendium of recommendations from ICEX (in particular: Tribunal de Cuentas, 2003, 2014) which, because of their relevance and reiteration over several years[11], are covered perennially:

- Regulatory homogenization of the deadlines for accountability of local entities throughout Spain, establishing June 30 as a general reference of the following financial year to which the accounts relate.
- Promotion of legislative measures aimed at reducing current processing and accountability of local budgets and general accounts, seeking to improve economic-financial planning and to bring accountability and control closer to management, with criteria of transparency and opportunity.
- Promotion of legislative measures aimed at reducing current processing and accountability of local budgets and general accounts, seeking to improve economic-financial planning and to bring accountability and control closer to management, with criteria of transparency and opportunity.
- Strengthening the accountability obligation in a timely manner through legislative measures that involve effective consequences of immediate and direct implementation in case of non-compliance. In particular, the updating of the amount of the penalty fines and the establishment as an indispensable requirement for the access by local entities and their dependent entities to public aid and subsidies stand out for their effectiveness.
- Personal and material reinforcement of local intervention bodies, especially after the entry into force in 2018 of the internal control regulation and the legal regime of these officials.
- Intensified effective support of supra-municipal, provincial and regional bodies to local entities, especially the smallest, so that they can meet the demand for accountability in all their terms.

11 Similarly, the reports of the regional external control bodies and formal statements of June 21, 2017, on legal amendments to promote the reduction of public sector accountability deadlines and on measures to stimulate accountability of local authorities (https://bit.ly/2MTOKoI).

Retos, 10(19), 2020

- Review of the plenary approval mechanism of the general account to prevent its possible rejection for political reasons, involving a deterioration of accountability.

4. Conclusions and discussion

Good governance, transparency and accountability— whether the latter as modalities of the former or as their own categories — are no longer mere aspirations or lower-ranking public duties, in order to transmute into high demands. Its compliance involves tasks and resources- which is obvious - and non-compliance can lead to sanctions or corrective and coercive measures, but in any case the higher good is quantified in the social benefit derived from rational and sound public, transparent management. This is predicable from the public sector as a whole and each of its members, but it is of crucial importance at the local level, because of the multitude of existing entities, because of its importance in providing basic public services for the citizenship and, also, because of the low rate of compliance with budgetary and economic-financial accountability obligations.

The budget and the general account need to return to the priority agenda, including its political (such as elements of planning, management and accountability), technical (with the reinforcement of internal control bodies and ICEX) and academic (with the solvent doctrinal and empirical studies on budgetary institutions, as Alesina & Perotti, 1996).

In the search for complete accountability, regardless of its exact formalization in specific legal, ethical or conduct standards, it is necessary to imbue all public managers, as well as bodies and supervisory institutions from this culture. This is also the broad mandate of the United Nations Sustainable Development Goals. In this context, the conclusions and recommendations presented for the Spanish case would be quite extrapolated to the scope of other Latin American countries, with the necessary considerations that may follow in each case (Almeida Sánchez, 2014).

In Spain, accountability has traditionally been regulated in the legislation of Local Finance and its derived legislation, together with all matters relating to public expenditure and revenue, which have undoubtedly enjoyed greater interest and political preponderance, subsuming the first ones in a certain abandonment. Perhaps this has been one of the reasons why the most recent legislation of transparency and good governance – both basic and regional – have also prevented the strengthening of this obligation, and may instead have met its requirements by incorporating many of ICEX's repeated recommendations. Similarly, at the local level, greater clarity is needed in the internal rules and procedures to enable legal requirements to be more effectively met, adapting in particular to the size of each administration concerned, given the municipal atomization.

There is ample room for improvement to meet existing obligations, which does not prevent further progress in defining new demands that exceed them, for example, to bring the audit closer to the management carried out over time, as well as to improve their quality. They would be unequivocal signs of institutional quality, signs of accountability and reliability, and evidence of ethics, transparency and good governance.

Supports and financial support of the research

The author appreciates the feedback received and the support of the GEN (Governance and Economics Research Network) group of the University of Vigo (Spain). All opinions are personal and non-institutional.

References

Albalate del Sol, D. (2013). The institutional, economic and social determinants of local government transparency. *Journal of Economic Policy Reform, 16*(1), 90-107. http://doi.org/10.1080/17487870.2012.759422.

Alesina, A., & Perotti, R. (1996). Déficits presupuestarios e instituciones presupuestarias. *Papeles de Economía Española, 68*, 255-271.

Almeida Sánchez, M. D. (2014). Experiencias internacionales en transparencia fiscal, *Macroeconomía del Desarrollo*, *146*. Comisión Económica para América Latina y el Caribe (Cepal) / Naciones Unidas.

Arapis, T., & Reitano, V. (2018). Examining the evolution of cross-national fiscal transparency, Examining the evolution of cross-national fiscal transparency, *The American Review of Public Administration, 48*(6), 550-564. http://doi.org/10.1177/0275074017706740.

Barea Tejeiro, J. (1997). *Disciplina presupuestaria e integración de España en la Unión Monetaria*. Madrid, España: Real Academia de Ciencias Morales y Políticas.

Bassols Coma, M. (2015). Buen gobierno, ética pública y altos cargos. *Revista Española de Derecho Administrativo, 172*, 27-60.

Bearfield, D. A., & Bowman, A. O. (2017). Can you find it on the web? An assessment of municipal e-government transparency. *The American Review of Public Administration*, 47(2), 172-188. http://doi.org/10.1177/0275074015627694.

Caamaño-Alegre, J., Lago-Peñas, S., Reyes-Santias, F., & Santiago-Boubeta, A. (2013). Budget transparency in local governments: An empirical analysis. *Local Government Studies, 39*(2), 182-207. http://doi.org/10.1080/03003930.2012.693075.

Campos Acuña, M. C. (2014). Las entidades locales ante las obligaciones de transparencia. Una primera aproximación a la Ley 19/2013, de transparencia, acceso a la información pública y buen gobierno. *Revista Digital CEMCI, 23*, 1-30.

Campos Acuña, M. C., & Caamaño Alegre, J. (2015). Abriendo puertas y ventanas de los ayuntamientos gallegos. Más transparencia para un mejor gobierno local. *Documento Red Locális, 2/2015*. Recuperado de: https://bit.ly/2qTg3H9 [Fecha de consulta: 1 de agosto de 2019].

Cárcaba García, A., & García-García, J. (2010). Determinants of online reporting of accounting information by Spanish local government authorities, *Local Government Studies, 36*(5), 679-695. http://doi.org/10.1080/03003930.2010.506980.

Comisión Europea (2001). *La gobernanza europea. Un Libro Blanco*. Luxemburgo, Luxemburgo, COM (2001) 428 final.

Descalzo González, A. (2017). El buen gobierno de los altos cargos. *Revista General de Derecho Administrativo, 44*.

Esteller-Moré, A., & Polo Otero, J. (2012). Fiscal transparency. (Why) does your local government respond? *Public Management Review, 14*(8), 1153-1173. http://doi.org/10.1080/14719037.2012.657839.

FEMP (2015). *Código de Buen Gobierno Local FEMP*. Recuperado de: https://bit.ly/2qJSxvZ [Fecha de consulta: 1 de julio de 2019].

Fernández Llera, R. (2009). Fiscalización de la gestión pública en los órganos de control externo de las comunidades autónomas. *Presupuesto y Gasto Público, 57*, 135-154.

Fernández Llera, R. (2015). Transparencia y rendición de cuentas locales tras la supuesta racionalización. *Presupuesto y Gasto Público, 81*, 131-150.

Frías Aceituno, J. V.; Marques, M. C., & Rodríguez Ariza, L. (2013). Divulgación de información sostenible: ¿se adapta a las expectativas de la sociedad? *Revista de Contabilidad, 16*(2), 147-158. http://doi.org/10.1016/j.rcsar.2013.07.004.

García Jiménez, A. (2018). El empleado público como epicentro del buen gobierno. *Revista General de Derecho Administrativo, 49*, 1-45.

García Pelayo, M. (2009). Del mito y de la razón en la historia del pensamiento político. En M. García Pelayo, *Obras completas II* (pp. 1229-1240). Madrid, España: Centro de Estudios Políticos y Constitucionales.

García-Sánchez, I. M.; Frías-Aceituno, J. & Rodríguez-Domínguez, L. (2013). Determinants of corporate social disclosure in Spanish local governments, *Journal of Cleaner Production, 39*, 60-72. http://doi.org/10.1016/j.jclepro.2012.08.037.

González García, J. M. (2016): *La mirada de la justicia*. Madrid, España: Antonio Machado Libros.

Guillamón, M. D.; Bastida, F., & Benito, B. (2011). The determinants of local government's financial transparency. *Local Government Studies, 37*(4), 391-406. http://doi.org/10.1080/03003930.2011.588704.

INAP (Instituto Nacional de Administración Pública) (2016). *La normativa autonómica en materia de derecho de acceso a la información Pública*. Madrid, España: INAP.

Irwin, T. C. (2013). Shining a light on the mysteries of State: The origins of fiscal transparency in Western Europe. *IMF Working Papers, WP/13/219*, 1-43.

Palomar Olmeda, A. (2014). La articulación general de la responsabilidad derivada de la gestión de fondos públicos. En VV.AA.: *XVIII Jornadas de presupuestación, contabilidad y control público. Contabilidad, transparencia y responsabilidades públicas* (pp. 249-285). Madrid, España: IGAE.

Ridao Martín, J. (2014). La regulación de la transparencia y del acceso a la información pública en la esfera autonómica. Un estudio comparado. *Revista General de Derecho Constitucional, 19*, 1-31.

Serrano-Cinca, C.; Rueda-Tomás, M., & Portillo-Tarragona, P. (2009). *Factors influencing e-disclosure in local public administrations*, *Environment and Planning C: Government and Policy, 27*(2), 355-378. http://doi.org/10.1068/c07116r.

Skinner, Q. (2009): *El artista y la filosofía* política. *El Buen Gobierno de Ambrogio Lorenzetti*. Madrid, España: Trotta.

Suárez Pandiello, J., & Fernández Llera, R. (2017). From legal transparency to good governance in the Spanish municipalities. En B. Cuadrado-Ballesteros e I. M García-Sánchez, (Eds.), *Local governments in the digital era. Looking for accountability* (pp. 113-130). Nueva York, Estados Unidos: Nova Science Publishers.

Tejedo-Romero, F., & Ferraz Esteves Araujo, J. F. (2018). Transparencia en los municipios españoles: determinantes de la divulgación de información. *Convergencia, Revista de Ciencias Sociales, 78*, 153-174. http://doi.org/10.29101/crcs.v25i78.9254.

Teré Peréz, A. (2015). La rendición de cuentas y la remisión de los contratos de las entidades locales a las instituciones de control externo: la distinción entre deber y obligación. *Auditoría Pública, 66*, 93-104.

Tribunal de Cuentas (2003). M*oción relativa a las posibles soluciones legales y administrativas para que las entidades locales rindan sus cuentas de forma completa y en los plazos legalmente establecidos*, Recuperado de: https://bit.ly/2JsQGlE [Fecha de consulta: 15 de septiembre de 2019].

Tribunal de Cuentas (2013). *Normas de fiscalización del Tribunal de Cuentas, aprobadas por el Pleno el 23 de diciembre de 2013*, Recuperado de: https://bit.ly/2JsQGlE [Fecha de consulta: 1 de octubre de 2019].

Tribunal de Cuentas (2014). *Informe sobre actuaciones del Tribunal de Cuentas para promover la rendición de cuentas en el ámbito local*, Recuperado de https://bit.ly/2JsQGlE [Fecha de consulta: 1 de octubre de 2019].

Tribunal de Cuentas (2016). Informe *de fiscalización del sector público local, ejercicio 2014*. Recuperado de: https://bit.ly/2JsQGlE [Fecha de consulta: 10 de octubre de 2019].

Tribunal de Cuentas (2018). *Fiscalización sobre la rendición de cuentas de las entidades locales, ejercicio 2016, con especial atención a entidades con incumplimientos reiterados de dicha obligación*. Recuperado de: https://bit.ly/2JsQGlE [Fecha de consulta: 10 de agosto de 2019].

Vila i Vila, J. (2013). Determinantes de la transparencia contable en los municipios. *Auditoría Pública, 60*, 57-64.

Villoria Mendieta, M. (2014). La transparencia como política pública en el nivel local. *Revista Democracia y Gobierno Local, 26/27*, 4-16.

Wang, R. F. *et al*. (2015). Trends in fiscal transparency: Evidence from a new database of the coverage of fiscal reporting. *IMF Working Papers, WP/15/188*, 1-37.

Retos, 10(19), 2020
Journal of Administration Sciences and Economics | p-ISSN: 1390-6291| e-ISSN: 1390-8618
www.retos.ups.edu.ec

Corporate Governance Code in Argentina: analysis of the compliance level

Código de Gobierno Societario en la Argentina: análisis del nivel de cumplimiento

Mg. Eliana Barco is a professor at the Administration Department of Universidad Nacional del Sur (UNS) (ebarco@uns.edu.ar) (https://orcid.org/0000-0003-0462-8308)

Dra. Anahí Briozzo is a professor at the Administration Department of Universidad Nacional del Sur (UNS) e investigadora del Instituto de Investigaciones Económicas y Sociales del Sur (IIESS, UNS-CONICET) (abriozzo@uns.edu.ar) (https://orcid.org/0000-0002-7865-2821)

Abstract

A Corporate Governance Code is a set of rules, principles, and recommendations for the behavior and operation, considered as the best practices for the good governance of organizations, in order to improve transparency, disclosure, and accountability. This paper analyzes the degree of compliance with the Corporate Governance Code in Argentina, where the Code is mandatory for companies that make a public offering of their securities. The empirical work is carried out in a sample of 20 national capital companies, excluding the financial sector and the companies that cross-list their values. The analysis of the level of compliance of the code presented by each firm is developed from two perspectives: the self-assessment carried out by the company, according to the principle of comply or explain, and the analysis performed by an external evaluator, based on publicly available information. The results show that the level of compliance is higher from the perspective of self-assessment and for larger companies. The principles of greater compliance, regardless of the size of the company, are those related to related parties and the audit function. In companies with greater capitalization, adherence to the principle of business ethics is also high. The principle referred to remunerate in a fairly and responsibly way presents the lowest compliance in all the studied companies.

Resumen

Un Código de Gobierno Corporativo es un conjunto de normas, principios y recomendaciones de comportamiento y funcionamiento, considerados como las mejores prácticas para el buen gobierno de las organizaciones para mejorar la transparencia, divulgación y rendición de cuentas. En el presente trabajo se analiza el grado de cumplimiento del Código de Gobierno Societario en la Argentina, que es de presentación obligatoria para las empresas que hacen oferta pública de sus títulos. El trabajo empírico se lleva cabo en una muestra de 20 empresas de capitales nacionales, excluyendo al sector financiero y a las compañías que realizan *cross listing* de sus valores. Se determina el nivel de cumplimiento del código presentado por cada firma desde dos perspectivas: la autoevaluación realizada por la propia emisora, según el principio de cumplir o explicar, y el análisis efectuado por un evaluador externo, a partir de la información públicamente disponible. Los resultados muestran que el nivel de cumplimiento es mayor desde la óptica de la autoevaluación, y para las empresas de mayor tamaño. Los principios de mayor cumplimiento, independientemente del tamaño de la compañía, son los referidos a partes relacionadas y a la función de auditoría. En las firmas de mayor capitalización también resulta elevada la adhesión al principio de ética empresarial. El principio referido a remunerar de manera justa y responsable presenta el menor cumplimiento en todas las empresas estudiadas.

Keywords | palabras clave

Corporate Governance Code, comply or explain principle, Argentina, governance, accountability, shareholders, good practices.
Código de gobierno corporativo, principio cumplir o explicar, Argentina, gobernanza, rendición de cuentas, accionistas, buenas prácticas.

Suggested citation: Barco, E., & Briozzo, A. (2020). Corporate Governance Code in Argentina: analysis of the compliance level. *Retos Revista de Ciencias de la Administración y Economía, 10*(19), 45-62. https://doi.org/10.17163/ret.n19.2020.03

Received: 28/06/2019 | Reviewed: 13/11/2019 | Approved: 04/12/2019 | Published: 01/04/2020

Retos, 10(19), 2020

1. Introduction and state-of-the-art

The corporate scandals that occurred at the beginning of the century in different countries originated the topic on the Corporate Governance (CG) on the agenda, making the different actors to seek for better governance practices. As a result, a regulatory and legislation process was initiated to prevent financial fraud and administrative corruption, increase the veracity of information, generate credibility and protect stakeholders in general. It should be noted that among the objectives for sustainable development posed by the United Nations is that of "promoting societies that are fair, peaceful and inclusive" (Objective 16). In particular, one of the goals proposed is directly linked to the CG, stating that it seeks to "create, at all levels, effective and transparent institutions that are accountable" (target 16.6) (ONU, 2015).

The objective of this research is to carry out an analysis and measurement of the Corporate Government in Argentina, through the study of the Corporate Governance Code (CGC) presented by companies. A quantitative index of the degree of compliance with the CGC is defined from a comprehensive analysis of the reports submitted by the companies participating in the Argentina securities markets and subject to the Regulation of the Res. 606/12 of the National Securities Commission (CNV), which is based on the principle of complying or explaining. This principle is present in most CG codes of the world (Seidl, Sanderson & Roberts 2013), and it was originally proposed by the Cadbury Committee in the United Kingdom (Committee on the Financial Aspects of Corporate Governance, 1992), and it implies that companies can meet the requirements of the code or explain why they do not meet them, in contrast to the mandatory regimes such as the Sarbanes-Oxley Act of the United States.

The level of compliance with the CGC is studied from two points of view: the one declared by the company, and the one that arises from the documentary analysis of the explanations provided in the CGC. Subsequently, it checks whether there are differences in compliance based on the size of the company, and it describes the principles with greater and lesser adherence and dispersion in the evaluations. The population under study are 42 issuers of national capital shares of the Argentinian stock markets, whose securities are not listed in other markets, excluding the financial sector that is subject to differential regulations. The sample consists of 20 companies, taking the ten largest market capitalization and the ten lowest capitalization.

1.1. Codes of Corporate Governance: the principle of complying with or explaining

A Code of Corporate Governance is a set of rules, principles and recommendations of behavior and functioning considered as the best practices for the good governance of organizations to improve transparency, disclosure and management of accounts (Zattoni & Cuomo, 2008; Fornero, 2007). Codes are based on the doctrinal concepts inherent to the best practices in the field in force at a time to regulate relationships between stakeholders.

The presence of codes becomes relevant when other mechanisms, such as the legal system, the company's policies and rules, control systems, among others, are not

effective. In the absence of other protection mechanisms for shareholders, codes are designed to improve the functioning of the board and the quality of information and accountability (Fornero, 2007).

Zattoni and Cuomo (2008) adhere to this approach, noting that the codes aim to fill the gaps in governance systems, regulating the aspects that create the highest risks to shareholders and are a source of conflict with the managers.

Codes have been developed and evolved before the laws of the matter. They are issued and legitimized by the same State or by stock exchanges, and are implemented by corporate laws, regulations or private compliance structures.

Fornero (2007) indicates that there is some worldwide convergence on the contents and recommendations of the codes on transparency, accountability, independence and board of directors. The emphasis on some issues adapts to each country's economic environment and its main CG problems. It also points out that the existence of a code is more relevant in countries with weak legal systems. A study by Zattoni and Cuomo (2008) found that common law countries are more likely to develop codes than civil law countries, which adopt codes against the risk of losing legitimacy rather than for reasons of efficiency or willingness to improve their practices.

An important number of codes adopt the principle to comply or explain: the organization is not obliged to comply with the postulates stated in the Codes of Good Practice, but if it does not, it must explain why it does not do it. The principle of complying or explaining takes a flexible approach, considering that there is no single form or measure for all organizations, and that, under certain circumstances, organizations may not comply or apply for some recommendations. Its essence is to justify non-compliance for particular cases or special situations (Seidl, Sanderson & Roberts 2012).

The effectiveness of self-regulation initiatives has been discussed in the literature, with mixed results. With regard to non-compliance, Merkl-Davies and Brennan (2007) indicate that silence may be a particular tactic in relation to soft law disclosures, where there is little or no oversight by regulators.

Considering the costs of implementing good governance practices, the level of compliance with the CG code can be conceptually linked to the size of the company, although the empirical evidence is not uniform. Campbell *et al.* (2009) study Polish companies and find that the level of compliance has no statistical relation to the size of the company. 16% of companies comply with 100% of the code. The principle that meets the highest non-compliance is the independence of the board members (74%), followed by the absence of audit and remuneration committees (66%).

Benavides Franco and Mongrut Montalvan (2010) observe that between 2001 (date of the first introduction of the CG code requirement in Colombia) to 2006, 101 companies had issued their CG code, out of which 43 belonged to the non-financial sector. The average level of compliance, measured as the percentage of positive responses relative to the total, was 46% in that period, with a very low positive correlation with the size of the company. The level of compliance with the code has been increasing in Colombian companies, reaching 71% in the period 2008-2014 (Lagos Cortés, Betancourt Ramírez & Gómez Betancourt, 2018). The highest compliance is in the recommendations of the dimension concerning the shareholders' meeting

Retos, 10(19), 2020

(81%), while the least accession is presented in the recommendations for dispute resolution (60%).

In Chilean companies, the degree of adoption of corporate governance practices is lower than in Colombia, with 40% for the most liquid at the market liquidity in 2015 (Moraga & Ropero, 2018). For both groups of companies, the group of principles with the highest compliance were those related to risk management and control. The trend in code compliance has been slightly positive in the period 2015-2017, increasing by an average of 6% (Torres, Troncoso & Ramírez, 2019).

Briano-Turrent and Poletti-Hughes (2017) build a CG index for the signatures of the major stock indices of Argentina, Brazil, Chile and Mexico, and find that the average value of the index was 64, in the period 2004-2010, with a strong positive ratio with the size of the company. Therefore, considering the conceptual and empirical background, the following hypothesis is proposed:

H1: CGS compliance has an inverse relationship with the company size.

Bianchi *et al.* (2011) find that 85.9% of Italian companies formally comply with the recommendations of the principle of transactions with related parties, but only 32.6% have implemented these recommendations in a way that the authors consider satisfactory. This gap is higher for non-financial and smaller firms.

Luo and Salterio (2014) study the adoption of good practices in Canada and observe that only 7% fully adopt them. The compliance by explanation rather than by adoption applies to practices that have high costs to the company. For those firms very close to full compliance, the principles that are not verified are mostly those related to the independence of the board and its subcommittees (independence of the council president, search and meetings of independent directors from the remuneration and nomination committees).

Shrives and Brennan (2017) analyze 100 UK companies at two points with regulatory change (2004/05 and 2011/12), finding that 43% of companies in 2011/12, and 63% in the previous period do not comply with any of the principles. The analysis shows an increase in the rhetorical strategies employed in the justification of non-compliance, with a preponderance of misleading explanations rather than convincing and meaningful reasoning. Taking into account the background presented, the following hypothesis is made:

H2: The company's self-assessment differs from the results of an evaluation by an external analyst

1.2. CG regulatory framework in Argentina

Argentina has a market of low-development capital like other countries in the region and emerging markets. This market is characterized by concentration of ownership, low liquidity and low level of activity of institutional and intermediary investors and low level of transparency. In this context, the incentives of companies for voluntary

adherence to good practices and CG codes are scarce, causing an adhesion given by the Institutional[1] component (CEF, 2005).

In the public aspect, it was noted that Argentina had lower performance than other countries in the region in terms of institutional CG and formal requirements. Therefore, there is a space to improve the institutional CG, the effective implementation of sanctioning actions and strengthen legal certainty and the protection of minority shareholders' rights (Villegas, 2006).

The regulatory framework in force in Argentina for companies under public offerings includes the General Law on Companies (Law 19550), the Capital Markets Act (Law 26831) and the CNV Norms (2013). This regulatory package establishes the obligation to have an audit committee, composed of at least three board members (administrative board) and whose majority shall be independent. The criteria for the independence of directors and the obligation to submit affidavits regarding the condition of independence are also established. External auditors must also be independent, the related parties are defined and the obligation to report acts and contracts prior approval is established where necessary.

Regarding the CGC, in 2006 the CNV issued a General Resolution 493/06 by which companies that list securities on the stock exchange had to answer a questionnaire of 14 questions related to compliance with the principles underpinning the Corporate Governance. Subsequently, Resolution 516/07(CNV) was issued, approving the CGC of companies authorized to publicly offer the representative shares of their capital share. This resolution establishes the obligation to submit a report on compliance with CG in order to prepare the accounting statements of the entity's exercise in order to be disseminated as a relevant fact. The implementation of the code is discretionary and voluntary, complemented by the methodology of complying or explaining by a report to be prepared by the governing body and to be included as a member of the social report. In 2012, the CNV replaced the annual report to be submitted on Corporate Governance with a more complete report, as set out in the Res. CNV 606/12. This Resolution creates a Corporate Government Code structured on principles and recommendations, with minimum requirements and content to be met by entities authorized to make a public offering of their marketable securities. The nine principles are summarized in Table 1.

1 The institutional dimension, also known as external, is normative. It is represented by the regulatory framework, the legal system and the network of institutions of a country. It is defined by the laws and regulations in force in each country, hence it is mandatory.

Table 1. Contents of the CGC (Res. CNV 606/12)

Principle	Title	N.R.	Content
1	Transparent the relationship between the issuers, the economic group leading and/or integrating it and its related parties	3	Existence of i) authorization regulations of transactions between related parties ii) conflict-of-interest prevention mechanisms; (iii) mechanisms to prevent misuse of privilege information.
2	Lay the foundation for sound management and supervision of the issuer	7	Role of the management body (MB) in the strategic planning, policy of CG and RSE, selection, evaluation, remuneration and succession of frontline managers; management and performance control of the first management line; participation of independent members in the MB (minimum 20%); existence and operation of the appointments committee (non-compulsory committee); selection, training, evaluation and succession of MB members and limits for their participation in other organizations.
3	Endorse an effective policy of identifying, measuring, managing and disseminating business risk	1	Existence of up-to-date comprehensive risk management policies, a risk management committee, indicating the methodology used (COSO, ISO 31000, etc.).
4	Safeguard the financial information with independent audits	1	Independent majority in the Audit Committee (mandatory committee), existence of internal audit function; analysis of the independence of external auditors, a policy of rotation of external auditors.
5	Respect the shareholder rights	6	Existence of regular briefings with shareholders; information mechanisms for investors and website; mechanisms to promote the participation of minority and institutional shareholders; equality between action and vote; mechanisms to protect against takeovers; stock dispersion of min. 20%; transparent dividend policy.
6	Maintaining a direct and responsible bond with the community	1	Existence of publicly accessible website i) with relevant information and communication channel; ii) Social and environmental responsibility balance with independent external auditor verification; iii) adoption of standards (GRI, ISO 26000, etc.).
7	Pay in a fair and responsibly way	1	Existence of remuneration committee, composition and operation; or detail the compliance with these functions within the MB.
8	Encourage business ethics	1	Existence of i) code of business conduct and application to MB, employees, customers, suppliers; ii) mechanisms for receiving complaints confidentially: iii) policies for the management and resolution of complaints
9	Deepen the scope of the code	1	Inclusion of GCC Forecasts in the Social Statute

Note: N.R Refers to the number of recommendations included
Source: Own elaboration

1.3. Analysis and measurement of CG in Argentina

The evolution of the corporate governance concept and the significance that it has acquired in recent years has led to the development of indicators that allow to evaluate and measure the good practices of corporate governance of companies. There are a lot of indicators both commercial, academic and institutional.

The Argentine Stock Exchange has not yet developed an institutional corporate governance index. The measurement history is detailed below. In 2006, the CEF designed the first CG index for Argentina: The Transparency and Dissemination Index (TDI), which aimed to provide a quantitative and objective measure to track the evolution of corporate governance of companies in Argentina. The TDI is based on the public information (from various sources) of each company. Bebczuk (2005) built a CG index for listed companies on the Stock Exchange. It is based on a transparency and dissemination index which is constructed with public information, and in a government index that is completed with business survey information. The response rate of these surveys has been very low. Therefore, the transparency index is considered as the CG measure, given the high correlation with it. At the time of construction, the adoption of the code was voluntary, thus its disadvantage is that it only showed the information that the company wanted to show publicly, generally related to accounting aspects.

IDEA (2010) conducted an analysis of the CNV RG 516/07 in 30 companies, with the aim of analyzing the compliance (proactive adhesion) vs formal (reactive adhesion). Gutierrez and Marcos (2018) analyze a sample of 14 companies from different sectors, including companies in the financial sector and during the period 2013 to 2016, finding that in most analyzed companies the compliance (self-assessed) of the CGC exceeds 70%.

2. Materials and methods

2.1. Design, population and sample

The research approach used is mixed with a descriptive scope, using qualitative tools for the documentary analysis of the CGC presented by the issuer and a subsequent quantitative analysis of the results.

The design of the research is not experimental, since "only phenomena are observed in their natural environment to be analyzed" (Hernández Sampieri *et al*., 2010, p. 149). As regards the temporal scope, the analysis was carried out on the CGC presented in the financial years ended in 2015/2016. This work analyses secondary data sources, in particular the CGC submitted by companies in the period 2015/2016. The information is available free of charge on the CNV website.

The population under study are the open capital companies that issue shares in the Argentine stock markets, listed in the general panel and which meet certain requirements. Based on a total of 97 listed companies, it was proceeded to exclude: a) those listed in international markets and those regulated by the Central Bank of Argentina (because they are subject to differential regulations of corporate gover-

Retos, 10(19), 2020

nance), and b) those that make up the SME panel, even if they may be included as undertakings to be analyzed by their capitalization, because they are not required to submit the CGC. This exclusion procedure is due to evaluate companies that submit information under the same regime, thus eliminating issuers that have variations not because of their behavior, policy or decision, but because they are achieved by a different framework of regulatory regulations compared to the CG. This eliminates institutional variations and analyses only organizations comparable to each other in terms of legislation and way of presenting the information. Therefore, the population is reduced to 42 companies, the sample selected in this study consists of a total of 20 companies: ten companies with the highest market capitalization and ten with the lowest market capitalization on the indicated date.

2.2. Analysis tools

Data analysis is performed in various stages: a first stage of qualitative data analysis and then a quantitative stage of summary results that allows to obtain an index that summarizes the level of compliance of CGC.

First, a documentary analysis of the CGC of each company studied is carried out according to the degree of compliance declared. A value of 0 is assigned if the company declares not to comply with the recommendation; 0.5 if the company declares partial compliance and a value of 1 if the company declares full compliance. For each of the nine principles that make up the CGC, relative compliance is determined according to the following key figure:

$$\text{Relative compliance of the principle}_i = \sum \frac{\text{Compliance and recommendations of the principle}_i}{\text{Number of recommendations of the principle}_i}$$

For example, Principle I is composed of the following recommendations. If an enterprise declares full compliance in Recommendation I.1 (1 point), partial in Recommendation I.2 (0.5 points) and fails to comply with the recommendation I.3 (0 points), the relative compliance ratio would be:

$$\text{Relative compliance of the principle}_I = \sum \frac{1+0.5+0}{3} = 50\%$$

With this declared information, the principles are ordered according to their relative level of compliance, in order to determine the principles with higher and lower declared compliance, disaggregated by size and comparing both groups.

Subsequently, a new analysis of the CGC is carried out, in order to study the consistency between the proposed self-assessment and the justification provided from the point of view of an external analyst who accesses only publicly available information. For this analysis, the Text Review is used, comparing the requirements specified in the CGC principles with the responses of the companies. The degree of compliance is determined by considering: i) whether the company's response is complete and in accordance with the recommendations of the CGC, (ii) if the processes, policies, actions are detailed as requested, and iii) in the cases it applies, the contrast between the responses and the publicly available information outside the CGC. For

example, when analyzing the independence of the directory, the rotation of the auditors, the number of committees, the existence of a website, not only the response of the issuer in its CGC is taken into account but also the public information about it, and the answer given with external evidence is validated.

Similar to the previous stage, its relative level of compliance is calculated for each principle. This new classification is compared to that obtained by self-assessment in order to determine the principles with greater distance between what the company stated and the opinion of an external analyst, through the absolute difference between the two ratings. Scattering within the same principle is measured in terms of the standard deviation.

The next step is to develop a quantitative index that summarizes the level of CGC compliance for each company. A linear index is developed, where the nine principles have the same weight. The linear methodology is chosen to build the index by interpreting the motivation of the Res. CNV 606/12, to establish nine principles with different recommendations, such as the interest of the comptroller's body to give equal importance to each principle of corporate governance. The index is constructed according to the following key figure:

$$\text{Compliance index of the CGC} = \frac{\sum_{i=1}^{9} \textit{Relative compliance of the principle } i}{9}$$

Thus, if an enterprise has a relative compliance level of 50% in principles I to V, 100% in principles VI to VII and 0% in principle IX, its compliance rate of the CGC will be:

$$\text{Compliance index of CGC} = \frac{0.5 + 0.5 + 0.5 + 0.5 + 0.5 + 1 + 1 + 1 + 0}{9} = 61.1\%$$

This calculation is made considering compliance with each principle both on the basis of the self-assessment of each company and on the analysis of an external analyst.

Differences in the distribution of compliance with the principles and the overall index according to the size of the company, as well as between the self-assessment and the vision of the external analyst, are evaluated by the U Mann-Whitney test (also known as Wilcoxon range sum test), which is a nonparametric test applied to two independent samples.

3. Results

The first section shows the results of the self-assessment carried out by companies, and the degree of self-assigned compliance, obtaining a ranking of met criteria. The following section discusses meeting the criteria from the perspective of an external evaluator, while section 3.3 presents the comparison of both approaches.

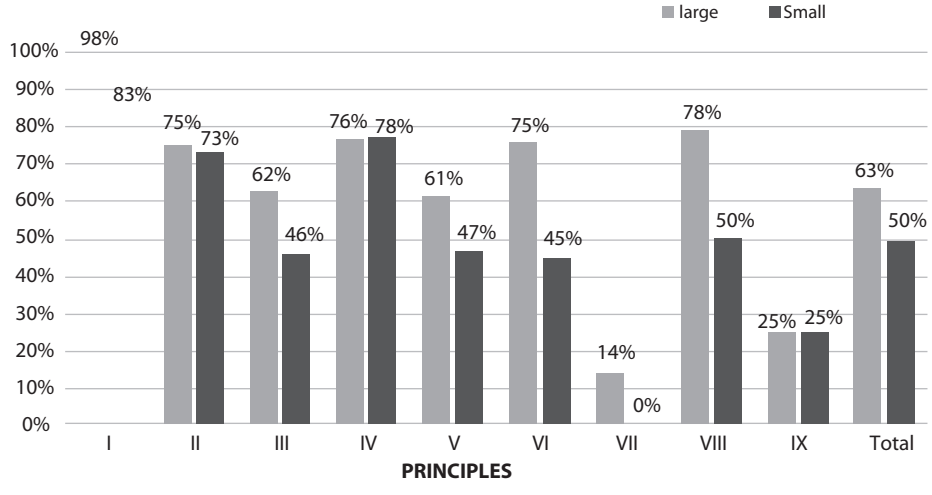
Retos, 10(19), 2020

3.1. Self-assessment of the report on the degree of compliance with the Corporate Governance Code

As can be seen in Figure 1, self-assessment does not have significant differences between large and small companies in relation to the ranking of compliance with principles. In both groups, the principle of higher compliance is Principle I (Transparent the relationship between the issuer and its related parts) and of lower compliance is the VII (Pay fairly). Principles VI (Maintaining Responsible Community Linkage) and VIII (Encouraging Business Ethics) have the greatest differences in the degree of compliance by business size.

Table 2 presents the average values based on the size, standard error, and p-value of the Mann Whitney test. The degree of self-assigned compliance is statistically higher for larger companies when considering the overall index, as indicated in the H1 scenario. However, in studying compliance in principle, it is noted that this difference is relevant only to principles VI (Maintaining a direct and responsible link with the community) and VIII (Promoting business ethics), hence differences in the level of CGC are not homogeneous between principles.

Figure 1. Self-assessment of the principles of *CGC* compliance according to company size



Source: Own elaboration

Table 2. Self-assessment of the principles of CGC compliance according to company size

Principle	Small		Large		p-value
	Mean	Standard Dev.	Mean	Standard Dev.	
P1E	83.4%	35.0%	98.3%	5.4%	0.465
P2E	73.4%	9.3%	74.8%	11.1%	0.762
P3E	51.1%	20.3%	62.0%	29.4%	0.387
P4E	77.8%	19.3%	76.6%	13.7%	0.667
P5E	51.9%	11.7%	61.1%	9.7%	0.125
P6E	45.0%	19.7%	75.0%	26.4%	0.016**
P7E	0.0%	0.0%	14.2%	30.1%	0.147
P8E	49.8%	36.0%	78.3%	35.2%	0.051*
P9E	25.0%	26.4%	25.0%	26.4%	1.000
Total-E	49.8%	12.6%	62.7%	8.3%	0.021**

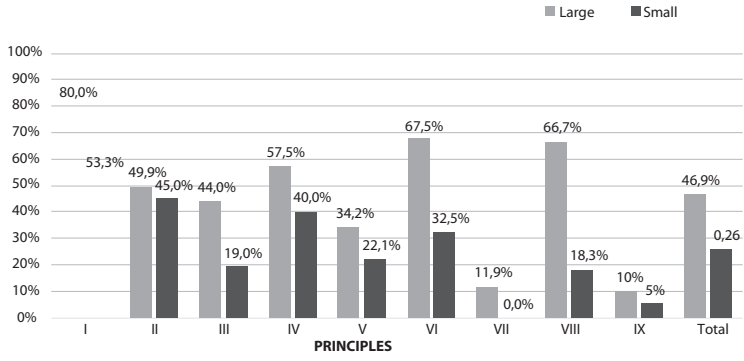
Note: P1E denotes that principle 1 is analyzed according to the company's self-assessment.
p-values of Mann-Whitney test are presented. Statistical significance at 5% (**) and 10% (*).
Source: Own elaboration

Dispersion in compliance with the principles also differs according to the size of the company. While the principles with the greatest dispersion between large companies are the VIII (Encouraging Business Ethics), VII (Pay fairly and responsibly and III (Risk Management), in the smaller firms are the VIII principles (Encouraging ethics), I (Economic group and related parts) and IX (Deepen the scope of the code).

3.2. External evaluation of the report on the degree of compliance with the Corporate Governance Code

Figure 2 shows compliance with the external evaluation in principle, and segregated by the company size. Differences are observed between the two groups, while in large companies the principles of higher compliance are the I (Transparent the relationship between the issuer, the economic group that leads and/or integrates and its related parts), VI (Maintaining a direct and responsible relationship with the community) and VIII (Promoting business ethics); on the other hand, small companies mostly fulfill principles I, II (Laying the foundations for a solid administration and supervision of the station) and IV (Safeguarding the integrity of financial information with independent audits). The principle with lower compliance is the IX (Deepen the scope of the code in large firms) and the VII (Pay fairly and responsibly) in the small companies.

Figure 2. External evaluation of the principles of CGC compliance according to company size



Source: Own elaboration.

Table 3 makes it possible to see that the difference in compliance with principles between large and small companies is higher when considering the assessment of an external analyst. While a significant difference is again seen at the general level of compliance, the behavior in principle differs markedly from that seen in Table 2. Only principle II (Lay the foundation for sound management and supervision of the station) and principle IX (Deepen the scope of the code) have similar compliances between the two groups.

Table 3. External evaluation of the principles of CGC compliance according to company size

Principle	Small		Large		p-value
	Mean	Estándar deviation	Mean	Estándar deviation	
P1A	53.4%	34.0%	79.9%	18.9%	0.076*
P2A	45.2%	8.0%	49.9%	9.4%	0.250
P3A	19.0%	13.7%	44.0%	28.4%	0.047**
P4A	40.2%	24.3%	57.6%	15.8%	0.093*
P5A	22.0%	9.2%	34.3%	9.5%	0.012**
P6A	32.5%	20.6%	67.5%	23.7%	0.004***
P7A	0.0%	0.0%	12.0%	25.3%	0.147
P8A	18.4%	35.6%	66.7%	35.0%	0.011**
P9A	5.0%	15.8%	10.0%	21.1%	0.542
Total-A	26.10%	8.6%	46.80%	9.8%	0.001***

Note: P1A denotes that principle 1 is analyzed according to the external analyst's assessment. P-values of the Mann-Whitney test are presented. Statistical significance at 1% (***), 5% (**) and 10% (*). Source of own elaboration.

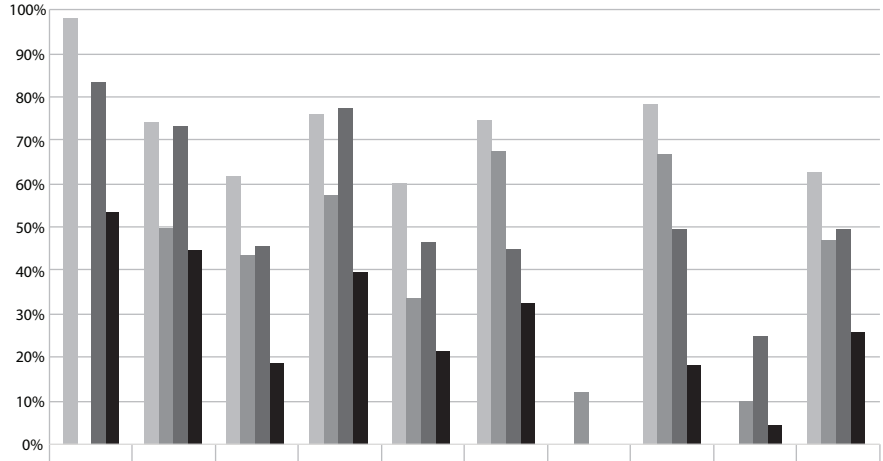
Dispersion in principled compliance under the perspective of the external analyst also differs by company size. While in small companies the most dispersal points are the VIII (Promoting business ethics), I (Economic Group and Related Parts) and IV (Independent Audits), it is observed that the VIII (Promoting Business Ethics), III (Risk Management) and VII (Pay fairly and responsibly) are in the large companies. It is interesting to mention that, for larger companies, the three principles with the greatest dispersion from this perspective are the same as those observed under the company's self-assessment. However, in small firms, the third principle with the greatest dispersion has a change: it is the IX (Deepen the scope of the code) under self-assessment, and the IV (Independent Audits) from the perspective of the external analyst.

In short, the results obtained, both under the company's self-assessment and under an external analyst, show that there is evidence in favor of the H1 hypothesis: compliance with the CGC has an inverse relationship with the size of the company.

3.3. Comparative analysis of assessments

Figure 3 shows the comparison of self-assigned compliance and compliance with the external assessment in principle, and segregated by the company size. The degree of overall compliance is also observed.

Figure 3. Comparison of evaluations of CGC compliance according to the company size



	PRINCIPLES I	PRINCIPLES II	PRINCIPLES III	PRINCIPLES IV	PRINCIPLES V	PRINCIPLES VI	PRINCIPLES VII	PRINCIPLES VIII	PRINCIPLES IX	Total
Large aut.	98%	75%	62%	76%	61%	75%	14%	78%	25%	63%
LArge ext.	80%	50%	44%	58%	34%	68%	12%	67%	10%	47%
Small aut.	83%	73%	46%	78%	47%	45%	0%	50%	25%	50%
Small ext.	53%	45%	19%	40%	22%	33%	0%	18%	5%	26%

Source: Own elaboration.

Retos, 10(19), 2020

Table 4 presents compliance on principle for the entire sample from two perspectives; self-assessment and external analyst. As can be seen, distributions are different for all principles except VI (Maintain a direct and responsible link with the community) and VII (Pay fairly and responsibly). In this way, there is evidence in favor of H2: The company's self-assessment differs from the results of an evaluation by an external analyst.

Table 4. Assessing the principles of *CGC* compliance according to the company and the external analyst

Principle	Self-assessment		External analyst		P-value
	Mean	Standard devi	Mean	Standard devi	
P1	90.9%	25.5%	66.7%	30.0%	0.0008***
P2	74.1%	10.0%	47.6%	8.8%	0.0000***
P3	56.8%	25.4%	31.5%	25.2%	0.0036***
P4	77.2%	16.3%	48.9%	21.9%	0.0001***
P5	56.7%	11.4%	28.2%	11.1%	0.0000***
P6	60.0%	27.4%	50.0%	28.1%	0.3218
P7	7.1%	21.9%	6.0%	18.5%	0.9172
P8	64.1%	37.6%	42.6%	42.4%	0.0910*
P9	25.0%	25.6%	7.5%	18.3%	0.0196**
Total	56.3%	12.3%	36.5%	13.9%	0.0001***

Note: p-values of the Mann-Whitney test are presented. Statistical significance at 1% (***), 5% (**) and 10% (*).
Source: own elaboration.

