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# Factors that influence the entrepreneurial intention of psychology students of the virtual modality

## Factores que influyen en la intención emprendedora de estudiantes de psicología de la modalidad virtual

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### Abstract

Most of the studies on entrepreneurial intention have been applied in university students under a face-to-face modality. However, it is also important to consider the context of the students in the virtual mode, that is, those students at a distance, so the objective of this study is to identify the most influential factors in the entrepreneurial intention of enrolled psychology university students in virtual mode. For this, a study with a quantitative approach is applied in which the Factorial Analysis statistical technique is used from the application of a survey to 178 psychology students from the Catholic North University Foundation. The convergent and discriminant validity of the proposed model is evaluated from the Theory of Planned Behavior and the Business Event Model, as well as the reliability and contrast of hypotheses. The results allow identifying relevant relationships between attitude, perceived behavior control, entrepreneurial behavior, and current behavior control with respect to the entrepreneurial intention of the surveyed students. Based on these results, it is possible to identify the most influential factors in the entrepreneurial intention of students, which allow strengthening from higher education institutions and universities the academic programs aimed at fostering the entrepreneurial spirit of psychology students in the virtual modality.

### Resumen

La mayoría de los estudios sobre intención emprendedora se han aplicado a estudiantes universitarios en la modalidad presencial. Sin embargo, también es importante considerar el contexto de los estudiantes en la modalidad virtual, es decir, estudiantes a distancia, por lo que el objetivo de este estudio es identificar los factores más influyentes en la intención emprendedora de estudiantes universitarios de psicología inscritos en la modalidad virtual. Para esto, se aplica un estudio de enfoque cuantitativo en el cual se utiliza la técnica estadística Análisis Factorial a partir de la aplicación de una encuesta a 178 estudiantes de psicología de la Católica del Norte Fundación Universitaria. Se evalúa la validez convergente y discriminante del modelo propuesto a partir de la Teoría del Comportamiento Planificado