The characteristics of the principles are then analyzed according to their degree of adherence and their dispersion between assessments.

3.3.1. Principles of greater adherence

In assessing the principles and their level of compliance, it is noted that the principle of greater compliance, both in the evaluation of the company and in the external evaluation is PRINCIPLE I for all companies: Transparent the relationship between the issuer, the economic group that leads and/or integrates and its related parties.

In large companies, it is a principle with a high degree of compliance and agreement between the evaluation of the issuer and the evaluation of the external analyst, with 100% compliance in two of its three recommendations. In small enterprises, the assigned compliance is only 53%, less than the 83% indicated by the issuers in their analyses. The main differences are due to the fact that the issuers consider the recommendations to be fulfilled by the fact that the law is abided by, and do not have complementary actions beyond the current regulations.

Only in the external analyst's assessment, the size of the organization contributes as a differentiator in compliance with the principle: larger companies have better self-evaluations as well as external ones, because large companies in addition to legal recommendations, take complementary actions to transparent relationship

In large companies, PRINCIPILE VIII: Promoting business ethics has very good assessments, ranking second, with less difference between the two assessments (11% net). In general, this difference is due to the lack of explanations about the processes and mechanisms for reporting.

In smaller enterprises, smaller self-compliance (fourth principle in the order of self-compliance) is observed, and a greater difference in external evaluation is noted, which results in 18% compliance with the principle, with seven issuers not complying with it, even though five of them self-assess with some degree of compliance. The main differences are due to the reporting of compliance even when they recognize that they do not have mechanisms or processes, or indicate that they do not consider them necessary to implement them.

Compared to the group of large companies, it can be said that size is a differentiating factor (Tables 2 and 3): large companies have codes of conduct with more mechanisms and processes, as well as their outsourcing; while small companies lack of it and they have not yet recognized the need, often justified in its size.

PRINCIPLE IV (Safeguarding the integrity of financial information with independent audits), has a similar own assessment in both samples, placing third for large enterprises and second for small ones. Within this principle, the highest compliance recommendation for all companies is the annual evaluation by the audit committee of external auditors. The lower-compliance recommendation refers to the rotation of the members of the audit committee and the external auditor for all enterprises, along with the existence of an internal audit function for smaller ones.

3.3.2. Principles of less adherence

At the opposite end, the principles of least compliance for both examples are:

- PRINCIPLE VII (Pay in a fair and responsible way): compliance with the principle is very low, there is no difference between the evaluation made by the external analyst and the self-assessment of the same company. In particular, this principle deals with the existence of the remuneration committee and its functions. It is the only criterion where both assessments do not present any dispersion The size of the station is not a differentiating factor, as all smaller companies self-assess with non-compliance, agreeing with the external evaluation.
- PRINCIPLE IX (Deepen the scope of the code): in both groups of companies it is a principle of low compliance, where companies declare to comply partially only by the fact of submitting the compliance report of the Corporate Government Code established by Resolution CNV 606/12. In addition, they indicate that they do not consider including governance issues in their Social Statute, since they consider that the legislation is sufficient. The external assessment is even smaller, with greater absolute dispersion for small businesses. If percentage variation is measured, the differences between the two assessments are important, especially in small ones: it is the principle of further percentage variation. Comparison between the two groups of companies does not support the assertion that there are differences depending on the size of the organization (Tables 2 and 3).

Retos, 10(19), 2020

4. Conclusions and discussion

The overall objective of this work is to analyze the CGC of the companies participating in the Argentinian stock markets and to develop a quantitative index of compliance with it, assessing differences based on the size of the company and the type of evaluation. The results obtained show that there are differences between the index self-assigned by the station and the index assigned by the evaluation of the external analyst. It is interesting to mention that, while overall compliance with the CGC differs according to the size of the undertakings, it is apparent from the analysis that this difference is not homogeneous between principles.

A secondary goal is to determine which aspects have higher and lower compliance. The principles concerning Related Parties (Principle I) and the Audit function (Principle IV) are the one with more compliance without distinction by size. This is based on compliance with legal provisions that also lead to compliance with the Code. In large companies the principle of Business Ethics (Principle VIII) has a high degree of compliance.

The principles of greater compliance support the institutional dimension of the CG, as well as what Fornero (2007) calls a shareholder-centric notion: the CC as a restricted vision, based on the control through regulatory mechanisms: laws, codes of conduct, regulations, code of good practice. The principles of lower compliance are those related to the Remuneration Committee (result that agree with Campbell *et al*., 2009) and the GS Policy and its inclusion in the statute.

It is concluded that the opinion of an external analyst does not agree with the self-assessment of the stations, which is higher than the external evaluation, indicating that the external analyst performs a more demanding analysis, a result similar to that obtained by Bianchi *et al.* (2011). As Merkl-Davies and Brenann (2007) state, it is sometimes observed that the station is self-assessed as full compliance even if it does not meet or provide explanations. This could be due to the same company being aware of the processes, policies and/or reasons behind its self-assessment. The same is not true of a third party (interested party, investor, control body) that analyses the report: it lacks of internal information to understand and evaluate. These results point to the usefulness of the voluntary contracting of an external auditor of the CGC, who can interact with the company and certify the information presented, as happens on the Lima Stock Exchange. In this way, it would increase confidence in the information presented in the CGC and would work with the protection of all stakeholders.

The study has the following limitations: evaluation carried out only with secondary sources of information, and a small number of companies participating in the capital market. As future lines of research, the sample can be expanded by incorporating more issuers, contacting companies to provide more information and feedback on unexplained issues; analyze public information of the company that responds to points indicated in the report and contact investors to know their perception of the CGC.

The results of this work present a measurement of the Corporate Governance in Argentina, which implies a significant contribution to the comprehensive analysis of government reports in Latin America. In this way, this research is inserted in the topic that analyzes how company managers apply CG codes, which allows to study

the effectiveness of the system to comply or explain. On the other hand, local studies on corporate governance allow capital market control bodies (in Argentina the National Securities Commission) to design mechanisms that promote transparency and accountability, in line with UN Sustainable Development Goals (2015).

Support granted for the research

Entity: Universidad Nacional del Sur (UNS)
Country: Argentina
City: Bahía Blanca
Subsidized Project: Desafíos del gobierno corporativo en empresas argentinas: su relación con la rentabilidad, financiamiento y riesgo
Project´s code: 24/C049.

References

Bebczuk, R. N. (2005). Corporate Governance and Ownership: Measurement and Impact on Corporate Performance and Dividend Policies in Argentina. Inter-American Development Bank - Latin American Research Network - Research Network Working paper #R-516.

Benavides-Franco, J., & Mongrut-Montalvan, S. (2010). Governance codes: facts or fictions? a study of governance codes in Colombia. *Estudios Gerenciales, 26*(117), 85-102.

Bianchi, M., Ciavarella, A., Novembre, V., & Signoretti, R. (2011). Comply or explain: Investor protection through the Italian corporate governance code. *Journal of Applied Corporate Finance, 23*(1), 107-121.

Briano-Turrent, G., & Poletti-Hughes, J. (2017). Corporate governance compliance of family and non-family listed firms in emerging markets: Evidence from Latin America. *Journal of Family Business Strategy, 8*(4), 237-247.

Campbell, K., Jerzemowska, M., & Najman, K. (2009). Corporate governance challenges in Poland: Evidence from "comply or explain" disclosures. *Corporate Governance: The international journal of business in society, 9*(5), 623-634.

CEF (2005). El Gobierno Corporativo en Argentina. Nota de Política N° 5. Centro de Estabilidad Financiera. Recuperado de: https://bit.ly/37Ufm0X [Fecha de consulta 24 de febrero de 2014].

CEF (2006). El Gobierno Corporativo de los Bancos en Argentina. Nota de Política Nº 6. Centro de Estabilidad Financiera. Recuperado de: https://bit.ly/394wmC3 [Fecha de consulta 11 de marzo de 2014].

Comisión Nacional de Valores (2007). Resolución General 516/2007. Código de Gobierno Societario. Buenos Aires, 11 de octubre de 2007. Recuperado de: https://bit.ly/3b8pqFu [Fecha de consulta 23 de febrero de 2014].

Comisión Nacional de Valores (2012). Resolución General 606/2012. Modificación Normas CNV (N.T. 2001) - Código de Gobierno Societario. Buenos Aires, 23 de mayo de 2012. Recuperado de: https://bit.ly/2Un9dpS [Fecha de consulta 4 de marzo de 2014].

Comisión Nacional de Valores (2013). Texto Ordenado Normas Comisión Nacional de Valores 2013. Aprobadas por Ley 26.831 y Decreto Reglamentario 1023/2013. Recuperado de: https://bit.ly/396rOdQ [Fecha de consulta 15 de marzo de 2014]

Comisión Nacional de Valores (2019). Resolución General 797/19. Recuperado de: https://bit.ly/391zdLC [Fecha de consulta 10 de agosto de 2019].

Committee on the Financial Aspects of Corporate Governance (1992). Report with Code of Best Practice [Cadbury Report]. London: Gee Publishing. Recuperado de: https://bit.ly/36NcFNe [Fecha de consulta 20 de febrero de 2014].

Retos, 10(19), 2020

Decreto 677/01 (2001). Poder Ejecutivo Nacional. Régimen de transparencia de la oferta pública. Buenos Aires, 22 de mayo de 2001. Recuperado de: https://bit.ly/2UslF85 [Fecha de consulta 11 de noviembre de 2013].

Fornero, R. (2007). El valor de parecer bueno. Perspectiva financiera de las buenas prácticas de gobernanza empresaria. *XXVII Jornadas de Administración Financiera*. Recuperado de: https://bit.ly/2S9JJtu [Fecha de consulta 22 de julio de 2013].

Gutiérrez, O., & Marcos, D. (2018). Gobierno Corporativo: Medición en empresas cotizantes en la Argentina. *38 Jornadas de Docentes en Administración Financiera (SADAF)*. Recuperado de https://bit.ly/2u4aYxH [Fecha de consulta 15 de marzo de 2019].

Hernández Sampieri, R., Collado Fernández, C., & Baptista Lucio, P. (2014). *Metodología de la investigación*, 6.ª Ed. México DF: McGraw-Hill.

IDEA (2010). Principios de Buen Gobierno. Recuperado de: https://bit.ly/2RT0R7H [Fecha de consulta 18 de abril de 2014].

Lagos Cortés, D., Betancourt Ramírez, J., & Gómez Betancourt, G. (2018). Relación entre gobierno corporativo, control familiar y desempeño en empresas colombianas. *Innovar, 28*(69), 85-98.

Ley Nº 19550. Ley General de Sociedades. Modif. Ley nº 26.994/27.077. Boletín Oficial de la Nación Argentina, Buenos Aires, Argentina, 8 de octubre de 2014. Recuperado de: https://bit.ly/2u6MvYF [Fecha de consulta 15 de marzo de 2019].

Ley Nº 26831. Mercado de Capitales. Boletín Oficial de la Nación Argentina, Buenos Aires, Argentina, 27 de diciembre de 2012. Recuperado de: https://bit.ly/2RRN8OG [Fecha de consulta 18 de abril de 2014].

Luo, Y., & Salterio, S. E. (2014). Governance quality in a "comply or explain" governance disclosure regime. *Corporate Governance: An International Review, 22*(6), 460-481.

Merkl-Davies, D., & Brennan, N (2007). Discretionary Disclosure Strategies in Corporate Narratives: Incremental Information or Impression Management? *Journal of Accounting Literature, 26*, 116-196

Moraga, H., & Ropero, E. (2018). Gobierno Corporativo y desempeño financiero de las empresas más importantes del mercado bursátil chileno. *Revista Venezolana de Gerencia, 23*(81), 145-162.

ONU (2015). Objetivos de desarrollo sostenible. Recuperado de: https://bit.ly/2GPBspd [Fecha de consulta 15 de noviembre de 2019].

Shrives, P. J., & Brennan, N. M. (2017). Explanations for corporate governance non-compliance: A rhetorical analysis. *Critical Perspectives on Accounting, 49*, 31-56.

Seidl, D., Sanderson, P., & Roberts, J. (2013). Applying the 'comply-or-explain' principle: discursive legitimacy tactics with regard to codes of corporate governance. *Journal of Management Gove, 17*(3), 791-826.

Torres, F. E. A., Troncoso, R. C., & Ramírez, V. S. (2019). Adopción de prácticas de gobierno corporativo del mercado chileno en el trienio 2015-2017. *Visión de Futuro, 23*(2), 1-17.

Villegas, M. (2006). *Gobierno Corporativo en Argentina.* Univ. Del CEMA. Recuperado de: https://bit.ly/37WfHQr [Fecha de consulta 12 de abril de 2014].

Zattoni, A., & Cuomo, F. (2008). Why Adopt Codes of Good Governance? A Comparison of Institutional and Efficiency Perspectives. *Corporate Governance: An International Review, 16*(1), 1-15.

Retos, 10(19), 2020
Journal of Administration Sciences and Economics | p-ISSN: 1390-6291| e-ISSN: 1390-8618
www.retos.ups.edu.ec

Economic growth in an enterprising region in Ecuador

Crecimiento económico en una región emprendedora en el Ecuador

Paúl Moina-Sánchez is a researcher at Universidad Técnica de Ambato (Ecuador) (pmoina9124@uta.edu.ec) (https://orcid.org/0000-0001-5286-6787)

Lilián Morales-Carrasco is a professor and researcher at Universidad Técnica de Ambato (Ecuador) (lilianmorales@uta.edu.ec) (http://orcid.org/0000-0001-7026-4544)

Ana Córdova-Pacheco is a professor and researcher at Universidad Técnica de Ambato (Ecuador) (anaccordova@uta.edu.ec) (https://orcid.org/0000-0001-6330-3306)

Abstract

This article analyzes the levels of early entrepreneurship of the strategic industries of the main port of Ecuador, in the province of Guayas in the period 2012-2016. Secondary sources were used in relation to the business activity corresponding to the companies in the Superintendence of Companies of Ecuador and the Internal Revenue Service of Ecuador for sole proprietorships. On the other hand, Value Added Data Gross and the economically active population, the unemployment rate of the Institute of Statistics and Census of Ecuador were obtained from the Central Bank of Ecuador, and with this information the TEA (total early-stage entrepreneurial activity) was obtained as well as the % of companies established in the province of Guayas, in order to design two econometric models by ordinary least squares, in which the incidence of TEA was verified as well as the established companies in terms of economic growth and the incidence of unemployment and companies established in the TEA. The results showed that the TEA and the rate of established companies accounted for 97.07% of the province's economic growth, especially in the textile, garment, processed food and beverages, where high new and emerging entry rates are evident. Additionally, it was found that there is an inverse relationship between unemployment and entrepreneurship.

Resumen

Este artículo analiza los niveles de emprendimiento temprano de las industrias estratégicas del principal puerto del Ecuador, en la provincia de Guayas en el período 2012-2016. Se utilizaron fuentes secundarias en lo que respecta a la actividad empresarial correspondientes a las sociedades en la Superintendencia de Compañías del Ecuador y del Servicio de Rentas Internas del Ecuador para las empresas unipersonales, por otro lado del Banco Central del Ecuador se obtuvieron datos del Valor Agregado Bruto y la población económicamente activa, la tasa de desempleo del Instituto de Estadísticas y Censos del Ecuador; con esta información se obtiene la TEA (Tasa de actividad emprendedora temprana) y el porcentaje de las empresas establecidas en la provincia de Guayas. Se diseñaron dos modelos econométricos mediante mínimos cuadrados ordinarios, en los cuales se comprobó la incidencia de la TEA y las empresas establecidas en el crecimiento económico y la incidencia del desempleo y las empresas establecidas en la TEA. Los resultados evidenciaron que la TEA y la Tasa de Empresas Establecidas explican en un 97,07% el crecimiento económico de la provincia especialmente en los sectores textiles, confecciones, alimentos y bebidas procesadas donde se evidencian altas tasas de entrada nacientes y nuevas, además se constató que existe una relación inversa entre el desempleo y el emprendimiento.

Keywords | palabras clave

Early entrepreneurial activity, established companies, economic growth, unemployment.
Actividad emprendedora temprana, empresas establecidas, crecimiento económico, desempleo.

Suggestedd citation: Moina-Sánchez, P., Morales-Carrasco, L., & Córdova-Pacheco, A. (2020). Economic growth in an enterprising region in Ecuador. *Retos Revista de Ciencias de la Administración y Economía, 10*(19), 63-78. https://doi.org/10.17163/ret.n19.2020.04

Received: 04/07/2019 | Reviewed: 19/11/2019 | Approved: 11/12/2019 | Published: 01/04/2020

Retos, 10(19), 2020

1. Introduction

Entrepreneurship is a global process present in all countries, which has developed since the existence of man, who has explored and worked as part of his/her provider nature. This economic initiative is seen as an option to labor and the need to generate wealth (Rodríguez, 2014). According to the report of the Global Entrepreneurship Monitor (GEM) (2017), in the last decade, half Latin American and Caribbean countries have presented significant, mainly positive, changes promoted by prudent macroeconomic policies that have allowed to face external shocks, and poverty levels which have reduced to less than half compared to the beginning of 2000, a middle class that has grown, and a strong investment that has occurred in Education, infrastructure and the productive strengthening of companies.

Entrepreneurship in Latin America and the Caribbean (LAC) is abundant, however, according to the World Bank report (2014), companies in this region are smaller and less likely to grow and innovate. The report reveals some positive facts, LAC is an area of entrepreneurs where the number of companies per capita is higher than in other countries and regions and in which the rate of entrepreneurs whose businesses are legally registered is considerably high in several economies of the region. However, despite a large number of companies, there is a considerable difference in innovation between LAC and the rest of the regions. This delay affects large and small companies, including companies with an export market.

In Ecuador, the term entrepreneurship started to arise since 2000 (Araque, 2015). Ecuador is the country with the highest total early-stage entrepreneurial activity (TEA) in Latin America and the Caribbean, and according to the report of the GEM Ecuador 2016 (2017) the total early-stage Entrepreneurial Activity at 2016 was 31.8%, the highest percentage was recorded in 2013 with 35.9%, time that is called "the entrepreneurship boom in Ecuador."

In this context, the topics to be addressed in this article are: Do the TEA and the established businesses influence the economic growth of the Guayas province? Are the province's unemployment rates related to the entrepreneurial activity?

The article is structured as follows: the first part provides a brief review of the literature on entrepreneurship and economic growth; the second part presents the methodology used for estimating the different econometric data and models; the third part indicates the results obtained; the fourth part presents the discussion of the results; finally, the conclusions present the information drawn from the investigation.

1.1. Review of the literature

The relationship between entrepreneurship and economic growth has been extensively studied, and the results of the different works do not indicate a single pattern, but vary depending on the region analyzed and the variables and indicators used. However, most studies confirm the positive relationship between the entrepreneurial activity and the economic growth (Stam, Suddle, Hessels & Stel, 2006; Acs, Audretsch, Braunerhjelm & Carlsson, 2012; Galindo & Méndez, 2012; Dau & Cuervo-Cazurra, 2014; Galindo, Mendez, & Castaño, 2016).

Lupiáñez, Priede and López (2014) and Galindo *et al.* (2016) carry out a review of a significant number of works addressing this relationship, which highlights that the promotion of a solid business base generates wealth, employment and well-being (Comisión Europea, 2003); in turn, the study of Lupiáñez *et al.* (2014) proposes that knowledge is a decisive factor, since the entrepreneur is the economic agent with the ability to convert knowledge into knowledge with economic value, being a main figure in the economic growth.

The role of cultural variables is taken into account in order to understand the relationship between the entrepreneurial activity and the economic growth in some works (Jaén, Fernandez & Liñán, 2013; Pinillos Costa, 2011), innovation and private investment (Galindo & Mendez, 2012) and the investment in knowledge (Acs, Audretsch, Braunerhjelm & Carlsson, 2012), which were determining variables in such works. Jaén *et al.* (2013) mention that the variable early entrepreneurial activity along with cultural variables help predict the level of economic growth, this relation was contrasted using a linear regression analysis on a sample of 56 countries (2001 to 2011), which revealed a negative global relationship between TEA and the level of income per capita, in which entrepreneurial activity explains in 37.8% the variance of the income level.

Galindo and Méndez (2012) considered a sample of 11 countries[1] during the period 2000-2010 to determine the relationship between entrepreneurs and the economic growth, using a logarithmic regression model which yielded significant results, where entrepreneurs have a positive effect on the growth, this being the main difference with the study of Jaén *et al.* (2013) that identified an inverse relationship between these two factors. It should be noted that Galindo and Mendez (2012) also included exogenous variables, innovation and private investment in the regression model, in which innovation also positively explains the economic growth, along with the entrepreneurial activity. Subsequently, Galindo, Mendez, and Castaño (2016) expanded this perspective, and they affirmed in their research that entrepreneurship is one of the main factors to stimulate the economic growth, because the entrepreneur is the one who uses the resources of capital and work for the generation of wealth that will be distributed in the society; it is essential that this distribution is fair, avoiding social tensions that affect the behavior and expectations of the entrepreneur. Therefore, for a correct distribution, which focuses on each receiving according to the contribution, the role of government is essential through economic policies and compensation principles that generate a balance in the social climate, which induces entrepreneurs to generate wealth. Additionally, they point out that economic growth is not a simile of the economic progress, in line with Holcombe's work (2007 cited in Galindo, Méndez and Castaño, 2016), who indicates that progress is related to the quality of the product while growth is related to the quantity, the entrepreneur being an essential factor in both processes, since this same economic agent is responsible for introducing innovation into the

1 Spain, Denmark, Germany, France, Italy, Finland, Holland, United Kingdom, Sweden, Japan and the United States.

Retos, 10(19), 2020

process, a factor that has an impact on progress, thus entrepreneurship is also the main factor in the economic progress.

Acs *et al.* (2012) by using an econometric model of generalized least squares determined whether entrepreneurial activity has a positive and systematic impact on the economic growth in a total of 18 countries from 1981 to 1998, finding that entrepreneurship makes a positive contribution to the economic growth. In addition, the investment in knowledge, as measured by the percentage of GDP in I+D and population school years, was identified as an important source of economic growth. Additionally, Stam, Suddle, Hessels, and Stel (2006) not only determine the relationship between entrepreneurship and economic growth, but also in figuring out what kind of entrepreneur most influences that growth. This research made a difference from the T total early-stage entrepreneurial activity in general, TEA strong growth, who expect to employ 20 or more workers within five years and average TEA-growth, which expect to employ 6 or more workers within five years, data obtained from the GEM (2002) for a sample of 36 countries. In addition to these variables, they also included in the model the independent variables per capita income and competitiveness growth. To contrast the impact of these factors on economic growth, the authors used an econometric model of simple regression, the results of which underpinned that the ambitious entrepreneurial spirit, i.e. owners who expect to employ 20 workers or more, contribute more to the economic growth than an entrepreneurial activity in general. It was also possible to verify that this generally occurred in countries in transition.

From another perspective, Dau and Cuervo-Cazurra (2014) proposed an approach in which entrepreneurship depends on the economic growth and pro-market institutions. To this end, they classify entrepreneurship in formal and informal, and they divide the pro-market institutions into their two main components, economic liberation and levels of governance. As a result of the research, economic growth as measured by GDP growth was found to have a significant and positive effect on both types of entrepreneurship, while governance levels have a positive effect on the formal but negative entrepreneurship in the informal and total entrepreneurship. Economic liberation has a positive effect on both types of entrepreneurship. Following the same approach but with different perspective, Liñán, Fernández and Romero (2013) raised a hypothesis in which the business activity rate correlates negatively with GDP per capita, i.e. a higher income is associated with less entrepreneurial initiative. The study sample corresponds to a total of 56 countries and a partial least squares econometric model was used to verify this hypothesis. The results of the model showed that GDP per capita plays an important role in explaining the level of entrepreneurial activity in the sample countries. As raised in the scenario, the level of income is negatively related to TEA.

Pinillos Costa (2011) studied the variables that affect entrepreneurship with a slightly different approach, working not only with economic and socio-demographic variables but also with cultural factors, which is the independent variable of the study. The basic hypothesis of the research is to verify the relation that if the cul-

ture of society is more post-materialist[2] then the total entrepreneurial activity rate will be lower. To contrast this hypothesis, a simple linear regression was developed where the independent variable is the level of post-materialism and the dependent variable is the TEA. In addition, different multiple regressions were performed including economic and socio-demographic variables, such as unemployment, per capita income and education level. The main result was that post-materialism is negatively related to entrepreneurial activity, verifying the study hypothesis in which, less materialistic societies tend to exhibit lower values of early entrepreneur activity. It should be noted that in this study the socioeconomic variables, unemployment, per capita income or level of study, were not significant in predicting the entrepreneurial activity.

Finally, Zuniga, Soza, and Soria (2015), who analyzed the impact of unemployment on entrepreneurship, suggest that the relationship between unemployment and the entrepreneurial activity is difficult to establish for its research area, since it was shown during 2011-2012 that changes in unemployment had a positive impact on entrepreneurship, while for the remaining years it was not possible to establish any kind of relationship between these two variables. The work focuses on the Chilean Patagonia during the period 2009-2012, with a main objective to contrast the existence of the opportunity effect or shelter effect[3], effects studied in the research of Reynolds *et al*. (1995), Blanchflower and Meyer (1994) and Audretsch (1995) cited in Zuniga, Soza, and Soria (2015).

Based on this literature, the following hypotheses of this research are raised.

H1: total early-stage entrepreneurial activity —TEA— and established companies affect the economic growth of the province of Guayas-Ecuador.
H2: Unemployment and established companies have an impact on the early —TEA— entrepreneurial activity of the province of Guayas-Ecuador.

2. Materials and methods

2.1. Data and variables

Secondary data sources were used, and the company information was obtained from the Superintendency of Securities and Insurance Companies —SUPERCIAS— while information from sole proprietorships was obtained from the Internal Revenue Service for obtaining the Gross Value Added Data —BCE— and finally, the National Institute of Statistics and Census —INEC— was the source for obtaining the data on the economically active population and the unemployment rate.

2 Post-materialism is the degree to which a society seeks intangible life objectives, such as personal development and self-esteem on material safety, a term coined by Inglehart in 1977.

3 The opportunity effect explains an inverse relationship between the origin of new businesses and unemployment, while the shelter effect explains that an increase in unemployment increases the interest to undertake a business.

Retos, 10(19), 2020

The research was implemented for the period 2012-2016 with information from the province of Guayas, which is considered one of the economic development areas in Ecuador and the strategic industrial sectors were analyzed as established by the National Secretariat of Planning and Development —SENPLADES— in Zonal agenda 8, namely chipping, steelmaking, pharmaceutical, metalworking, fabrics and clothing, food and beverage and hardware and software development.

For this research, both sole proprietorships and companies from the above-mentioned industries were considered; also, to facilitate the identification and classification of companies by type of industry, the International Standard Industrial Classification was used —ISIC— adopted by INEC in the National Classification of Economic Activities, which allowed to clean-up and count the number of companies.

The —TEA— Early-stage Entrepreneurial Activity and the established companies are identified based on the conceptualizations used by the Global Entrepreneurship Monitor —GEM—.

For the GEM, the TEA is the percentage of the adult population that is actively involved in nascent businesses (companies with no more than 3 months of existence) or new businesses (companies with more than 3 months, but no more than 42 months).

Rocha (2013) calculates the TEA per year using the formula:

$$TEA = \frac{Enascent + Enew}{PEA\ Guayas} * 100 \qquad (1)$$

Where *Enascent* is the total number of new businesses in the strategic industrial sectors under study, *Enew* corresponds to the total number of new businesses of the strategic industrial sectors under study, and the *PEA Guayas* is the active population of the province.

Established companies are calculated as a percentage of the adult population that is actively involved in a business with more than 42 months.

The TEA formula was adapted to quantify established companies.

$$Established = \frac{Nestablished}{PEA\ Guayas} * 100 \qquad (2)$$

Where *Nestablished* refers to the total number of established companies in the strategic industrial sectors under study, while *PEA Guayas* is the active population of the province.

The variable of economic growth uses the Gross Value Added —GVA— of the province of Guayas, whose information was obtained from the Provincial Accounts of the BCE website. The unemployment rate variable refers to the situation of the unemployed citizen in the labor market, whose rates have been obtained from INEC for the province of Guayas.

Table 1. Variables, indicators and sources of information

Variable	Indicator	Description
Early entrepreneurial activity	TEA Rate	Developed in this research using data from SRI, SUPERCIAS and INEC.
Companies established	Established Enterprises Rate	Developed in this research using data from SRI, SUPERCIAS and INEC.
Provincial economic growth	GVA	Gross value obtained from the Central Bank of Ecuador
Unemployment	Unemployment Rate	Unemployment rate obtained from INEC

Source: Own Elaboration

2.2. Econometric models

To contrast the hypotheses raised and determine whether there is a significant incidence between the variables, two econometric regression models were established, equations (3) and (4) were estimated using the ordinary least squares —OLS— method. Nonlinearity contrast was applied only in equation (4) because logarithms were not applied in this model. Additionally, it was verified whether the residues of each of the two models follow a normal distribution.

$$logGVA = \beta_0 + log\beta_1 TEA + log\beta_2 Established + \mu \quad (3)$$

Equation 3 seeks to verify the hypothesis of incidence of the exogenous variables TEA and rate of established companies on the dependent variable of economic growth. It was chosen to analyze this relationship based on the works of Lupiáñez, Priede and López (2014); Jaén, Fernández and Liñán (2013); Galindo and Méndez (2012); Stam, Suddle, Hessels and Stel (2006); Acs, Audretsch, Braunerhjelm and Carlsson (2012) and Galindo, Méndez and Castaño (2016) who have studied the relationship of the impact of entrepreneurship on the economic growth.

$$TEA = \beta_0 + \beta_1 Unemployment + \beta_2 Established + \mu \quad (4)$$

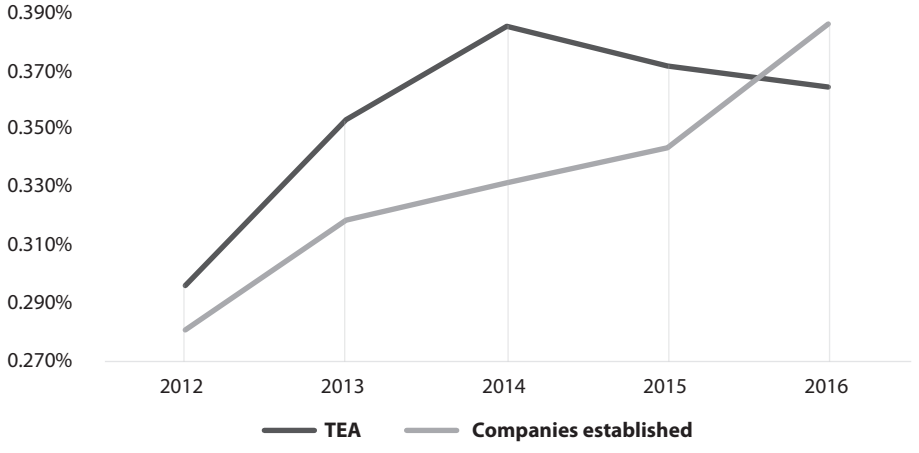
Equation 4 is intended to contrast the incidence of the independent variables Unemployment Rate and Established Business Rate on the endogenous variable TEA. The idea was to analyze this model based on the research of Zuniga, Soza, and Soria (2015), who established the relationship between unemployment and entrepreneurship for one year. Likewise, Pinillos Costa (2011) performed the same but with different results, since the author found no significance between unemployment and entrepreneurship.

Retos, 10(19), 2020

3. Results

Figure 1 shows the evolution of the TEA and the Established Enterprises Rate for the period 2012-2016. The economically active population of the province of Guayas is considered as the denominator in these contribution percentages of the TEA and the total established companies. The figure shows how TEA has been superior to the established companies for most of the study period, excepting in 2016. TEA had a positive trend until 2014 where its highest peak is recorded, as of this year it has suffered a moderately significant setback. On the other hand, the Established Companies Rate has had a positive trend throughout the study period, where the greatest variation occurs from 2015 to 2016, due to the consolidation of companies created in previous years.

Figure 1. TEA and Rate of Companies Established in the Strategic Industries of Guayas



Source: Own elaboration. SRI database and Superintendency of Companies.

Table 2. Total business activity of the Strategic Industries of Guayas

Gross Income		Gross Output	Net Income	Turbulence	Nascent enterprises	New Enterprises	Established enterprises
2012	2118	985	1133	3103	535	4797	5050
2013	2138	1168	970	3306	557	5517	5488
2014	2128	1575	553	3703	602	6121	5773
2015	2346	1097	1249	3443	609	6283	6364
2016	2209	841	1368	3050	587	6388	7397

Source: Own elaboration. SRI database and Superintendency of Companies.

Table 3. Nascent enterprises by Strategic Industries of Guayas

Nascent enterprises (up to 3 months)							
	Food and processed beverages	Textiles and Manufactures	Pharmaceutical	Steel	Development of Hardware and Software	Metal-mechanical	Ship making
2012	117	390	2	10	2	4	10
2013	120	407	3	9	3	5	10
2014	139	434	0	14	0	4	11
2015	195	382	4	10	1	2	15
2016	201	361	3	4	0	3	15

Source: Own elaboration. SRI database and Superintendency of Companies.

Table 4. New Companies by Strategic Industries of Guayas

New Companies (more than 3 to 42 months)							
	Food and processed beverages	Textiles and Manufactures	Pharmaceutical	Steel	Development of Hardware and Software	Metal-mechanical	Ship making
2012	1056	3513	21	66	3	37	101
2013	1195	4047	22	82	9	37	125
2014	1423	4404	22	88	16	49	119
2015	1543	4466	19	76	15	47	117
2016	1863	4241	22	88	14	41	119

Source: Own elaboration. SRI database and Superintendency of Companies.

Retos, 10(19), 2020

Table 5. Established Companies by Strategic Industries of Guayas

Established Companies (over 42 months)							
	Foods and processed beverages	Textiles and Manufactures	Pharmaceutical	Steel	Development of Hardware and Software	Metal-mechanical	Ship making
2012	1883	2708	91	124	7	85	152
2013	1937	3093	89	113	7	90	159
2014	1922	3379	88	117	6	90	171
2015	1960	3952	82	118	7	88	157
2016	2145	4760	85	128	9	96	174

Source: Own elaboration. SRI database and Superintendency of Companies.

For 2014 the highest rate of turbulence was recorded, which was caused by an increase in gross outputs (Table 2), a relevant data because it occurred a year before the economic slowdown in Ecuador, thus being able to target companies as radar of the situation economic crisis, as they perceived the contraction of the economic cycle.

By visualizing the dynamics of the business demographics of the strategic sectors of Guayas, it was observed that the textiles and clothing industry and the food and beverage industry record the largest number of companies in both new and nascent companies (Tables 3, 4 and 5), strengthening the idea of the specialization in these industrial sectors in the province of Guayas and to a lesser extent, but certainly in force, the ship making sector, the oldest and most traditional of Ecuador's main seaport, accompanied by steelmaking. Finally, sectors such as pharmaceuticals and software and hardware development stand out with a good component of new and established companies, but to a lesser extent than the previous ones.

Table 6. TEA and Rate of Established Companies of the Strategic Industries of Guayas

	Nascent enterprises	New enterprises	Established enterprises	Guayas PEA	TEA (%)	Established enterprises (%)
2012	535	4797	5050	1799221	0.296	0.281
2013	557	5517	5488	1720708	0.353	0.319
2014	602	6121	5773	1743443	0.386	0.331
2015	609	6283	6364	1853859	0.372	0.343
2016	587	6388	7397	1913954	0.364	0.386

Source: Own elaboration. SRI database and Superintendency of Companies.

Table 7. Guayas unemployment rate and GVA

	Unemployment	GVA
2012	5.5%	20439.78
2013	5.4%	22763.86
2014	4.6%	24749.66
2015	5.2%	24409.21
2016	6.4%	24970.22

Source: Own elaboration. SRI database and Superintendency of Companies.

Table 6 shows the percentages related to the TEA and Established Companies of the study, as well as the number of New, Established and PEA companies of Guayas, which were used for the calculation. The TEA of the strategic sectors of the province under study presents indexes higher than the Rate of Established Enterprises (Table 6), with the exception of 2016. This information is corroborated by the report of the GEM Ecuador 2016 (2017), which mentions that Ecuador is characterized as a country with high levels of entrepreneurship, whose TEA is one of the highest in the region, and this in turn, is higher than the Rate of Established Enterprises for the province of Guayas. Conversely, Table 7 presents the evolution of unemployment and GVA of Guayas for the years of the study.

Table 8. Correlation Matrix

	VAB	Unemployment	Established	TEA
TEA	0.9475	- 0.2735	0.7014	1
Established	0.8765	0.4712	1	
Unemployment	- 0.0111	1		
GVA	1			

Source: Gretl Software. Own elaboration.

Table 8 shows the correlations of all variables considered in the study. It is noted that TEA is strongly related to GVA (0.9475) and Established Enterprises (0.7014). In turn, the correlation between the GVA and the established companies is positive (0.8765).

Table 9. Normal contrast

	Shapiro-Wilk		
	Statistics	gl	Sig.
TEA	0.859	5	0.224
Established	0.984	5	0.955
Unemployment	0.955	5	0.772
VAB	0.843	5	0.174

Source: SPSS Software. Own elaboration.

Retos, 10(19), 2020

Table 9 shows the results of the Shapiro-Wilk test, which allows to estimate whether the variables have a normal distribution. The study was conducted for the different study variables, and in all cases it can be seen that the p-value is higher than 5%, determining that the data for each of the variables follow a normal distribution.

Table 10 lists the results of the first regression model that measures the impact of TEA and the Rate of Established Enterprises on the economic growth. While Table 11 shows the results of the second econometric model, where the impact of the Unemployment Rate and the Established Enterprises Rate is measured in the TEA.

Table 10. Economic growth based on TEA and the Rate of Established Enterprises

	Coefficient	Typical Desv.	Statistict t	P-value	
Const	14.7465	0.404546	36.4520	0.0008	***
l TEA	0.526539	0.105696	4.9816	0.0380	**
l Established	0.29977	0.0934246	3.2087	0.0849	*
Corrected R-squared		0.970754			
P value (F)		0.014623			
Normality contrast of the residues: Null hypothesis: errors are normally distributed Jarque-Bera contrasts = 1.22017, with p value = 0.543306					

Source: Gretl Software. Own elaboration

Table 10 indicates that the TEA variable has a probability value lower than the statistical significance level of 5% (0.0380), showing an incidence ratio of this variable on the GVA. The ratio of these variables is directly proportional, i.e., for each percentage point that TEA increases, the GVA will increase by 0.52 percentage points. It is also observed that the probability value of the descriptor estimator of the Established Enterprises Rate variable is close to the significance level of 5% (0.0849).

In addition, it can be observed that the relationship between the Established Enterprises Rate and the GVA is directly proportional, for each percentage point that the Established Enterprises Rate increases, the GVA will increase by 0.30 percentage points.

The p-value of the Fisher statistic is lower than 5% (0.01462), i.e. both the TEA and the Established Enterprises Rate are determined to have a collective impact on the GVA. The determination coefficient is 0.9707, showing that the TEA and the Rate of Established Enterprises explain 97.07% of the GVA. The logarithmic regression model is ideal, because it has a linear relationship and its residues are normally distributed. No nonlinearity contrast was performed, because the model is logarithmic. The normality test of the residuals indicates a non-significant p-value, being higher than 5% (0.5433), determining that errors follow a normal distribution; i.e., even though the number of observations is reduced, the estimators are reliable for making predictions and checking relationship hypotheses.

Table 11. TEA based on Unemployment Rate and Established Business Rate

	Coefficient	Typical Dev.	t Statistict	P-value	
Const	0.00267501	0.000486464	5.4989	0.0315	**
Unemployment	-0.0425209	0.00866271	-4.9085	0.0391	**
Established	0.95748	0.14191	6.7471	0.0213	**
Corrected R-squared		0.922128			
P value (from F)		0.038936			
Nonlinearity contrasts (logarithms) -					
Null hypothesis: the ratio is linear					
with p-value = 0.082085					
Contrast of Normality of Residues: Null hypothesis: Errors are normally distributed Jarque-Bera Contrasts = 1.41296, with p value = 0.493378					

Source: Gretl Software. Own elaboration

Table 11 shows that the probability value of the parameter corresponding to the independent unemployment variable is lower than the statistical significance level of 5% (0.0391), showing an impact ratio of this variable on TEA. It can be observed that the relationship between TEA and unemployment is inversely proportional due to the negative sign of the estimator, which means that at a lower unemployment the TEA will increase by 0.04 percentage points. It was also seen that the probability value of the descriptor estimator of the Established Enterprises Rate variable is lower than the significance level of 5% (0.0213), which means that this indicator affects the TEA. The relationship between these variables is directly proportional; for each percentage point that the Established Enterprises Rate increases, the TEA will increase by 0.95 percentage points. The p-value of the Fisher statistic is less than 5% (0.03894), hence it is determined that both unemployment and the Established Enterprise Rate have a collective impact on the TEA. The Determination Coefficient was 0.9221, which shows that unemployment and the Rate of Established Enterprises explain 92.21% on the TEA.

The linear regression model is ideal because it has a linear relationship and its residues are normally distributed. The nonlinearity contrast showed a p-value higher than the statistical significance level of 5% (0.0821), assuming that the relationship between unemployment, the Established Enterprise Rate and the TEA has a linear relationship; i.e., it is not necessary to estimate logarithms to perform the regression. The residue normality test showed a non-significant p-value higher than 5% (0.4933), indicating that errors follow a normal distribution; i.e., even though the sample is small, the estimators will be reliable for making predictions and checking relationship hypotheses.

4. Discussion and Conclusions

The results obtained in Table 10, which establish the relationship and positive impact of the TEA and the Rate of Established Companies in economic growth and measu-

Retos, 10(19), 2020

red by the GVA, is consistent with the study of Lupiáñez, Priede and López (2014), in which they conclude that there is a positive relationship between the activated entrepreneur and the economic growth, affirming entrepreneurship as a base of the economic growth. Similarly, the result of Galindo and Méndez (2012) is confirmed with this research, where entrepreneurs have a positive effect on the economic growth measured by the GVA, and it should be noted that the regressions used by these authors added a variable on innovation that also explains the economic growth along with the entrepreneurial activity. The results presented in Table 10 also agree with the research of Stam, Suddle, Hessels and Stel (2006); Acs, Audretsch, Braunerhjelm and Carlsson (2012) which indicate that the entrepreneurial activity has a positive and systematic impact on the economic growth, as measured by the variation in the GDP per capita. The latter is different compared to the results of Jaén, Fernández and Liñán (2013), which show an inverse relationship between TEA on the economic growth.

Table 11 shows that the TEA is explained by the Unemployment Rate and the Established Enterprises Rate. On the other hand, Zuniga *et al.* (2015) found evidence of this relationship for a year of study, showing that changes in unemployment have a positive impact on entrepreneurship, known as a shelter effect, according to these authors, i.e., an undertaking created by necessity, where unemployment has a directly proportional relationship with entrepreneurship.

In short, the unemployment and TEA variables are related. The difference of the results in the various studies occurs in the type of relationship, i.e., in some works the correlation is positive and in others it is negative. This study identified an inverse relationship between these variables, indicating that each decreasing unit of unemployment influences an increase of approximately 4% of TEA. In other words, a reduction in unemployment leads to an increase in entrepreneurial activity. In this study, self-employment measured by TEA means an increase in employment in the region related to an era of expansion of the Ecuadorian economy, recorded in much of the study period used, and gives an account of the creation of entrepreneurship opportunity for the improvement and not for a need for employment, and even people who, while employed, have decided to undertake in response to market opportunities or to have the necessary skills to do so (Pinillos Costa, 2011) or as Zuniga, Soza, and Soria (2015) call the opportunity effect.

This situation is complemented by the positive relationship found with the variable established companies and TEA, i.e. the number of established companies increases in the expansionary economic cycle leading to the strengthening of business clusters and a healthy entrepreneurial ecosystem that accommodates entrepreneurship by opportunity.

There is cluster specialization in Ecuador's Guayas province, specifically the textile and clothing and processed food and beverage sectors, which is evidenced by the high entry rates of nascent and new companies, as well as by the rates of established companies. Traditional strategic sectors such as ship making, steel and metalworking maintain a contribution of new and nascent companies to the economy of the province, and the software, hardware development, and pharmaceuticals to a lesser extent.

The contraction of the economy was detected by the new and nascent inflows of the different strategic sectors, identifying high rates of turbulence in 2014.

The inverse relationship between unemployment and early entrepreneurship identifies that companies created in the strategic sectors of Guayas would arise from the opportunity for improvement.

Finally, the evidence presented confirms the idea that early entrepreneurship and established companies drive the economic growth of the province of Guayas as a harmonious whole that promotes the new and maintains the existing companies, so that it converts this province into an economic development area of Ecuador.

References

Acs, Z. J., Audretsch, D. B., Braunerhjelm, P., & Carlsson, B. (2012). Growth and entrepreneurship. *Small Business Economics, 39*(2), 289-300. https://doi.org/10.1007/s11187-010-9307-2

Araque, W. (2015). *Emprendimiento en Ecuador.* Core Bussiness Ekos. Recuperado de: https://bit.ly/2OsagkH

Banco Mundial (2014). El emprendimiento en América Latina: Muchas empresas y poca innovación. Banco Mundial. https://doi.org/10.1596/978-1-4648-0284-3

BCE (2017). Valor Agregado Bruto provincial. Cuentas Provinciales Serie 2007-2016. Recuperado de https://www.bce.fin.ec/index.php/component/k2/item/293-cuentas-provinciales/

Dau, L. A., & Cuervo-Cazurra, A. (2014). To formalize or not to formalize: Entrepreneurship and pro-market institutions. *Journal of Business Venturing, 29*(5), 668-686. https://doi.org/10.1016/j.jbusvent.2014.05.002

Galindo Martín, M. Á., & Méndez Picazo, M. T. (2012). *Factores que estimulan el emprendimiento y el crecimiento económico*. Recuperado de: https://bit.ly/397FJjU

Galindo Martín, M. Á., Méndez Picazo, M. T., & Castaño Martínez, M. S. (2016). *Crecimiento, progreso económico y emprendimiento*. *Journal of Innovation & Knowledge, 1*(1), 62-68. https://doi.org/10.1016/j.jik.2016.01.006

GEM (2016). Global Entrepreneurship Monitor. GEM América Latina y el Caribe 2015/16. Recuperado de: https://bit.ly/3bcXb8s

GEM (2017). Global Entrepreneurship Monitor. GEM Ecuador 2016. Recuperado de: https://bit.ly/2RZGQN8

Jaén, I., Fernández, J., & Liñán, F. (2013). Valores culturales , nivel de ingresos y actividad emprendedora. *Revista de Economía Mundial, 35*(1576-0162), 21-45. Recuperado de: https://bit.ly/2UmSDGM

INEC (2015). Instituto Nacional de Estadística y Censos. Proyecciones poblacionales del Ecuador, a partir del VII censo de población y VI de Vivienda 2010, actualizadas a la División Político Administrativa 2015. Recuperado de: https://bit.ly/38j1AFk

INEC (2017). Instituto Nacional de Estadística y Censos. Indicadores del Mercado Laboral. Recuperado de: https://bit.ly/38rl6Q5

Liñán, F., Fernández, J., & Romero, I. (2013). Necessity and Opportunity Entrepreneurship: The mediating of culture. *Revista de Economía Mundial, 17(*enero), 21-47. https://doi.org/10.3167/sa.2014.580207

Lupiáñez Carrillo, L., Priede Bergamini, T., & López Cózar, C. (2014). El emprendimiento como motor del crecimiento económico. *Boletín económico de ICE, 10.* Recuperado de: https://bit.ly/3bs4lpB

Pinillos Costa, M. J. (2011). Cultura postmaterialista y variaciones en el espíritu emprendedor. *Investigaciones Europeas de Dirección y Economía de la Empresa, 17*(1), 37-55. https://doi.org/10.1016/S1135-2523(12)60043-4

Rocha, H. (2013). *Entrepreneurship and Regional Development: The Role of Clusters.* New York: Palgrave and Macmillan.

Rodríguez, A. (2014). *Emprendimiento: una megatendencia a nivel mundial.* Forbes México. Recuperado de: https://bit.ly/2HdSH3I

SENPLADES (2015). Secretaría Nacional de Planificación y Desarrollo. Agenda Zonal, Zona 8 - Guayaquil. Recuperado de: https://bit.ly/2UMpjtD

SRI (2018). Servicio de rentas internas. Base de datos del Registro Único de Contribuyentes. Recuperado de: https://bit.ly/2uC57jb

Stam, E., Suddle, K., Hessels, S. J. A., & Stel, A. van. (2006). Los emprendedores con potencial de crecimiento y el desarrollo económico . Políticas públicas de apoyo a los emprendedores. *Ekonomiaz, 62*, 1-26. Recuperado de: https://bit.ly/37hBe4Y

SUPERCIAS (2018). Superintendencia de compañías, valores y seguros. Directorio de compañías. Recuperado de: https://bit.ly/3brEz4K

Zuniga Jara, S., Soza Amigo, S., & Soria Barreto, K. (2014). Dinámica del emprendimiento y el desempleo en Guatemala. *Pensamiento & Gestión, 43*(1), 103-115. https://doi.org/10.4067/s0718-22442015000100007

Retos, 10(19), 2020
Journal of Administration Sciences and Economics | p-ISSN: 1390-6291| e-ISSN: 1390-8618
www.retos.ups.edu.ec

Identification of the tourist's perception towards the destination Cuenca-Ecuador, through "Netnography"

Identificación de la percepción del turista hacia el destino Cuenca-Ecuador, mediante la "Netnografía"

Nicolás E. Morales Vásquez is a Commercial Engineer from Universidad Politécnica Salesiana (Ecuador) (nicolasmv@outlook.com) (https://orcid.org/0000-0003-3214-4212)

Dra. Gliceria P. Gómez Ceballos is a professor and researcher of the Administration and Economy Department at Universidad Politécnica Salesiana (Ecuador) (ggomez@ups.edu.ec) (https://orcid.org/0000-0001-6955-3293)

Abstract

This investigation analyzes the necessity and convenience of demonstrating that "Netnography" is a method that contributes to the development of tourism, because it helps to determine the tastes and preferences in relation to the resources/attractions existing in the locality and the level of satisfaction of the consumer´s needs. The aim is to identify perceptions of tourists for the destiny Cuenca-Ecuador, the methodology selected for the study was the proposed by Vargas (2011), who stablishes as steps of the procedure: the definition of the topic to investing, the virtual communities where the data will be extracted, and finally the interpretation of the information. The research integrated comments taken from the Facebook´s page Visit Cuenca and the tourist forum of the Cuenca´s city in Trip Advisor. The results show the perception of the tourists in relation to the attributes offered by the city, the existence of a greater influx of Ecuadorian tourism into the city and the composition by origin foreign segments, including tourists from Latin America and the Caribbean. It is observed that the most important attraction in order of preference was its architectural area and the natural attractions of the environment, findings that can be taken into account for the design of future marketing strategies for the destination.

Resumen

La presente investigación analiza la necesidad y conveniencia de demostrar que la Netnografía es un método que aporta al desarrollo del turismo, ya que contribuye a determinar los gustos y preferencias con relación a los recursos/atractivos existentes en la localidad y el nivel de satisfacción de las necesidades en los consumidores; el objetivo general, es identificar percepciones de los turistas para el destino Cuenca, Ecuador y la metodología seleccionada para el estudio, fue la propuesta por Vargas (2011), quien establece como pasos del procedimiento: la definición del tópico a investigar, las comunidades virtuales donde se extraerán los datos y por último, la interpretación de la información. El universo de la investigación integró la totalidad de comentarios extraídos de la página de Facebook de Visit Cuenca Ecuador y el foro de turismo de la ciudad de Cuenca en Trip Advisor. El análisis arrojó como resultado la percepción de los turistas con relación a los atributos que oferta la ciudad, la existencia de una mayor afluencia de turismo nacional y segmentación de turistas extranjeros por su procedencia, destacándose América Latina y Caribe; se observa que el atractivo más importante en orden de preferencia es el área arquitectónica y los atractivos naturales del entorno; hallazgos que podrán ser tomados en cuenta para el diseño de futuras estrategias de comercialización del destino.

Keywords | palabras clave

Attributes, tourist profile, tourist destination, marketing, data mining.
Atributos, perfil turista, destino turístico, mercadeo, minería de datos.

Suggested citation: Morales Vásquez, N. E., & Gómez Ceballos, G. P. (2020). Identification of the tourist's perception towards the destination Cuenca-Ecuador, through "Netnography". *Retos Revista de Ciencias de la Administración y Economía, 10*(19), 79-94. https://doi.org/10.17163/ret.n19.2020.05

Received: 15/11/2019 | Reviewed: 21/11/2019 | Approved: 11/12/2019 | Published: 01/04/2020

Retos, 10(19), 2020

1. Introduction

Ecuador has shown an increase in tourism in recent decades, developing new potential to diversify the country's economy. Thus, the experiences of other countries that allow to develop a sustainable tourism model must be taken into account (Castillo, Roget & Rozas, 2015). The country has a productive structure with a great dependence on the primary sector; therefore, there is the need to diversify the productive matrix and the search for income alternatives that improve its economy, an issue that is clearly expressed as a willingness policy in (SENPLADES, 2012).

To align with this purpose, it is necessary to incorporate new technologies into the tourism management process, since from the demand approach, tourists basically organize their trip through the use of technological devices; thus, it is important that there is a response consistent with these expectations from the offer. In relation to the domestic market, the INEC data (2017) show that the use of smartphones has increased over time, indicating that in 2017, 63.4% of people have a smartphone compared to 2016, 52.9%, an increase of 10.7%. Regarding the reason for the use of the internet, in 2017 40.7% of the population used it to obtain information, general communication (31%), education and learning (21.10%), work (3.3%) and other activities 3.9%. The use of ICT plays an important role for business growth, decision-making and the creation of new business models by diversifying the interaction between tourists and travel agencies, taking as reference a new technological structure (Tafur Avilés *et al.,* 2018).

As part of the boost to tourism development policy, Ecuador's Ministry of Tourism (MINTUR) was established in 2017 in a partnership with Amadeus IT Group with the aim of promoting Ecuador as a preferred tourist destination for foreigners, through the use of a platform called "AMADEUS", which will agree to investigate and analyze current trends, based on the results of which strategies were formulated for the promotion of the country, applying them efficiently to various markets (MINTUR, 2017), these are positive signs that demonstrate the interest and concern in the country from government policies about the incorporation of technological advances into the tourism management process.

In the area of micro-enterprises in the city of Cuenca, Aucay Piedra and Herrera Torres (2017) state that 97% of establishments use social networks daily for communication activities, as they reveal advantages obtained by the management of social networks and mobile applications for communication and marketing. To take full advantage of the business opportunities provided by mobile tourism-linked services, it is necessary to make a well-detailed segmentation of the type of visitor entering the country, since there are several areas with a high degree of potential increase in revenue to the tourism (Quezada-Sarmiento *et al*., 2018).

The bibliographic revision carried out with the aim of identifying the state-of-the-art about the elements that underpin the analysis of this research shows Dell Innocenti (2012), who summarizes social networks as a way to shorten the relationship between company-client, increasing its dynamics, they close the online-offline linkage, allow the integration of tools such as means of advertising and finally they stand out the value of applying digital media and non-digital by taking advantage of the goodness that each provides. Likewise, Sakulsureeyadej (2011) adds that most

travelers have high expectations in receiving personalized products or services to meet their demands and companies, therefore there must be tools to collect and control information.

From another perspective that supports the above approaches, it is necessary to take into account the need to promote the use of mobile applications and smartphones at a global level, since these are the ones that open up the possibility of using these applications, whose growth is exponential and their use differs depending on the market segment by ages, highlighting that the age group between 35 and 55 years is the one that has had the greatest growth dynamic in the last 3 years (Saura, Sán, & Reyes, 2017).

These authors also emphasize the use of these technologies in the last 3 years, the mobile communication and social media applications are the most used with 47%, followed by business, finance, shopping and sports applications (Saura *et al.*, 2017). The smartphone is an excellent intermediary between the traveler and the destination, as it allows to interact directly with the agents to decide alternatives of use of their leisure time (Quijano, Arellano & Naranjo, 2017); there is an increase in the use of mobile phones to obtain information used by 96 out of 100 inhabitants in the world, being a means to offer services through the internet. (Desplas & Mao, 2014; Dina & Sabou, 2012; Kang & Schuett, 2013) say that tourists prefer to use social networks as an online means of communication for the decision-making and the organization of their trip when choosing their tourist destination.

Marín and Torres (2017) mention that banking has been experimenting with the use of game elements in mobile applications in order to increase customer loyalty; however, Netnography is not mentioned as a means of obtaining information from its customers (likes, preferences, needs, suggestions) to develop or improve the loyalty of its customers.

Quijano *et al.* (2017) indicate that statistics show that the use of mobile devices in the field of tourism is widespread, with a high percentage of US tourists (85%), followed by Europeans with 50% in different modes of use, which has special significance for Ecuador given that the largest issuer of foreign tourism today is in the US, and in the future it must turn its view to the European market, due to the potential in the country in relation to the existence of resources/ natural attractions and their preference for tourists who come from these countries.

The dynamics of use of these technologies has challenged the market research, this step is the starting point of any management process, since it allows to analyze the variables of the environment with respect to competition, macro and micro environment and especially the demand; aspects that condition the tourist offer. The use of social networks, used as a source of information of tourist destinations, has grown omitting the traditional way of accessing trips for the enjoyment of leisure time; thus, netnography arises as a technological tool that investigates the behavior of users on websites through a statistical analysis of the data obtained. Gebera (2008) describes Netnography as a method to make the most of the information provided by the network, establishing ethnography as a basis to check the consumer´s behavior in different virtual spaces.

Retos, 10(19), 2020

The use of Netnography has allowed to establish a set of several factors that will serve as the basis for its future application in several companies specialized in its sector, since it facilitates the broad knowledge of the end consumers that are part of the virtual sites, integrating them as a strategic objective for the promotion and distribution (Colordo Prutsky, 2004).

This technique manages to obtain a wide difference compared to ethnography in terms of the generation of greater reliable knowledge; it prevents the researcher from getting directly involved in the field of research; it prevents any kind of manipulation of the information; it is simpler and quicker to apply; it provides immediate access to the information (Romeo, Abbot, Forgas & Huertas, 2014).

At the international level, countries have a greater interest in managing social networks as means of tourism promotion, standing out Instagram as the network with the most interaction between its users, being ideal for tourist communication (Gutiérrez, Sánchez & Galiano, 2018). Meanwhile (Celdrán, Mazón & Giner, 2018) mention that obtaining tourist information today through the use of mobile applications is essential to promote the enjoyment of a better experience on the part of the tourist and with it, increase the competitiveness levels, a trending topic of tourism-managing countries as a development alternative.

From this perspective, Ecuadorian tourism companies should use social media to provide as much information regarding their tourism proposal, as well as to focus on leveraging the information extracted from the comments of their followers in order to design new offers and positioning strategies based on the preferences of tourists. Unlike the traditional form of communication and information management, the vast amount of qualitative data that provide social media forces to look for alternatives to their measurement (Fisher, 2009); define the key points to achieve differentiation with respect to their competition, because tourists first review blogs and tourism forums to learn about their destination (Montserrat, 2014); understand that the use of social networks is essential for the attraction of customers and for maintaining their loyalty (Morales, 2016); social media has even become more impulsive in the decision to visit new tourist destinations (Sotiriadis & Van Zyl, 2013).

As a result, mobile apps for travel and tourism are not only increasing exponentially, but are changing the way tourists search for information, behave, consume and make decisions. Additionally, smartphones and Mobile apps allow the traveler to align their needs, preferences, resources and time constraints, with the offer of services and activities at the destination, giving them more freedom than ever when it comes to mobilization.

Therefore, there are clear certainties about the importance of the current use of mobile applications for the orientation of the tourist and the management of information, which allows to structure an offer consistent with their expectations; however, there is no evidence of documented experience linked to the use of Netnography as a market research tool. Thus, the aim of this research is to identify the perception tourists have of Cuenca through the methodological application called "Netnography" as it provides the ease of obtaining and analyzing various comments that tourists make in the different virtual communities related to tourism in Cuenca.

2. Materials and methods

Data mining was used for the development of the research, which facilitates the discovery of relationships, patterns and trends, examining large amounts of data extracted from different databases, the web, linked to statistical programs to quantitatively analyze the information obtained, such as the number of positive and negative comments. The Netnography method was applied from the procedure proposed by Vargas (2011). The steps to follow are:

2.1. Definition of the research question or topic to be investigated

The research question is created to identify factors in the different virtual communities related to tourism that provide information to determine the perception of the tourist destination to the city of Cuenca.

The selected analysis units were: Social Networks: Visit Cuenca Ecuador Facebook page; Tourism Forums: Trip Advisor Ecuador Basin Forum.

The following variables related to tourist preferences (cultural, natural), quality of accommodation and catering services, destination price perception, security, hospitality, climate, were identified, as well as the tourist´s place of origin.

2.2. Community identification and selection

To select communities, the criteria of relevance, activity, interactivity, substantiality, heterogeneity and wealth of data are followed.

It should be emphasized that an observation was made to the different websites of travel agencies that provide a tourist package to the city of Cuenca, assessing its quality in the content of the offer and taking into account the interactivity between the page and tourists. Based on the criteria mentioned above, the following communities have been selected:

- Visit Cuenca Ecuador Facebook page: This page allows to have access to comments and opinions from tourists who have visited the city and get information about the people who plan to visit it in the future. This objective was assessed by analyzing the content of questions placed in the forum linked to tourist preferences. The selection is because it is the only one that has an interactivity space.
- Trip Advisor Ecuador Basin Forum: This forum is popular among travelers, as it provides information on the destination, hotels, tourist attractions, restaurants, among others. It gives comments or opinions to tourists in relation to topics such as safety, weather, transportation, places to visit.

3. Data collection

The procedure for data collection was carried out automatically and manually, aligned with the selected procedure. Two software were used for this purpose:

Facepager and Netvizz: This software allows to structure a database with comments and posts made on pages or public groups on Facebook. In this case, it was used to extract information from the Visit Cuenca Ecuador page on Facebook, and

Retos, 10(19), 2020

comments were obtained from both the posts made by the page and the "Opinions" section of the page.

This software has limitations, since it can only obtain information from users who share or comment on it publicly. Once assessed the goodness of both software, it was decided to use only the Facepager, since it was verified that Netvizz gives similar results. IBM Statistics 22 statistical software was used for the statistical data processing.

The Facepager software allows to set a date range for data extraction, and it was decided to extract the comments made on the Facebook page of Visit Cuenca Ecuador between January 2017 to February 2019.

For the manual procedure, a database was created with all the comments made by travelers on the Ecuador Basin forum on the Trip Advisor website, then each comment was analyzed with the aim of eliminating erroneous or non-erroneous posts consistent with the object of study. The AntCont program was used to list the most repeated words in the database obtained through the Facepager software.

4. Data analysis and interpretation and presentation of results

Once the data was obtained, each of the messages was reviewed and classified in correspondence with the variables identified in the study; subsequently, the information was processed through the SPSS version 22 software.

5. Results

This section consists of two parts: the first shows the results on adequacy with the purposes of investigating the national and foreign agencies operating at the destination; the second part presents the results obtained through the Facepager software, IBM Estatistics and the AntCont program.

5.1 Part One

13 national and international agencies were selected (see Table 1), which manage tours or tourist packages to the destination Cuenca-Ecuador; the criteria for searching for information were:

1. If the website has a space for tourists to give their opinions or comments about their experiences when they enjoy the tour.
2. The number of comments on the pages that provide this option was identified.

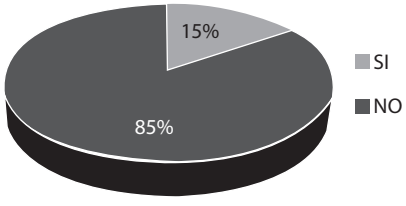
The results show that national agencies do not have any comment or opinion space, and 4 out of 13 international agencies have this space, representing 15%, as shown in Figure 1.

Table 1. List of national and foreign agencies offering tours to the destination Cuenca-Ecuador

Travel agencies			
National		International	
1	Sol Caribe Travel Agency	14	Get Your Guide
2	Spring Travel Tour Operator	15	Expedia
3	Nova Travel EC	16	Atrápalo
4	Corpo Viajes Agency Travel	17	World Travel
5	Virgin Rent a Car	18	Trip
6	La moneda Viaje Turismo & Eventos	19	Visit a City
7	Vive Now	20	Tours 4 Fun
8	Cazhuma Tours Travel Agency	21	Anywhere
9	Terra Diversa Ecuador Explorer	22	Gray Line
10	Cite Tour	23	Price Travel
11	Expediciones Apullacta	24	Viator a Trip Advisor Company
12	Tours Costa Ecuador	25	Inspirock
13	Turi Bus	26	Happy Gringo

Source: Own elaboration

Figure 1. Percentage of national and international agencies with a space for comment



Source: Own elaboration.

This limits the study to 2 sources (Trip Advisor and Visit Cuenca), hence, the rest of the agencies have been excluded for the lack of information.

The observation made to the web pages shows that they only provide basic information about the offer (Table 2). Despite having a space for comments, these pages do not adequately take advantage of this availability.

Retos, 10(19), 2020

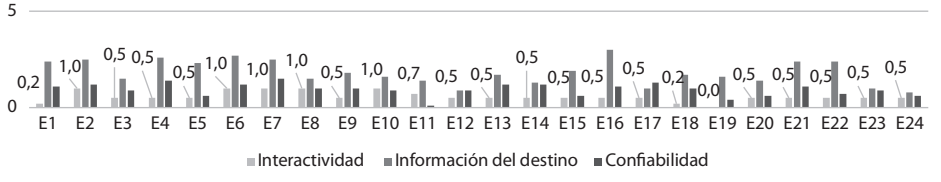
Table 2. Number of comments on the websites of national and international travel agencies

No.	Travel agency	Quantity of comments and opinions	No.	Travel agency	Quantity of comments and opinions
	Nationals			Internationals	
1	Sol Caribe Travel Agency	-	14	Get Your Guide	1
2	Spring Travel Tour Operator	-	15	Expedia	-
3	Nova Travel EC	-	16	Atrápalo	-
4	Corpo Viajes Agency Travel	-	17	Mundo Travel	-
5	Virgen Rent a Car	-	18	Trip	-
6	La moneda viaje Turismo & Eventos	-	19	Visit a City	-
7	Vive Now	-	20	Tours 4 Fun	0
8	Cazhuma Tours Travel Agency & Tour	-	21	Anywhere	-
9	TerraDiversa Ecuador Explorer	-	22	Gray Line	-
10	Cite Tour	-	23	Price Travel	0
11	Expediciones Apullacta	-	24	Viator A Trip Advisor Company	1
12	Tours Costa Ecuador	-	25	Inspirock	-
13	Turi Bus	-	26	Happy Gringo	-

Note: The hyphen symbol (-) means that the page does not have a space to make a comment.
Source: Own elaboration.

The evidence found in a work carried out by Vázquez (2018) is corroborated, comparing the results of 20 tourism companies based on the quality variable of their websites. The interactivity factor is maintained at very low levels (Figure 2).

Figure 2. Quality assessment of tourist intermediation websites



Note: Abbreviation E1 stands for Company 1. Source: Vázquez, J. P. (2018).

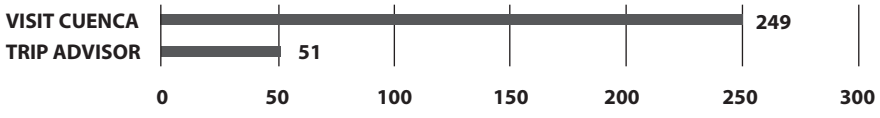
5.2 Part Two

Data collection manually and automatically.

The total comments on the Trip Advisor page were listed in the forums section linked to the city of Cuenca, 51 were valid, for which no software was used because the information was obtained manually.

Subsequently, the collection of information was carried out automatically, for this purpose the Facepager technology tool was used, obtaining information from January 1, 2017 to February 1, 2019, from the Facebook page Visit Cuenca, for a total of 249 comments collected. The total between both websites (Forum Trip Advisor and Visit Cuenca) was 300 comments.

Figure 3. Number of comments collected manually and automatically

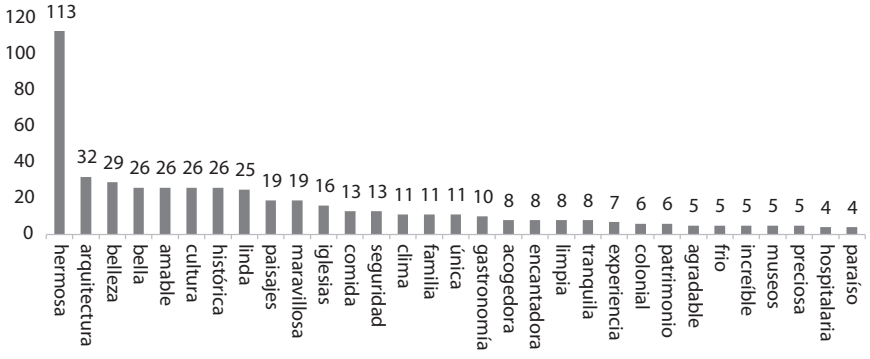


Source: Own elaboration.

An analysis of the comments was performed using the AntCont software to determine the frequency of the words or attributes that are most repeated in the comments of users of both the Trip Advisor forum and visit Cuenca's Facebook page.

The frequency index was calculated in relation to words that indicate the perception of tourists regarding the city of Cuenca, with an emphasis on tourist attractions (cultural, natural), quality of accommodation services and restaurants, price perception of the destination, security, hospitality and climate; and words that are repeated more than 4 times were chosen as illustrated in Figure 4, which results in price perception not being hierarchical as an attribute of preference.

Figure 4. Frequency of words most commonly used by tourists



Source: Own elaboration

Retos, 10(19), 2020

These results (comments) were processed for statistical analysis using IBM Statistics SPSS software, applying the cross-tabled option between variables Country and Gender, resulting Colombia, Peru, Argentina as the countries with higher emission levels, followed by the United States and Spain, as shown in Table 3, reaffirming the results of the Research Group on Regional Economy (GIER) in 2018, stating that the tourists who visit the city of Cuenca are from Latin America (35.3%).

Table 3. People with more participation based on their home country

Country	Gender		Total
	Female	Male	
Ecuador	114	62	176
U.S	30	23	53
Peru	14	25	39
Colombia	9	8	17
Argentina	5	8	13
Spain	7	0	7

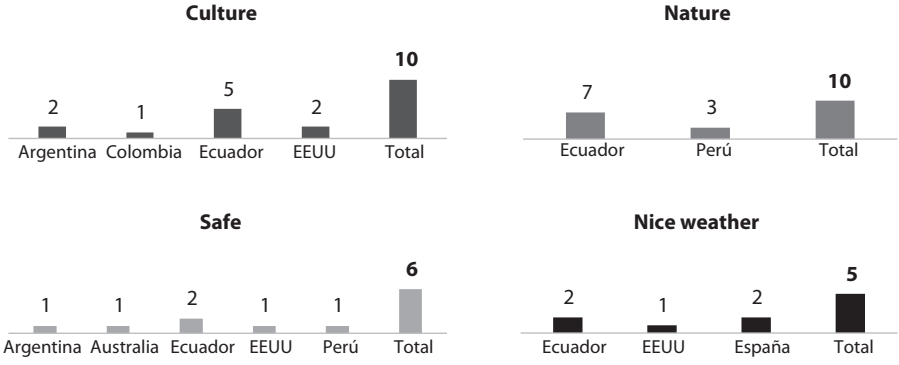
Note: Based on the results provided by IBM Estatistics SPSS software.
Source: Own elaboration

Tourists' preferences when selecting the city of Cuenca as a tourist destination are located in variables such as "beautiful city, architecture, friendly people, gastronomy" (these were the most common, see figure 5), and factors such as safety, climate, culture and nature were less frequent (Figure 6).

Figure 5. Factors that tourists perceive from the city of Cuenca

Source: Own elaboration.

Figure 6. Factors that tourists perceive from the city of Cuenca

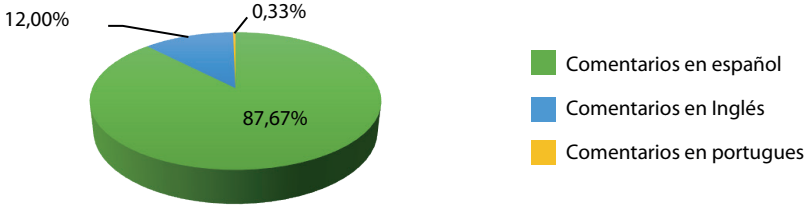


Source: Own elaboration.

There is also a greater participation of Ecuadorian tourism, who occupy the first place in the comments made about the city. Regarding the participation of foreign tourism, South America stands out, such as Colombia, Peru, Argentina, Brazil, followed by North American countries such as the United States and Canada and a single European and Oceania country such as Spain and Australia, respectively, reflecting more visits by domestic tourists.

This information may be skewed because the language used on the pages is Spanish, being this language most commonly used to express comments in 87.67%, followed by English and Portuguese (Figure 7), and there is evidence of a large presence of tourists who speak Spanish and a low participation of foreigners with another language.

Figure 7. Total of comments according to their language



Source: Own elaboration.

6. Discussion and conclusions

Studies conducted in 2018 by GIER (2018), show that tourism in the city of Cuenca during the years 2016-2018 has a slight trend for the growth of people from Latin America and the Caribbean with 1.19%; and a slight decrease for Europe (0.5%), North America (1.10%) and 0.4% for the rest of the world.

Retos, 10(19), 2020

These studies reveal that there is little use of the websites of both domestic and foreign travel agencies; 7% of tourists get information through travel agencies, and in greater proportion by references from previous experiences (38.9%). While Vidal (2018) states that 74% of travelers use internet for planning their trip through the Google Travel site that reports generally on the world's tourist sites and only 13% in travel agency. Therefore, there is a coincidence with the results of this research by showing (see Table 2) the insufficient use of the pages as a means of information and choice of destination, reflecting a low interaction between users; hence, these pages should offer information as aid to the decision-making in the choice of the place to spend their holidays, visit options or activities related to resources/attractions.

In relation to previous reports and the findings obtained in this work, it is confirmed that the origin of the largest number of tourists visiting the city is from Latin American and Caribbean countries (Colombia, Peru, Brazil, Argentina, Venezuela, Mexico) 78.62%, followed by North America (USA, Canada) with 17.61%; as established by GIER (2018), in which 35.3% of visitors are from Latin America followed by Europe with 31% and America with 30.8%; this reaffirms the feasibility of using Netnography with the use of technological tools that lead to lower costs, as opposed to the survey-based data collection.

The observation of the pages showed that the websites that manage the tours operators to provide services to domestic and foreign tourists, offer basic information about the destination; thus, it is necessary to improve the content of these sites and encourage a comment space where people can interact by expressing suggestions or opinions that can contribute to the quick and immediate decision-making about the city as a destination, optimizing the time when choosing their trip, otherwise visitors will choose another place as a destination. In this sense, alliances between the different actors of tourism are necessary, fact that is expressed in the strategic tourism plan of the city (TurisConsulting, 2016) (strategy five), where the need to strengthen the tours operators is expressed in the market access and bargaining power, but unfortunately this remains as a policy statement and formulation of strategies that has not materialized within the destination. One of the activities that could contribute to it is to encourage access to technological systems of online booking and purchases by joining forces through cooperation. The document shows no results, even though it contains an execution plan with people who are in charge of it and with a budget stablished for it.

From the perspective of perception of attractions, there is also a coincidence with what GIER published (2018), since both show that people appreciate the city as beautiful, architectural, historical, friendly people, followed by natural attractions. However, it was found that very few people choose the city for its variety of churches (20 churches distributed throughout the urban area), variety of museums, which is the main characteristic of the city and what is most advertised in the pages or recreational spaces such as Turi, tours within the city. The latter shows that the content of the pages has gaps of information in correspondence with the preferences of tourists, dismissing the rest of cultural attractions such as other museums, the natural environment that surrounds the city, its gastronomy or its cultural richness in various artistic expressions.

GIER data (2018) show that tourists visit the city of Cuenca motivated by its historic downtown as a main attraction at 19%; this information agrees with the results obtained from the research (Figures 5 and 6), reaffirming the above. It should be noted that the research defined other factors such as climate and safety; however, the greatest preference in relation to the destination is its architectural area that enhances the city that is compared to European cities.

With regard to the extracted database, it is noted that most comments are in Spanish (Figure 7), so that tourists who communicate in another language do not have much interaction because the publications are only in Spanish. Therefore, it is urgent to publish the posts in other languages to give greater possibility of participation to foreigners who do not speak Spanish, this is very important since social networks have become a means of connection between businesses and people, who share ideas, suggestions and even complaints about the products or services that a company provides. Such information is relevant as it yields needs, desires and aspirational feelings of tourists to determine their tastes and preferences with the aim of improving or developing a new tourist offer which satisfies the national and international tourist, as defined by authors cited in the introduction.

Although the data extracted in relation to security are not representative, there are signs that it may be an attraction of interest especially to foreign tourists. Studies carried out by (Prada *et al.,* 2018) indicate that the average travel rating, attention to the population and the appearance of the city, are valued positively and similarly in the case of pure cultural tourists who visit the city, reaffirming that the city is at the levels of preference of tourists, which is significant for the case of the pure cultural tourist.

Knowing the different attributes of domestic and foreign tourists is important to determine what their behavior is. Netnography is a valid tool for this purpose, as it helps to determine the different behaviors and interactions of social groups on different websites based on the information obtained from them, using technological tools that cheapen cost, as evidenced in the discussion of the results shows.

Most tourists visiting the city are Ecuadorians; although this is due to the local economy, it would be significant to increase foreign tourism that contributes to the inflow of foreign exchange from foreign tourism; thus, strategies should focus on this area to continue moving in a growing dynamic.

Although the Municipal Tourism Foundation of Cuenca established four tourist routes called The Artisan Route, Route of Museums, Route of Mills and Bread and the Rural Route, with the aim of demonstrating that the City of Cuenca has other tourism alternatives to promote the length stay of tourists, these routes have not been promoted sufficiently, leaving aside the opportunity offered by the websites, even though sites have launched a mobile application that publicizes the different areas of city tours where the routes mentioned are defined tourist areas, such as churches, museums, parks, and others, with the ease of being guided by a GPS.

All these aspects limit market opportunities, since the gastronomic, artisanal, cultural, natural diversity that the city possesses are not taken advantage of. One of the causes is that it maintains the traditional way of seeking information about the behavior of the consumer, bypassing advances in technology, especially in the field of

Retos, 10(19), 2020

tourism, where people look for information on the web, especially on social networks, to choose or know about their destination.

Regarding the comments obtained during the research, it has been observed that people visit the city of Cuenca for various recreational activities, but none related to the business, being a key point for the city, since it would encourage the participation of several local producers in order to increase the local productivity, while the Foundation states that the city of Cuenca is limited to developing with an image of business and conventions because of the lack of connectivity area, described in the third strategy of the Strategic Plan (TurisConsulting, 2016).

Another important aspect is that the different opinions of tourists about the city are positive, many people say that Cuenca is very quiet and they mention the good behavior of people during their stay, where they feel very comfortable generating a unique experience when walking or using public transportation. Such comments are favorable for the city and the tourism sector, people feeling calmer will generate good feedback towards other people, being of great help and influence to choose Cuenca as a destination, it will also increase the opportunity for a return and encourage the increase in tourism.

Tamara (2011) has established that the warmth and kindness of local people to tourists is a great motivation to return to the city, and potential tourists are influenced by the experiences and/or opinions of people who have already visited that destination when making decisions about their journey (Zeng & Gerritsen, 2014). The recommendations between family members and friends is the first source of information for the choice of destination, suggesting the importance of providing good experiences by the service providers (Consulting, 2011). One of the channels where this information is expressed is the virtual since it acts as influential through comments based on experiences (Barbery Montoya *et al.,* 2018); these elements are key to the target's players being motivated to develop new products that allow to take advantage of new market opportunities.

It is worth considering that the preservation of the cultural heritage of Cuenca is essential for the development of a sustainable destination, fact that agrees with (Prada *et al.,* 2018) when stating that the expense involved in creating a cultural good is insignificant compared to the cost demanded by its preservation over time, and the more extensive the life of the cultural good is the greater the investment that it demands.

7. Limitations

The limitations of the study focus primarily on the breadth and depth of data collection with respect to the population selection, given that there is a low level of use of technologies in the city by intermediation companies, reaffirming the results of studies carried out by (García & Vázquez, 2018).

On the other hand, the collection of personal data is limited because since 2018 there is a high data protection on the social network Facebook (Facebook, 2018), and it is only possible to have access to the name of the person and city of origin, thus restricting the possibility of determining a complete profile of the tourist through the use of Netnography, even though (DINARDAP, 2018) states that in

Ecuador regulations have not yet been implemented regarding compliance with the policy expressed in the Constitution.

References

Aucay, E., & Herrera, P. (2017). Nivel de uso de las redes sociales en el proceso de comunicación en las MIPES de Cuenca. *Retos: Revista de Ciencias de la Administración y Economía, 8*(14), 81-98. http://dx.doi.org/10.17163/ret.n14.2017.04

Barbery, D. C., Andrade, J., & Zambrano, M. (2018). Internet y prosumers: impacto en la decisión de compra de servicios hoteleros. *Revista Espacios, 39*(51). Recuperado de: https://bit.ly/2Z5KVk1 [Fecha de consulta: 22 de junio de 2019].

Castillo, E., Roget, F., & Rozas, E. (2015). El turismo en Ecuador. nuevas tendencias en el turismo sostenible. *Galega de Economía, 24*(2), 69-88.

Celdrán, M., Mazón, J., & Giner, D. (2018). Open Data y turismo. Implicaciones para le gestión turística en ciudades y destinos turísticos inteligentes. *Investigaciones Turísticas* (15), 49-78. Recuperado de: https://bit.ly/2Ri2aeG

Colordo, D. (2004). *Comunidades virtuales.* Recuperado de: https://bit.ly/2XOeCJq

Consulting, G. (2011). Plan Estratégico de Desarrollo Turístico. Quito: MINTUR-Fundación Turismo Cuenca.

Dell Innocenti, C. (2012). *Las redes sociales digitales como herramientas de marketing.* En C. Dell'Innocenti. Mendoza: Universidad de Mendoza.

Desplas, N., & Mao, M. (2014). Análisis paralelo entre e-turismo y e-gobierno: evolución y tendencias. *Investigaciones Turísticas* (7), 1-22. Recuperado de: https://bit.ly/2KNI4aU

Dina, R., & Sabou, G. (2012). Influence of social media in choice of touristic destination. *Cactus Tourism Journal, 3*(2), 24-30.

DINARDAP (2018). *Una Ley de Protección de Datos Personales es una oportunidad para el empresario ecuatoriano*. Recuperado de: https://bit.ly/2vxpnje

Facebook (2018). Compromiso de Facebook con la protección de datos y la privacidad en cumplimiento del GDPR. Recuperado de: https://bit.ly/2EGyMvB

Fisher, T. (2009). ROI in social media: A look at the arguments. *Journal of Database Marketing & Customer Strategy Management, 16*(3), 189-195. https://doi.org/10.1057/dbm.2009.16

García, F., & Vázquez, J. (2018). MIPYMES distribuidoras turísticas: recomendaciones seo a partir del análisis de palabras claves. Cuenca: Grupo Investigación Gestión de las MIPYMES-GIGMP.

Gebera, W. (2008). La netnografía: un método de investigación. Barcelona: EDUCAR. Recuperado de: https://bit.ly/2JAO439 (2018- 01-12). [Fecha de consulta: 12 de enero de 2018].

GIER (2018). Anuario Estadístico Estudio de Demanda y Oferta Turística en la ciudad de Cuenca. Cuenca: Universidad de Cuenca. Recuperado de: https://bit.ly/2KgMp7f

Gutiérrez, G., Sánchez, M., & Galiano, A. (2018). Redes sociales como medio de promoción turística en los países iberoamericanos. *Retos Revista de Ciencias de la Administración y Economía, 15*(8), 135-150. https://doi.org/10.17163/ret.n15.2018.09

INEC (2017). Tecnologías de la información y comunicación. Recuperado de: https://bit.ly/2PS8kRz

Kang, M., & Schuett, M. (2013). Determinants of sharing travel experiences in social media. *Journal of Travel & Tourism Marketing, 30*(1-2), 93-107. https://doi.org/10.1080/10548408.2013.751237

Marín, P., & Torres, Á. (2017). Gamificación en aplicaciones móviles para servicios bancarios de España. *Retos: Revista de Ciencias de la Administración y Economía, VII*(13). https://doi.org/10.17163/ret.n13.2017.02

MINTUR (17 de agosto de 2017). Ecuador se promocionará inteligentemente a nivel mundial, con alianza estratégica con Amadeus. Recuperado de: https://bit.ly/2x8pqlX

Montserrat, G. (2014). Impacto de las TIC en el turismo. Valladolid.

Morales, A. P. (2016). *Uso de redes sociales como estrategia de promoción de marketing*. Cuenca: Universidad de Cuenca.

Prada, J., Armijos, D., Crespo, A., & Torres, L. (2018). El turista cultural: tipologías y análisis de las valoraciones del destino a partir del caso de estudio de Cuenca-Ecuador. *Pasos: Revista de Turismo y Patrimonio Cultural, 16*(1), 55-72. https://doi.org/10.25145/j.pasos.2018.16.004

Quezada, P. A., Suasnavas, M. G., Chango-Canaveral, P. M., Gonzaga-Vallejo, C., Enciso, L., & Calderón-Cordova, C. A. (2018). Used of Social Networks and web application to design and promote the ecotourism route in the Southern Amazon of Ecuador. *13th Iberian Conference on Information Systems and Technologies, CISTI*, june, 27, pp. 1-7. doi:10.23919/CISTI.2018.8399399

Quijano, C., Arellano, A., & Naranjo, K. (2017). *(Dis)connection during a tourism trip: The use of smartphones by independent travelers*. Guayaquil: ESPOL.

Romeo, A., Abad, J., Forgas, S., & Huertas, R. (2014). La netnografía como herramienta de investigación en contextos on-line. *Innovar Journal, 24*(52), 89-102.

Sakulsureeyadej, A. (2011). Cómo la tecnología está cambiando el turismo mundial. En *OMT, AM Reports: Tecnología y Turismo* (Vol. 1). Recuperado de: https://bit.ly/2P2i5uZ

Saura, J., Sánchez, P., & Reyes, A. (2017). *Marketing a través de aplicaciones móviles de turismo (m-tourism). Un estudio exploratorio.* Madrid.

SENPLADES (2012). Transformación de la Matriz Productiva: Revolución productiva a través del conocimiento y el talento humano (1 ed.). Quito.

Sotiriadis, M., & Van Zyl, C. (2013). Electronic word-of-mouth and online reviews in tourism services: the use of twitter by tourists. *Electronic Commerce Research, 13*, 103-124. https://doi.org/10.1007/s10660-013-9108-1

Tafur, G., Vélez, C., Machado, O., Zumba, M., & Jácome, J. (2018). Desarrollo tecnológico del sector turístico en la ciudad de Guayaquil (Ecuador). *Revista Espacios, 39*(44), 3. Recuperado de: https://bit.ly/2XSnJ7n (2019-06-22).

Tamara, F. (2011). *Guía para la creación de emprendimientos culturales.* Cuenca: Universidad de Cuenca. Recuperado de: https://bit.ly/2sErF1p

TurisConsulting (2016). *Plan Estratégico de Desarrollo Turístico y Mercadeo del destino Cuenca y su área de Influencia 2016-2021* (Vol. 1). Cuenca.

Vargas, G. (2011). Método Netnográfico. En G. M. Vargas, *La investigación de mercados online y la Netnografía* (pp. 42-43). Santiago de Chile: Universidad de Chile.

Vázquez, J. P. (2018). Aportes al comercio turístico a través de websites: Mejoramiento para la evaluación de calidad. *Un espacio para la ciencia, 1*(1), 145-168. Recuperado de: https://bit.ly/2KlZrjx

Vidal, B. (2018). *Turismo y tecnología: cómo la tecnología revoluciona el sector turístico.* Recuperado de: https://bit.ly/2M8ZIDU

Zeng, B., & Gerritsen, R. (2014). What do we know about social media in tourism? A review. *Tourism Managment Perspectives, 10*, 27-36. https://doi.org/10.1016/j.tmp.2014.01.001

Retos, 10(19), 2020
Journal of Administration Sciences and Economics | p-ISSN: 1390-6291| e-ISSN: 1390-8618
www.retos.ups.edu.ec

Signaling and success in campaigns of Latin-American crowdfunding

Señalización y el éxito de las campañas de *crowdfunding* latinoamericano

Ing. Walter M. Sánchez Fontana graduated from Universidad del Azuay (Ecuador) (mateosanchezf@es.uazuay.edu.ec) (https://orcid.org/0000-0001-5401-3729)

Econ. Luis B. Tonon Ordóñez is a profesor and researcher at Universidad del Azuay (Ecuador) (ltonon@uazuay.edu.ec) (http://orcid.org/0000-0003-2360-9911)

Abstract

Funding opportunities for entrepreneurships in Latin America are few, commonly being limited to the use of traditional platforms such as public and private banking, or even informal forms of recollecting recourses, none of this particularly fitted to support early stage entrepreneurship. Because of this, new collection mechanisms have emerged, such as reward-based crowdfunding. However, this mechanism presents large percentages of failure and diminished growth rates compared to other regions. This empirical research aims to contribute to the understanding of the factors that make a successful campaign from the perspective of signaling theory. Based on the information collected from 21 804 Latin American campaigns, extracted from eight different countries, and from the Catarse, Kickstarter and Idea.me platforms, the results indicate that the use of social networks, number of rewards, multimedia material such as images, videos and gifs, as well as efforts of communication with clients during or after the funding phase, have a positive influence in the success of a campaign. Furthermore, all of these are seldom used by the majority of the evaluated campaigns, independent of their country of origin or the nature of the campaign itself. The lessened growth of crowdfunding on the region is understood, and it is partly affected due to the inherent quality of the projects, where there is a lot of room for improvements to be made.

Resumen

Las oportunidades de financiamiento para emprendimientos en Latinoamérica son pocas, limitándose comúnmente al uso de instituciones tradicional como la banca pública y privada, o incluso a recursos recaudados informalmente, ninguno de estos particularmente estructurado para emprendimientos de etapa temprana. A esto, han surgido nuevos mecanismos de recaudación como el *crowdfunding* basado en recompensa. Sin embargo, este sufre en Latinoamérica de grandes porcentajes de fracaso y un crecimiento general desacelerado en comparación a otras regiones. Esta investigación empírica, pretende contribuir al entendimiento de los factores que hacen a una campaña exitosa desde la perspectiva de la teoría de señalización. Basado en la información recaudada de 21 804 campañas de origen latinoamericano, extraídas de ocho países distintos, de las plataformas Catarse, Kickstarter e Idea.me; Los resultados indican que el uso de redes sociales, número de recompensas, material multimedia incluyendo imágenes, videos y gifs, así como esfuerzos para comunicarse con el cliente sea durante o después de culminado el plazo de recaudación, influyen positivamente al éxito de una campaña. Se determina también un uso marginal de todas estas señales, independientemente del país de origen de las campañas o su naturaleza. El mermado crecimiento de la escena de *crowdfunding* en la región se entiende, está siquiera en parte afectada por la calidad inherente de los proyectos, donde hay mucho espacio por mejorar en referencia a las señales usadas.

Keywords | palabras clave

Crowdfunding, reward, signaling, data extraction, e-commerce, asymmetries, funding, entrepreneurship.
Crowdfunding, recompensa, señalización, extracción de datos, comercio en línea, asimetrías, financiamiento, emprendimiento.

Suggested citation: Sánchez Fontana, W. M., & Tonon Ordóñez, L. B. (2020). Signaling and success in campaigns of Latin-American crowdfunding. *Retos Revista de Ciencias de la Administración y Economía, 10*(19), 95-110. https://doi.org/10.17163/ret.n19.2020.06

Received: 01/12/2019 | Reviewed: 18/12/2019 | Approved: 15/01/2020 | Published: 01/04/2020

Retos, 10(19), 2020

1. Introduction

In any developing economy, the promotion of private investment is a priority that is difficult to implement due to several factors. One of the main difficultness is the fact of incentivizing the willingness to finance by traditional financial institutions, which represents a very cautious financing alternative, leaving without opportunities higher risk investments, such as early-stage entrepreneurships.

In response to these difficulties, instruments that allow the financing of higher risk investments have emerged in recent years, some of these based on the internet as their platform. This is the case of crowdfunding, which is an effort to democratize the financing power of the common person and distribute the risk to a greater number of investors.

The interest in this research lies in the potential that crowdfunding can have in the Latin American entrepreneurship, and which developed slowly, especially in its lower-complexity models, such as reward-based crowdfunding that works similarly to a common e-commerce page, with the difference for the consumer of paying in advanced for the product and relying on just the prototype of the product.

The introduction of this new mass financing model requires understanding the factors that influence in making it a more attractive alternative to the investor, who in this case it would be the common consumer. In these efforts, the works that have been carried out, especially in more experienced markets such as the American one, has pointed to the study of quality signaling on web platforms and projects, as one of the mechanisms by which to promote this investment model.

Thus, this research strives to understand how well the platforms and projects of the main crowdfunding pages in Latin America are implementing basic signaling efforts, in order to determine how much of the difficulty in increasing the success rate of crowdfunding projects on these pages is simply due to the quality of the projects submitted and what is due to a general lack of online consumer culture of the region.

It is based on the assumption that the better the use of quality signaling by projects, the greater the chances of successfully raising the money ordered. This will be analyzed and answered within the research, through the collection of information from Latin American projects on three of the most used platforms in the area, and by using a search robot created for this purpose.

2. Literature review

A major challenge involved in creating any venture is the raising of initial capital to cement the start-up of a company. Traditionally, if there is no way to self-finance entrepreneurs use intermediaries (mainly commercial banks) in search of long-term loans (Berger & Udell, 1995); or even angel investment models and venture capital investments in certain cases. However, the former commonly has considerable aversion to financing these projects, due to the high risk involved, in addition to the amount of monthly interest payment, given by the financial volatility of these projects. The second is rare and may require a lot of investor interference in project decisions, creating a hole in significant financing opportunities (Kunz, Bretschneider,

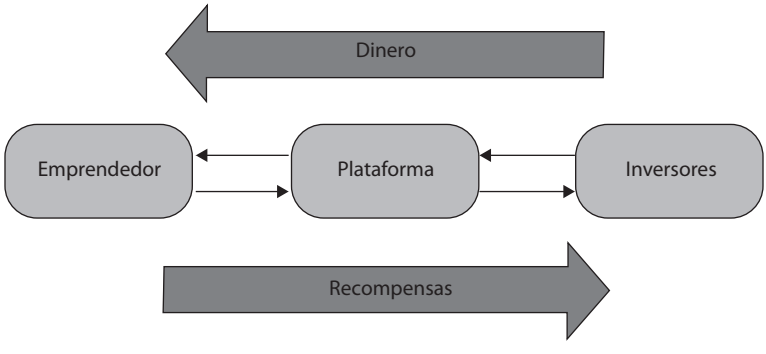
Erler & Leimeister, 2017), especially for the promotion of new projects (Mason & Harrison, 2004).

Additionally, fundraising is not the end of complications for an entrepreneurship. After finding some kind of financing, whether internal or external, the new business must start producing or developing a service on its own account or under the outsourcing of this function, to later try to sell it directly or under an intermediary. This traditional method is expensive and especially risky, given the strong assumptions that must be made about the real demand of the product (Chakraborty & Swinney, 2016), as well as the overall health of its cash flows in order to cover the debt or obligations of investors.

However, the increasing use of the internet as a friendly means to various types of economic and financial transactions (Dehling, 2013), has triggered in the creation of new forms of financing that welcome those weaknesses and sectors of demand neglected by traditional formats. These new financing models have resulted in rare connections between the entrepreneur and the investor, where the latter can take different forms, such as that of co-creator, consumer, sponsor, investor or simply lender (Davies & Giovanetti, 2018). What is consistent in all of them is the absence of a great intermediary, thus appealing to free access, in which accessibility and number of investors is stimulated (Dehling, 2013; Agrawal, Catalini & Goldfarb, 2013; Lambert & Schwienbacher, 2010). The most important of these online mechanisms is called crowdfunding.

Crowdfunding is a relatively new financial model which democratizes the power of financing, i.e., it usually has free access to the ordinary citizen and it is defined as "the efforts of entrepreneurs and non-profit groups to finance their projects by attracting small contributions from large numbers of individuals through platforms on the internet" (Mollick, 2013, p. 2). Therefore, the dynamic by which crowdfunding works is composed of three actors (Figure 1): entrepreneurs, responsible for the project; the online platform as a vehicle for exposure and transaction; and investors, who may have several forms, depending on whether they are offered in return.

Figure 1. *General crowdfunding model*



Source: Davies and Giovannetti, 2018

Retos, 10(19), 2020

This model is particularly useful for businesses and small businesses, since, being such small contributions of money, their investors experience little risk aversion, and their intermediaries are the platforms that manage the exchange of these funds, and these remain from commissions that commonly range from 3% to 8%, all operating online (Wells *et al.,* 2011).

There are specifically four models by which investors finance in crowdfunding (Agrawal *et al.,* 2012; Banco Mundial, 2013; Belleflamme, Lambert & Schwienbacher, 2013), where the difference lies in the way the investor is rewarded. This has great implications on how each of them works. These are: donation, the simplest of all since it does not include a greater reward in return, it is used for social causes, where it only emphasizes a sense of altruism in its participants; loans where the participant acts on a promise of payment to the person who finances and also appeals to a sense of altruism or individual interest of the participant; rewards, with a higher level of complexity, it is the financing in exchange for a specific product or service; and acquisition of shares, the most complex of all and that progressively takes on more traction (Massolution, 2015), comprising the acquisition of a portion of the company. Each of these has its own dynamics and theories that support the success or failure of a project.

The proposed study focuses specifically on the reward-based model, which functions as the promise of sale (pre-sale) of a product or service (Chakraborty & Swinney, 2016) that the entrepreneur wishes to produce in case the 'objective' financing to start such a business be fulfilled (Agrawal *et al.,* 2013), thus, solving the other difficulties about the risks of production and marketing prior to the confirmation of a real demand for the product, as mentioned before.

This model is chosen for the study, since this is the predominant, even more so in Latin America where more than three-quarters of visits to crowdfunding sites are to platforms of this type (Rentería, 2016); and it is also the model with more accessibility of information (Dehling, 2013; Banco Mundial, 2013). Thus, also the level of average complexity has allowed its introduction in Latin America, since it is very accessible to the public by behaving mostly as a common online commerce dynamic.

Crowdfunding has already gone from being a promising phenomenon to a consolidated and high-growth structure in all its forms. In 2015, 34.4 billion dollars were collected worldwide, with a growth of 270% and 200% in previous years (Massolution, 2015) and it is expected that by 2020 it will raise an estimated 90 billion dollars (Forbes, 2015). The phenomenon of crowdfunding platforms of all kinds has catapulted in recent years (Banco Mundial, 2013), primarily in the United States, after the introduction of regulations imposed for the freest application of all crowdfunding models in crowdfunding jobs act (Dehling, 2013). These new laws paved the way for the replication and expansion of this financing model by Europe, and more recently in some parts of Latin America.

Kickstarter, the main reward-based crowdfunding platform, has raised $3.9 billion since its founding in 2008 through the conduction of 420,000 projects. Out of these projects, the ones that have had the most traction have collected between $13 million and $20 million. In addition to their numbers, these platforms have allowed the commercialization of new technologies such as watches, bookshelves and smart electrical connections, water repellent fabrics, new beekeeping formats and novel gadgets.

The crowdfunding scene in Latin America is generally incipient in relation to the progress on other continents. In 2014, a total of $57.2 million was financed in Latin America, with an annual growth of 167%, a percentage that has been declining over the years, and with a level of growth close to that handled by the most advanced markets such as the American or the European with 140%. In fact, the market that looks significantly more promising is the Asian with an annual growth of 300% and a funding of 3.4 billion in 2014 (Massolution, 2015).

In total, the numbers are equally discouraging. Of all the funding raised by Crowdfunding worldwide in 2013, only 0.4% was generated in Latin America. This could be due to three different factors. It could first be caused by the lack of Latin American platforms, where in 2014 there were only 50 and very small growth; second it could be due to a lack of consumption culture of this kind in the region; or finally that the projects launched do not meet sufficient quality standards, which would be met with the lack of traction projects of Latin origin even on international platforms such as Kickstarter (Massolution, 2015).

Even if the growth of Latin American crowdfunding does not go hand in hand with other regions, volumes are still representative, and their growth rates are high compared to other financing alternatives. This is promising considering that this is a highly concentrated phenomenon in a few countries and therefore it has significant growth potential.

The Latin American crowdfunding scene such as its development has not even been in the different countries of the region. On the contrary, the activity is highly concentrated in Brazil, where in 2015, the percentage of daily visits to Brazilian platforms was 42.2% of the entire South American market (Rentería, 2016; Kickante, 2018). In addition, the countries with average activities are Argentina, Chile and Mexico, the latter despite not having a strong national platform (Nafin Mexico, 2017); and the rest of the Latin countries are still in the initiation process.

As far as platforms are concerned, it is not a surprise that these in turn are very concentrated and few conglomerates most of the visits. The main ones are Catarse, Idea.me, Vakinha, Prestadero, Panal de ideas and Broota (Rentería, 2016), of which they are all reward-based platforms with the exception of Broota, identifying a clear mode. Broota is the only prominent investment-based crowdfunding platform, which still suggests the lack of progress of the Latin market in legal and cultural terms in the face of this phenomenon.

Crowdfunding is a very atypical funding format, so it was originally of the main academic interest to understand the foundation that makes a successful crowdfunding campaign (successful is understood as those campaigns that collect 100% or more pre-defined funding target), and to know whether previous models that predicted traditional financing of early-stage projects were valid within crowdfunding dynamics (Mollick, 2013). The literature that explains the behaviors of the credit market, especially at an early stage, is characterized by information asymmetries. This is understood as forms of compromise in which there are high degrees of uncertainty about the reliability if the other party can fulfill the part of the deal (Connelly, Certo, Ireland & Reutzel, 2011; Spence, 1973). In the case of traditional financial offerings,

Retos, 10(19), 2020

this is reflected in a strong aversion to venture financing for the lack of reliable information about the borrower or the project (Davies & Giovannetti, 2018).

The influence of information asymmetry on reward-based crowdfunding is no less, since it afflicts the transactions of this phenomenon by two different ways, first for this being a credit model and because it is very similar to a transaction in an electronic market; finally, by information asymmetries (Kunz *et al.,* 2017).

This is clearly the weakness of reward-based crowdfunding, as it comprises a transaction in which a lot of confidence is required, since the buyer/investor is not sure that the product or service he/she is purchasing is in fact the exactly offered, this insecurity is characteristic of online shopping since there are only limited ways to know if the product looks and works as it is being sold (Dehling, 2013; Kunz *et al.,* 2017; Kim, Buffart & Croidieu, 2016; Martens, Jennings, & Jennings, 2007). Additionally, the purchase in crowdfunding based on reward is not mostly immediate, as it would be in an online purchase, but the money would be delivered only under the promise that the product will be manufactured and sent, after a period of time, into the hands of the consumer. Therefore, this makes financing through reward-based crowdfunding different and complicated to materialize (Belleflamme *et al.,* 2012).

Due to these clear limitations, there are measures that can be taken into account to mitigate the limitations that information asymmetry imposes. These are represented under the theory of signaling (Mollick, 2013; Etter, Glossglauser & Thiran, 2013; Chakraborty & Swinney, 2016; Kunz *et al.,* 2017); which is explained as a set of 'signals' which are "attributes presented by an individual within a market, which, intentionally or not, alter beliefs and express information to other individuals in the market" (Spence, 1973, p. 263); i.e., these are sets of information that suggest the consumer the quality and reliability of the product or service (Cardon, Sudek, Mitteness, 2009). These are commonly used in e-commerce for the same purpose, and are materialized under the particular product presentation, page layouts and all the multimedia material that surrounds it, payment buttons and any other signals that suggest that the seller is reliable (Jiang & Benbasat, 2007).

In the particular case of reward-based crowdfunding, signaling works in a very similar way as it does in e-commerce. However, the difference is that crowdfunding platforms use common presentation formats in order to standardize and give all the tools to entrepreneurs to present their projects. Therefore, under this standard format of campaign presentation, examples of quality signals could be: the video that exposes the prototype (of the good or service), the number and forms of rewards understood as the portfolio of the campaign, the number of updates made to the page, the amount of feedback people leave and the response to such comments, traction generated on the network, etc. (Belleflamme, 2012; Mollick, 2013; Kunz *et al.,* 2017; Lynn, 1991; Nahapiet & Ghoshal, 1998).

3. Materials and method

For this research, the measurable attributes that make a Crowdfunding campaign have higher quality have been evaluated, based on the perspective of signaling theory. In addition, the aim is also to assess the existence or non-existence of signi-

ficant distinctions between the country of origin of these projects and their quality (performance in their use of signals), in order to understand whether signaling and the inherent quality of the projects have an effect on how crowdfunding unequally develops in the region.

In this way, a basic review of signals composed of the following (Table 1), has been stipulated, which in turn have been subdivided by their relative cost of implementation to see in what time of the campaign the signals are applied. The same presentation format used by Kunz *et al. (2017)* has been used, which in turn is based on a format used for signaling on e-commerce pages.

Table 1. Signals to use under Mavlova et al. format

	Before the beginning of the campaign	During the campaing
Low cost	Use of accounts in social networks (Facebook, Instagram and Twitter	Number of comments
		Updates
High cost	Number of images	Staff picked
	Number of videos Own website	
	Number of rewards	

Source: Kunz *et al.,* 2017

For the research, relevant data of Latin campaigns: Catarse, Kickstarter and Idea.me were collected for the research, since these are three of the main platforms in most countries in the region. Only campaigns of American origin or with characteristics of what would be considered a reward-based Crowdfunding campaign have been leaked, i.e. donation campaigns and social causes have been ignored.

Once applied all these filters, there is a total of 21 804 projects, out of which 74.54% belong to the Catarse platform, i.e., 16 253 projects; second 13.22% for Kickstarter with 2882 projects; and finally, 12.24% for Idea.me with 2669 projects.

These webpages, because they do not have an API[1], require that the extraction of these amounts of data is carried out by means of a Web Crawler program. [2] These can be understood as "search programs capable of iterative and automatically download complete web pages, extracting their URLs and collecting information in detail" (Thelwall, 2001, p. 319). To this end, one has been developed for this purpose and the variables set out in Table 1 have been extracted, as well as complementary descriptive variables, in order to be able to present the information that includes campaign name, category, country of origin, target amount and amount raised.

In order to be able to see the relationship between the signals used by the projects and the success of the projects, i.e., if the campaign managed to raise the

1 Company-specific interfaces, which allow any user to extract metadata from their URLs.

2 Free data extraction software, which can collect any requirements (attribute on a page) asked.

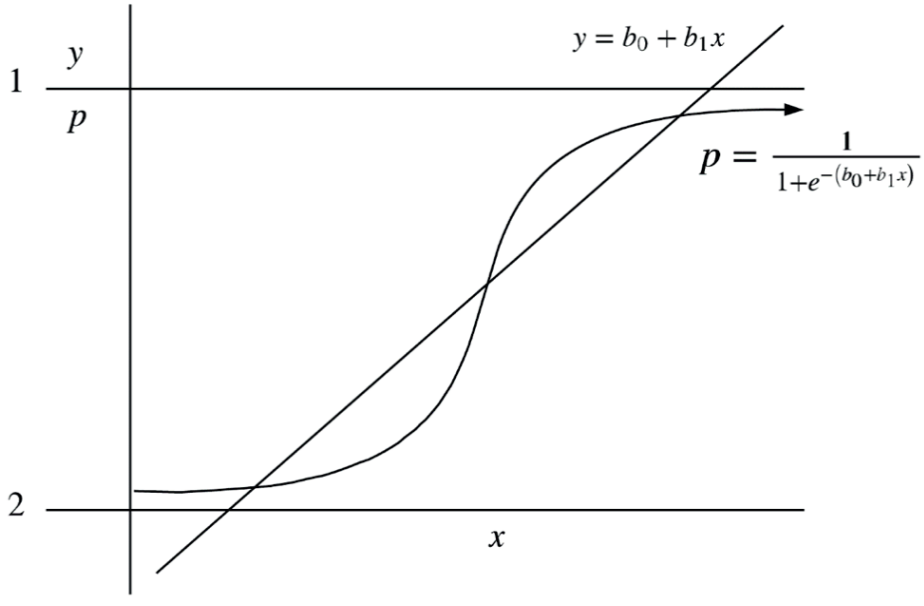
Retos, 10(19), 2020

money that was initially proposed as a goal, then its probabilistic relationship must be determined by the use of regression binary logistics, as suggested in the literature (Courtney, Dutta & Li, 2017; Mollick, 2013; Kunz *et al.,* 2017; Davies & Giovannetti, 2018), where a dummy variable is used as a dependent variable, indicating the success (1) or failure (0) of a campaign, and it is in turn controlled by the independent variables to be evaluated (signals), both separately and in combinations.

The SPSS statistical program will be used to carry out this analysis, which has the necessary tools for carrying out such research (Kunz *et al.,* 2017).

This type of analysis is more easily detailed by its distinctive s-shaped graphic, which works in a range from 0 to 1, as can be seen in Figure 2.

Figure 2. Differences between linear regression and logistic regression



Source: saedsayad.com, n.f.

Through this type of analysis, the idea is to find combinations of independent variables that test the highest predictive values about the success of a campaign, while these have the least number of variables for determining the more harmonious effects (Tranmer & Elliot, 2005).

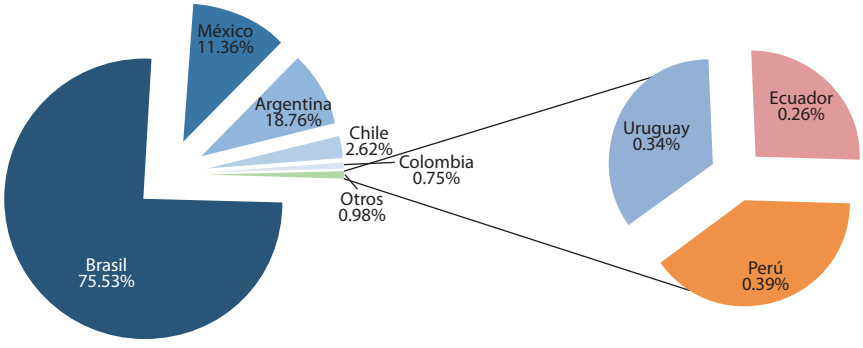
At first, binary logistic regression asks for a bi-variant evaluation, where the unique effect of each independent variable or signal and its significance in the contrast of its Chi square (Canela, Lora & Estrella, 2011) will be evaluated. To reinforce the understanding of these relationships, contingency tables can first be generated to evaluate the contrast of the hypothesis and an association measure (Walsh, 1987).

4. Results

As of November 26, 2018, 21 803 projects were collected, 6586 of these were successful, corresponding to 30.21%.

As expected, many of the projects were from Brazil, comprising 75.53%, mainly in Catarse but also in Idea.me; Mexico followed with 11.36% and Argentina with 8.76%; the sum of the other sources groups about 5%. This demonstrates the imbalance in crowdfunding development in the region and the platforms that represent them, as it is clearly observed in Figure 3.

Figure 3. Classification of all projects by their country of origin



As for the performance of the projects, it is necessary to understand the number of investors that can be attracted. The mode is very clear, the overall mode of the projects is zero investor and most investors accumulate in very few projects, making the crowdfunding very uneven, where projects that fail do it outright and those that success are very little (Mollick, 2013); after all, only 2843 projects or 13.20% have more than 100 investors and the odds are decreasing significantly; 317 projects or 1.45% have more than 500 investors.

The use of own webpages to generate traffic and value outside the platform follows a pattern not entirely homogeneous across the platforms, being higher its use in Idea.me, approaching 57%. However, the average is 32.60% of use, very close to 28.90% and 29.84% seen on the Catarse and Kickstarter platforms, respectively. Thus, its use is representative, but not widespread, so it can be an important differentiating tool.

The use of social networks under this same role is much more common, representing an average of 57.26% in the conglomerate, likewise it is not a continuous trend across platforms, it was the Catse projects that raised this value, its use in Idea and Kickstarter being between 20% and 25%, respectively.

Regarding the use of networks, strong trends can be distinguished in the favoritism of certain pages, the clearly preferred is Facebook which is presented in two thirds of the times in which the application of a social network appears; this trend is maintained by the platforms, less on Kickstarter where Instagram has a dominant

Retos, 10(19), 2020

role; this can be seen in Table 4, where the use of Facebook in Kickstarter projects did not generate a significant positive effect. In the case of Idea.me, the use of Facebook is almost absolute. Likewise, the use of Twitter and Instagram is significant and the entrepreneur finds them value; but it is in the Facebook format that the presentation of a project is more comfortable, especially in the eyes of the Latin entrepreneur.

The use of rewards follows the same pattern across platforms, because while a higher usage was distinguished in Idea, whose average is seven, the overall average is 4. As far as mode is concerned, it concentrates on four rewards with a use of 22.52%, the number of which is significant since it allows enough complexity for entrepreneurs to offer various products without making it excessively complicated for their execution.

The use of multimedia in general is lower in the use of images, for example, the mode of the of projects is one; however, these changes depend on the platform, since on Kickstarter it is two and in Idea.me it is four; for the Cating platform the images did not take on such importance and a very broad mode was found in one.

Likewise, the favoritism in the use of videos and gifs corresponds to one, this is understandable from the presentation format of the projects, which gives a fundamental importance to a first video, presenting it at the beginning of the page, but the others relegating to the description section next to the other media. Its cost and greater complexity can be the factors that make this an uneven distribution, to such an extent that only 1570 projects have more than two videos, representing only 7.20% of the population.

The use of mechanisms during the campaign, such as updates, is surprisingly low; its use is very similar in all platforms, mostly on Kickstarter with 35.74%, but it reduces to 32.72% in Catarse and 22.39% in Idea.me. In addition to this, among those who use it, mode is found in an update and concentration significantly to one, two and three, which accounts to 17.78% of the observation. On the contrary, those who use more than five updates represent 12.47%, and those over ten only 6.06%.

Binary logistic regression could be successfully developed, and it was carried out under three different models. On the one hand, the variables of number of rewards, number of images, number of videos and gifs, number of updates, use of social networks and reward limit can be evaluated for the entire sample. But, this is not the case for the variable number of comments that can only be evaluated for the Kickstarter and Catarse platforms; and for the use of the variable staff picked that can only be evaluated for the Platform Kickstarter, due to the structure of each platform and the tools they have.

For the first model, as can be seen in Table 2, the use of the eight variables initially described of the total extracted projects, is evaluated. In this way, the nullity model is used ($\chi^2(8) = 7218.68$, $p < .001$) to which the next model adapts significantly better with 76.1% of cases classified correctly, this meaning that such a percentage of cases under the following model would be correctly classified as successful and unsuccessful.

The model also explains between 31.4% (Cox & Snell R^2) and 41.9% (Nagelkerke R^2) of variance. This means that between 31.4% and 41.9% from the volume of successful projects are due to the predictors mentioned below, the rest of the volume are explained by other predictors not taken into account. This can be understood as a circle that encompasses between 31.4% and 41.9% of projects that marks the impact that predictors (signals) had.

Table 2. Binary logistic regression for success statistics in the data

Predictors	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Facebook account	.145	.042	12.069	1	.001	1.156	1.065	1.255
Twitter account	.451	.042	113.006	1	.000	1.570	1.444	1.706
Instagram account	.826	.039	457.446	1	.000	2.284	2.117	2.463
Number of rewards	.098	.005	452.687	1	.000	1.103	1.093	1.113
Number of images	-.015	.002	50.421	1	.000	.985	.981	.989
Number of videos and gifs	-.040	.012	10.606	1	.001	.961	.939	.984
Number of updates	.287	.006	2051.481	1	.000	1.333	1.316	1.349
Reward limit	.310	.052	35.022	1	.000	1.364	1.231	1.511
Constant	-2.275	.050	2037.045	1	.000	.103		

Predictors are understood as correct by maintaining a significance level less than 0.05. This can be observed in the Sig column, Table 2. As can be seen, all variables meet it, accepting their relevance and effect as predictors of success in launching a Crowdfunding campaign whether this is a positive or negative effect.

The standard regression coefficient (B) indicates the direction of the predictor effect. It can be observed how the use of social networks, the number of rewards, the number of updates and the limit of rewards have a positive effect, which means that the greater the use of these signals the greater the probability of success. The number of images and number of videos and gifs indicate a further tendency to fail if there are more of these signals available. This can be evidenced by their Exp(B) odds ratios, which are less than 1, indicating a decrease in the probability of success.

The confidence level has consistent probability ratios and it allows to accept the hypotheses that the other coefficients have. This is noted in minor and large Exp(B) which are both ≥ 1 *or* ≤ 1.

A second logistic regression was developed only including projects extracted from the Kickstarter and Catarse platforms, as can be seen in Table 3, with the additional predictor number of comments. The results show that the data fits well with the model ($\chi^2(9) = 6641.47$, $p < .001$), with 82% of cases classified correctly.

The model also explains a Cox & Snell R^2 equal to 29.5%, while a Nagelkerke R^2 equal to 42.2% was also obtained, which as would be expected, is highly similar to the first model.

Retos, 10(19), 2020

Table 3. Binary logistic regression for kickstarter and Catarse success statistics

Predictors	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Facebook account	.863	.048	327.525	1	.000	2.370	2.159	2.603
Twitter account	.131	.066	3.974	1	.046	1.140	1.002	1.297
Instagram account	.750	.095	62.947	1	.000	2.117	1.759	2.548
Number of rewards	.103	.006	348.305	1	.000	1.108	1.096	1.120
Number of images	-.006	.003	4.170	1	.041	.994	.989	1.000
Number of videos and gifs	-.002	.012	.026	1	.872	.998	.974	1.022
Number of updates	.312	.008	1722.780	1	.000	1.366	1.346	1.387
Number of comments	.069	.009	61.246	1	.000	1.071	1.053	1.090
Reward limit	.044	.062	.506	1	.477	1.045	.926	1.180
Constant	-3.692	.113	1067.416	1	.000	.025		

When assessing its significance level, it is found that the number of comments is a relevant predictor in achieving the success of the campaigns, as well as the rest under this model, except the variables number of videos and gifs, and the reward limit.

By timely analyzing the signal comments, it can be observed a significance level less than 1 that confirms its predictor effect, a positive B and Exp(B), indicating the predictor effect of success, and a congruent confidence level that confirms the hypothesis. Therefore, the more comment usage, the greater the prediction of success.

Finally, a third regression observed in Table 4 had to be developed to evaluate the data related to the Kickstarter platform, in order to include and analyze the variable staff picked, so the data meets significantly with the model ($\chi^2(9) = 1598.99$, $p < .001$

The model also explains between 43.00% (Cox & Snell R^2) and 59.10% (Nagelkerke R^2) of variance. This means that the amount between 43.00% and 59.1% of successful projects are due to the nine predictors used, which are slightly larger margins than the previous models.

Table 4. Binary logistic regression for Kickstarter success statistics

Predictors	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Facebook account	20.880	1602.290	.000	1	.990	1169 119607.255	.000	.
Twitter account	3.465	.871	15.841	1	.000	31.986	5.806	176.227
Instagram account	3.602	1.032	12.171	1	.000	36.656	4.846	277.247
Number of rewards	.108	.016	47.942	1	.000	1.113	1.080	1.148
Number of images	-.007	.008	.960	1	.327	.993	.978	1.007
Number of videos and gifs	-.090	.026	12.384	1	.000	.914	.869	.961
Number of updates	.378	.025	223.360	1	.000	1.459	1.388	1.533
"Staff picked"	-1.672	.166	101.976	1	.000	.188	.136	.260
Reward limit	-.536	.175	9.334	1	.002	.585	.415	.825
Constant	-27.919	1602.291	.000	1	.986	.000		

The data of the latest model present in Table 4 show alterations in the use of Facebook account, demonstrating a significance level very close to 0.05, making it irrelevant. The case is similar for more images that are presented, which apparently have no greater influence on the prediction of success. The fact of being selected as a favorite by the platform enhances the possibility of success.

In this way, it is understood under these three different models that all the signals evaluated, except the number of images and number of videos and gifs, have positive effects for the success of a campaign, these fluctuating slightly depending on the model and population evaluated. The other successful effects are understood to be intrinsic to product quality or network traction.

Most of the results found agree with the data obtained in the literature, strengthening much more the validity of the signal because they have been developed at different times and on populations with significant geographical differences. The studies of Mollick (2013) and Kunz *et al.* (2017) show the Kickstarter universe and how the use of these signals comprise a predictor of success in the campaigns. Kraus *et al.* (2016) demonstrate that signals are also applied to European platforms, and state that these can be replicated under certain modifications in other crowdfunding models as demonstrated by Ma *et al.* (2017); Vismara (2018) and Ahlers *et al*. (2015) in their studies on crowdfunding for acquisition of shares. There are also certain distinctions, the main one is the negative effect that was found with the greatest use of images, videos and gifs, when the rest of the evaluated literature indicates otherwise. Another difference with the literature is that the success rate is significantly higher in the American context as expected, especially on Kickstarter, where in Mollick's year of study, it added up to 48.10% and in Kunz's study years it would point to a figure of

Retos, 10(19), 2020

46.13% of success, presenting a fairly stable level, which explains that while the number of published projects has continued to increase, the likelihood of success remains; while this work elucidated a much stronger reality for the Latin crowdfunding, where there was 30.21% of success from global extraction.

5. Conclusions and discussion

Crowdfunding in Latin America is still in its early stages and it demonstrates many behaviors accordingly, such as campaign conglomeration and the success of campaigns in very few categories, always focused on commodities or based on content creation, peer products and little variety in rewards that do not go beyond slight changes in profits. It is understood that in most cases its use by the entrepreneur tends to the extension of a personal brand, whether by that of a particular band, publisher or author, or the creation of games by a specific agency. This means that the traction of the product or service is generated externally to the platform, and the latter is used as an early payment tool. This is more than as an e-commerce market independent from others.

A big difference has been found in the advancement of crowdfunding depending on the country of origin of the project, this is particularly noticeable from the beginning in the number of projects that have been extracted, where 16 731 projects have generated in Brazil, and 56 in Ecuador. It is clear that it is limited to the use of the particular platforms of the study, but in the same way no country has a platform even close to the magnitude of the Brazilian Catarse; moreover, most countries do not have a strong national platform, such as the case of Mexico (Rodríguez, 2017).

From this developing difference, the distribution in the usage categories has changed, where a concentration in categories based on multimedia or information products can be seen in countries with little development; on the contrary, in more developed countries there is a greater importance in digital games and miscellaneous products. This reflects the variety of entrepreneurs on these sites and their consumers, as well as the quality and cost of shipping services and the confidence in the projects and the platforms that filter them.

It is important to emphasize the general little use of quality signals, since there is marginal use in all of them, which makes that very few projects accumulate the use of these tools. In a global sense, the use is less; for example, the use of website is 32.60%, the use of at least one social network is 57.26%, the mode in the use of rewards is equal to four, the use of images is one and approximating to zero. This is exactly the same case with videos, and the use of updates does not take off from scratch in 64.85% of cases. In other words, there is very little seriousness and resources in most projects, so their feasibility since their origin was almost zero.

This last observation is somewhat positive given that, despite having such a marginal percentage of success, it has been demonstrated under a binary logistic regression that all signals presented, except the use of images, videos and gifs, a very relevant positive influence in the likelihood of success of a campaign, proving that its use can predict between 31.4% and 41.9% of a campaign's success. The effort through these signals generates massive differences in the overall poor quality of the projects. In this way, a good use of social networks, the use of a website to explain the product

or service, the extension of a large portfolio reflecting in product quality and communication with the consumers at each stage of the project, make a big difference.

The efforts that the platforms put in to improve the presentation and traction of the projects of its clients, as well as the natural evolution of online shops and related infrastructure that will arise in Latin America will undoubtedly enhance the use of services like reward-based crowdfunding. This is the beginning of a long journey that will only be accelerated by developing strategies to captivate a very wary market, which is very large and incrementally adepts at online transactions and the influence of more developed countries.

References

Agrawal, AK, Catalini, C., & Goldfarb, A. (2013). Some Simple Economics of Crowdfunding. *Nber Working Paper Series*. Recuperado de: https://bit.ly/2w8KWdg

Ahlers, Gerrit K.C., & Cumming, D., Günther, C., & Schweiser, D. (2015). Signaling in Equity Crowdfunding. *Entrepreneurship: Theory and Practice*, 955-980. https://doi.org/10.1111/etap.12157

Banco Mundial (2013). Crowdfunding's Potential for the Developing World. *Finance and Private Sector Development Department*, 1-102.

Belleflamme, P., Lambert, T., & Schwienbacher, A. (2012). Crowdfunding: Tapping the right crowd. *Journal of Business Venturing*, *29*(5), 585-609. https://doi.org/10.1016/j.jbusvent.2013.07.003

Berger, A. N., & Udell, G. F. (1995). Relationship Lending and Lines of Credit in Small Firm Finance. *The Journal of Business*, *68*(3), 351. https://doi.org/10.1086/296668

Canela, M., Lora, M., & Estrella. (2011). Cómo hacer una Regresión Logística binaria "paso a paso" (II): análisis multivariante. *Docuweb FABIS*, 34.

Cardon, M., Sudek, R., & Mitteness, C. (2009). The impact of perceived entrepreneurial passion on angel investing. *Frontiers of Entrepreneurship Research 29*. Recuperado de: https://bit.ly/393U5SR

Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling Theory: A Review and Assessment. *Journal of Management*. Recuperado de: https://bit.ly/3bo1VbH

Courtney, C., Dutta, S., & Li, Y. (2017). Resolving Information Asymmetry: Signaling, Endorsement, and Crowdfunding Success. *Entrepreneurship: Theory and Practice, 41*(2), 265-290. https://doi.org/10.1111/etap.12267

Chakraborty, S., & Swinney, R. (2016). Signaling to the Crowd: Private Quality Information and Rewards-Based Crowdfunding. *Ssrn*. https://doi.org/10.2139/ssrn.2885457

Davies, W. E., & Giovannetti, E. (2018). Signalling experience & reciprocity to temper asymmetric information in crowdfunding evidence from 10,000 projects. *Technological Forecasting and Social Change*, (March), 1-14. https://doi.org/10.1016/j.techfore.2018.03.011

Dehling, S. (2013). *Crowdfunding – A Multifaceted Phenomenon*. University of Twente. Recuperado de: https://bit.ly/37ehkb7

Etter, V., Grossglauser, M., & Thiran, P. (2013). Launch hard or go home! *Proceedings of the First ACM Conference on Online Social Networks-COSN '13*, 177-182. https://doi.org/10.1145/2512938.2512957

Jiang, Z., & Benbasat, I. (2007). Investigating the influence of the functional mechanisms of online product presentations. *Information Systems Research, 18*(4), 454-470.

Kickante (2018). *Os 10 maiores sites de Crowdfunding no Brasil.* Recuperado de: https://bit.ly/2HWpY43

Kim, P. H., Buffart, M., & Croidieu, G. (2016). TMI: Signaling Credible Claims in Crowdfunding Campaign Narratives. *Group and Organization Management*, *41*(6), 717-750. https://doi.org/10.1177/1059601116651181

Kickstarter (2018) *Estadísticas*. Recuperado de: https://bit.ly/37QZcpq (2018-09-10).
Kunz, M. M., Bretschneider, U., Erler, M., & Leimeister, J. M. (2017). An empirical investigation of signaling in reward-based crowdfunding. *Electronic Commerce Research* (Vol. 17). https://doi.org/10.1007/s10660-016-9249-0
Kraus, S., Richter, C., Brem, A., Cheng, C.-F., & Chang, M.-L. (2016). Strategies for reward-based crowdfunding campaigns. *Journal of Innovation & Knowledge*, *1*(1), 13-23. https://doi.org/10.1016/j.jik.2016.01.010
Lambert, T., & Schwienbacher, A. (2010). An Empirical Analysis of Crowdfunding. *SSRN Working Paper*. Recuperado de: https://bit.ly/2OIBQKs
Lynn, M. (1991). Scarcity effects on value: A quantitative review of the commodity theory literature. *Psychology & Marketing*, *8*(1), 43-57. https://doi.org/10.1002/mar.4220080105
Mason, C. M., & Harrison, R. T. (2004). Improving access to early stage venture capital in regional economies: A new approach to investment readiness. *Local Economy, 19*(2), 159-173.
Ma, X., Yang, M., Li, Y., & Zhang, J. (2017). Signaling factors in overfunding: An empirical study based on Crowdcube. *14th International Conference on Services Systems and Services Management, ICSSSM 2017 - Proceedings*, (2016). https://doi.org/10.1109/ICSSSM.2017.7996208
Massolution (2015). The crowdfunding industry report. Recuperado de: https://bit.ly/39wqn97
Martens, M. L., Jennings, J. E., & Jennings, P. D. (2007). Do the stories they tell get them the money they need? The role of entrepreneurial narratives in resource acquisition. *Academy of Management Journal, 50*(5), 1107-1132.
Mollick, E. (2013). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing*, *29*(1), 1-16. https://doi.org/10.1016/j.jbusvent.2013.06.005
Nahapiet, J., & Ghoshal, S. (1998). Social Capital, Intellectual Capital, and the Organizational Advantage. *The Academy of Management Review*, *23*(2), 242. https://doi.org/10.2307/259373
Rentería, C. (2016). *Las plataformas de crowdfunding en América Latina*. Nueva York. https://doi.org/10.13140/RG.2.2.29576.01286/1
Rodríguez, R. (2017). *Evolución del ecosistema de crowdfunding en México 2015-2017*. Crowdfunding México-BIMCON.
Rojas, L. (2017). *Situación del financiamiento a pymes y empresas nuevas en América Latina.* CAF. Santiago. Primera Edición. Recuperado de: https://bit.ly/38jSXKD
Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics, 87,* 355-374. doi:10.2307/1882010
Tranmer, M., & Elliot, M. (2005). Binary Logistic Regression. *Cathie Marsh Centre for Census and Survey Research*, (1), 3-43. https://doi.org/10.4135/9781412995627
Thelwall, M. (2001). A web crawler design for data mining. *Journal of Information Science*, *27*(5), 319-325. https://doi.org/10.1177/016555150102700503
Vismara, S. (2018). Signaling to Overcome Inefficiencies in Crowdfunding Markets. *The Economics of Crowdfunding*. https://doi.org/https://doi.org/10.1007/978-3-319-66119-3_3
Walsh, A. (1987). Teaching Understanding and Interpretation of Logit Regression. *Teaching Sociology*, *15*(2), 178-183. https://doi.org/10.2307/1318033
Wells, J. D., Valacich, J. S., & Hess, T. J. (2011). What signal are you sending? How website quality influences perceptions of product quality and purchase intentions. *MIS Quarterly, 35*(2), 373-396.

Retos, 10(19), 2020
Journal of Administration Sciences and Economics | p-ISSN: 1390-6291| e-ISSN: 1390-8618
www.retos.ups.edu.ec

Cooperation between firms and regional development: a review

La cooperación entre firmas en el desarrollo regional: una revisión

Sofía Carpio is a researcher at Latin American Faculty of Social Science, FLACSO (Ecuador) (stcarpio8@gmail.com) (https://orcid.org/0000-0003-2350-3041)

Abstract

The study of cooperation between firms within the field of economic development has a longstanding tradition, particularly in regional development. This research aims to carry out a review of the literature concerned with the role that firm cooperation has in the regional development. The review includes works that analyze empirical cases and aim to identify the elements that explain why in some cases inter-firm cooperation is successful while in others it is not. The dimensions of cooperation emphasized in the surveyed works share various similarities: the conditions in regional agglomerations that enable repeated interactions between firms to take place, the need for governance mechanisms to enforce cooperation between firms and to prevent opportunistic behavior from arising, the institutionalization of cooperation, the impact external factors have on the continuation of cooperation between firms. An emphasis in the literature on learning, knowledge-diffusion and innovation processes were identified. In the concluding remarks, the role of cooperation between firms in the regional development literature was summarized in four main dimensions: 1) the industrial organization of industrial districts, clusters and regions; 2) the balance between cooperation and competition; 3) governance mechanisms and the building of trust and reciprocity in firm relations; and 4) the impact of external factors on inter-firm cooperation, rendering these relation dynamic.

Resumen

El estudio de la cooperación entre empresas dentro del campo del desarrollo económico tiene una amplia trayectoria en el área del desarrollo regional. El presente trabajo realiza una revisión de literatura sobre el papel de la cooperación entre firmas dentro de las experiencias de desarrollo regional. Se incluyeron trabajos que, mediante la revisión de casos empíricos, identificaban los factores que explican por qué en algunos casos emergen relaciones de cooperación entre firmas mientras que, en otros, no. Se encontraron varias similitudes en las dimensiones estudiadas: las condiciones que ofrecen las aglomeraciones para la interacción repetida entre las firmas, la necesidad de mecanismos de gobernanza para evitar comportamientos oportunistas, la institucionalización de la cooperación, el efecto de factores externos a la región sobre la continuidad de los procesos de cooperación. También se identificó un énfasis en los procesos de aprendizaje, diseminación de conocimiento e innovación que ocurren en las configuraciones industriales observadas usualmente en los clústeres, distritos industriales o región. Se resume el papel de la cooperación en el desarrollo regional en cuatro dimensiones principales: 1) la organización industrial de los distritos industriales, clústeres y regiones; 2) el equilibrio entre procesos de cooperación y competencia; 3) la gobernanza y la construcción de relaciones de confianza y reciprocidad; y 4) el efecto de factores externos sobre la cooperación entre firmas, otorgando a estas relaciones un carácter dinámico.

Keywords | palabras clave

Interfirm cooperation, regional development, industrial districts, clusters, industrial organization.
Cooperación entre firmas, desarrollo regional, distritos industriales, clústeres, organización industrial.

Suggested citation: Carpio, S. (2020). Cooperation between firms and regional development: a review. *Retos Revista de Ciencias de la Administración y Economía, 10*(19), 111-126. https://doi.org/10.17163/ret.n19.2020.07

Received: 02/12/2019 | Reviewed: 16/12/2019 | Approved: 15/01/2020 | Published: 01/04/2020

Retos, 10(19), 2020

1. Introduction

Cooperation has been studied in the field of development economics in the topics of regional development and geographical economy, such as the case of the success of some specific regional development, in which production processes were observed in SME networks with interaction through cooperation and competition arrangements, achieving a high global competitiveness. Among the cases that received the most international attention are the Third Italy, Germany and other European industrial districts, and also the case of Japan whose industrial organization, unlike other industrialized countries, is characterized by a large percentage of small and medium-sized firms (Sayer, 1989; Carlsson, 1989). Studies were developed on industrial districts, the "district effect" and clusters as a way to promote regional and national economic development. Several lines of research can be identified (external economies and collective efficiency in industrial districts, small-scale industrialization, innovation in productive networks or clusters, relationships in industrial districts, industrial industries, just to mention a few). Due to the number of perspectives that address the issue of cooperation, relationships between firms, industrial districts and economic development, it can be inferred that to investigate the link between cooperation within the field of the development economy requires delimiting the approach, accepting that there will be edges that will be left out, while others will be given greater emphasis.

Both the lines of research shown above and the context in which this relationship between cooperation and regional development arises, indicate that there is an important link between cooperation between firms and their scale, i.e., the study of cooperation between small-scale firms or cooperation between large firms and small firms, the latter always present in the equation, is privileged in this review. Another link between the study of cooperation between firms and development can be outlined from this observation, specifically a type of development whose benefits are more equitably distributed. The study of the processes in which SME productive groups or networks manage to cooperate to achieve international competitiveness and enact regional development processes is important for the formulation of public strategies and policies that promote a development at the regional and national levels.

Thus, the aim of this research is to conduct a literature review of the role of cooperation between firms within regional development experiences. On the one hand, it seeks to address the revision from a theoretical point of view, selecting works that refer to the conceptualization of cooperation between firms and try to explain the conditions under which it is successful. On the other hand, it seeks to review studies that present specific cases. The following summarizes the findings in the academic discussion on this topic, the discussions and consensuses found.

2. Metodología: criterios de selección

Para la selección de los trabajos parte de esta revisión de literatura se utilizaron las herramientas Scopus y Google Scholar, empleando los siguientes términos en la búsqueda: "cooperation in economic development", "firm cooperation in economic development", "Cooperation in development economics", "interfirm cooperation development". En la selección de trabajos se priorizaron aquellos que abordaban

conceptualmente el estudio de la cooperación entre firmas, así como experiencias específicas de desarrollo regional. Algunos trabajos se seleccionaron de entre aquellos referenciados por la selección inicial cuando éstos parecían ser bastante relevantes al enfoque delineado en el presente trabajo para abordar el vínculo entre cooperación y desarrollo. Este fue el caso, en particular, en la búsqueda de abordajes teóricos de la cooperación entre firmas.

2.1. Methodology: selection criteria

Part of this literature review used the Scopus and Google Scholar tools, using the following terms in the search: "cooperation in economic development", "firm cooperation in economic development", "Cooperation in development economics", "inter-firm cooperation development". In the selection of works, those that conceptually addressed the study of cooperation between firms, as well as specific experiences of regional development, were prioritized. Some studies were selected from among those referenced by the initial selection when these seemed to be quite relevant to the approach outlined in this paper to address the link between cooperation and development. This was the case in the search for theoretical approaches to cooperation between firms.

3. Results and discussion

Cooperation between firms has been addressed in various works in the literature of industrial districts, clusters and regional development. In this review, the types of cooperation identified in the relationships between signatures are introduced, while summarizing the theoretical conceptualizations of each author, identifying similarities and differences.

3.1. Cooperation between firms in economic development literature

Cooperation between firms in the field of economic development becomes particularly relevant from the experience of industrial districts in Third Italy and subsequently, the identification of industrial districts in other parts of Europe and the world (Rabelloti, 1997; Schmitz, 1995; Amin, 1994). At the same time, from the post-fordism studies arise several approaches that identify a change in the way industrial production is organized in the main industrialized economies (Piore & Sabel, 1984; Acs & Audretsch, 1990). In a context of technological change, there was a perceived distancing from a hierarchical industrial organization, from vertical integration, standardized and massed production (called Ford production) to a more industrial decentralized organization on smaller, flexible and heteroarchical scales (Piore & Sabel, 1984; Cooke, 1998). There are a lot of works on this transformation from different theoretical currents and there are still some discussions on this subject (see Amin, 1994).

In general, this emerging form of industrial organization is characterized by the formation of productive networks of small and medium-sized firms, or alternatively, large firms that begin to outsource several of their activities to SMEs to focus on their nuclear competences (Loveman & Sengenberger, 1991) with which they establish more cooperative relationships in order to respond to fluctuating demand for differentiated products and more segmented markets (Sabel, 1994). However,

Retos, 10(19), 2020

relevant to this review is the conclusion that, under this new way of organizing industrial production in a context of deepening globalization, the cooperative and competition relationships between firms are of great importance to build and maintain a competitive advantage (Raco, 1999; Cooke, 1998). Whether in the context of productive networks of companies operating in geographical agglomerations or in a context of large firms that increase the outsourcing of small and medium-sized firms for the execution of some of their activities (Sabel, 1994), in both the need to cooperate to achieve full-value chain coordination becomes imperative, hence it is possible to maintain (or build) competitiveness.

Within regional development literature, there are several works that seek to build a theoretical formulation that explains why in some cases (and under what circumstances) these cooperation processes are successful, and why in others they are not. In the next section, the concepts derived from these theoretical formulations will be introduced. After introducing the concept of external economies, the processes of deliberate cooperation between firms can be divided into: the provision of public goods, the coordination of productive activities and other forms of cooperation.

3.2. Marshall´s external economies

External economies are perhaps the first theoretical formulation that sought to explain the competitiveness acquired by those geographically agglomerated firms that grouped around the same economic activity (Rabellotti, 1997; Schmitz, 1995). The external economies of industrial districts contribute to lower transaction costs between firms. They are side effects of market transactions between firms and are of a public good nature that makes their provision not to be at the optimum level. In other words, because they are positive externalities, the firms that produce them do not do so at the level at which the marginal social cost is equivalent to the marginal social gain of production. It is at this point that cooperation between firms is the element that explains how external economies can be better exploited by providing public goods at optimal levels and avoiding the problem of stowaway (Rabelloti, 1997, pp. 33-36).

3.3. Public goods and collective efficiency

Another advantage that can be found in some cases of productive agglomerations and which is present in most of the revised works is the possibility of cooperating in order to finance certain goods and services that benefit all firms, i.e., the possibility of agreeing to produce public goods. These may include: ease of access to financing, the possibility of buying raw materials together, I+D, marketing, market intelligence services, unemployment insurance, technical training institutes and education for workers, among others (Lorenz, 1992, p. 175, Enright, 1995 in Raco, 1999, p. 953; Rabelloti, 1997; Schmitz, 1995; Porter, 1990, pp. 80-81). Cooperating to produce this type of goods makes it easier for SMEs to access certain services that are usually reserved for large companies due to their cost. Generally, the provision of these services is mediated by an institution created for this purpose, this may be private (a trade union organization, a technical institute co-financed publicly and privately, a bank or cooperative) or public (Rabelloti, 1997, p. 4; Arku, 2014; Goetz, 1993; Gordon, 2007). There is a whole literature that studies these institutions and mechanisms, public or

private, local or national. These works are not part of this literature review, which focuses rather on the mechanisms of cooperation between firms and not on the role that other public or private institutions may play in the process; however, it is important to emphasize that one aspect of cooperation in the relationships between firms is, precisely, as will be presented below, the governance dimension of these processes.

Schmitz (1995) brings together the concept of external economies, the provision of public goods and other forms of cooperation between firms within a single concept, *collective efficiency*, defined as "the competitive advantage that derives from local external economies and collective action" of geographically concentrated firms (Schmitz, 1995, p. 530). Collective action involves the express (and non-secondary) cooperation actions carried out by companies. This cooperation can take several forms, either as collaboration between specific firms (e.g. in innovation or technology adoption projects, coordination between firms and their subcontractors), or through public and private institutions that provide services to all district firms (such as the provision of technical training, market intelligence services, access to financing, among others). Within the latter is cooperation for the provision of public goods, while external economies are an unplanned effect, a side of the interactions between district firms; collective action consists of a conscious collective effort (Schmitz, 1995, p. 536). The author emphasizes the distinction between those passive cooperation processes (external economies) and those that require the proactivity of firms (public goods and other cooperation processes) (Schmitz, 1995, p. 536).

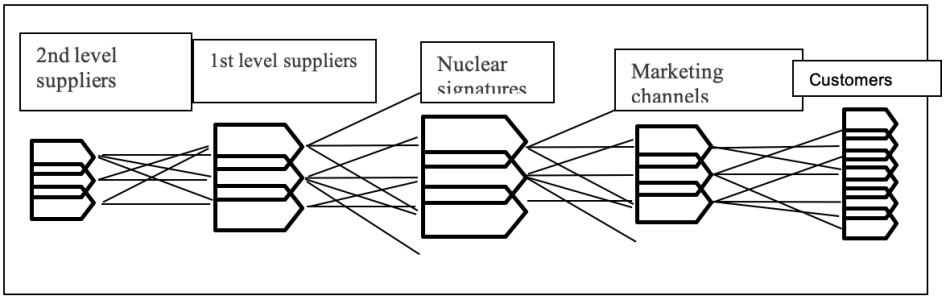
3.4. Other forms of cooperation

There are other cooperation processes that are essential to increase the competitiveness of the district, cluster or region. These processes include, on the one hand, actions aimed at coordinating production throughout the value chain, and on the other hand, adherence to certain agreed competition rules (Lorenz, 1992; Cooke, 1998, p. 22). In the latter, a balance between cooperation and competition occurs, which becomes a necessary process to build and increase the competitive advantage throughout the agglomeration; this point will be delved into the next section. Next, is presented the need to coordinate activities across the chain or value complex.

Because production is organized in a value chain involving several firms, it is necessary that coordination processes be undertaken at each link to ensure that the specifications of the goods produced by each firm are adequate, in order to guarantee quality throughout the chain, to enable a rapid (and flexible) response of production to fluctuations in the final demand, changes in differentiated tastes and finally, to drive innovation processes throughout the chain that would allow to remain competitive. This configuration of localized industrial production of more complex nature is stated by Patchell (1996) as the "regional value complex". It is distinguished from the "regional value chain" in that there are several nuclear firms that outsource several of their processes to other firms, and distribute through several distributors instead of a single nuclear firm that outsources several of its processes and sells its products through several distributors (a value chain) (Patchell, 1996, p. 490). In general, this is the case for several of the identified industrial districts.

Retos, 10(19), 2020

Figure 1. Regional value complex with rivalry between subcontractors, nuclear firms, distributors and buyers



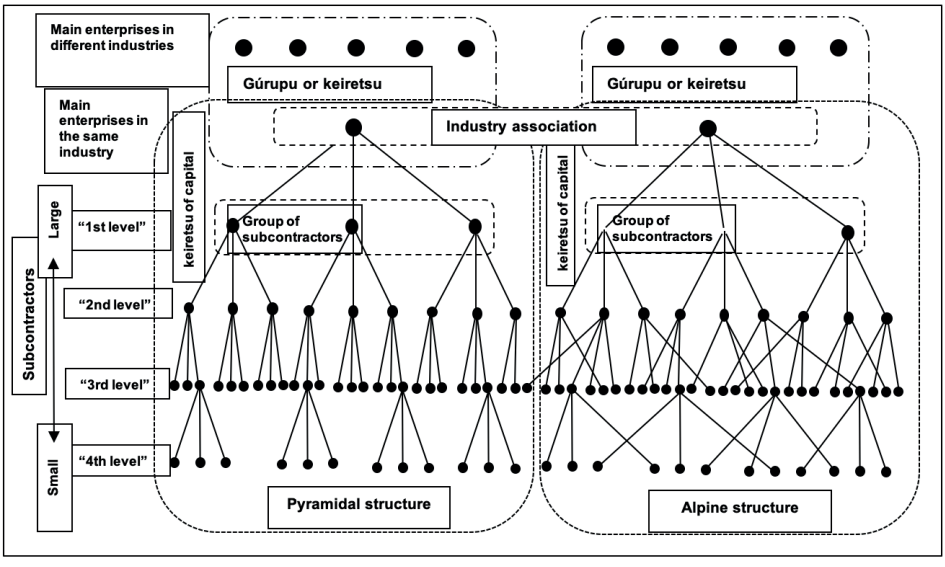
Source: Patchell 1996, p. 490

A similar complex form of industrial organization can be found in Japan's experience, as mentioned by Sayer (1989). As can be seen in Figure 2, the economic activities that make up the value chain are spread across several firms, in a fairly vertical disintegrated arrangement. The case of Japan differs from the other experiences mentioned in the revised work in which there are large firms that are at the top of the organizational pyramid. However, they outsource much of their activities to other firms they establish relationships with, and where cooperation and coordination processes are as essential as in the case of industrial districts and clusters composed of SME networks. There is still a certain hierarchy; however, the need for trusting relationships that enable cooperation and coordination between firms is a requirement for a more flexible production capable of responding to fluctuations in international demand and constant innovation and development (Sayer, 1989). Additionally, the Japanese model, for example in the semiconductor industry, emphasizes the hierarchical nature of the model and nuance the level of cooperation between horizontally competing firms; however, the role of cooperation between firms in the emergence of Japanese competitiveness in this specific industry was recognized globally to the point of promoting research cooperation initiatives in other countries that produce semiconductors (United States and Britain) and whose share of the international market diminished by Japan (Thornberry, 2002, p. 665).

In this context of a movement of the global industrial organization towards vertical disintegration, more flexible production and the complexity of value chains, as well as the emergence of a greater number of interdependence relationships between the need to build and maintain cooperative relationships between the firms that make up the chain is evident.

External economies, the provision of public goods and the coordination of activities throughout the value chain (or complex) have been mentioned so far. However, there are other forms of cooperation involving respect for certain "competition rules" in the face of changing situations (Lorenz, 1992, p. 179; Cooke, 1998, p. 22). The following describes some of the theoretical conceptualizations of each author to explain the cooperative relationships between firms, after which the similarities and differences between them are summarized.

Figure 2. Types of industries in Japan



Source: Sayer, 1989, p. 684.

3.5. Theoretical conceptualizations of cooperation relations between firms

In the revised works addressing the theoretical conceptualization of cooperation, different terms were found, depending on from which literature the subject is addressed; however, in all cases reference is made to a balance between competence and cooperation, emphasizing that these behaviors are not opposite, but that they form a dynamic in the relations between firms.

Patchell (1996) is based on Axelrod's definition of cooperation (1984), who uses game theory to explain why cooperating strategies over non-cooperative strategies can succeed in inter-signature interactions. According to Axelrod, "cooperation is defined as a voluntary relationship in which the parties search selfish benefits that are mutual and whose evolution is promoted by the location of a population" (Axelrod, 1984 in Patchell, 1996, p. 481). Based on game theory, specifically the Multi-Iteration Prisoner's Dilemma, Axelrod (1984) investigates the cooperative (or desertion) relationships between signatures. The author finds that cooperating strategies can successfully invade a population of non-cooperative strategies. These results have been replicated by other authors (Nowak, 2006, pp. 71-91).

According to Patchell (1996), cooperation between firms serves to mediate between competition and control. The author refers to the control as the proportion of profits corresponding to each firm participating in an economic transaction. In this context, cooperating implies the ability of each firm to cede the other firm part of the control on proportion of the total profits it owes (Patchell, 1996, p. 487). To do this, there

Retos, 10(19), 2020

must be a level of trust that allows each firm to expose itself to the other signature(s) adopting opportunistic behavior and still the outcome to be one in which relations maintain their cooperative character. For the author, for each of these elements (cooperation, control, competence) there is a situation in which, in the absence of a balance in the case of incurring an excess, there can be an undesired scenario. Excessive cooperation between firms can lead to collusion between them in a way that it suffocates horizontal or vertical competition, promotes assignments not based on efficiency criteria and loses competitiveness. An exacerbated competition can lead to the kind of exacerbated rivalry that, by transforming into a cost-cutting race, can damage the established confidence and affect coordination across the chain. Finally, an unbalanced level of control may become a repression in which some firms abuse their power to the detriment of others, affecting the networks of trust and cooperation built (Patchell, 1996, pp. 484-485). This is how cooperation is understood as a mediator mechanism between a desired level (and type) of competence and control over the benefits generated.

From sociology and economic sociology, Trapido (2007) defines cooperation using the concept of interdependence (Emerson, 1962 in Trapido, 2007). In its definition, competition consists of a struggle between two firms for the resources of a third party and the extent to which this struggle is carried out independently (pp. 166-167). Cooperation consists on the management of interdependence on a continuous spectrum where, at one end there is pure independent competition between firms and at the other, there is the merge of signatures; in the middle there are the actions in which firms cooperate to achieve their objectives (p. 167).

Despite using different terms, both conceptualizations recognize a degree of interdependence between firms as economic agents and perceive the process of cooperation as a balance between pure competition and collaboration between the two actors. This notion is also found in the literature review conducted by Newlands (2002), in which it is one of the three dimensions used to compare the different theoretical approaches on industrial clusters.

Likewise, Lorenz (1992, p. 179) refers to cooperation as the adherence to certain "competition rules". This would constitute a third form of cooperation identified in the regional development literature, together with the provision of public goods and production coordination activities throughout the chain mentioned above. Adherence to certain competition rules seeks to prevent the rise of a kind of neck-to-neck competition between signatures, a zero-sum game or what Trapido (2007) calls a "negative interdependence"; i.e., a situation in which both firms perceive their profits to be directly proportional to the losses of the other (Trapido, 2007, p. 166). "Competition rules" take other names when taking concepts from collective action literature, as seen in Cooke (1998).

Another concept used to explain the different types of competition is the distinction between what has been called a "high" (or "noble") path and a "low path" (or "less noble") of competition between companies (Schmitz, 1995, p. 541; Loveman & Sengenberger, 1991, p. 27; Ornston, 2014). The "noble path" refers to competition processes through quality improvements, product innovation, decreased response time and other dimensions that do not involve what would be the "less noble" competition that, on the other hand, implies the decrease in prices, labor flexibility, cheap employment

and the use of lower quality materials (Schmitz, 1995, p. 541). In Schmitz's literature review of industrial district cases in developing countries, it is common to find the application of different grades of both types of competence (Schmitz, 1995, pp. 541-542).

In industrial agglomerations, this type of neck-to-neck competition based primarily on cutting costs in whatsoever to gain a greater share of the market leads to "price decline, theft of trained staff from other firms, a vicious cycle of lack of investment and depreciation and devaluation of work" (Florida & Kenney, 1990 in Patchell, 1996). The type of desired competition in the relationships between firms is an "interdependent competition" or "horizontal competition", where each firm employs different generic strategies (Porter, 1985) and benefits from the advantages derived from the whole industry competitiveness: attracting investment, discouraging new competitors from entering the market, contributing to market development and improving the structure of industry (Porter, 1980 in Patchell, 1996, p. 489). It seeks to foster competition through innovation processes, quality improvement, segmentation and supply specialization, in order to promote improvements in quality, development of new products and the completion of production, for the benefit of collective competitiveness of the entire agglomeration. Maintaining this type of competition requires firms to adopt certain competition rules and even, faced with unfavorable international circumstances, to rely on times of declining external effective demand. Maintaining the cooperative-competition balance, this statement does not reject the need for "local rivalry" to encourage investment in innovation processes and constant improvement (Porter, 1990, p. 80).

Adherence to certain competition rules makes it possible to prevent the exploitation of chain vulnerabilities that favor the individual opportunism of firms. In the changing circumstances of international demand, the lack of trust and cooperation between firms could translate into opportunities for firms to prioritize their individual short-term profit and harm other firms in the network. If one or more firms adopt opportunistic behavior, networks of trust are broken to the detriment of the entire chain or complex of value, collective efficiency and competitiveness. Similarly, the need to cooperate is also evident in value chains involving large firms and their subcontractors, so as to ensure the survival of all in the market. In this case, cooperation makes it possible for large firms to support them instead of being enlisted in their subcontractors. Japan's experience is an example of relationships between strategic collaboration rather than exploitation firms (Loveman & Sengenberger, 1991; Sayer, 1989).

Finally, Rabelloti (1997) identifies another dimension of collective efficiency that explains the heterogeneity observed in the performance of firms and their use of cooperation mechanisms available in the district. There are certain actions within collective cooperation actions that benefit a large proportion of the district's firms (but the entire district) and whose benefits are not excluded. But, there are also other actions whose benefits are excluded and that could be considered "club assets" in the sense that only cooperating firms receive their benefits. In this way, they function as a reward for having cooperated, and increase incentives to cooperate. Examples include: exchange of information, technology, know-how or human capital, monetary exchange, reputation that serves in future interactions with district signatures (Rabellotti, 1997, p. 39). Finally, the ability of each firm to take advantage of access to the benefits derived from cooperation actions would also explain this heterogeneity (pp. 39-40).

Retos, 10(19), 2020

3.6 Factors that enable the emergence of cooperative relationships between firms

What factors explain the emergence and sustaining of these types of cooperation between firms (the provision of collective goods, coordination of activities in the chain, adherence to certain competition rules) in the revised regional development experiences? The next section identifies the factors mentioned in the literature, which are repeated in most of the revised papers.

In line with Axelrod's findings (1984), for firms to choose to maintain cooperating behavior, they should anticipate that interaction with another signature(s) will be repeated. This is the case of firms in an agglomeration as, being geographically located, their interaction with the other firms is expected to be repeated in the future. Therefore, for each firm, the expected benefits of adopting cooperative behavior are greater in the long term than the alternative of adopting opportunistic behavior that would bring short-term benefits (Lorenz, 1992; Rabellotti, 1997, pp. 37-38). Patchell calls this situation as the space-time constraint (Patchell, 1996, p. 492). The temporary aspect of the restriction is given by the character of long-standing trade relations between economic actors, which is the case in several of the revised experiences (Rabelloti, 1997, p. 38; Sayer, 1989; Piore & Sabel, 1984; Kamnungwut & Guy, 2012).

The second factor in achieving a cooperative result is the existence of reciprocity (Patchell, 1993, p. 493; Schmitz, 1995, p. 541). Those firms that choose not to cooperate should expect retaliation from the rest of the group; this loss of profits acts as a disincentive to adopt opportunistic behavior. This observation is present in the application of the Prisoner's Dilemma to this context (Axelrod, 1984). The most successful strategies were those that replicated the behavior of the other player; i.e., once the other player (or any of the other players) chooses not to cooperate, the firm stops cooperating as well (Axelrod, 1984 in Patchell, 1996, pp. 485-486). Something similar is found in selected works reviewing empirical cases, which mention the need to sanction firms that do not adhere to the established "competition rules", in most cases, informally. Lorenz (1993) mentions social sanction as a social control mechanism that ensures the maintenance of cooperation in a community. In the research on the cooperation of various local actors to attract private investment to localities in Ohio (USA), Cox and Wood (1997) mention the importance of trust in the network of relationships between actors linked to local economic development and the widespread knowledge that a betrayal of this trust ("honor code") would result in the exclusion of future attraction processes (Cox & Wood, 1997, p. 83).

Lorenz (1992) mentions another observation absent in the rest of the revised work: the need for mechanisms that can more equitably redistribute the benefits obtained by the entire production complex (leveling mechanisms), which can include unemployment insurance, redistribution of external demand to less successful firms and access to credit (Lorenz, 1992, p. 179). According to the author, increasing economic inequality between the signatures of an agglomeration can lead to mistrust and questioning the interdependence of the entire network. At the same time, if these mechanisms result in excessive redistribution, they can result in discouraging investment in innovations and improvements. Therefore, a balance must be found between

rewarding entrepreneurship initiatives without inequality in the entire agglomeration growing excessively. In this sense, the need for an adequate governance system from which all firms participate becomes more evident (Lorenz, 1992). Ornston (2014) reports an increase in labor force inequality (between white-collar and blue-collar workers) in the process of cracking cooperative relations in Finnish industry (Ornston, 2014, p. 460).

The willingness to maintain cooperative relationships with other firms depends on the information each firm has, and their beliefs about the behavior of other members of the cluster, district or network. If firms believe that the rest of the companies will adopt opportunistic behavior, then they will choose to do the same, making it impossible for the emergence of cooperation processes. Therefore, a certain level of trust between firms is required to arouse cooperative relationships. All reviewed works identify trust as a third determinant in successful cooperation between firms.

The presence of strong community ties is one of the factors frequently cited in the literature to explain the existence of networks of trust and the emergence of sustained cooperation processes. In communities where members share values, beliefs, certain cultural traits that make them a territorial unit with a strong social fabric, it is easier for them to advocate a high level of trust. In Rabellotti, this aspect is one of the characteristics that separates an industrial district from the rest of the type of geographical agglomerations: the existence of "a strong and relatively homogeneous social and cultural background that links economic agents and creates a common, sometimes explicit, but often implicit, and widely accepted" code of behavior (Rabellotti, 1997, p. 23).

The existence of:

> A social capital of a cultural, communal, ethnic or religious nature that produces a sanction strong enough to prevent a breaking of the rules in the first place, or to provide a strong enough basis to repair that damage (Cooke, 1998, p. 18)

Comparing Silicon Valley's experiences with Route 128, both technology clusters in the United States, Trapido (2007) highlights in the first the existence of a business culture open to cooperation as a factor that makes it possible to exchange knowledge between firms; meanwhile, the second experience is recognized for its reluctance to this type of cooperation (Saxenian, 1994 in Trapido, 2007, p. 170). One of the hypotheses examined by the author in his study of cooperation in the venture capital market is precisely the cultural hypothesis of the emergence of cooperation (Trapido, 2007, p. 170). Felzensztein (2008) also identifies greater social cohesion and "collectivism" as a factor that facilitates cooperation between firms in marketing activities (p. 240). Neto (2008) mentions the lack of trust and a tradition of cooperation among the barriers to cooperation in Latin America.

However, there is also evidence of contexts of cultural cohesion that hinder the emergence or deepening of cooperation between firms. Patchell (1996) mentions such a case in Guangdong (China) where relations between firms are strongly crossed by kinship ties to the point that they limit the entry of other firms and, therefore, horizontal competition that balances collaboration between signatures. Schmitz (1995) also reports a similar case in a shoe production district in Agra, India (Knorringa, 1994 in Schmitz, 1995, p. 541). The role that networks of trust plays in the balance

Retos, 10(19), 2020

between competition and cooperation is not entirely resolved; however, the evidence is strong about its importance in the emergence of cooperation between firms.

Other revised works mention the existence of trusted networks built not from shared cultural background, but from repeated past interactions between firms. Using data from the U.S. venture capital market, Trapido (2007) confirms the hypothesis that companies that were competitors in the past are more likely to cooperate in the future. His explanation lies that, having competed in the past, firms are aware of the existence of the other, which leads to them being personally known and able to build a level of trust that would enable cooperation actions (Trapido, 2007, p. 169). Another similar case in the U.S. semiconductor industry is described in Thornberry (2002), in cooperation in research activities; in the latter example, there are some case-specific variables that contributed to its success.

A certain degree of confidence allows some of the coordination to be carried out through informal agreements, which gives the entire production complex the flexibility to change aspects of production to arise the need, without having to worry about rigidities of formal contracts (Patchell, 1996, p. 494; Acs & Fitzroy, 1989, p. 313).As these arrangements are maintained and respected, the value chain (or complex) builds a competitive advantage as it has a level of coordination that makes it flexible, and the necessary risks can be taken to make investments and get involved in innovation processes (Lorenz, 1992, p. 180).

Another recurring aspect of the literature of cooperation between firms in regional development experiences is the institutionalization of cooperation and governance mechanisms for their maintenance over time. In this regard, Patchell (1996) emphasizes the need for an external control mechanism to the firm, in which decisions on aspects of production and control of the proportion of profits corresponding to each firm are not internal to a nuclear firm, but are shared among the firms involved in the transactions: "As production becomes more sophisticated, the need to ensure external governance of development, quality, cost, distribution and increase in profits becomes higher (Patchell, 1996, p. 491). On the other hand, Raco mentions the advantages of institutionalizing cooperation mechanisms through associativity as a means of deepening cooperation mechanisms; his work focuses on the aspect of constant learning and dissemination of information as a source of competitiveness of the cluster, so this type of institutionalization would generate additional channels for collective learning (Raco, 1999, pp. 954-955). Literature focused on this aspect and also on the actions that these institutions can take to promote cooperation between firms, as well as public policies aimed at promoting regional development based on cooperation between actors economic is quite broad.

3.7 The innovative region and emerging economies

At this point, it is worth mentioning another approach identified in the literature that focuses on regional innovation and learning processes, which give technological dynamism to the region and which is the result of cooperation between firms. This literature focuses on geographical agglomerations as environments of innovation and learning where a "culture of learning" can emerge (Cooke, 1998). Production coordination activities across the value chain result in learning processes that can lead to inno-

vations that increase the competitiveness of the region. Patchell (1996) mentions the emergence of "relational skills" developed from the cooperative relationships between nuclear firms and their subcontractors. The latter are specializing and adjusting their production to the demands of nuclear firms, while they adapt to external demand, and through a sustained process of cooperation and coordination, it is possible to build skills that increase the competitiveness of the complex, which are specific to the industrial organization of the chain and that maintain a degree of flexibility. In other words:

> Specific relational skills contribute to the region's upgrading by opening up opportunities for subcontractors to increase demand for their assets through transactions with other nuclear firms, and the opportunity for these nuclear firms to take advantage of the development of its subcontractors, with the possibility of expanding into new production systems (Patchell, 1996, p. 492).

These processes allow the region to move from learning by doing to learning by learning (Cooke, 1998, p. 17-18). The emphasis on quality learning from the institutionalized cooperation networks into clusters is also mentioned by Raco (1999). This aspect of collective learning also characterizes the school of innovative milieux (GREMI group), according to the Newlands classification (2002, p. 525).

However, authors were found to nuance this established relationship between innovation, geographical agglomerations, technology-intensive activities and cooperation, particularly with regard to bias towards high-tech industries (Lundvall, 2007, p. 9). In the review of the case for the development of technology-intensive industries in Finland, Ornston (2014) notes the success of the strategy resulted in a cracking of cooperation between firms by capitalizing the networks of cooperation inherited from the post-war period. To explain this outcome, Ornston (2014) points to two factors. First, the nature of these industries makes them vulnerable to disruptive innovations that destroy previously built capabilities; and second, the highly competitive nature of these industries exacerbated the unwanted competition described above (Ornston, 2014, p. 460). Thus, although these networks of cooperation (not only between firms but between employers and workers, and with state actors as well) enabled the successful development of high-tech industries in Finland, they turned out to be the price to pay. The themes addressed in this work nuance the cooperative-innovation-technological dynamism relationship, while highlighting other important factors to be taken into account on a case-by-case basis, such as the nature of the specific industry

3.8 Factors external to the district or cluster

One dimension found in almost all reviewed works is the effect that external factors can have on the cooperative relationships between firms. Rabellotti (1997) mentions the importance of not considering cooperation or the agreements that enable it as unchanging institutions over time. For example, in its analysis of the Sino Valley industrial district in southern Brazil, Schmitz identifies changes in the forms and levels of cooperation between firms due to external factors (Schmitz, 1995, p. 547). Lorenz also mentions the cracking of trust and networks of cooperation in the industrial districts of Saint-Etienne (France), the German industrial districts, and in

Retos, 10(19), 2020

the industrial districts of Birmingham and Sheffield (Britain) (Sabel & Zeitlin,1985; Herringel, 1990 in Lorenz, 1992, p. 179).

In this regard, Raco (1999) criticizes the literature of the New Industrial Districts. This literature focuses on the endogenous aspects of the region to explain its success, ignoring those external aspects of national or even global political economy that may play a role in explaining unequal development in a country or region; thus, they constitute only a partial explanation of the process (Raco, 1999, p. 963).

Focusing on local proactivity ignores the broader contexts in which localities operate, and thus the development of local institutional capacities merely encloses them into a vicious spiral of competition for global mobile investments (Harvey, 1989; Leitner, 1991; Kantor, 1995 in Raco, 1999, p. 963).

An example of competition for mobile domestic investments is seen in Gordon (2007).

4. Conclusions

The theoretical conceptualizations of cooperation in regional development literature can be summarized in four dimensions according to the most relevant topics identified in the discussion.

- The industrial organization composed of vertical and horizontal relations between the firms and whose complexity requires cooperation between them.
- The need for a balance between cooperation and competition in the relationships between firms to maintain the competitive advantage of the region. Within this dimension, emphasis is placed on learning and innovation processes emerging from cooperation.
- The need for a qualitative background that allows the emergence and existence of trust networks and governance mechanisms that allow social control of the members of the region, promoting reciprocity and adherence to the agreed codes.
- The dynamic nature of cooperation relationships and the effect that external factors can have on their maintenance.

References

Acs, Z. J., & Fitzroy, F. R. (1989). Inside the firm and organizational capital: A review article. *International Journal of Industrial Organization, 7*(2), 309-314. https://doi.org/https://doi.org/10.1016/0167-7187(89)90026-X

Acs, Z. J., & Audretsch, D. B. (1990). Small Firms in the 1990s. En D. B. Acs, Zoltan J. y Audretsch (Ed.), *The Economics of Small Firms: A European Challenge* (pp. 1-24). Springer Science+ Business Media Dordrecht. https://doi.org/10.1007/978-94-015-7854-7

Amin, A. (1994). Post-Fordism: Models, Fantasies and Phantoms of Transition. En A. Amin (Ed.), *Post-Fordism: A Reader* (pp. 1-41). Oxford: Blackwell Publishers. https://doi.org/10.1002/9780470712726

Arku, G. (2014). Competition and Cooperation in Economic Development: Examining the Perceptions of Practitioners in Ontario, Canada. *Journal of Urban Affairs, 36*(1), 99-118. https://doi.org/10.1111/j.1467-9906.2012.00647.x

Axelrod, R. (1984). *The evolution of cooperation.* Nueva York: Basic Books Inc.

Carlsson, B. (1989). The evolution of manufacturing technology and its impact on industrial structure: An international study. *Small Business Economics, 1*(1), 21-37. https://doi.org/10.1007/BF00389914

Cooke, P. (1998). Introduction: Origins of the Concept. En H.J. Braczyk, P. C. Cooke, y M. Heidenreich (Eds.), *Regional Innovation Systems: the role of governances in a globalized world* (pp. 2-26). UCL Press. https://doi.org/10.4324/9780203390702_chapter_1

Cox, K. R., & Wood, A. (1997). Competition and Cooperation in Mediating the Global: The Case of Local Economic *Development. Competition & Change, 2*(1), 65-94. https://doi.org/10.1177/102452949700200102

Felzensztein, C. (2008). Clusters, social networks and marketing collaboration in small firms: exploratory evidence from Chile and Scotland. *International Journal of Entrepreneurship and Small Business, 6*(2), 230-244. https://doi.org/10.1504/IJESB.2008.01863

Goetz, E. G., & Kayser, T. (1993). Competition and Cooperation in Economic Development: A Study of the Twin Cities Metropolitan Area. *Economic Development Quarterly, 7*(1), 63-78. https://doi.org/10.1177/089124249300700106

Gordon, V. (2007). Partners or Competitors? Perceptions of Regional Economic Development Cooperation in Illinois. *Economic Development Quarterly, 21*(1), 60-78. https://doi.org/10.1177/0891242406291573

Kamnungwut, W., & Guy, F. (2012). Knowledge in the air and cooperation among firms: Traditions of secrecy and the reluctant emergence of specialization in the ceramic manufacturing district of Lampang, Thailand. *Environment and Planning A, 44*(7), 1679-1695. https://doi.org/10.1068/a44522

Lorenz, E. H. (1992). Trust, Community, and Cooperation: Toward a theory of industrial districts. En M. Storper y A. J. Scott (Eds.), *Pathways to Industrialization and Regional Development* (pp. 175-182). Nueva York: Routledge. https://doi.org/https://doi.org/10.4324/9780203995549

Loveman, G., & Sengenberger, W. (1991). The Re-Emergence of Small-Scale Production: An International Comparison. *Small Business Economics, 3*(1), 1-37. https://doi.org/https://doi.org/10.1007/BF00389842

Lundvall, B. (2007). National Innovation Systems. Analytical Concept and Development Tool. *Industry and Innovation, 14*(1), 95-119. https://doi.org/10.1080/13662710601130863

Neto, J. A. (2008). Productive cooperation network as a competitive advantage for small and medium firms in the Brazilian state of São Paulo. *International Journal of Entrepreneurship and Small Business, 5*(2), 201-211. https://doi.org/https://doi.org/10.1504/IJESB.2008.016593

Newlands, D. (2003). Competition and Cooperation in Industrial Clusters: The Implications for Public Policy. *European Planning Studies, 11*(5), 521-532. https://doi.org/10.1080/09654310303649

Nowak, M. A. (2006). *Evolutionary dynamics: Exploring the Equations of Life*. Belknap Press of Harvard Univ. Press. https://doi.org/10.2307/j.ctvjghw98

Ornston, D. (2014). When the High Road Becomes the Low Road: The Limits of High-Technology Competition in Finland. *Review of Policy Research, 31*(5), 454-477. https://doi.org/10.1111/ropr.12091

Patchell, J. (1996). Kaleidoscope Economies: The Processes of Cooperation, Competition, and Control in Regional Economic Development. *Annals of the Association of American Geographers, 86*(3), 481-506. https://doi.org/10.1111/j.1467-8306.1996.tb01763.x

Piore, M., & Sabel, C. F. (1984). *The Second Industrial Divide: Possibilities for Prosperity*. Nueva York: Basic Books Inc.

Porter, M. E. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors (Republishe)*. Nueva York: The Free Press.

Porter, M. E. (1990). The Competitive Advantage of Nations. *Harvard Business Review*. Recuperado de: https://bit.ly/2HeRKIt

Rabellotti, R. (1997). *External Economies and Cooperation in Industrial Districts: A Comparison of Italy and Mexico*. Londres: Macmillan Press Ltd. https://doi.org/10.1007/978-1-349-25794-2

Raco, M. (1999). Competition, Collaboration and the New Industrial Districts: Examining the Institutional Turn in Local Economic Development. *Urban Studies, 36*(5-6), 951-968. https://doi.org/https://doi.org/10.1080/0042098993295

Sabel, C. F. (1994). Flexible Specialization and the Re-emergence of Regional Economies. En A. Amin (Ed.), *Post-Fordism: A Reader* (pp. 101-156). https://doi.org/https://doi.org/10.1002/9780470712726.ch4

Sayer, A. (1989). Postfordism in question. *International Journal of Urban and Regional Development, 13*, 666-695. https://doi.org/https://doi.org/10.1111/j.1468-2427.1989.tb00141.x

Schmitz, H. (1995). Collective efficiency: Growth path for small - scale industry. *The Journal of Development Studies, 31*(4), 529-566. https://doi.org/10.1080/00220389508422377

Thornberry, J. B. (2002). Competition and Cooperation: A Comparative Analysis of SEMATECH and the VLSI Research Project. *Enterprise & Society, 3*(4), 657-686. https://doi.org/10.1017/S1467222700011976

Trapido, D. (2007). Competitive Embeddedness and the Emergence of Interfirm Cooperation. *Social Forces, 86*, 165-191. https://doi.org/10.1353/sof.2007.0110

Retos, 10(19), 2020
Journal of Administration Sciences and Economics | p-ISSN: 1390-6291| e-ISSN: 1390-8618
www.retos.ups.edu.ec

Perspectives on corporate finance and the Peruvian stock market

Perspectivas del financiamiento corporativo y el mercado de valores del Perú

Dr. Indalecio Enrique Horna Zegarra is a PhD in Accounting Science of the Faculty of Economic, Accounting and Administrative Sciences at Universidad Nacional de Cajamarca (ihorna@unc.edu.pe) (https://orcid.org/0000-0002-8375-243X)

Abstract

The degree of development of financial markets is an indicator of countries' economic growth. A financing alternative for companies is the placement of corporate bonds through the stock market; therefore, this study aims to comparatively review the behavior of the Peruvian stock market in relation to corporate bond issues during the periods 2005-2010 and 2015-2019, as a reflection of the current situation of the Peruvian market. It is a documentary and descriptive study that collects data related to corporate bond placements (amounts, maturity terms and interest rates), through the review of press releases from the Superintendence of the Stock Market (SSM) and the respective cumulative reports of the different risk classifiers approved by the SSM, for each of the companies under study. On average, an increase in emissions was observed, as well as a decrease in interest rates, and both trends were statistically significant. On the other hand, two of the companies examined issued green bonds in both the domestic and international markets. These are favorable indicators for Peru's economy, validating that it is growing and even more so, predisposed to global change in which more than business financing, a positive impact in the social and environmental spheres are sought through the issuance of green bonds.

Resumen

El grado de desarrollo de los mercados financieros son un indicativo del crecimiento económico de los países. Una alternativa para el financiamiento de las empresas es la colocación de bonos corporativos a través del mercado de valores, así, este estudio pretende revisar el comportamiento en el mercado de valores peruano relativo a las emisiones de bonos corporativos comparativamente durante los periodos 2005-2010 y 2015-2019, como reflejo de la situación del mercado actual peruano. Es una investigación de tipo documental y descriptiva, recopilando datos relativos a las colocaciones de bonos corporativos (montos, plazos de vencimiento y tasas de interés), mediante la revisión de notas de prensa de la Superintendencia del Mercado de Valores (SMV) y los respectivos informes acumulados, de las diferentes compañías clasificadoras de riesgo aprobadas por SMV, para cada una de las empresas en estudio. Se observó en promedio un aumento en las emisiones, así como la disminución de las tasas de interés y ambas tendencias, fueron estadísticamente significativas. Por otra parte, dos de las empresas revisadas, emitieron bonos verdes tanto en el mercado nacional como en el internacional. Estos, son indicadores favorables para la economía del Perú, los cuales validan que viene en crecimiento y más aún, predispuestas al cambio global en donde se busca más que el financiamiento empresarial, un impacto positivo en el ámbito social y en el medio ambiente, con la emisión de bonos verdes.

Keywords | palabras clave

Stock market, corporate bonds, green bonds, bond market.
Mercado de valores, bonos corporativos, bonos verdes, mercado de bonos.

Suggested citation: Horna Zegarra, I. E. (2020). Perspectives on corporate finance and the Peruvian stock market. *Retos Revista de Ciencias de la Administración y Economía, 10*(19), 127-142. https://doi.org/10.17163/ret.n19.2020.08

Received: 23/08/2019 | Reviewed: 07/11/2019 | Approved: 18/12/2019 | Published: 01/04/2020

Retos, 10(19), 2020

1. Introduction

Different economy studies link the growth of financial markets to the development of the economy, giving importance to the benefit that the development and growth of capital markets generate in a country. Thus, the development of the financial market in the country is a necessary condition to achieve better rates of economic growth (Moreno, Vásquez, Hernández & Larios, 2015; Greenbaun, Thakor & Boot, 2019).

The stock market is part of the financial market, where various economic actors converge, such as state-owned enterprises, corporate enterprises, individuals and others, which require and deliver borrowable funds. The function of this market is to centralize financial securities negotiations, also called financial instruments.

The companies that participate in the market to raise resources are the issuers and those with capital to finance are called investors. The marketable securities are shares, bonds, short-term instruments, etc., and depending on the instrument, they grant rights to investors in the share of the profits or dividends of companies, right to vote at shareholders' meetings, or to receive interest payments (MEF, 2016a).

The stock market offers several investment alternatives as needed by issuers or investors, in terms of criteria such as yield, liquidity and risk. Thus, the money received by issuers is mainly used to finance investment projects or restructure the company's liabilities (Stowell, 2018).

The stock market offers financing alternatives when savings resources are granted through its system, creating the investment allocation channel; reducing the cost of financial intermediation and constituting the beginning of the financial change. Therefore, they serve the function of facilitating the investment process by providing a market where transactions are carried out efficiently and with lower costs. Thus, investors can safely sell and buy securities if required and make continuous transactions, guaranteeing their price (Stowell, 2018). However, many investors with high experience in their inquiry, retrospectively note how in the past they could obtain reasonable income from relatively secure certificates of deposit, and money market funds have today been encouraged by what appears to be the beginning of a faster increase in interest rates, affecting price stability in the investments, reason for which the rate increase causes a loss of attraction to already overvalued stocks, long before pension investments in certificates of deposit and money market funds became profitable capital investments for both existing investors and previous generations.

If a company is judged favorably by investors, it is estimated that the stock market value becomes more attractive, the entity is strengthened financially, they acquire higher volumes which facilitates new financing and more growth (Jacobsen & Venkataraman, 2018). In addition, the operation of the stock market is stabilized, generating continuous markets that cause more frequent but smaller price changes. In lower-moving markets, price changes are less frequent, but more violent; and this will facilitate the assimilation of new securities issues and their successful launch (Greenbaun *et al.,* 2019).

Globally, a widely used alternative for the financing of the business sectors is primary the allocation of corporate bonds before resorting to a bank credit (Rodríguez, 2010; Jacobsen & Venkataraman, 2018). Allocating or issuing bonds on the market meets medium- and long-term financial needs, and the capital acquired is used to

finance new investment proposals such as the acquisition of new assets or the restructuring of long-term debts (Rodríguez, 2010; Stowell, 2018; Greenbaun *et al.*, 2019).

The Peruvian Securities Market Law, Article 86 of Legislative Decree No. 861, defines bonds as the public offering of debt securities with a debt term higher than one year, and the Securities Law includes them within transferable securities, where the public primary offering (PPO), implies that it is aimed at the general public, and the issuers and claimants of funds offer transferable securities (shares, bonds, negotiable certificates of deposit, short-term instruments, etc.) to outperforming agents who have surplus funds, investors.

For a company to enter the PPO it must comply with the requirements that regulate the stock market, one of them being the registration of the securities matter of the offer in the Public Register of the Securities Market (RPSV), this, prior to the placement of such securities among investors (Acosta, 2017).

The PRSM is a register managed by the Superintendency of the Securities Market (SSM), which is the supervisor and regulator of the public stock market in Peru. The registration in the PRMV involves giving the integrated permanent disclosure system all company information to the market in relation to the securities being traded, which favors the allocation of the market value price and it also has the effect of reducing the costs associated with disclosing information (Acosta, 2017).

In general, businessmen complain about the limited access to the primary capital market (Chalamandaris & Vlachogiannakis, 2018; Nikolova, Wang & Wu, 2019). In Peru, few companies are resorting to the issuance of corporate bonds, this is partly due to the number of requirements to which public offerings are subject, and secondly the companies that can access the financing through these debt instruments are mostly rated as large corporations, as their financing needs are so large that they dilute fixed issuance costs. Legislation should promote greater competition to primary corporate bond placements to improve the primary stock market, with the idea that the primary stock market actually offers a financing alternative that competes with the banking system (Rodriguez, 2010).

In fact, the Securities Market Promotion Act (Act No. 30050), as well as the Institutional Investor Market Regulations approved by Resolution SSM No. 021-2013-SMV/01, provide an exception to the regime to issue securities that are publicly offered to institutional investors, in which some advantages are added for potential issuers, such as fewer requirements for the registration and formulation of the offer of securities (stocks, bonds and short-term instruments), shorter durations of formalities and less cost, among other benefits, representing a change and the beginning of new economic trends for Peru (MEF, 2019a).

During the years 2007-2009, a contraction of the economy was manifested globally; impacting the local corporate bond market, reducing emissions and amounts, then gradually, according to the report of the Ministry of Economy and Finance of Peru (2016) in recent years the private sector has participated and used the market values, so this has been growing (MEF, 2016b).

The above is a reason to present a review of the allocations of corporate bonds in the public primary offerings on the Peruvian stock market of some of the Peruvian companies that traditionally use this medium for their financing, as an extension that allows to know the changes that have been happening to the Peruvian economy.

Retos, 10(19), 2020

1.1. Financing instruments

Trading instruments on the stock market are known as financial securities, financial assets or simply securities. Peruvian law establishes differences between securities and transferable securities, the first being the bill of exchange, the check, the promissory note; while transferable securities refer to stocks and bonds, negotiable certificates of deposit, short-term instruments, etc. (Art 1 Securities Act (LTV) of 19/06/2000; Article 3 Law on the Securities Market (LMV), Legislative Decree No. 861 of 22/10/1996.

Legislative decree No. 861 in Article 3 of the Law on the Securities Market (LSM), in force since 22/10/1996, establishes that transferable securities are those issued in a massive and freely negotiable form that give their holders credit, land or patrimonial rights, or those with participation in the capital, equity or profits of the issuer. Article 86 defines bonds as the public offering of representative debt securities longer than one year.

The stock market differentiates several types of bonds depending on the issuing agent, among those from the public sector are: treasury bonds, capitalization of the Central Reserve Bank, recognition and Brady; and by the private sector: corporate, leasing and subordinated bonds (Noriega,1998; Stowell, 2018).

Bonds are fixed income financial instruments issued in the medium and long term by a deficit agent that may be a company, government or public body (municipality), with a certain interest rate (fixed rate, or zero coupons) and already set dates for the payment of interest (coupons) and reimbursement. They represent an advantage for issuers because they are not necessarily covered by defined guarantees, contrary to bank loans in which fixed assets can be taxed more frequently (Rodríguez, 2010; Pilbeam, 2018; Stowell, 2018).

Bond issuance covers medium and long-term financial needs and the accrued capital will be used to finance part of its fixed assets, investment projects or the restructuring of long-term commitments. This aspect is precisely what sets it apart from other short-term instruments, which are aimed at meeting short-term financial needs (Sambola, 2012).

Among the bonds issued by the private sector are the leasing bonds, which are issued by companies authorized to carry out leasing operations within a term of no less than three years, which could be placed in both and offer fixed or variable performance. If necessary, there is no impediment to incorporating as collateral any assets of the issuing entity, third parties or a bond card granted by an entity of the financial system (MEF, 2012).

Subordinated bonds are issued by banks and financial firms over five years, they do not have the option of guarantees, nor can they be canceled before time or the draw ransom. If the issuing company goes into liquidation, they are redeemed after fulfilling the other obligations borne by the issuer. Subordinated bonds are only anticipated to common and preferential shares in the order of priority (Sambola, 2012; MEF, 2012).

Corporate bonds, the subject of this study, are those issued by companies to raise funds that allow to finance their investment operations and projects. They are

issued at face value which will be paid to the holder on the due date. The amount accrues interest that is canceled in periodic installments (coupons) or in full on the due date, which will be more than one year (Rodríguez, 2010; Pilbeam, 2018).

1.2. Market for borrowable funds

Investing represents allocating resources to assets that will increase a corporation's production capacity. The investment of the corporation will depend on the interest rate, which is the cost of the loan; evidently, the company will only accept projects whose profits are higher than the cost of financing. Hence, the higher the interest rate, the lower the demand for loans from a given company. Thus, the interaction between the functions of supply and demand will determine the equilibrium interest rate (Arrarte, 2018).

From a financial point of view, the investment is an operation in which the level of assets required in a given production or provision of services is provided initially or fully. Its essence is in the desire to sacrifice the consumption in the present, in order to access more consumption in the future.

Whether an investor agent has the ability to finance others or that as an issuer it will require financing will depend on the relationship between the investment and savings at a given time. When there is a shortage of financial resources in a company (deficit agents), the agent will tend to finance itself through the various instruments offered by the financial markets (Arrarte, 2018).

Borrowable fund markets (or capital markets) are the channels through which deficit agents obtain the financial resource to acquire their fixed assets. These resources come from the savings of surplus agents. A characteristic of the borrowing fund market is that all kinds of investments or transactions relating to capital or financial assets (buying sale of shares, bonds, among others) as well as the placement of loans in the long term are made (García, 2014). In this market, it is where the price of capital is adjusted to make the amount offered equal to the amount demanded, setting the interest rate. Thus, the interest rate is the price of use of borrowed funds during a specific period (Gómez González, Huertas, Cristiano & Chavarro, 2016; Pilbeam, 2018).

Therefore, relatively long-term financial instruments are traded in the capital market, facilitating the union that is established between the savings versus the investment provisions of the companies involved. Thus, the value of the financial asset is allocated by the current price of the expected cash flows (the liquid money that is expected to be received during the fixed period of that financial investment) (García, 2014).

According to the theory of the law of supply and demand, bond buyers are willing to buy more bonds at a lower price. The lower the price of the bond, the higher its yield at maturity. The higher the yield at maturity, the more surplus agents will be willing to lend money (Chalamandaris & Vlachogiannakis, 2018). In contrast, bond borrowers will offer more bonds at a higher price. Higher bond prices mean lower maturity yields. Bond bidders are willing to offer more bonds (take more funds) at lower interest rates than at higher interest rates (Pilbeam, 2018).

The supply and demand for bonds determine how the bond is quoted. Thus, as the market interest rate decreases, the price of the bond will be higher and vice versa (Arrarte, 2018; Pilbeam, 2018).

Retos, 10(19), 2020

2. Materials and method

The objective of this study is to conduct a retrospective review of the corporate bond placements of some companies participating in the Peruvian stock market during the periods 2005-2010 and 2015-2019, in order to assess the situation of companies in both periods in correspondence with the dynamics of changes that have occurred in the Peruvian economy.

This is a documentary and descriptive investigation, since the data was obtained by consulting different types of documentation; thus, the information corresponding to the period 2005-2010 corresponds to the data of the doctoral research work of the author, the work is titled "Primary placements of corporate bonds on the Peruvian stock market". The obtaining of the data during the period 2015-2019, was carried out by reviewing press news issued by the Superintendency of the Securities Market and the reports issued by the different risk classifying companies such as: Class & Risk Classifying Associates, PCR Pacific Credit Rating, Support and Associates fitch ratings, and Equilibrium Risk Sorter, for each of the companies in the 2019 cumulative reports, locating information regarding the amounts of annual corporate bond placements, maturity and interest rates.

The sampling was not directed, as 10 companies were chosen by the easiness of finding the company's information in relation to the placement of corporate bonds on the stock market, the maturity period and interest rates average to the annual face value in both periods, whether published on social media through press reports or in public domain documents, which are found on the sites of the Superintendency of the Securities Market (SSM) and on the web as the reports of the risk classifiers. Data for the years 2011-2014 were not included in the study, because during that period some companies did not issue bonds or the information was not available.

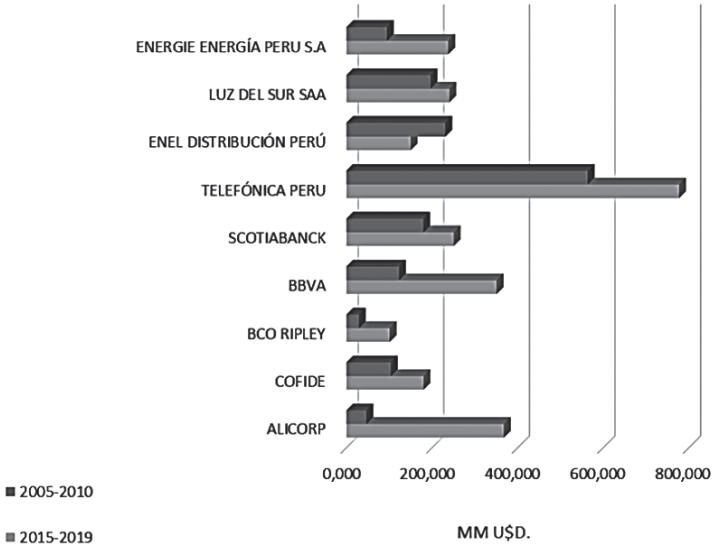
The collected data was given descriptive statistics, tabulating amounts and fees on bar charts. In addition, inferential statistics were applied, using Pearson's nonparametric test for trend analysis of placed amounts, while the Spearman index was used to assess the trend with respect to interest rates to correspond these trends to the current situation of Peru's economy.

3. Results

During the period 2005 to 2010, a total of 70 companies made primary public offerings on the Peruvian stock market, of which 46 companies resorted to financing through corporate bonds, representing 66% of the total placed in *soles*, followed by 18% and 8% in negotiable certificates of deposit and short-term instruments, respectively. Of the total placements in *soles* and dollars, 55% was made in new *soles* and the difference in dollars (45%) (Horna, 2012).

Figure 1 shows the total amounts accumulated by each of the companies in the periods 2005-2010 and 2015-2019, with an increase in total emissions in *soles* in most companies, led by the company Alicorp with an increase in its emissions by US$ 322 million, equivalent to 1094 million *soles*, and the company ENEL Distribution Peru as an exception, with a decrease of US$ 81 million, equivalent to 274.31 million *soles* in the cumulative of its placements in that period.

Figure 1. Amounts in total US$ placed by companies through corporate bonds on the Peruvian stock market in the periods 2005-2010 and 2015-2019



Source: Own elaboration with data obtained from the reports of the risk classifiers for each of the companies cited: Cariñaupa and Barba (2019); Córdova (2019); Garro (2018); Garro (2019); Izquiero and Gallo (2018a, 2018b); Tarazona and Regis (2019); Tejada and Barba (2019); Tejada and Regis (2019); Tejada and Vallejo (2019).

When applying the Pearson inferential statistic to the data to correlate the trend between the two periods, an index of R=0.80 was obtained, indicating that bond placements in the two periods have a very strong and positive linear correlation. In other words, the tendency of companies is towards increasing the amounts of corporate bond placements on the stock market.

With regard to the average interest rate at which the maturity quotas of the different deadlines were set, Figure 2 shows that it decreases when comparing the periods studied. The companies that did not meet this trend were ALICORP, Luz del Sur and Telefónica Peru, with differences of 0.1; 0.4 and 0.9 points, respectively. The case of Telefónica Peru, whose increase in the average rate was the largest, was highlighted.

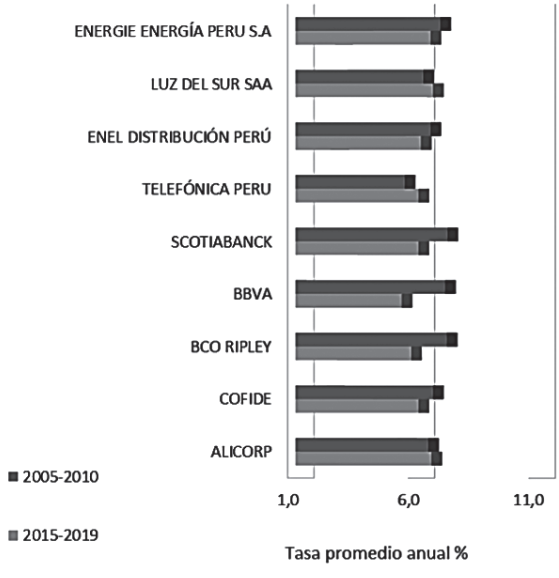
Also, when performing the trend correlation analysis in the two periods studied, it was observed that the trend was not linear, better adjusting the data to the Spearman model (nonlinear) yielding in this case an index R= -0.74, which is negative and with a high value indicating very strong correlation, i.e. interest rates set on corporate bond issuances are prone to decline, with a negative and very strong correlation rate.

Retos, 10(19), 2020

Moreover, in this study, in addition to the private companies chosen, two public state banking companies, such as Corporación Andina de Fomento (CAF) now called Banco de Desarrollo de América Latina and Corporación Financiera de Desarrollo S.A. (COFIDE) were included (see Table 1), which in its economic activities represent state policies, giving the guidelines in some way to the economy in the market.

CAF was not included in the previous figures, as for the period 2005-2010 after having place a total amount of approximately US$ 116 million (393 million soles) in corporate bonds, it presented a considerable spin in the recent period, where all its placements were in 12 types of foreign currency in the international market, totaling US$4.9 billion, of which US$130 million were three Green Bond placements in 2018. On the other hand, COFIDE was included, which has been participating in the primary public offering of the Peruvian stock market, placing corporate bonds which have marked a trend towards the increase in the value of the amounts, passing approximately in their equivalent in US$104,099,000 for the period 2005-2010 to US$180,091,000 in 2015-2019, presenting in the first quarter of 2019 a shift by placing US$100 million in Green Bonds, within three years with a rate of 5.13%.

Figure 2. Average interest rate at which the issuance of total corporate bonds accumulated on the Peruvian stock market was fixed in the periods 2005-2010 and 2015-2019



Source: Own elaboration, with data obtained from the reports of the risk classifiers for each of the companies cited: Cariñaupa and Barba (2019); Córdova (2019); Garro (2018); Garro (2019); Izquierdo y Gallo (2018a, 2018b); Tarazona and Regis (2019); Tejada and Barba (2019); Tejada and Regis (2019); Tejada and Vallejo (2019).

Table 1. Placement of corporate bonds of the companies CAF and COFIDE during the period 2015-2019

Enterprise	Bond type	Issuance year	Accumulated amount MM US$	Average term (years)	Average interest rate %
Corporación Andina de Fomento (CAF)	Corporate In International Market, Placement in Dollars	Accumulated 2015-2019	21020	3	2.12
	Green bonds	2018	130	6	3.99
Corporación Financiera de Desarrollo (COFIDE)	National corporate makets	Accumulated 2015-2018	180,691	9	6.28
	Green bonds	2019	29,41	3	5.13

Source: Own elaboration with data from S&P Global, (2017); Krmelj, Regis and Tejada, 2019.

4. Conclusions and discussion

For countries, the primary stock market plays an important role in their economy by facilitating the reduction of transaction costs by obtaining financing at lower interest rates. During the period 2005-2010, most of the companies that made up the Peruvian business sector had reduced asset volumes, hence the financing requirement is not large enough to enter the primary market of securities at a cost that is less than other financing alternatives, representing a structural constraint. In fact, according to SSM out of a total of 1828 companies in Peru in 1999, only 2% had assets higher than US$ 200 million.

There were limited corporate issues in the period 2005-2010, which, by capturing the full flow of capital, contributed in some extent to reducing the diversification of the capital market and the concentration of placements of financial assets; this given by the low number of companies willing to participate in the PPO, regardless of whether they require financing and that it is considered as one of the best alternatives because of the low costs of issuance, but in this type of financing companies are subject to a legal framework that rule operations.

As expressed above, if companies want to participate in the PPO of securities they must register with the PRSM and ask for their participation in the SSM, including the documentation and information indicated in the Securities Market Law, Legislative Decree No. 861 and its changing rules. One of the documents to be submitted is a draft information leaflet, which is a legally binding document containing all the necessary financial information, so that the investor can make an informed investment decision. Once registered in the PRSM, companies are obliged to provide all information to the market with respect to securities, and for a major Peruvian business sector this is considered a constraint; thus, of the total number of companies in Peru, very few access this alternative when seeking financing, most have proven reluctant to provide their information to the market; i.e., they do not wish to make

Retos, 10(19), 2020

public the information regarding the progress of their companies, perhaps due to a weak or poor culture of disclosure of financial information, which similarly affects the low appreciation of such instruction from a tax point of view.

However, the results of the study conducted by Nikolova, Wang and Wu (2019) for companies in the United States of America found that these companies complain of limited access to primary markets, based on little information available about issuing companies.

In the Peruvian case, another limitation on the participation of companies to the PPO of corporate bonds is the costs of access, because the minimum value of emissions must be greater than US$ 10 million for a valued AAA-level company to consider profitable debt to be issued, otherwise its fixed expenses could not cover them. This minimum issuance amount is an obstacle that prevents smaller capital firms from participating in the market, as they require lower amounts of financing.

Thus, since 2010, the SSM has promoted a set of initiatives aimed at strengthening the role of the stock market in the financing of Peru's economic development, seeking from the point of view of the offer, to promote the entry of new issuers, easing regulation, new mechanisms, maintaining information visibility and knowledge of risks, ensuring the investor´s protection and allowing new investors to enter. The SSM recorded the influx of approximately 31 new issuers to the capital market during the period 2010 to 2015, and in 2012 the Alternative Securities Market (ASM) was created for non-corporate companies (Roca, 2016), with the aim of establishing the foundations for the market growth.

During the period 2005-2010, 55% of the total placements in the capital market were made in s*oles* compared to 45% in dollars. This preference for *soles* financing reduces exchange rate risk in the balance structure, given by the strengthening of the dollar, the commodity price falls and the exchange market volatility, negatively affecting foreign currency investments and placements.

This behavior repeated over the years. The SSM reported in 2011 the increase in placements in *soles* by 62%, while the remaining 38% corresponded to placements in dollars (MEF, 2016b). Likewise, in 2015, only a corporate bond issue was made in dollars in the amount of US$ 97.3 million by the Administrator Jockey Plaza Shopping Center S.A. representing 28.5% of the total issued in all debt instruments by the date (Bonds Corporate, Subordinates, Financial Leasing, etc.) (Vallejo & Barbieri, 2016).

This behavior is repeated in the first half of 2019, when dollar bond placements accounted for only 7%; while placements in *soles* accounted for 93%. This continues to indicate a strong confidence in the domestic market (MEF 2019b).

In relation to the data in this study, a strong and positive correlation was obtained with R= 8.0, in terms of the placements of corporate bonds in *soles* on the stock market between the periods 2005-2010 and 2015-2019, indicating that the trend to increase the number of the business sector's bonus emissions is statistically significant, which effectively demonstrates the confidence that this sector has in the country and the strengthening of its economy.

Thus, all the companies evaluated increased the total amount placed, excepting ENEL Distribution Peru, because what is being expressed is the placement in *soles*, however currently this company has a support through intercompany loans to

a maximum amount of US$ 200 million with a deadline of December 2020. For the companies that make up the group in Peru, this amount facilitates efficient management of the available funds. This group is one of the leading multinationals in the electricity and gas market, operating in 35 countries on five continents. In Peru, it distributes and commercializes the electricity in the northern area of Metropolitan Lima, in the Constitutional Province of Callao and the provinces of Huaura, Huaral, Barranca and Oyón; serving 52 districts exclusively and sharing five additional districts with the distribution company in the southern area of Lima, benefiting more than half of the inhabitants of Metropolitan Lima (Garro, 2019a).

As for the changes in interest rates in both periods, a strong and negative correlation was obtained with R=-0.7, indicating that the decrease in interest rates between the two periods, 2005-2010 and 2015-2019, is statistically significant. This is explained by the fact with higher issues of higher amounts, and even an increase in the number of issuers, more confidence is generated in the market by investors, leading to lower interest rates (Robles, Sutton & Vtyurina, 2017).

Out of all the revised companies, an increase in the interest rate was observed in only three, being the most significant Telefónica of Peru, with a difference of 1.9 more than the average rates obtained for the period 2005-2010 (Garro, 2018). This was because their corporate bond placements in the period 2015-2019 hovered between 5 and 8 years, while their placements in the previous period were at longer terms between 10 and 20 years and also for smaller amounts, variables that influence the market for the determination of interest rates (Robles *et al*., 2017).

In that sense, one of the most difficult problems facing any economy in recent months is the high cost of credit. The recessionary crisis facing any country could be less hard if the interest rate would reduce more quickly, and as with any other price in the various market economies, interest rates are determined by supply and demand forces, in this case, the supply and demand for credit. If lenders' credit supply (S) increases relative to borrowers' demand (D), the price (interest rate) will tend to fall while lenders compete to find a use for their funds (Rivas, 2012).

On the other hand, Galicial, Cárdenas and Rivas (2017) report according to a study in relation to the countries that make up the Latin American comprehensive market (MILA) stock exchange, which are Colombia, Chile, Peru and Mexico. They point out that Peru, though it is one of the lowest economies compared to the rest of the countries that make up MILA, being even 5.6 times below Mexico, has 1.9% more companies listed on the stock market. In the study, Peru ranks second as a country with the largest number of stock companies, and when compared to Mexico it shows to have more culture towards openness, as comparatively more companies are willing to show their information; on the other hand, it has comparatively more companies contributing to the primary sector, behavior that is consistent to be a country under development.

Robles *et al*. (2017) also conducted a comparative study on the capital market in Latin American countries, noting that it is Peru followed by Brazil, the countries in which the negotiations are mainly based on the issuance of corporate bonds, mainly in their domestic markets. And in the case of Peru, it is expressly dominated by financial institutions and a few energy companies.

Retos, 10(19), 2020

Financial globalization has opened up favorable financing opportunities for companies based in these countries, now known as emerging, although not many companies have the size and manageability needed to issue international bonds; however, the increasing issuance of bonds as a source of funds for new investments is functioning as a complement to other mechanisms, such as foreign direct investment (López-Herrera, Santillán-Salgado & Cabello, 2019).

It is undeniable that the Peruvian economy has been growing, fighting against the contraction of the global crisis, and the domestic policy situation; however, it has managed to move forward while maintaining low and stable inflation levels. Nevertheless, there is still much to be done, and Galicial *et al.* (2017) mention that Chile and Peru have the highest tax rates by 2 and 3 points above others, in terms of the costs per issue of instruments on the market, and this tax exemption regime has discouraged entrepreneurs from participating in the market, having a negative effect on the business environment of each country.

When large companies participate in the national stock market to obtain finance by placing large amounts in *soles*, they reflect the dynamism in private investment, as well as they demonstrate confidence in the country plan, so it is a way to redeem their debt in dollars and to repay the terms of their repayments to avoid foreign exchange risk, and they also represent a strong support for the domestic market.

Companies seek for financing to be able to carry out their new projects of expansion, growth of their assets or investment in technological advances; in the case of financial institutions the resources are offered to their clients as loans, but recently, new trends have emerged based on the need to protect the planet, looking for alternatives that contribute to preserving nature in the fight against global warming. Green bonds arise, which will be debt instruments with terms higher than one year, differing from the rest in which the funds raised are used exclusively to the financing of new or already ongoing projects, having a positive environmental impact, i.e. that the bond is issued for the purpose of investing in projects related to the environment and climate change (The World Bank, 2015).

Generally speaking, green bonds are fixed income securities issued for capital raising by entities to finance their environmentally friendly projects, such as renewable energy, sustainable water management, prevention of pollution, adaptation to climate change and so on (Tang & Zhang, 2018).

The European Investment Bank and the World Bank were the first two issuers of green bonds in 2007 to finance environmental infrastructure. However, this market internationally starts in 2013, when the International Finance Corporation (IFC) sold a green bond of US$ 1 billion, opening up this market of issuers in a variety of sectors and with variable credit ratings. It has started with high-performance issues, but it is expected to increase as more corporations participate (Flaherty, Gevorkyan, Radpour & Semmler, 2017).

In 2014, the investment banks: Bank of America Merrill Lynch, Citi, JPMorgan, BNP Paribas, and HSBC, established the principles of green bonds (GBP) these include transparency and disclosure, along with the four components: revenue use, project evaluation and selection process, revenue management and reporting, being widely accepted by the international market. Regardless of the generality of the GBP, it pro-

vides an eligibility criterion and a detailed green taxonomy by sector that third parties can adopt to evaluate the rating of a green bond (Tang & Zhang, 2018).

The companies which issued green bonds and that were reviewed in this study were CAF and COFIDE, being the first state financial firms to issue green bonds with the aim of using resources in projects that promote sustainable productive transformation and green infrastructure, such as energy renewable production (wind, photovoltaic and small hydroelectric plants); information and communication technologies; sustainable forest management; clean transportation; sustainable agriculture and sanitation as wastewater treatment.

At the XXI International Conference on Climate Change (United Nations Climate Change Conference 2015 in Paris-France), Peru was rated as a "particularly vulnerable country", and the conference stablished an agreement where measures are included to reduce greenhouse gas emissions through the mitigation, adaptation and resilience of ecosystems as a result of global warming. Already, in 2014, in Peru, the company Rímac Seguros y Reaseguro, invests by acquiring the first green bonds with CFI. Hence, the emissions of green bonds made by CAF and COFIDE are considered an advance that continues to drive such initiatives, hoping that the green bond market will gain greater promotion and consolidation (Quispe, 2018).

The global trend is aimed at promoting and giving importance to all projects that have a positive impact on the environment, so the Lima-Peru Stock Exchange, the British Embassy in Peru, the Mexican Stock Exchange and Climate Partners participated in the development of the Green Bonds Guide for Peru, which was approved on April 30, 2018 and whose objective was to guide companies and institutions to issue this type of instrument (Quispe, 2018; Monasterolo & Raberto, 2018; Flammer, 2018).

Globally, although green bond issuances have initially been by financiers, development banks, as well as investors have been institutional as pension fund managers, pension standardization offices or insurers, what is expected is the awareness and consolidation of this market, in which not only securities of equity, titling and others are issued, but the inclusion of corporations or companies as investors (Flammer, 2018).

According to Tang and Zhang (2018) when reviewing green bond issues along with investment initiatives called climate change initiatives (CBI) on five continents, they noted that stock prices increase significantly on the announcement of the issuance of green bonds, and the reaction of stock markets is stronger for the first time than for repeated issuers, and stronger for corporate issuers than issuers of financial institutions. The issuance of green bonds can help broaden the investor base, as the issuance of green bonds attracts more media exposure and can be used by impact investors to meet their investment mandates (Tang & Zhang, 2018).

This is still a relatively incipient and substantially smaller market than conventional bonds, and its growth promotes sustainability by accelerating the capitalization of the green bond market; the results can be seen through macroeconomic (and institutional) improvements in the pursuit of sustainability through the financing of green bonds; this growth is able to close the gap between economic factors and sustainability and reduce the costs of companies in the search for investments in sustainability by promoting the issuance of green bonds as financing alternatives to lower cost (Tolliver, Keeley & Managi, 2019).

Peru is on track, making efforts such as making changes to regulations (Law No. 30050, adopted in SSM resolution No. 021-2013-SMV/01: reduction of formalities and costs in the issuance of securities on the market) to make them more open and participatory, thus encouraging the entry of more companies to the stock market, and increasing the financing alternatives that direct efforts towards environmental protection, where projects that improve the environmental impact are financed, helping investors who are sensitive to the environment.

References

Acosta, M. (2017). *El prospecto informativo en las ofertas públicas primarias de valores mobiliarios*. Superintendencia del Mercado de Valores (Nota de prensa), Gestión,17 de diciembre 2017. Recuperado de https://bit.ly/2HdOjSD (2019-08-10).

Arrarte, R. (2018). Tasas de interés real neutrales y las normas internacionales de información financiera. *Quipukamayoc, 25*(49), 9-25. https://doi.org/10.15381/ quipu.v25i49.14276.

Cariñaupa, L., & Barba, H. (2019). Banco Ripley Perú S.A. Informe de clasificación, Equilibrium clasificadora de riesgos S.A., 11 de junio de 2019, Recuperado de: https://bit.ly/2zftkuk [Fecha de consulta: 13 de agosto de 2019].

Chalamandaris, G., & Vlachogiannakis, N. (2018). Adverse-Selection Considerations in the Market-Making of Corporate Bonds. *SSRN Electronic Journal.* DOI:10.2139/ssrn.3209196

Córdova, P. (2019). Fundamento de clasificación de riesgo Luz del Sur S.A.A. Class & Asociados S. A. Clasificadora de Riesgos, 25 de febrero de 2019 pp. 13 Recuperado de: https://bit.ly/2KLm146 [Fecha de consulta: 09 de agosto de 2019].

Flaherty, M., Gevorkyan, A., Radpour, S., & Semmler, W. (2017). Financing climate policies through climate bonds. A three stage model and empirics. Research in International Business and Finance. 42. 468-479. https://doi.org/ 10.1016/j.ribaf.2016.06.001

Flammer, C. (2018). Corporate green bonds. *SSRN Electronic Journal, 41,* julio. http://dx.doi.org/10.2139 /ssrn.3125518

Galicial, S., Cárdenas, M., & Rivas, L. (2017). Las bolsas de valores de los países afiliados al Mercado Integral Latinoamericano (Colombia, Chile, Perú y México). *Memoria del XI Congreso de la Red Internacional de Investigadores en Competitividad*, 1819-1833; Guadalajara, México: Red Internacional de Investigadores en Competitividad. Recuperado de: https://bit.ly/2Z6BapC

García, V. (2014). *Introducción a las finanzas.* México, México: ebook. Grupo editorial Patria S.A. de C.V. Recuperado de: https://bit.ly/2McxwlD

Garro, S. (2018). Informe de clasificación de riesgo, Telefónica Perú S.A.A, Class & Asociados, clasificadora de riesgos, 15 de marzo del 2018, pp. 23. Recuperado de: https://bit.ly/2TOHqfF [Fecha de consulta: 13 de agosto de 2019].

Garro, S. (2019). Informe de clasificación de riesgo, ENEL Distribución Perú S.A.A. Class & Asociados, clasificadora de riesgos, 08 de mayo de 2019, pp. 18. Recuperado de: https://bit.ly/2Mtlztp [Fecha de consulta: 13 de agosto de 2019].

Gómez, J., González E., Huertas, C., Cristiano, D., & Chavarro, X. (2016). Evaluación de la transmisión de la tasa de interés de referencia a las tasas de interés del sistema financiero colombiano. *Ecos de economía, 20*(42), 19-45. DOI:10.17230 /ecos.2016.42.2

Greenbaun, S., Thakor, A., & Boot, A. (2019). *Contemporary financial intermediation.* London, United Kingdom: Elsevier Academic Press.

Horna, I. (2012). *Colocaciones primarias de bonos corporativos en el mercado de valores peruano.* (Tesis Doctoral) Universidad Nacional de San Marcos, Perú.

Izquierdo, J., & Gallo, D. (2018a). Scotiabank Perú S.A.A. Informe trimestral, Apoyo & Asociados Fitch Ratings, 12 de junio de 2018 pp. 15 Recuperado de: https://bit.ly/2P43MuV [Fecha

de consulta: 12 de agosto de 2019].

Izquierdo, J., & Gallo, D. (2018b). BBVA Continental Informe anual, Apoyo & Asociados Fitch Ratings, 02 de marzo de 2019 pp. 15 Recuperado de: https://bit.ly/2ZmlcTL [Fecha de consulta: 12 de agosto de 2019].

Jacobsen, S., & Venkataraman, K. (2018). *Does Trade Reporting Improve Market Quality in an Institutional Market?* Evidence from 144a Corporate Bonds. SSRN. Recuperado de: http://dx.doi.org/10.2139/ssrn.3171056

Krmelj, L., Regis, H., & Tejada, M. (2019). Corporación Financiera de Desarrollo S.A. COFIDE. Informe de Clasificación. Equilibrium Clasificadora de Riesgo, 02 de julio de 2019, pp. 11. Recuperado de: https://bit.ly/2Hfazf0 [Fecha de consulta: 13 de agosto de 2019].

López-Herrera, F., Santillán-Salgado, R.J., & Cabello A. (2019). Latin American Corporate Emerging Markets Bond Indices (CEMBIs): Their recent evolution. *Global Finance Journal, 41,* 104-112. https://doi.org/10.1016/j.gfj.2019.03.002

MEF (2012). Manual de Instrumentos Financieros. Ministerio de Economía y Finanzas, Dirección General de Endeudamiento y Tesoro Público, 31 de julio de 2012. Recuperado de https://bit.ly/33O6ZlJ [Fecha de consulta: 06 de agosto de 2019].

MEF (2016a). Capítulo I. Conceptos Básicos sobre el Mercado de Valores. Ministerio de economía y finanzas. Recuperado de: https://bit.ly/2O0lwU3 [Fecha de consulta: 6 de agosto de 2019]

MEF (2016b). Capítulo II. Situación actual del mercado de valores peruano Ministerio de economía y finanzas. Recuperado de: https://bit.ly/2Z4ISAs [Fecha de consulta: 6 de agosto de 2019].

MEF (2019a). SMV aprobó un trámite de inscripción del Programa de Bonos Corporativos hasta por S/ 500 millones para inversionistas institucionales. Nota de Prensa N°11 SMV, 26 de junio de 2019. Recuperado de: https://bit.ly/2ZlNcH7 [Fecha de consulta: 6 de agosto de 2019].

MEF (2019b). Empresas obtienen financiamiento en el mercado de valores por más de US$ 1,000 millones en lo que va de este año. Nota de Prensa Nº 14 SMV, 05 de agosto de 2019. Recuperado de: https://bit.ly/2ZlNcH7 [Fecha de consulta: 6 de agosto de 2019].

Moreno, E., Vásquez, D., Hernández, S., & Larios, L. (2015). Interdependencia de los mercados de valores en el mundo. *Economía: teoría y práctica, 43,* 155-181. Recuperado de https://goolnk.com/xrWP3l

Monasterolo, I., & Raberto, M. (2018). The EIRIN Flow-of-funds Behavioral Model of Green Fiscal Policies and Green Sovereign Bonds. *Ecological Economics*. *144,* 228-243. https://doi.org/10.1016/j.ecolecon.2017.07.029

Nikolova, S., Wang, L., & Wu, J. (2019). Institutional Allocations in the Primary Market for Corporate Bonds. *Journal of Financial Economics*. Recuperado de: http://dx.doi.org/10.2139/ssrn.3181983

Noriega, F. (1998). *La Bolsa de Valores, Instituciones e Instrumentos del Mercado de Valores Peruano.* Lima, Perú: Universidad de San Martín de Porres.

Pilbeam, K. (2018). *Finance and Financial markets.* London, England: Macmillan Publishers Limited.

Quispe, F. (2018). Un reto y una oportunidad para la economía y la infraestructura. El mercado de bonos verdes. *Jurídica, Suplemento de análisis legal del peruano*, 03 de julio 2018. Recuperado de: https://bit.ly/30mhDOn [Fecha de consulta:10 de agosto de 2019].

Rivas, P. (2012). Algunos efectos de la expansión monetaria en las tasas de interés del mercado de préstamos. *Pensamiento crítico, 17*(2), 137-153. https://doi.org/10.15381/pc.v17i2.8938

Robles, A., Sutton, B., & Vtyurina S. (2017). Patrones e impulsores de los bonos corporativos en América Latina. *Monetaria, Centro de Estudios Monetarios Latinoamericanos, CEMLA, 39*(2), 295-348. Recuperado de: https://bit.ly/2Hg 7POH

Roca, L. (2016). *Avances normativos con respecto a la emisión de valores en el Perú.* Jornadas sobre Tendencias Internacionales de Regulación y Supervisión Financiera en Iberoamérica. SMV, pp.16 Recuperado de: https://bit.ly/2KIoP21

Rodríguez, V. (2010). Ofertas públicas primarias de bonos corporativos en el Perú. *Quipukamayoc, 17*(33), 71-95. https://doi.org/10.15381/quipu.v17i33.4554

Sambola, R. (2012). Nuevas tendencias en finanzas corporativas. La financiación de las operaciones corporativas. *Revista de contabilidad y dirección, 15*(12), 65-96. Recuperado de https://bit.ly/2MuYUwO

S&P Global (2017). Análisis Corporación Andina de Fomento, América Latina. S& P. Global Ratings, 25 de julio de 2017. pp.21 Recuperado de: https://bit.ly/2KUJleM (2019-08-13).

Stowell, D. (2018). *Investment Banks, Hedge Funds, and Private Equity*. London, United Kingdom: Academic Press.

Tang, D. Y., & Zhang, Y. (2018). Do shareholders benefit from green bonds? *Journal of Corporate Finance*. https://doi.org/10.1016/j.jcorpfin.2018.12.001

Tarazona, J., & Regis, H. (2019). Alicorp S.A.A.Informe de clasificación, Equilibrium Clasificadora de Riesgo S.A., 28 de mayo de 2019. Recuperado de: https://bit.ly/30xCf6J [Fecha de consulta: 09 de agosto de 2019].

Tejada, M., & Barba, H. (2019). Scotiabank Perú S.A.A.Informe de clasificación, Equilibrium Clasificadora de Riesgo S.A., 26 de marzo de 2019. Recuperado de: https://bit.ly/2NmkXFG [Fecha de consulta: 12 de agosto de 2019].

Tejada, M., & Regis, H. (2019). BBVA Banco continental S.A. Informe de clasificación, Equilibrium Clasificadora de Riesgo S.A., 27 de marzo de 2019. Recuperado de: https://bit.ly/2NmkXFG [Fecha de consulta: 12 de agosto de 2019].

Tejada, M., & Vallejo, R. (2019). ENGIE Energía Perú, Informe de clasificación de riesgo, Equilibrium Clasificadora de Riesgo S.A., 22 de mayo de 2019. Recuperado de: https://bit.ly/2qAxfit [Fecha de consulta: 09 de agosto de 2019].

Tolliver, C., Keeley, A.R., & Managi, S. (2019). Drivers of green bond market growth: The importance of Nationally Determined Contributions to the Paris Agreement and implications for sustainability. *Journal of Cleaner Production*. https://doi.org/10.1016/j.jclepro.2019.118643

The World Bank (2015). What are Green Bonds? International Bank for Reconstruction and Development. Recuperado de: https://bit.ly/2YotGOv [Fecha de consulta: 16 de agosto de 2019].

Vallejo, R., & Barbieri, R. (2016). *Comportamiento de los Bonos Corporativos en el Mercado Peruano*. Equilibrium Clasificadora de Riesgo S.A., abril. Recuperado de: https://bit.ly/2MuSA8x [Fecha de consulta 6 de agosto de 2019].

Retos, 10(19), 2020
Journal of Administration Sciences and Economics | p-ISSN: 1390-6291| e-ISSN: 1390-8618
www.retos.ups.edu.ec

Analysis of construct validity of the instrument: "Managerial approach in the management for the results in the knowledge society"

Análisis de validez de constructo del instrumento: Enfoque Directivo en la Gestión para Resultados en la Sociedad del Conocimiento"

Mtro. José Isaías Martínez-Corona is a full time professor at Tecnológico Nacional de México (Mexico) (joseisaias.martinezcorona@gmail.com) (https://orcid.org/0000-0003-3465-5606)

Mtra. Gloria Edith Palacios-Almón is a full time professor at Tecnológico Nacional de México (Mexico) (gloriaedith.palaciosalmon@gmail.com) (https://orcid.org/0000-0002-2411-5553)

Dr. Luis Gibran Juárez-Hernández isa a professor and researcher at Centro Universitario CIFE (Mexico) (luisgibran@cife.edu.mx) (https://orcid.org/0000-0003-0658-6818)

Abstract

This article presents the results of an instrumental study that deals with the analysis of construct validity and reliability of the instrument: managerial approach in the management for the results in the knowledge society, with the objective to obtain an optimum quality to provide valid and reliable evidence. The construction of the instrument was based on the four fundamental axes of the management cycle and what was expressed in the first principle of the Marrakech Declaration. To meet the objective, the instrument was applied to 505 executives of the public administration. The construct validity analysis was performed using the exploratory factor analysis (EFA) technique, verifying the pertinence of the data for this technique and analyzing the reliability of the instrument using Cronbach's Alpha. The results of the EFA reveal that the items are represented in the factorial model, manifesting only one factor, which corresponds to the proposed theoretical model. Regarding the reliability analysis, an optimal value was obtained (Cronbach's Alpha: 0.868). Given these results, it is concluded that the instrument and the elements that integrate it accurately represent and measure the construct that is intended to be evaluated.

Resumen

En el presente trabajo se exponen los resultados de un estudio instrumental que aborda el análisis de la validez de constructo y confiabilidad del instrumento: enfoque directivo en la gestión para resultados en la sociedad del conocimiento, con el objeto de que obtenga una calidad óptima para que brinde evidencias válidas y confiables. La construcción del instrumento se basó en los cuatro ejes fundamentales del ciclo de gestión y en lo expresado en el primer principio de la Declaración de Marrakech. Para cumplir con el objetivo, el instrumento fue aplicado a 505 directivos de la administración pública. El análisis de validez de constructo se realizó con la técnica del análisis factorial exploratorio (AFE), verificándose la pertinencia de los datos para esta técnica y se analizó la confiabilidad del instrumento mediante el Alfa de Cronbach. Los resultados del AFE revelan que los ítems están representados en el modelo factorial, manifestándose un solo factor, lo cual corresponde con el modelo teórico propuesto. En cuanto al análisis de confiabilidad, se obtuvo un valor óptimo (Alfa de Cronbach: 0.868). Ante estos resultados, se concluye que el instrumento y los elementos que lo integran representan y miden con precisión el constructo que se pretende evaluar.

Keywords | palabras clave

Management for results, management approach, knowledge society, analytical rubric, reliability, reliability, validity, construct validity.
Gestión para resultados, enfoque directivo, sociedad del conocimiento, rúbrica analítica, confiabilidad, fiabilidad, validez, validez de constructo.

Suggested citation: Martínez-Corona, J. I., Palacios-Almón, G. E., & Juárez-Hernández, L. G. (2020). Analysis of construct validity of the instrument: "Managerial approach in the management for the results in the knowledge society". *Retos Revista de Ciencias de la Administración y Economía, 10*(19), 143-154. https://doi.org/10.17163/ret.n19.2020.09

Received: 02/12/2019 | Reviewed: 07/01/2020 | Approved: 22/01/2020 | Published: 01/04/2020

Retos, 10(19), 2020

1. Introduction

One of the great demands that public workers have is to carry out their activities more effectively and efficiently; i.e. to meet the objectives of their responsibility, but with less resources. In this sense, there is an approach known as New Public Management (NPM), which promotes the incorporation of management models in the public administration (Ministerio de Economía y Finanzas, 2015). In the context of developed countries, it is used to maintain the level of development achieved and to overcome issues related to fiscal or financial crises; however, in developing countries, the fundamental objective of their use is to find a higher level of development, i.e. to find better results in the implementation of public policies.

In this way, the idea is to look for a more efficient state and much closer to society (Pliscoff-Varas, 2017), and in Latin America, the aim is to achieve a higher level of development, reason for which it is referred to results-based management (RBM) (Ministerio de Economía y Finanzas, 2015). This term has been conceived as a managerial discipline (Secretaría de Hacienda y Crédito Público, 2017) that applies to the public sector and that involves elements of the management cycle (Shack & Rivera, 2017).

In this regard, Martínez-Corona and Palacios-Almón (2019) express that the RBM comprises an approach to organizational culture that relies on practical tools. Therefore, it assumes that public servants must focus in terms of professionalism and a managerial approach that concentrates on the results that bring value to society. In addition, the RBM should be seen as a compromise and not a challenge, as it involves a transformation in the institutional culture.

One of the important challenges for public workers is that the impacts of public policy implementation cannot be assessed *ex ante*, the effects can be observed with the results obtained in the implementation in an *ex post* measurement (Secretaría de Hacienda y Crédito Público, 2017). Therefore, the manager must have an approach to the use of methodologies, techniques and technologies for this purpose. Hence, it is important to consider the principles of the Knowledge Society, which among its main elements is the creation of knowledge, collaborative work, the management of change and the use of Information Technologies and Communications. The combination of these elements helps organizations to solve problems and achieve shared goals (Tobón, Guzmán, Hernández & Cardona, 2015).

Although it is a high priority topic, instrumental inputs for its evaluation are scarce. In this regard, Martínez-Corona, Palacios-Almón and Juárez-Hernández (2020) proposed the instrument called "Directive Approach in the Management of the Results in the Knowledge Society" (DAMfRNS). The instrument integrates the four fundamental axes of the management cycle as a reference: planning, budgeting, implementation of programs and projects, and evaluation (Kauffman, Sangines, & García-Moreno, 2015), considering the basis of what was expressed in the first Marrakesh Declaration (Chica, 2015), which structures the management approach for the results in three dimensions: *ex ante*, during the execution and *ex post*. A cross-cutting dimension of this topic is incorporated to make it affordable with the Knowledge Societ.

It is important to note that, once the construction phase is completed, Martínez-Corona *et al*. (2020) indicate how the instrument was validated in terms of

facie and content. In addition, it is noted that the instrument was applied to a pilot group of 12 officials at the management level of the public administration, where the degree of satisfaction of the items and instructions was also assessed, and the degree of satisfaction with the instrument. The latter process is important because it is affordable to use the instrument in the context in which it is intended to be applied; i.e. the characteristic or quality of feasibility is fulfilled (Carvajal, Centeno, Watson, Martínez & Sanz-Rubiales, 2011).

Hence, evaluating the psychometric properties of the instrument is essential for determining the quality of what it is intended to measure (Carvajal *et al*., 2011). Therefore, having the validity of content is relevant; but, for the instrument to obtain optimal quality, the analysis of construct validity is required. In this regard, Hernández-Sampieri, Fernández-Collado, and Baptista-Lucio (2010) define the construct as the measured variable that takes place within a theoretical hypothesis, theory or scheme. The authors express that, from a scientific point of view, the validity of the construct is likely to be the most important of the concepts.

Hernandez-Sampieri *et al*. (2010) indicate that the validity of the construct refers to "how successfully an instrument represents and measures a theoretical concept" (p. 51). For their part, Prieto and Delgado (2010) express that it can be used to contrast scientific theories with the use of the hypothetical-deductive method; as well as it represents "a comprehensive framework for obtaining evidence of validity" (p. 71), which is inclusive for the validity of content and criteria. The authors refer that validation is concrete by being based on the theories on which the evaluated construct is defined and its relationship "with other constructs, their manifestations and their potential applications and interpretations" (p. 71). Another relevant psychometric property is reliability, which is defined as the accuracy of the results when the instrument is applied on different occasions (Carvajal *et al*., 2011).

Carvajal *et al.* (2011) mention that the validation process of an instrument is continuous and dynamic, and evaluating its psychometric properties is an essential criterion to determine the quality of its measurement (Gómez-Benito & Hidalgo, 2015). For this reason, the analysis of the validity of construct and reliability of the DAMfRNS instrument is addressed in the development of this work, with the aim of obtaining optimal quality with valid and reliable evidence.

2. Materials and method

2.1. Type of Study

An instrumental study was carried out, which consists on the development / adaptation of tests or devices, as well as the study of their psychometric properties to develop new procedures, instruments or tests (Montero & León, 2002). The validity of construct and reliability of the above-mentioned instrument were analyzed: a management approach to the management for the results in the knowledge society. With the above, the idea is to provide the instrument accuracy and consistency to be able to make generalizations in the findings (Hidalgo, 2005).

Retos, 10(19), 2020

2.2. Procedure

The study of the validity of the construct and reliability of the instrument was carried out through the following phases:

2.2.1. Instrument

The DAMfRNS instrument consists of an analytical rubric that aims to evaluate the approach of public sector managers in a management-based management for the results and with a perspective from the knowledge society (Martínez-Corona *et al.*, 2020), which groups together four aspects (*ex ante*, implementation, *ex post* and transversal axis: knowledge society) and is integrated into seven items. The aforementioned aspects are constituted in a dimension, which represents the theoretical construct Management for the Results in the Knowledge Society; this is because the theoretical model, as already mentioned, is based on the fundamental axes of the management cycle and the first principle of the Marrakesh Declaration. Each of the items has a descriptor, which was formulated considering some of the socio-formative taxonomy elements, and the established levels were receptive, resolute, autonomous and strategic (Tobón, 2017). Table 1 presents the aspects, components and indicators that make up the instrument.

Table 1. Aspects, components and indicators of the instrument

Aspect	Component	Indicator
Ex ante phase	Expected Results	Views the expected results when designing an institutional program or project (Program)
	Probable Costs	Foresees the likely costs of implementing a program
	Expected Impacts	Anticipates the expected impacts of the Program
	Design of Strategic Indicators	Sets indicators to measure program effectiveness for program evaluation and monitoring
Implementation phase	Design of Performance Indicators or Management	
	Follow and Evaluation	
	Corrections	
Ex post phase	Program Evaluation	
	Accountable	Accoutable to society for program results
Cross-axis (Knowledge Society)	ICT in decision-making	Uses Information and Communication Technologies for strategic and tactical processes
	Data management	Conducts data analysis and decision-making to drive results
	Decisions and data analysis	

Source: Martínez-Corona *et al.*, 2020.

After its design, the instrument was validated in facie and content (Martínez-Corona *et al.*, 2020). The first phase is called facie validation, presentation validity or apparent validity and its objectives are to verify whether the items belong to a pheno-

menon or construct, their relevance, wording and if they are understandable (Buela-Casal & Sierra, 1997; Reina Gamba & Vargas Rosero, 2008; Salas-Razo & Juárez-Hernández, 2019). Regarding the content validity analysis, an expert judgement was conducted with a qualitative-quantitative approach where all items were validated, revealing "the degree to which the instrument reflects a specific content domain of what is being measured" (Hernández-Sampieri *et al.,* 2010, p. 201). It is important to note that the instrument was applied to a pilot group of civil workers at the management level of the public administration with the aim of assessing the affordability of the instrument and conducting an initial reliability analysis by Cronbach's Alpha coefficient (Cronbach, 1951). The results of this phase were favorable, revealing assessments of good and excellent, in terms of the degree of understanding and an optimal value of reliability (Cronbach Alpha: 0.822).

2.2.2. Selection of the population sample for the implementation of the instrument

The instrument was applied to 505 managers (public workers); who, in the period stablished for the collection of the data, responded to the invitation. To be considered as research individuals, they had to meet the criterion of carrying out a management responsibility in the public sector. It is important to note that the implementation of the instrument was carried out online by an invitation to participate in the study, for which they were given a description of the instrument, its purpose and the instructions to follow. Sociodemographic data of participants are shown in Table 2.

Table 2. Sociodemographic data of the participants (n=505)

Sociodemographic Data of Pilot Group Participants	
Sex	Men 59.2%
	Women 40.8%
Average Age (years)	44.6 years
Position	Administrative 2.6%
	IC or Inner Comptroller 1.8%
	Coordinator 1.6%
	Special Delegate 0.2%
	Director 38.2%
	Area Director 0.8%
	General Director 0.8%
	Teacher 1.2%
	Chief Department 28.5%
	Chief of Office 3.4%
	Doctor 0.4%
	Rector 0.6%
	Secretary 0.8%

Retos, 10(19), 2020

	Subdirector 17.6%
	Sub-secretary office 0.2%
	Specialized Technician 1.0%
Academic degree	Bachelor 40.6%
	Master 52.7%
	Doctorate 6.7%
Area of experience	Organizational Processes 26%
	Teaching 57.7%
	Management 16.3%

Source: Own Elaboration.

2.2.3. Analysis of construct validity and reliability

The analysis of construct validity was carried out using the exploratory factor analysis technique (EFA), with the aim of verifying whether the instrument items represent the different dimensions of the same construct (Mavrou, 2015). For the development of the EFA, the above was consulted by Costello and Osborne (2005), Hair, Black and Anderson (2010), Pérez and Medrano (2010), Frías-Navarro and Pascual-Soler (2012), Mavrou (2015) and López-Aguado and Gutiérrez-Provencho (2019) regarding the minimum sample to verify the relevance of the data for this analysis.

The latter was made through the observation of the correlation matrix, the determinant value, the Kaiser-Meyer-Olkin and Barlett test (Pérez & Medrano, 2010; Hair *et al*., 2010; Mavrou, 2015). According to these authors, the correlation coefficients must be higher than 0.50 and significant, the determinant value was close to zero, the KMO index was higher than 0.70 and finally Bartlett's sphericity test was statistically significant ($p<0.05$) (Costello & Osborne, 2005; Pérez & Medrano, 2010; Juárez-Hernández, 2018).

As these assumptions were fulfilled, the factor extraction method of main axes was chosen (Gorsuch, 1983; Hair *et al.,* 2010; De Winter & Dodou, 2012; Juárez-Hernández, 2018; López-Aguado & Gutiérrez-Provecho, 2019). It is important to note that the number of factors to be retained was based on Gutman-Kaiser rule (Ruiz & San Martín, 1992; Pérez & Medrano, 2010). For its part, the determination of significance in the factorial loads was carried out as stipulated by Rositas-Martínez (2014), who states that according to the sample size, the factorial load must be higher than 0.30. If factorial loads have significant loads to more than one factor in the factorial matrix, the rotation of the matrix was performed using the algorithm with higher convenience and the Reliability analysis using the Cronbach Alpha coefficient (Cronbach, 1951) and finally the quality of feasibility was analyzed through the satisfaction survey instrument (CIFE, 2018).

3. Results

3.1. Analysis of the validity of the instrument

Table 3 shows the correlation matrix between the items; in which, it can be observed that all items are significantly correlated ($p<0.05$) and with a determinant of 0.058. Secondly, Kaiser Meyer Olkin test (KMO: 0.901) and Bartlett's esfericity test (X2:1429.358 gl: 21; $p<0.001$) showed that the data are susceptible to analysis using the EFA.

Table 3. Correlation matrix between items (Note *= p<0.05)

Item	1	2	3	4	5	6	7
1	1.000						
2	0.464*	1.000					
3	0.474*	0.516*	1.000				
4	0.518*	0.532*	0.545*	1.000			
5	0.314*	0.365*	0.458*	0.457*	1.000		
6	0.390*	0.464*	0.470*	0.522*	0.568*	1.000	
7	0.451*	0.501*	0.553*	0.574*	0.538*	0.579*	1.000

Source: Own elaboration.

The EFA in its first matrix (communalities), showed the representation of all the items within the factorial model (Table 4), and a single factor presented an eigenvalue higher than 1, and this explained more than 56% of the variance. The analysis of the factorial matrix denoted the representation of the items with a significant loading on the factor found (Table 4).

Table 4. Communalities and Factorial loading

Item	Communalities	Factorial loading
1. It views the expected results when designing an institutional program or project (Program).	.373	.611
2. It foresees the likely costs of implementing a Program.	.453	.673
3. It anticipates the expected impacts of the Program.	.520	.721
4. It establishes indicators to measure the effectiveness of the program for the evaluation and monitoring of programs.	.576	.759
5. It is accountable to the company with respect to the results of the program.	.408	.638
6. It uses Information and Communication Technologies for strategic and tactical processes.	.512	.715
7. It performs data analysis and decision-making to drive results.	.602	.776

Source: Own elaboration.

Retos, 10(19), 2020

In the application of the instrument to the participating sample, an optimal reliability value was obtained (Cronbach Alpha: 0.868). Finally, it was found that the participants showed good to excellent degree of understanding with the instrument's instructions, understanding of the items, satisfaction with the instrument and relevance of the questions (Table 5).

Table 5. Instrument Satisfaction Survey Results

	Low	Acceptable	Good	Excellent
What was the understanding degree of the instrument's instructions?	0.990	14.455	58.614	25.941
What was the understanding degree of the questions or items?	0.990	15.842	58.020	25.149
What was the satisfaction degree with the instrument?	1.386	16.436	59.802	22.376
What is the relevance degree of the questions?	0.594	15.446	54.455	29.505

Source: Own elaboration.

4. Discussion

From an organization point of view, the different tools that support management move their attention to results rather than procedures. This feature mentions the criteria or reference framework for the certification of management systems, or for the purpose of accrediting higher education curricula in the case of evaluation. In the public administration, management results have taken on major relevance, particularly in Latin America, where there is little background (García-López & García-Moreno, 2010). From the point of view of evaluating the approach of the managers, in this construct, it was found that the contributions are null and void. Thus, the RBM is a managerial discipline that seeks to overcome problems in the public administration, with the use of public policy information to improve the decision-making (Martínez-Corona & Palacios-Almón, 2019).

This represents a necessity since the evaluation has two functions: one psychosocial and one administrative. The first related to personal development and adaptation to the environment; the second, to identify the right people for a position and identify training proposals (Gil-Flores, 2007). In particular, there is a premise that the managerial approach as any competition must be demonstrated and must have performance criteria (Vargas-Leyva, 2008).

In this sense, the design and development of an instrument to support the evaluation of the management approach to the management results is considered desirable and relevant; in particular, suitable for a knowledge society in order to contribute to the granting of services in the public administration with value to society. Consequently, the importance of having a management-oriented approach to the management results is to highlight that it must be seen as a system; therefore, it is

based on the results-oriented management cycle, which involves everything from a diagnosis to accountability. It emphasizes that each of the stages must be properly articulated, with the aim of facilitating the subsequent stages (Kauffman *et al.,* 2015), stating that even though it important to know how the actions are carried out, the main emphasis is: what is done, what is achieved and what is its impact (UAEM, 2015).

To fulfill this task, the analytical heading was proposed: "management approach in the management for the results in the knowledge society" (Martínez-Corona *et al.,* 2020); which is considered a contribution to the area, as it denotes elements to identify characteristics in public workers towards a guidance for the results in the implementation of public policy; as well as making decisions for the training of public managers, based on an institutional diagnosis and taking as reference the axes of the management cycle and is structured under the management approach for the results.

While the instrument is considered to include aspects that characterize the RBM, validation is necessary to verify that it measures what it needs to measure; i.e., the reason for its design (Carvajal *et al.,* 2011). In this regard, there are a number of psychometric properties of relevance in the evaluation of instruments. These point out the so-called validity of facie, which is the verification of the relevance of the instrument items and the assessment of their understanding in their wording (Reina Gamba & Vargas Rosero, 2008); and the second called content validity which "refers to the degree to which an instrument reflects a specific content domain of what is being measured" (Hernández-Sampieri *et al.,* 2010, p. 201).

With regard to the latter, Juárez-Hernández and Tobón (2018) refer to the validity of the content such as the quality and accuracy of the research instrument, for which they perform an analysis of the historical development of the term, in which stand out definitions such as the one of Kerlinger (1986) that expresses that it is the representativeness of the content, also Koller, Levenson and Glück (2017) who add elements such as representativeness of items and their grammatical aspects, as well as the clarity of the instructions. Additionally, Carvajal *et al.* (2011) express that the validity of the content is a qualitative assessment to know whether the questionnaire covers all the dimensions of the phenomenon to be measured. According to the above, the instrument was subjected to these processes; therefore, it can be indicated that the instrument for evaluating the DAMfRNS has content validity and the appropriate features for its application.

However, both properties have been mentioned as important, and the validity of the construct is considered to be the one of greatest relevance and importance, since it corresponds to the meaning of the instrument and concerns, verifying that an instrument represents and measures the theoretical concept it aims to measure (Hernández-Sampieri *et al.,* 2010, p. 203). Other authors indicate that it is the main in terms of the types of validity, and that it is a unifying concept, since it integrates into a common framework to test the theoretically relevant relationships, the considerations of content validity and criterion (Messick, 1980).

In order to comply with the validation scheme, the analysis of this property was carried out, applying the instrument to 505 managers of the public administration, which optimally meets the fundamental standard of the sample size for the implementation of exploratory factor analysis (Hair *et al.,* 2010; Mavrou, 2015). The results

Retos, 10(19), 2020

were satisfactory, as the correspondence of what was theoretically proposed was first observed. In this sense, even if the instrument considers various aspects, its basis is the axes of the management cycle and the first principle of the Marrakesh declaration, since they represent a process where all aspects are related and are part of the same construct. Thus, it could be verified that they respond to the same dimension derived from the matrix of the total variance explained, and only one factor obtained an eigenvalue higher than 1 and which explained more than 56% of the variance.

Secondly, all the proposed items are represented within the factorial model and the factor found, revealing that the instrument items represent and measure the theoretical construct or concept that is proposed (Mavrou, 2015). This aspect is relevant as it shows the value of content validation, since as noted, the latter represents a fundamental part of the construct´s validity (Messick, 1980). Another important aspect to note is the fulfillment of all assumptions, since the method large samples, correlation between variables and adequacy data were favorable. Compliance with these assumptions brings robustness and relevance to the results found.

Another property analyzed was reliability, which according to Virla, González-Pineda and Gutiérrez (2013) is related to the accuracy used by an instrument to measure what must be measured. Hernandez-Sampieri *et al.* (2010) express the extent to which the repeated application of an instrument to the same individual produces equal results. Specifically, an optimal value (Cronbach Alpha of 0.868) was obtained according to the criteria indicated (Cervantes, 2005; Juárez-Hernández, 2018; Taber, 2018), revealing the reliability of the instrument, which means that the results are reliable when applied in several moments (Carvajal *et al.,* 2011). Likewise, it is important to note that the instrument showed optimal reliability values in its first analysis (Cronbach Alpha 0.822) in the pilot group, and according to Charter (2003) the coefficient tends to be unstable with small samples. The above highlights the value obtained in this work, since the sample is considered optimal to perform this analysis and be certain about the obtained value.

Another aspect to mention is the characteristic or quality of feasibility; i.e., its affordability for the targeted population (Carvajal *et al.,* 2011). In this work, good weights were obtained regarding the understanding of instructions and items, as well as the satisfaction of the instrument, which is similar to the pilot group (Martínez-Corona *et al.,* 2020). This aspect is of the utmost importance, since as Corral (2009) and Carvajal *et al.* (2011) mention, inadequate understanding of instructions or questions may affect psychometric properties, as well as the results of the instrument.

5. Conclusions

The instrument "management approach to the management for the results in the knowledge society" and the elements that are part of it, accurately represent and measure the construct to be evaluated. In addition to these results, the relevance of the previous phases of review and validation of the instrument's content stands out, being significant in the results obtained in this work. It is worth noting the evaluation by the target population, since it stated that the instructions and items of the instrument are understandable with a high degree of satisfaction. This evidence denotes the

quality in the instrument and its measurement, which represents a contribution to the area of study and provides the opportunity to apply the instrument for obtaining a diagnosis to identify lines of training for the managers in the public sector, which can improve public policy decisions and outcomes.

References

Buela-Casal, G., & Sierra, J. C. (1997). *Manual de evaluación psicológica: fundamentos, técnicas y aplicaciones*. España: Siglo XXI.

Carvajal, A., Centeno, C., Watson, R., Martínez, M., & Sanz-Rubiales, Á. (2011). ¿Cómo validar un instrumento de medida de la salud? *Anales Sis San Navarra*, *34*(12), 63-72.

Cervantes, V. H. (2005). Interpretaciones del coeficiente alpha de Cronbach. *Avances en medición*, *3*(1), 9-28.

Charter, R. A. (2003). A Breakdown of Reliability Coefficients by Test Type and Reliability Method, and the Clinical Implications of Low Reliability. *The Journal of General Psychology*, *130*(3), 290-304. https://doi.org/10.1080/00221300309601160.

Chica, S. A. (2015). Gestión para Resultados en el Desarrollo: Hacia la Construcción de una Buena Gobernanza. *Administración & Desarrollo*, *45*(1), 71-93.

CIFE (2018). *Planeación del diseño y validación de un instrumento de investigación*. Cuernavaca, Morelos, México: Centro Universitario CIFE.

Corral, Y. (2009). Validez y confiabilidad de los instrumentos de investigación para la recolección de datos. *Revista Ciencias de la Educación*, *19* (33), 228-247.

Costello, A. B., & Osborne, J. W. (2005). Best Practices in Exploratory Factor Analysis: Four Recommendations for Getting the Most From Your Analysis. *Practical Assessment, Research & Evaluation*, *10*(7). https://dx.doi.org/10.4135/9781412995627.d8

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, *16*(3), 297-334. https://doi.org/10.1007/BF02310555

De Winter, J. C., & Dodou, D. (2012). Factor recovery by principal axis factoring and maximum likelihood factor analysis as a function of factor pattern and sample size. *Journal of Applied Statistics, 39,* 695-710. https://doi.org/10.1080/02664763.2011.610445.

Frías Navarro, D., & Pascual Soler, M. (2012). Prácticas del Análisis Factorial Exploratorio (AFE) en la investigación sobre conducta del consumidor y marketing. *Suma Psicológica*, 47-58.

García-López, R., & García-Moreno, M. (2010). *La gestión para resultados en el desarrollo: Avances y desafíos en América Latina y el Caribe*. Banco Interamericano de Desarrollo.

Gil-Flores, J. (2007). La evaluación de competencias laborales. *Educación XX1*(10), 83-106.

Gómez-Benito, J., & Hidalgo, M. D. (2015). La validez en los tests, escalas y cuestionarios. *La sociología en los escenarios, 8 (revista electrónica)*, 1-14.

Gorsuch, R. L. (1983). *Factor Analysis* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Hair, J. F., Black, W. C., & Anderson, R. E. (2010). Multivariate data analysis. *Upper Saddle*. River, NJ: Prentice Hall.

Hernández-Sampieri, R., Fernández-Collado, C., & Baptista-Lucio, P. (2010). *Metodología de la Investigación*. México: McGraw-Hill Educación.

Hidalgo, L. (2005). Confiabilidad y validez en el contexto de la investigación y evaluación cuantitativas. *Revista Venezolana de Investigación*, 225-243.

Juárez-Hernández, L. G. (2018). *Manual práctico de estadística básica para la investigación*. Florida: Kresearch.

Juárez-Hernández, L. G., & Tobón, S. (2018). Análisis de los elementos implícitos en la validación de contenido de un instrumento de investigación. *Revista Espacios*, *39*(53), 23.

Kauffman, J., Sangines, M., & García-Moreno, M. (2015). *Construyendo gobiernos efectivos: Logros y retos de la gestión pública para resultados en América Latina y el Caribe.* (B. I. Desarrollo, Ed.) Washington, D.C., USA.

Retos, 10(19), 2020

López-Aguado, M., & Gutiérrez-Provecho, L. (2019). Cómo realizar e interpretar un análisis factorial exploratorio utilizando SPSS. *REIRE Revista d'Innovació i Recerca en Educació*, *12*(2), 1-14. http://doi.org/10.1344/reire2019.12.227057.

Martínez-Corona, J. I., & Palacios-Almón, G. E. (2019). Análisis de la Gestión para Resultados en el Marco de la Sociedad. *Revista Atenas*, *3*(47), 180-197.

Martínez-Corona, J. I., Palacios-Almón, G. E., & Juárez-Hernández, L. G. (2020). Diseño y validación del instrumento —enfoque directivo en la gestión para resultados en la sociedad del conocimiento". *Revista Espacios,* artículo en prensa.

Mavrou, I. (2015). Análisis factorial exploratorio: cuestiones conceptuales y metodológicas. *Revista Nebrija de Lingüistica Aplicada a la Enseñanza de las Lenguas*, *19*.

Messick, S. (1980). Test validity and ethics of assessment. *American Psychologist*, *35*, 1012-1027. http://dx.doi.org/10.1037/0003-066X.35.11.1012

Ministerio de Economía y Finanzas (2015). *Presupuesto por resultados y la articulación territ*orial. Recuperado de: http://bit.ly/2oYlt36 (2019-05-29)

Montero, I., & León, O. G. (2002). Clasificación y descripción de las metodologías de investigación en psicología. *Revista Internacional de Psicología Clínica y de la Salud*, *2*(3), 503-508.

Pliscoff -Varas, C. (2017). Implementando la nueva gestión pública: problemas y desafíos a la ética pública. El caso chileno. *Convergencia Revista de Ciencias Sociales*, *24*(73), 141-164.

Pérez, E. R., & Medrano, L. (2010). Análisis Factorial Exploratorio: Bases Conceptuales y Metodológicas. *Revista Argentina de Ciencias del Comportamiento, RAAC, 2*(1), 58-66.

Prieto, G., & Delgado, A. R. (2010). Fiabilidad y validez. *Papeles del Psicólogo*, *31*(1), 238-253.

Reina Gamba, N. C., & Vargas Rosero, E. (2008). Validez de contenido y validez facial del instrumento "Percepción de comportamientos de cuidado humanizado". *Avances en enfermería*, *26*(2), 71-79.

Rositas-Martínez, J. (2014). Los tamaños de las muestras en encuestas de las ciencias sociales y su repercusión en la generación del conocimiento. Innovaciones de negocios. *Innovaciones de Negocios*, *11*(22), 235-268.

Ruiz, M. A., & San Martín, R. (1992). El comportamiento de la regla k1 en la estimación del número de factores. *Psicothema*, *4*(2), 543-550.

Salas-Razo, G., & Juárez-Hernández, L. G. (2019). Rúbrica analítica para el diagnóstico integral del nivel de desarrollo de una comunidad rural. *Ager: Revista de Estudios sobre Despoblación y Desarrollo Rural, 26*(1), 161-188.

Secretaría de Hacienda y Crédito Público (2017). *Módulo 2. Planeación y Presupuesto Orientado a Resultados del Diplomado de Presupuesto Basado en Resultados*. Ciudad de México: SHCP.

Shack, N., & Rivera, R. (2017). *Seis años de la gestión para resultados en el Perú (2007-2013)*. Huancayo: Universidad Continental, Fondo Editorial.

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48*(6), 1273-1296.

Tobón, S. (2017). *Evaluación socioformativa: estrategias e instrumentos*. Mount Dora, USA: Kresearch.

Tobón, S., Guzmán, C. E., Hernández, J. S., & Cardona, S. (2015). Sociedad del conocimiento: Estudio documental desde una perspectiva humanista y compleja. *Paradigma*, *36*(2), 7-36.

UAEM (2015). *Gestión para resultados en la UAEM*. Recuperado de: bit.ly/34lPnxk

Vargas-Leyva, M. R. (2008). *Diseño curricular por competencias*. Ciudad de México: ANFEI.

Virla, M. Q., González-Pineda, M., & Gutiérrez, D. J. (2013). Pertinencia de los términos validez y fiabilidad en investigaciones de la complejidad social. *Opción*, *29*(71), 45-56.

Retos, 10(19), 2020
Journal of Administration Sciences and Economics | p-ISSN: 1390-6291| e-ISSN: 1390-8618
www.retos.ups.edu.ec

Analysis of Convergence for the Ecuadorian case at the cantonal level in the period: 2007-2017

Análisis de convergencia para el caso ecuatoriano a nivel cantonal en el período: 2007-2017

José Paúl Tinizhañay Peralta is an independent reseacher (jose_tinizhanay@hotmail.com) (https://orcid.org/0000-0002-7350-693X)

Abstract

The objective of this study is to analyze the existence of convergence and determine its magnitude at the cantonal level for the Ecuadorian economy during the period 2007 to 2017. Following the methodology proposed by Quah, the transition matrix of the Ecuadorian economy at the cantonal level is estimated, following the postulates of Barro and Sala-i-Martin, the sigma convergence process is identified and an econometric model is estimated using OLS and cross-sectional data, to determine the existence and magnitude of the beta convergence. The main findings indicate that Ecuador shows an improvement in the final mobility situation. Furthermore, the absolute convergence rate amounts to 3.62% annual average at the cantonal level, while, by including conditioning factors in relation to physical infrastructure of households, electricity consumption and education, the speed of convergence amounts to 4.67% average annual, which denotes key areas of intervention, among others, in order to shorten territorial gaps in Ecuador.

Resumen

El objetivo de este estudio es analizar la existencia de convergencia y determinar su magnitud a nivel cantonal para la economía ecuatoriana durante el período 2007 a 2017. Siguiendo la metodología propuesta por Quah, se estima la matriz de transición de la economía ecuatoriana a nivel cantonal y siguiendo los postulados de Barro y Sala-i-Martin, se identifica el proceso de convergencia sigma y se estima un modelo econométrico utilizando MCO y datos de corte transversal, para determinar la existencia y magnitud de la convergencia beta. Los principales hallazgos indican que Ecuador muestra una mejora en la situación final de movilidad. Además, la tasa de convergencia absoluta asciende al 3.62% promedio anual en el nivel cantonal, mientras que, al incluir factores de condicionamiento en relación con la infraestructura física de los hogares, el consumo de electricidad y la educación, la velocidad de convergencia asciende al 4,67% promedio anual, lo que denota áreas clave de intervención, entre otras, para acortar brechas territoriales en Ecuador.

Keywords | palabras clave

Mobility Matrix, Sigma Convergence, Beta Convergence, economic growth, development, cross-sectional data.
Matriz de movilidad, Convergencia Sigma, Convergencia Beta, crecimiento económico, desarrollo, corte transversal.

Suggested citation: Tinizhañay Peralta, J. P. (2020). Analysis of Convergence for the Ecuadorian case at the cantonal level in the period: 2007-2017. *Retos Revista de Ciencias de la Administración y Economía, 10*(19), 155-173. https://doi.org/10.17163/ret.n19.2020.10

Received: 22/11/2019 | Reviewed: 07/01/2020 | Approved: 22/01/2020 | Published: 01/04/2020

Retos, 10(19), 2020

1. Introduction

The economic growth is an opportunity for a country to emerge from poverty or improve its current living standards. However, if this growth only concentrates in certain areas that have shown high performance due to their geographic location, concentration of public entities, sea ports and other exogenous advantages, it will cause a problem of polarization of wealth and not a true economic growth and development.

Over the past decade, Ecuador has experienced a period of economic growth and, as a result, the government has taken a number of measures with the aim of closing the gaps between the rich and depressed areas of the country, thus achieving a visible economic integration. However, it is of great interest, both politically and academically, to find evidence as to whether this growth and policies have had the desired effect or, conversely, if the concentration of wealth has maintained in certain regions.

Therefore, this empirical research aims to show the existence and magnitude of convergence at the cantonal level between 2007 and 2017 in Ecuador. For this purpose, three strategies are used, the first is to analyze the mobility of the cantons between different states or strata according to their average annual per capita production for the period 2007 and 2017, through the transition matrix proposed by Quah. Secondly, to identify the existence of convergence and its magnitude over time at the cantonal level, for this reason the postulates of Barro and Sala-i-Martin on sigma convergence are taken into account. The third strategy is to estimate an econometric model using cross-sectional data, following the proposal of Barro and Sala-i-Martin, to demonstrate conditional beta convergence. In this sense, given the economic growth and political stability experienced in Ecuador during the period of analysis, it is possible to hypothesize positive mobility of the cantons, which would show an improvement in the Ecuadorian economy as a whole end of the period analyzed. In addition, due to the size of Ecuador and its level of social development, it is possible to think that the key factors around the levels of savings, technology, capital depreciation and mobility of factors between the cantons within the country may be similar, therefore, it is very likely that the convergence hypothesis will be met.

The importance and originality of this research lies in incorporating different approaches to draw important conclusions from an academic and scientific point of view. In addition, the literary production on this subject carried out in Ecuador is very scarce, limiting the analysis at the provincial level in shorter previous periods, not covering the time section analyzed in this work. As a result, there is an urgent need for a more detailed and comprehensive research analysis that can provide a scientifically rigorous approach for planners and policymakers in the country on the situation of territorial differences and the performance of the economy at the cantonal level.

The main results obtained show that the Ecuadorian cantons analyzed have experienced positive mobility, i.e., at the end of the analysis period, a significant percentage of cantons are in higher relative positions compared to the initial situation. In addition, empirical evidence corroborates the existence of conditional sigma and beta convergence in Ecuador in the period 2007-2017.

2. Literature Review

Differences in the growth levels of economies around the world have been explained through various theories over time. Thus, the exchange of ideas in an academic environment has led to two main approaches that explain such differences between countries. First, the neoclassical theory of economic growth formulated by Solow (1956) who mentions that given the existence of a constant, unique and stable state that is accessible regardless the initial conditions, a higher rate of economic growth for poor economies is predicted in contrast to rich economies, and consequently there will eventually be convergence of growth rates and per capita income levels.

On the other hand, endogenous growth theories consider that the rate of economic growth depends basically on three factors: physical capital, human capital, and technical knowledge or progress, which are cumulative and generate externalities. When considering this postulate, the new endogenous growth models replace neoclassical postulates of perfect competition and consistent yields at scale with imperfect competition and increasing yields. As a result, these new theories consider economic growth as an endogenous process of the economic system (Barro & Sala-i-Martin, 1991). In this mainstream, there are several works that analyze this new conception of economic growth, such as Romer (1986), Lucas (1988), Rebelo (1991) and Young (1991), among others.

Based on this latter approach, Barro and Sala-i-Martin (1991) design a proposal to address the issue of convergence, which starts from a neoclassical model and predicts the existence of a negative relationship between initial income and growth rate, under the idea that the difference between economies is due to their initial physical capital stocks. Later, Barro and Sala-i-Martin (1992a) formulate a methodology for the convergence study that consists of estimating a multiple regression model where the rate of GDP growth per capita is a function of the initial GDP per capita and the value in its constant state. However, this methodology has been transformed into a simple linear regression model, where the constant state value of each country's GDP is contained in the term of disturbance. This process implies that all countries approach the same stationary state, which is not correlated with their per capita income level. However, this methodology has been transformed into a simple linear regression model, where the constant state value of each country's GDP is contained in the term of disturbance. This process implies that all countries approach the same stationary state, which is not correlated with their per capita income level.

In addition, Barro and Sala-i-Martin (1992b) also define another type of convergence that relates to the first, which is called sigma. This conception of convergence is closely related to an idea of dispersion of per capita income among groups of countries over time. These two main concepts can be summarized as follows:

Beta Convergence: it establishes the inverse relationship between the growth rate and the initial level of per capita income. This implies faster growth for poor nations.

Sigma convergence: it occurs when the dispersion of per capita income tends to decrease over time, i.e., this indicator expresses a type of inequity in the distribution of income.

In contrast, given the progress made by Barro and Sala-i-Martin in the empirical analysis of inter-country convergence, Quah (1993) argues that there is no need

Retos, 10(19), 2020

to talk about a specific point where economies converge, but these regions form, in the long term, groups of rich and poor nations. Therefore, he proposes a new methodology consisting in the development of a mobility matrix by using per capita income to establish convergence towards two income levels, rather than a single state. This work in the field of long-term dynamics has made an important contribution to understanding the trends followed by a world divided between rich and poor, and today, this approach continues to be used in convergence analysis.

In the global context, the study conducted by Miller and Upadhyay (2002) for a joint sample of developed and developing countries finds statistical evidence, supporting the absolute and conditional β convergence of total factor productivity, but only the conditional convergence of real GDP per worker. In addition, Desli and Gkoulgkoutsika (2019) study the world's highest-income economies by world bank rankings during the period 1980-2016, and conclude that the group of the world's highest-income economies effectively participate in a convergence process underway, although the financial crisis could have disrupted it.

Similarly, Chapsa *et al.* (2015) in their analysis of conditional income β convergence within the EU-15 during the period 1995 to 2013, incorporates two institutional variables, corruption and bureaucracy. The study finds evidence of the negative impact of corruption on growth and the zero effect of bureaucracy on the performance of the EU's wealthiest members. However, the countries analyzed appear to be on the path of convergence once the econometric model is controlled by economic factors such as investment in physical and human capital, inflation, public consumption and openness.

On the other hand, in Latin America, Azzoni (2001) analyses the evolution of regional inequality in Brazil over a period of 57 years through the convergence analysis calculated in two ways, the neoclassical model and the coefficient of variation. The findings indicate the presence of regional income convergence in Brazil, but with significant fluctuations in the evolution of inequality over time. Silva (2010) in the convergence analysis of growth between Colombian states during the period 1975 to 2000, finds statistical evidence supporting the convergence hypothesis, but at low speed, about one percent per year.

Mora (2003) uses the Quah approach to discuss the idea of convergence clubs and argues that, although the discussion on the results of the sigma and beta convergence type, it is reasonable, and the calculation form of M (Stochastic core) is very debatable; therefore, the transition analysis between countries is limited because it is reduced to a one-step Markov chain. In addition, Islam (2003) highlights the benefit of using Quah's approach to analyze convergence in strata, however, the author warns that the analysis should be complemented by other statistical tools to provide a better description of trends in convergence and transition. The use of Markov chains has been extended, and in some cases it has been improved by the use of different variables, Moncada and Hincapie (2013) used Markov chains to build classic and spatial Markov transition probability matrices, concluding that there is convergence in the quality of life as measured by the indicator of the quality of life of the communes and municipalities of Medellin for the period 2004-2011.

In this study, these three approaches are addressed in the following order: Quah's mobility matrix, σ convergence, and then β convergence, to achieve the research objectives.

3. Materials and methods

Regarding the data, this empirical work uses Gross Aggregate Value (GVA) data for 220 out of 221 cantons that make up Ecuador, as it is not possible to include Quinsaloma because it was created in 2007 and there is no data for three consecutive periods. The temporary section includes the period 2007 to 2017 due to the availability of data. The information is provided by the official statistics of the Central Bank of Ecuador (ECB), which is in nominal terms, being necessary its transformation to real terms, therefore, using the implicit deflators of the AVA by industry, it was proceeded to calculate the values of the series in thousands of U.S. dollars at 2007 prices. In addition, the estimated annual population which was required to express the variables in per capita terms, was obtained from Ecuador's National Institute of Statistics and Census (INEC).

On the other hand, to make the econometric estimation of the conditional beta convergence model, information on the characteristics of each canton should be collected in order to explain territorial differences. To do this, four variables obtained from the official statistics published by INEC are used in its Population and Housing Census 2010 database, and by the Ecuador Electricity Corporation (CONELEC) for 2012. First, the percentage of homes in acceptable living conditions is defined as the number of houses whose living conditions are considered acceptable from the combination of the predominant materials of the floor, wall and ceiling; and, the status of these materials, expressed as a percentage of the total housing for a canton. Second, the illiteracy rate, defined as the percentage of the population aged 15 or over that cannot read, write or understand a simple and brief text about their daily life, in the survey period. Third, the average schooling of the population aged 24 and over is defined as the average number of years approved in formal education institutions, for people who are 24 years old or older in a specific territory. Finally, the billed Energy of the residences is expressed in gigawatt hours (Gwh) for a specific territory. It should be noted that this last variable is used as a logarithm to facilitate its interpretation.

4. Quah mobility matrix

This work follows the same methodology proposed by Quah (1993). In his work, the author transforms the per capita income of the countries analyzed into fractions of the global average per capita income and sets 5 categories that are classified as follows:

- Category ¼: it corresponds to economies whose level of per capita income is lower or equal to the global average.
- Category ½: This category covers those economies that have a higher per capita income than the global average and lower or equal to the global average.
- Category 1: All economies whose per capita income is higher than the global average and lower or equal to the value of the global average.
- Category 2: This category means that the per capita income of the economy is higher than the global average and lower or equal to 2 times the same global average.
- Category ∞: economies whose per capita income level is higher than 2.

Retos, 10(19), 2020

Once the resulting matrix has been formed, values outside the main diagonal show the state change in economies regarding their initial situation.

5. Sigma Convergence

According to Barro and Sala-i-Martin (2004), sigma convergence can be expressed as:

$$\sigma^2 = \left(\frac{1}{N}\right)\sum\left[\log(y_{i,t}) - \mu_t\right]^2 \quad (1)$$

Where $y_{i,t}$ denotes the GVA per capita of the economy i in year t and μ_t is the mean $\log(y_{i,t})$. However, if N is large enough, then the population variance approaches the sample. Since this study considers all cantons in Ecuador, the formula to be used is equation number 1 with variance in population.

6. Conditional beta convergence

Sala-i-Martin (1994), proposes the following econometric model to test the convergence hypothesis in per capita terms, at the same rate of income growth and at the same level of capital (stationary state), and if the initial economic differences tend to disappear (known as "absolute β convergence" or unconditional):

$$(1/T)*\log(y_{iT}/y_{i0}) = \alpha - \left[\frac{1 - e^{-bT}}{T}\right]*\log(y_{i0}) + w_{i0,T} \quad (2)$$

However, since in a group of economies i = 1.2 ... N; the rate of per capita income growth between the year t and t-1 can be expressed as $g_{it} = \log(y_{i,t}) - \log(y_{i,t-1})$, and the convergence hypothesis in this approach expresses that the growth rate is a negative function of the income level in the initial period , equation (2) can be restated as:

$$g_{it} = \alpha - \beta\log(y_{i0}) + \mu_{it} \quad (3)$$

Equation (3) is widely used by economic literature in empirical studies (Barro and Sala-i-Martin, 2004). This equation implies that the average growth rate of per capita production of territory i in the period between 0 and T g_{it} has a negative relationship with the level of per capita production in the initial period y_{i0} . where β is a constant, μ is the convergence rate, and μ is the estimation error.

On the other hand, to contrast conditional or relative convergence, a set of variables P X_{i0} can be added to equation (3), which theoretically affect the steady state of each territory, resulting in:

$$g_{it} = \alpha - \beta\log(y_{i0}) + \sum_{p=1}^{P}\varphi_p X_{i0} + \mu_{it} \quad (4)$$

Both equation (3) and equation (4) will be estimated using the ordinary least square method.

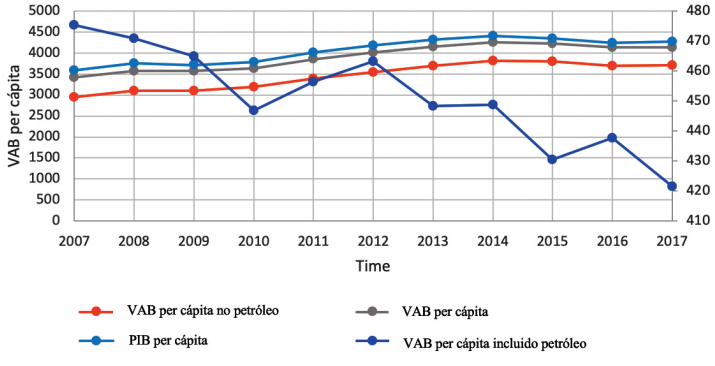
7. Results and discussion

This section presents an analytical description of the information to be used, as well as the results obtained from the implementation of the proposed approaches along with an analysis of the implications in terms of economic growth and development.

7.1 Data analysis

Historically, the areas that are most favored with the implementation of public policies have been those where a large part of economic activity is concentrated, either because it is a capital city (as Quito) or because it has seaports through which the goods enter (as in Manta, Guayaquil and Bolívar) or because it is a place of the first colonial settlements (as Cuenca) or because these are places with lots of tourist activity (as Galapagos). This polarization makes these places as a destination for large migration flows or labor force movements, because the dynamic activity generated on these sites is high, requiring a lot of resources. However, despite the measures taken by governments on duty, which aim to reduce the gap between depressed and developed areas (such as the human development bonus and school scholarships), these policies have often undergone continuing variations, making these polarizations even more drastic over time. Therefore, to assess the performance of the economy in terms of convergences, it is important to analyze the trends that Ecuador's main macroeconomic variables have had during the analysis period considered in this study, prices of raw materials exported by Ecuador (such as oil) and the populism of the main authorities.

Figure 1. Main macroeconomic variables per capita (US dollars 2007)



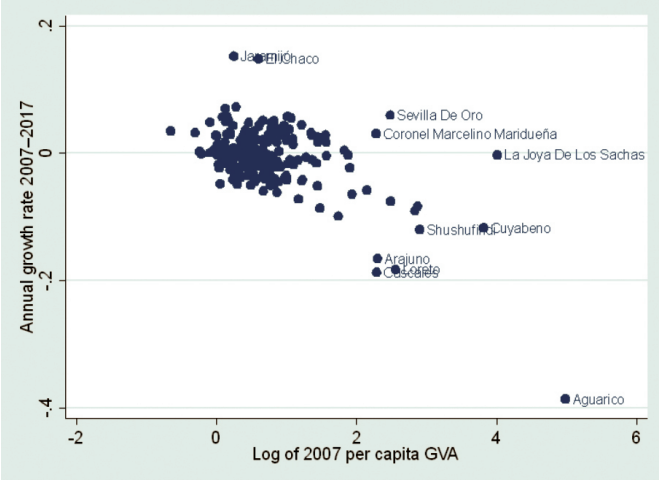
Source: BCE, 2019; INEC, 2019.

Figure 1 shows a high fluctuation in gross value added (GVA) due to oil production. Ecuador has characterized as a highly oil-dependent country and after the oil boom after 2007—a period in which the sale price per barrel of oil reached around $121.66 (BCE, 2009, p. 1) the value added of this industry has reduced dramatically. In addition, the total GVA follows a trend very similar to GDP per capita. Therefore, total gross value Added will be used in the empirical study as there is no GDP data at the cantonal level.

Retos, 10(19), 2020

On the other hand, it is also important to analyze the situation of the cantons in terms of GDP and their relationship to the growth experienced during the period analyzed. It should be noted that this work is performed with 220 cantons, as it is not possible to include the canton Quinsaloma in the province of Los Ríos, because it was created in 2007 and there is no data for three consecutive periods.

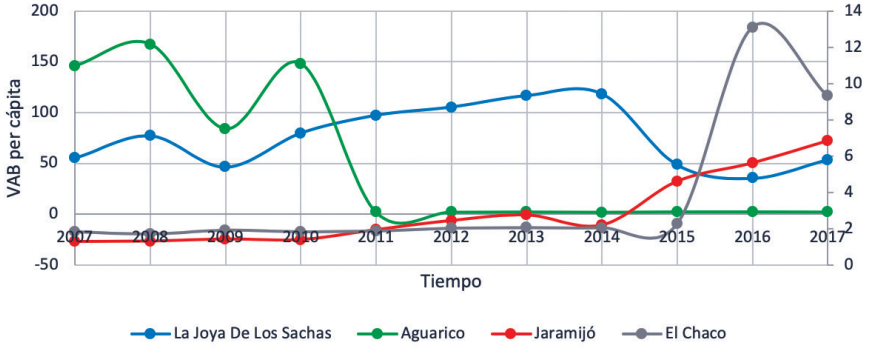
Figure 2. Annual growth rate 2007-2017



Source: BCE, 2019; INEC, 2019.

As shown in Figure 2, there is the presence of certain data that could be considered atypical, therefore, the situation of 6 cantons in particular should be analyzed: Jaramijó, El Chaco, La Joya de los Sachas and Aguarico. Of these, only two belong to the same province, thus a possible geographical influence can be ruled out.

Figure 3. Trends in the designated cantons (Thousands of US dollars 2007)



Source: BCE, 2019; INEC, 2019.

The most extreme data, in the negative direction, shown in Figure 2 belong to the Aguarico canton. Figure 3 shows that this canton recorded a high GVA that has decreased significantly over time. However, according to official sources and the local press, this canton has not experienced havoc due to natural phenomena, external shocks, migration or disturbances of any other kind during the period of analysis. It is in the Amazon region of Ecuador, and historically the cities and communities of that region have characterized by being distant and perennially abandoned by central governments, causing a severe limitation for its development; however, this data cannot be classified as atypical, as there is no exogenous factor that may have distorted it.

The data found at the top of Figure 2 corresponds to Jaramijó and El Chaco, which are located in the provinces of Manabí and Napo, respectively. Figure 3 shows that Jaramijó shows a sustained growth pattern that becomes more pronounced since 2014. Although Manabí was hit hard in 2016 by an earthquake, the GVA in this canton does not exhibit a severe recession. On the contrary, El Chaco, belonging to the Amazon region of Ecuador, has benefited from road and highway construction programs, and, according to local press information, due to the initiatives of the current government at that time the tourist activity was also stimulated. However, it cannot be ensured that these initiatives have had an impact that could lead to sustained long-term economic growth, as the change in trend shown in Figure 3 is only evident during the last part of the analysis period. No evidence is found that these two cantons are atypical.

On the other hand, the case of La Joya de los Sachas, a canton of the province of Orellana located in the Amazon, maintained significant growth until 2014, but then it shows a decrease in its pattern. This particular case is an area affected by mining activity in 2018, however, due to the availability of data until 2017, it is not possible to identify the trend of the series after this period. As explained above, this is the case of several other cantons located in the Amazon. However, the data recorded for this canton are high due to the production of cocoa and mango with new agricultural techniques that have allowed these products to be exported (Alvarado, 2015). In addition, during the last century, the missions of Catholic priests contributed to the development of the canton and, thanks to its tourism potential, it is the destination of a large number of retired Americans. Due to this fact, it can be inferred that the situation shown in Figure 3 is close to reality, therefore it does not represent an outlier and it is included in this empirical study.

In summary, the presence of outliers shown in Figure 2 is rejected, with the exception of Quinsaloma, whose observations cannot be included in the analysis, given the limitations detailed above.

8. Quah mobility matrix

Based on the process described in the methodological section, the mobility matrix was developed for the 220 cantons analyzed, taking into account the total gross value added at constant prices of 2007. The average value of GVA per capita among the cantons reached in 2007 was US$3621.00, while in 2017 it recorded a value of US$2662.09. This would seem to show a general deterioration in the Ecuadorian eco-

Retos, 10(19), 2020

nomy, however, this behavior is due to the high values recorded by certain cantons in the initial period, for which the standard deviation between the cantons in 2007 is US$ 10941.89, while for 2017 is lower, with a value of US$4106.75. For this reason, the possibility of data inconsistency is rejected.

Each cell in the matrix (i, j) should be interpreted as the probability that an economy in the initial state will transit or move to the final j state. Therefore, the data on the main diagonal of Table 1 show the probability of remaining in the same relative position at the end of the analysis period; the top shows an improvement in the observable situation; below, it is understood that performance has declined over the time horizon. The final column in Table 1 provides information on the total number of cantons located in each category in 2007.

Table 1. Mobility Matrix of Ecuador, 2007-2017

Position in 2007	Position in 2017					Number
	Category 1/4	Category 1/2	Category 1	Category 2	Category ∞	
Category 1/4	0.00	1.00	0.00	0.00	0.00	4
Category 1/2	0.01	0.48	0.49	0.02	0.01	105
Category 1	0.00	0.06	0.59	0.32	0.02	81
Category 2	0.00	0.00	0.18	0.41	0.41	17
Category ∞	0.00	0.08	0.23	0.23	0.46	13
Total Observations						220

From the first row in Table 1, the results show a 100% probability of moving to a higher stratum, at a level higher than a quarter of the national average for GVA recorded in 2017 but less than half that value. This result shows that the country's poorest cantons group have improved their situation during the period of analysis. In this category are the cantons 24 de Mayo, Jama (located in Manabí), Huamboya and Taisha (located in Morona Santiago). However, this latter group located in the Amazon region of Ecuador has been controversial in the topics related to the extraction of oil and environmental pollution. As a result, it is not possible to guarantee that the level of economic growth and quality of life of its inhabitants is better today, as the information suggests.

Similarly, the second row in Table 1 shows that only 1% of cantons have deteriorated their situation. However, 49% of all cantons have reached a higher category, and 2% have reached two higher categories, ranking between the national average and twice as high. In addition, this category contains the highest number of observations and the highest positive transition rate recorded throughout the analysis period.

Cantons that recorded below the national average, but higher than half, show the highest probability of remaining in the same state at the general level. However, the percentage of cantons that moved to a higher level is 32%, which is significantly higher than the percentage of reduced mobility.

As a result, cantons whose GVA per capita was higher than the national average at the beginning of the period show a 41% chance of moving to a higher category, which is more than double the national average in the final position. This value matches the probability of remaining in the same state. On the other hand, the probability of moving to a lower category registers a value of 18%. Therefore, the cantons in this category have performed well because they have experienced upward mobility at a level that is twice the national average recorded in that year.

The category that deserves special attention (as well as the poorest economies) is the one that includes the richest cantons. In this case, the results in Table 1 indicate that there has been a significant deterioration of that group, since the probability of heading towards the two recessionary states is 23%, and even more, it is clear that the probability of a three-state reduction is 8%. It is important to note that this category excludes cantons that have concentrated the wealth generated of the country, excepting one (San Cristobal, Galapagos) due to its tourist activities (Vasquez, 2015). As a result, evidence suggests that this set of cantons has impaired their level of economic activity.

The overall results show that Ecuador has experienced a noticeable improvement throughout the analyzed period using Quah's proposed approach. On the other hand, since there is no data available at the cantonal level for previous periods and the existing literature is limited to studies at the provincial level for periods prior to the oil boom experienced in 2007 and the dollarization in 2000, a definitive conclusion cannot be obtained on economic growth and convergence at the regional level in the long term. However, the results of this research are consistent with the findings presented in the study conducted by Chimbo and Ñauta (2012), at the provincial level for the period 2001-2007, in which is argued that Ecuador exhibits positive mobility, marking a continuity in the previously recorded trend.

9. Sigma convergence

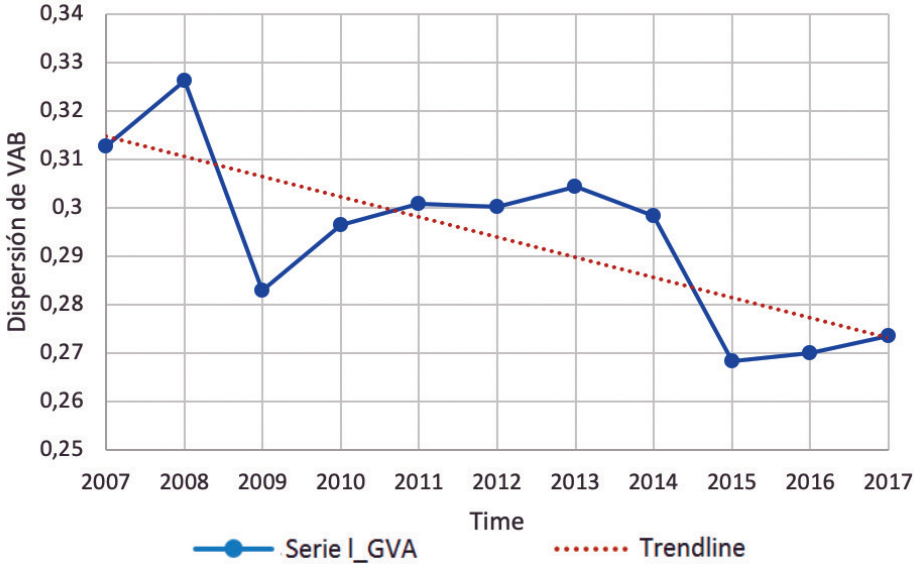
Following the methodology stated by Barro and Sala-i-Martin, Figure 4 shows the relationship between the deviation of the GVA logarithm per capita recorded at the cantonal level with respect to the period of time analyzed.

The dispersion recorded at the beginning of the analyzed period was 0.3126, reaching a value of 0.2735 at the end of the analyzed period. However, Figure 4 shows that the trajectory of the series has not been sustained, showing the largest increase in 2008 with a value of 0.3262 and subsequently a significant drop. In addition, from 2009 to 2014, the series shows a gradual increase culminating in another significant decrease in 2014 and exhibiting a slight increase over the past three years. Despite the behavior shown, the downward slope of the trend suggests that the dispersion has decreased over time. Therefore, the observed patterns of peaks are strongly offset by falls in the dispersion recorded over time, demonstrating a clear pattern of sigma convergence in Ecuador in the period analyzed.

This result is consistent with the findings presented by Riofrío (2009) at the provincial level for the period 1993-2007, who argues that the dispersion trend at the provincial level has declined at a rate that could be considered sustained in the long term. As a result, in considering these findings, it can be concluded that Ecuador has shown remarkable performance in its attempt to reduce territorial economic differences.

Retos, 10(19), 2020

Figure 4. Dispersion of GVA per capita in Ecuador, 2007-2017



This finding suggests that efforts by the government on duty to reduce economic gaps between regions could have had the desired impact. However, it is important to note that this period is characterized by political stability in Ecuador, unlike the past decades, where no president was able to complete the term for which he was elected, and even more so to be re-elected in the general elections. This stability plays an important role at the time of the long-term convergence and growth analysis, because regardless of the measures taken, consistency and compliance with a specific project and plan can show positive results without ignoring the articulated efforts of sectional administrations. However, the result obtained cannot be attributed only to this factor (political stability), as there could be other variables and factors present for achieving the results presented.

10. Beta Convergence

Table 2 shows the results obtained from equations (3) and (4) using Minimum Ordinary Squares. It should be noted that models 1 and 2 exhibited the presence of heteroscedasticity, therefore estimates are presented using robust standard errors.

Table 2. Results of the Absolute and Conditional Convergence model

Variables	Model 1	Model 2	Model 3	Model 4
	Coefficients	Coefficients	Coefficients	Coefficients
β	-0.0362***	-0.0261***	-0.0460***	-0.0467***
Housing			0.0916***	0.0632*
Illiteracy rate			-0.1047	
lnelec			0.0064***	0.0056**
Average schooling				0.0067**
α	0.0220***	0.0157***	-0.0011	-0.0529***
Observations	220	219	220	220
F-statistical	85.597	44.5063	10.3982	11.0893
R-square	0.2819	0.1702	0.4601	0.4676
Aic	-770.618	-804.963	-827.3727	-830.4204
Bic	-763.831	-798.184	-810.4045	-813.4523
legend: *p<.05; **p<.01; ***p<.001				

First, it is important to note that there is evidence of absolute beta convergence at the cantonal level because the coefficient obtained is negative and statistically significant, whose value is around 3.62% annual average. In addition, due to the presence of a value belonging to the Aguarico canton that could be considered an outlier, Model 2 excludes this observation to verify the existence of possible changes in the magnitude of the coefficients. The results are shown in the second column of Table 2. Evidence suggests that the absolute convergence rate decreases to 2.61%, however, the results maintain their validity and statistical significance. As a result, the existence of absolute convergence at the cantonal level in Ecuador is confirmed.

Comparing the results obtained with a previous study carried out for the period 2007 to 2012 by Mendieta (2015), who finds a convergence rate of about 1.37%, it can be seen that the reported value in this work is higher, difference that can be attributed to the time factor. This work considers a longer period of time, and because this type of analysis requires extended time intervals to show statistically stronger results, it is permissible to consider that the convergence rate obtained in this research is closer to reality.

On the other hand, it is necessary to analyze which variables affect this beta convergence process. For this, the conditional beta convergence approach detailed in the methodology section is taken into account and the results are presented in Models 3 and 4 of Table 2. This work uses a set of characteristics related to infrastructure, education and electricity consumption, with the aim of explaining the conditional convergence of each territory. The variables considered for this purpose are: Percentage of homes in conditions of acceptable habitability (housing), illiteracy rate (illiteracy rate), average schooling of the population aging 24 years and older (average schooling), logarithm of billed energy of residences (lnelec), which are obtained

Retos, 10(19), 2020

from the 2010 Census of Population and Housing, except the last one, whose data are recorded by CONELEC for 2012. The difference between the models mentioned above lies in the introduction of the variable that refers to the educational level of the population. In this sense, the introduction in the same model of the variables: average illiteracy rate and schooling would create statistical and theoretical inconsistencies. For this reason, Model 3 takes into account the illiteracy rate, while Model 4 considers the average schooling of the population.

The results shown in Table 2 indicate that the conditional convergence rate is higher for Model 3, compared to the absolute convergence result. The coefficient obtained is negative and statistically significant with an annual average value of 4.60% at a cantonal level. In addition, the conditioning variables bill energy and percentage of households in acceptable living conditions, have positive and statistically significant coefficients, having a logical congruence since a canton that demands a high electricity consumption and has adequate physical infrastructure experiences a higher average growth rate of per capita production. However, although the illiteracy rate is not statistically significant, its appearance seems logical, as a higher illiteracy rate is expected to negatively affect the average growth rate in the analysis period. Finally, an overview of the model allows to show that, according to the value of the F statistic, the variables are statistically significant from a significance level of 1%, in addition, its inclusion improves the R-Squared coefficient, goodness of adjustment.

According to the results of the Model column 4 in Table 2, there is a slight increase in convergence speed that registers a value of 4.67%. The econometric estimation shows a better degree of fit and, as in the case of the previously analyzed model, the statistical significance of the variables is maintained. However, unlike the previous model, all variables introduced in the model prove to be statistically significant at the individual level with a 90% confidence level. A deeper analysis shows that an increase in the percentage of households with adequate habitability is associated with a 0.06 percentage point increase in the average growth rate of per capita production and, in the same way, a 1% increase in the billed amount of electricity produces an estimated average increase of 0.0056% in the average growth rate per capita. This corroborates the hypothesis that, by improving the conditions of domestic infrastructure and increased demand for electricity, it has the effect of reducing territorial economic differences in Ecuador. On the other hand, education is a key factor in the economic growth and development of the territories. These magnitudes are consistent with the higher level of convergence, as the positive impact they produce in the analysis model is positive, denoting their relevance to the convergence process.

A statistical comparative analysis of models makes it possible to establish that the best econometric estimate is presented in Model 4 of Table 2 given the adjustment for the addition of new explanatory variables, according to Akaike (1974) and Schwarz (1978) Bayesian information criteria.

This set of results implies that the government should improve the living conditions of the population in terms of physical infrastructure and access to basic services, as well as the educational level of the population. However, in order to reduce the economic gaps between the different regions of the country, it should be noted that these variables are only a sample of the possible areas of intervention and the

existence of other factors that contribute to the reduction of territorial differences. In this sense, multiple research and empirical evidence point to the importance of education, as well as investment in infrastructure, in a country's economic growth, and even more so in the degree of economic inequality and poverty in a territory. These results are consistent with the findings of Duffy-Deno and Eberts (1991) that show the importance of infrastructure investment and its impact on regional development. Démurger (2001) whose contribution explains the impact that infrastructure development has had on reducing regional differences in China, and Adshead *et al.* (2019), who mentions that long-term infrastructure planning is efficient in meeting the sustainable development goals in Curacao. In addition, the study conducted by Goetz and Hu (1996) highlights the importance of education as a key factor in the formation of human capital and its contribution to the speed of income convergence. Similarly, Kruss *et al.* (2015) and Rivza *et al*. (2015) argue that strengthening the educational process and curricula would lead to an improvement in regional growth trends.

Based on the results, it is possible to analyze two relevant aspects that help explain the degree of territorial convergence and its long-term impact. First, Ecuador currently shows major deficiencies in terms of physical infrastructure among cantons, with the most disadvantaged being those with a large percentage of indigenous, Afro-descendant population and, mainly, the Amazon region. While it is true that during the analyzed period the political stability and investment in social dimensions such as work, health and education has been observed, there are still great differences between the territories that concentrate the wealth of the country because of their historical and geographical characteristics, and those that have no such advantages. This is reflected in the results, specifically in the relatively low value of the convergence rate.

Second, an effective and immediate measure widely suggested in the economic literature consists of an academic stimulus that, as noted above, has great benefits both in the short and long term. However, in Ecuador, access to formal education is strongly conditioned in many cases by the socio-economic level of the household. Although education at the primary and secondary levels is mostly free, its quality is widely questioned. One way or another, there are large differences between schools, the best being generally located in the big cities (which concentrate most of the country's economic activity), in contrast, those schools located in the rural sector lack of many comforts. Rural education is one of the most important factors in the regional development (Biriescu & Babaita, 2014), thus sectional and municipal governments should focus more efforts on strengthening education programs in the rural sector. This reality produces an incentive for internal migration, however, often this decision is conditioned by the economic situation of the household (opportunity cost) and the perception of future benefits in relation to employment. In this scenario, it is very likely to note that when the decision is made to migrate, it is not done with the desire to return to the area of origin since, in many cases, there are no jobs that allow to exploit the acquired knowledge. On the other hand, the decision to remain implies a low level of education in the territory. Both phenomena contribute to depressed areas to continue, while rich areas continue to grow, increasing territorial differences in Ecuador.

On the other hand, a mathematical exercise, based on the informed magnitude of the beta coefficient and the assumption of geometric growth used in the conver-

Retos, 10(19), 2020

gence hypothesis, provides an idea of the degree of convergence in temporal terms. Taking as a reference the rate of absolute convergence reported by Model 1 of Table 2, it is possible to determine that the canton Salitre of the province of Manabí (the poorest) would take approximately 120.86 years to reach the average production per capita of La Joya de los Sachas of the province of Orellana (the richest). This result shows that while there is statistical evidence of absolute convergence, it is not enough to close economic gaps in Ecuador in the short term. Conversely, when considering the conditional convergence coefficient obtained from Model 4 in Table 2, a canton would broadly take approximately 14.5 years on average to reach twice its per capita production recorded in 2017, *ceteris paribus*. These results show more clearly the magnitude of the cantonal convergence process in Ecuador and its temporal implications. As a result, in addition to empirical corroboration of the beta convergence hypothesis at the cantonal level during the period 2007-2017, it has been shown that it can be considered slow when analyzing its temporal dimension.

11. Conclusions

The results of this investigation can be grouped into three main findings. First, it is concluded that Ecuador has experienced internal mobility in a positive sense at the cantonal level, i.e. according to Quah's mobility matrix, a significant part of the cantons analyzed shows an improvement in the final situation, ranking in categories higher than initially reported. The implications of this outcome suggest that the policies implemented and the political stability experienced in this period (given the coincidence with the period of government at the time) could have contributed to improving the economic situation of the country and its economic growth. However, more studies are needed to ensure the importance of the political variable.

Second, the evolution in the degree of dispersion in per capita production shows that Ecuador has experienced a systematic reduction in the variability of this indicator over time, which supports the existence of sigma convergence. In this sense, Ecuador's economy, as a whole, shows a continuous improvement during the period of analysis.

Third, empirical evidence corroborates the existence of absolute and conditional beta convergence at the cantonal level for the period 2007-2017. In the first case, the rate of convergence amounts to the average 3.62% per year, while, in the second case, when considering the physical infrastructure of households, their electricity consumption and their educational level, significant results are obtained, reaching 4.67% annual percentage. Therefore, the existence of beta convergence for the Ecuadorian case is concluded.

On the other hand, the combination of the approaches used in this study ensures that, although the main findings are favorable and show good performance of the Ecuadorian economy, they are still not sufficient to effectively close the gaps in the medium term and probably in the long term. Overall, Ecuador has shown a systematic improvement in its economic situation over time, however, it is up to the government in turn to undertake new, more effective initiatives to ensure an effective reduction of economic differences between the territories of the country, since the period analyzed

is characterized by an oil boom; therefore, it would be it is important to verify that the obvious closure of the gaps in this study is not reversed in the coming years.

The main reflections for economic policymakers in Ecuador are the emphasis to be placed on improving the quality of household infrastructure and the educational level of individuals as factors relevant to the development, among other. However, the incidence of other variables that were not included in this study and their relevance in reducing economic differences in a territory is not ruled out. In addition, the empirical evidence provided by this study in Ecuador during the period 2007-2017 is supported by the economic literature and works carried out on this subject.

The main limitations found were in relation to the data availability. At the moment, Ecuador does not maintain a cantonal record for years outside the analysis period considered in this study. Similarly, official statistical sources do not have information at the cantonal level on the relevant factors that the economic literature suggests to include in a conditional convergence analysis.

Finally, future research could include longer periods of time and discuss the possibility of including other conditioning factors that help explain the territorial differences present in Ecuador.

References

Adshead, D., Thacker, S., Fuldauer, L. I., & Hall, J. W. (2019). Delivering on the Sustainable Development Goals through long-term infrastructure planning. *Global Environmental Change, 59*. https://doi.org/10.1016/j.gloenvcha.2019.101975

Akaike, H. (1974). A New Look at the Statistical Model Identification. I*EEE Transactions on Automatic Control, 19*(6), 716-723. https://doi.org/10.1109/TAC.1974.1100705

Alvarado, R. J. (2015, diciembre). *Potencial de las empresas petroleras para el desarrollo local amazónico: análisis a partir de su incidencia en el sector agropecuario del cantón la Joya de los Sachas*. (Tesis de maestría). Quito: Repositorio Digital FLACSO Ecuador. Recuperado de: https://bit.ly/2HgXyRM

Azzoni, C. (2001). Economic growth and regional income inequality in Brazil. *The Annals of Regional Science, 35*, 133-152. https://doi.org/10.1007/s001680000038

Barro, R., & Sala-i-Martin, X. (1991). Convergence Across States and Regions. *Brookings Papers on Economic Activity, 22*(1), 107-182.

Barro, R., & Sala-i-Martin, X. (1992a). Convergence. *Journal of Political Economy, 100*(2), 223-251. https://doi.org/10.1086/261816

Barro, R., & Sala-I-Martin, X. (1992b). Public Finance in Models of Economic Growth. *The Review of Economic Studies, 59*(4), 645-661. https://doi.org/10.3386/w3362

Barro, R., & Sala-i-Martin, X. (2004). *Economic Growth* (2nd ed.). Cambridge: Massachusetts Institute of Technology.

BCE (diciembre de 2009). Banco Central del Ecuador. Recuperado de: https://bit.ly/38o4QyZ

BCE (mayo de 2019). Banco Central del Ecuador. Recuperado de: https://bit.ly/39sh7T6

Biriescu, S., & Babaita, C. (2014). Rural Education, an Important Factor of Regional Development in the Context of Local Government Strategies. *Procedia-Social and Behavioral Sciences, 124*, 77-86. https://doi.org/10.1016/j.sbspro.2014.02.462

Chapsa, X., Tsanana, E., & Katrakilidis, C. (2015). Growth and Convergence in the EU-15: More Evidence from the Cohesion Countries. *Procedia Economics and Finance, 33,* 55-63. https://doi.org/10.1016/S2212-5671(15)01693-7

Chimbo, J., & Ñauta, F. (2012). *Movilidad de las provincias del Ecuador desde el punto de vista del VAB, 2001-2007. Matriz de Quah*. Cuenca: Degree Work, Universidad de Cuenca. Recuperado de: https://bit.ly/2SnA7fQ

Démurger, S. (2001). Infrastructure Development and Economic Growth: An Explanation for Regional Disparities in China? *Journal of Comparative Economics, 29*(1), 95-117. https://doi.org/10.1006/jcec.2000.1693

Desli, E., & Gkoulgkoutsika, A. (2019). Economic convergence among the world's top-income economies. *The Quarterly Review of Economics and Finance*. https://doi.org/10.1016/j.qref.2019.03.001

Duffy-Deno, K. T., & Eberts, R. W. (1991). Public infrastructure and regional economic development: A simultaneous equations approach. *Journal of Urban Economics, 30*(3), 329-343. https://doi.org/10.1016/0094-1190(91)90053-A

Goetz, S. J., & Hu, D. (1996). Economic growth and human capital accumulation: Simultaneity and expanded convergence tests. *Economics Letters, 51*(3), 355-362. https://doi.org/10.1016/0165-1765(96)00827-0

INEC (2019, mayo). Instituto Nacional de Estadísticas y Censos. Recuperado de: https://bit.ly/39CDeGR

Islam, N. (2003). What have We Learnt from the Convergence Debate? *Journal of Economic Surveys, 17*(3), 309-362. https://doi.org/10.1111/1467-6419.00197

Kruss, G., McGrath, S., Petersen, I.-h., & Gastrow, M. (2015). Higher education and economic development: The importance of building technological capabilities. *International Journal of Educational Development, 43*, 22-31. https://doi.org/10.1016/j.ijedudev.2015.04.011

Lucas, R. (1988). On the mechanics of economic development. *Journal of Monetary Economics, 22*(1), 3-42.

Mendieta, R. (2015). La hipótesis de la convergencia condicional en Ecuador: un análisis a nivel cantonal. *Retos. Revista de Ciencias de la Administración y Economía, 5,* 13-26. https://doi.org/10.17163/ret.n9.2015.01

Miller, S. M., & Upadhyay, M. P. (2002). Total factor productivity and the convergence hypothesis. *Journal of Macroeconomics, 24*(2), 267-286. https://doi.org/10.1016/S0164-0704(02)00022-8

Moncada, J., & Hincapié, D. (2013). Convergence of the Quality of Life in Medellin 2004–2011. A Spatial Nonparametric Analysis. *Ensayos sobre Política Económica, 30*(70), 267-314. doi:https://doi.org/10.1016/S0120-4483(13)70034-4

Mora, J. J. (2003). Crecimiento y convergencia: A propósito de Quah. *Estudios Gerenciales, 89,* 57-72. Recuperado de: https://bit.ly/2SoMmZW

Quah, D. (1993). Empirical cross-section dynamics in economic growth. *European Economic Review, 37*(2-3), 426-434. https://doi.org/10.1016/0014-2921(93)90031-5

Rebelo, S. (1991). Long Run Policy Analysis and Long Run Growth. *Journal of Political Economy, 99*(3), 500-521.

Riofrío, L. (2009). *Capital humano y procesos de convergencia en el Ecuador.* Degree Work. Loja: Universidad Técnica Particular de Loja. Recuperado de https://bit.ly/39x6zlK

Rivza, B., Bikse, V., & Brence, I. (2015). Evaluation of Higher Education Study Programmes and their Development Trends as Drivers of Regional Growth. *Procedia Economics and Finance, 26*, 643-650. https://doi.org/10.1016/S2212-5671(15)00804-7

Romer, P. (1986). Increasing Returns and Long-Run Growth. *Journal of Political Economy, 94*(5), 1002-1037.

Sala-i-Martin, X. (1994). Cross-sectional regressions and the empirics of economic growth. *European Economic Review, 38*(3-4), 739-747.

Schwarz, G. (1978). Estimating the Dimension of a Model. *The Annals of Statistics, 6*(2), 461-464. https://doi.org/10.1214/aos/1176344136

Silva, A. (2010). *Economic Growth and Poverty Reduction in Colombia*. Frankfurt Am Main: Peter Lang AG. https://doi.org/10.3726/978-3-653-00274-4

Solow, R. (1956). A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics, 70*(1), 65-94.

Vásquez, M. E. (2015). Propuesta para implementar un ecoturismo rural en la isla San Cristóbal. (Tesis de Pregrado). Guayaquil, Ecuador. Recuperado de: https://bit.ly/31QaN5r

Young, A. (1991). Learning by Doing and the Dynamic Effects of International Trade. *The Quarterly Journal of Economics, 106*(2), 369-405.

Basic writing rules

Universidad Politécnica Salesiana del Ecuador

1. General information

"Retos" is a bilingual scientific publication by the Universidad Politécnica Salesiana de Ecuador, which has been edited on a bi-annual basis since January 2011. The journal focuses on Development and transdisciplinary issues including Public Administration, Social Economics, Marketing, Tourism, Entrepreneurship, Management, Administrative and Economic Science, etc.

It is an arbitrated Scientific Journal that uses an external evaluation system known as *peer-review*, employing *double-blind review*, in accordance with the American Psychological Association (APA) style rules. By using this system, the authors have access to an objective, impartial and transparent review process, which facilitates their publication being included in databases, repositories, and international indexed references.

"Retos" is indexed in the selective directory and catalog of the Online Regional Information System for Scientific Journals in Latin America, the Caribbean, Spain, and Portugal (Latindex), in the REDALYC Scientific Information System, the Directory of Open Access Journals in repositories, libraries, and specialized catalogs in Ibero-America.

The Journal is published with two different editions: printed (ISSN: 1390-62911) and electronic (e-ISSN: 1390-8618), in Spanish and English, and each article is identified with a DOI (Digital Object Identifier System).

2. Scope and policies

2.1. Themes

Original contributions in Development issues, as well as related fields: Public Administration, Social Economics, Marketing, Tourism, Entrepreneurship, Management...and all other disciplines related to the central thematic issue.

2.2. Contributions

"Retos" preferably publishes the results of empirical research about Development, written in Spanish and/or English, while reports, studies, and proposals are also accepted, as well as reviews of state-of-the-art literature.

Retos, 10(19), 2020

All of the publications must be original, never have been published in any other journal, and not be undergoing any arbitration or publication processes. Contributions to the journal can include any of the following:

- **Research:** 5,000 to 6,500 words of text, including the title, abstracts, keywords, tables, and references.
- **Reports, Studies, and Proposals:** 5,000 to 6,500 words of text, including the title, abstracts, tables, and references.
- **Reviews:** 6,000 to 7,000 words of text, including tables and references. Justified, current, and selective references shall be evaluated, and should include around 70 publications.

"Retos" is published bi-annually (20 articles per year), in April and October, and each edition has two sections with five articles each, the first containing a **Monograph** theme edited by subject matter experts, and a second **Miscellaneous** section, made up of diverse contributions related to the publication's theme.

3. Presentation, structure, and submission of manuscripts

Papers are to be presented with Arial 10 typeface, single line spacing, all justified, without indentation or blank spaces between paragraphs. A space is only to be included between the major sections (title, authors, abstracts, keywords, credits, and epigraphs). All margins on each page must be 2 cm.

The papers are to be presented in Microsoft Word format (.doc or .docx), and the file is to be anonymous in the File Properties such that the author(s) is(are) not identified.

Manuscripts are to be submitted only through the OJS (Open Journal System), in which all authors must first register. Original papers sent via email or another interface are not accepted.

3.1. *Manuscr*ipt Structure

For papers that are empirical research, the manuscripts are to follow IMRDC structure, while Notes and Contributions epigraphs are optional. Papers that constitute reports, studies, proposals, and reviews are afforded greater flexibility in terms of epigraphs, especially in relation to Materials and Methods, Analysis and Results, and Discussion and Conclusions. All types of papers are required to include References.

1) **Title (Spanish) / Title (English):** Concise but informative, the first line in Spanish and the second, in English. Maximum 80 characters are accepted, including spaces. The Editorial Board is allowed to propose changes to the author's title.
2) **First and last names:** of each of the authors, organized in order of priority. Maximum three authors are accepted per original paper, although justified exceptions may be allowed, based on the theme, complexity, and length. The names are to be followed by the professional category, workplace, each author's email address and ORCID number. It is mandatory to include whether the author has a doctorate degree (Dr. before the name).

3) **Abstract (Resumen, Spanish) / Abstract (English):** This section can contain a maximum of 230 words, first in Spanish and then in English. The abstract shall concisely contain the following, and in this order: 1) Justification of the theme; 2) Objectives; 3) Methods and sample; 4) Main results; 5) Main conclusions. It should be written impersonally "This paper analyzes..." In the abstract, automatic translation is not accepted due to its poor quality.
4) **Keywords (descriptores, Spanish) / Keywords (English):** Six keywords are to be included for each language, and must be directly related to the paper's theme. This requirement shall be scored based on whether the keywords can be found in the UNESCO Thesaurus.
5) **Introduction and State of the Question:** The section proposes the question, the context of the issue surrounding it, justification, basis, and proposal for the study, using bibliographic references, including the most important up-to-date literature on the theme, both nationally and internationally.
6) **Material and Methods:** This is to be composed in such a way that the reader can easily understand how the research was performed. As appropriate, describe the method, sample, sampling, and refer to the type of statistical analysis used. If it is an original method, present the reasons for applying it, and describe any possible limitations.
7) **Analysis and Results:** This section should seek to highlight the most important observations, and without including any value judgments, describe the methods used. Throughout the text, essential tables and figures shall be included in a logical sequence, without repeating any data.
8) **Discussion and Conclusions:** This section summarizes the most important findings related to any observations from relevant studies, pointing out contributions and limitations, without repeating data from other sections. The discussion and conclusions paragraph is to include inferences and new lines of research for the future.
9) **Contributions and acknowledgment (optional):** The Science Editors Board recommends that the author(s) specify the financing source for their research. Priority shall be given to work endorsed by competitive national or international projects. Regardless, for the manuscript to be scientifically evaluated, it is to be anonymized with an XXXX only for the initial evaluation, in order to avoid identification of any of the authors or research teams, which are to be named in the Cover Letter and later, in the final manuscript.
10) **Notes** (optional) are included, only if necessary, at the end of the article (before the references). They are to be included manually, since the Word footnotes are not recognized by the layout systems. Note numbers are to be included using superscript, both in the text and in the final note. Notes including simple bibliographic references (without comments) are not allowed, since these are supposed to be included in the references.
11) **References:** Bibliographic references are to follow the text references. Under no circumstances should references be included that have not been cited in the text. There should be enough references in order to contextualize the theoretical framework, and be based on criteria of contemporary relevance and importance.

They are presented alphabetically, according to the author's last name (if the last name has more than one word, based on the first word of the last name).

3.2. Rules for references

Periodical publications

Journal article (one author) Valdés-Pérez, D. (2016). Incidencia de las técnicas de gestión en la mejora de decisiones administrativas [Impact of Management Techniques on the Improvement of Administrative Decisions]. *Retos*, *12*(6), 199-2013. https://doi.org/10.17163/ret.n12.2016.05

Journal article (up to six authors): Ospina, M.C., Alvarado, S.V., Fefferman, M., & Llanos, D. (2016). Introducción del dossier temático "Infancias y juventudes: violencias, conflictos, memorias y procesos de construcción de paz" [Introduction of the thematic dossier "Infancy and Youth: Violence, Conflicts, Memories and Peace Construction Processes"]. *Universitas*, *25*(14), 91-95. https://doi.org/10.17163/uni.n25.%25x

Journal article (more than six authors): Smith, S.W., Smith, S.L. Pieper, K.M., Yoo, J.H., Ferrys, A.L., Downs, E.,... Bowden, B. (2006). Altruism on American Television: Examining the Amount of, and Context Surronding. Acts of Helping and Sharing. *Journal of Communication*, *56*(4), 707-727. https://doi.org/10.1111/j.1460-2466.2006.00316.x

Journal article (with no DOI). Rodríguez, A. (2007). Desde la promoción de salud mental hacia la promoción de salud: La concepción de lo comunitario en la implementación de proyectos sociales. *Alteridad*, *2*(1), 28-40. (https://goo.gl/zDb3Me) (2017-01-29).

Books and chapters of books

Complete books: Cuéllar, J.C., & Moncada-Paredes, M.C. (2014). *El peso de la deuda externa ecuatoriana*. Quito: Abya-Yala.

Chapters of a book: Zambrano-Quiñones, D. (2015). *El ecoturismo comunitario en Manglaralto y Colonche*. En V.H. Torres (Ed.), Alternativas de Vida: Trece experiencias de desarrollo endógeno en Ecuador (pp. 175-198). Quito: Abya-Yala.

Electronic media

Pérez-Rodríguez, M.A., Ramírez, A., & García-Ruíz, R. (2015). La competencia mediática en educación infantil. Análisis del nivel de desarrollo en España. Universitas Psychologica, 14(2), 619-630. https://doi.org.10.11144/Javeriana.upsy14-2.cmei

All reference that have a DOI (Digital Object Identifier System) must be included in the References (which can be obtained at http://goo.gl/gfruh1). All of the journals and books that do not have a DOI are to appear with a link (to the online version, if available, shortened using Google Shortener: http://goo.gl) and the date of query in said format.

Journal articles are to be listed in English, except for those that are available in Spanish and English, in which case, both languages are to be included in brackets.

All internet addresses presented are to be shortened in the manuscript, except for the DOI, which are to be included in the established format (https://doi.org/XXX).

3.3. Epigraphs, Tables, and Graphs

The epigraphs in the article's body are in Arabic numbers. These are to avoid all capital letters, underlining, or bold text. Numbering should use maximum three levels: 1. / 1.1. / 1.1.1. A carriage return is to be used at the end of each epigraph.

Tables are to be included in the text in Word format, according to their order of appearance, with Arabic numbering and captioned with a description of their content.

Graphics or figures should be kept to a minimum and incorporated into the text, in accordance with their order of appearance, with Arabic numbers and captions with a short description. Quality should be no less than 300 ppp, if necessary, using TIFF, PNG, or JPEG formats.

4. Submission process

The papers are to be submitted in two files through the journal's OJS system:

1) **Cover letter and title page,** which includes the title in Spanish and English, first and last names of the authors (standardized format) with ORCID number, abstract in Spanish and English, keywords in Spanish and English, and a declaration that the manuscript constitutes an original contribution that has not been sent for evaluation in another journal, confirmation of the authorship, acceptance (as the case may be) of formal changes to the manuscript according to the rules, and partial transfer of copyright to the publishing house (use the official format).
2) **Completely** anonymized manuscript in accordance with the preceding rules.

All authors are to register on the OJS platform, even if only one of them will be in charge of correspondence. No author can submit two manuscripts simultaneously, with a penalty of not being able to participate in four consecutive editions (2 years).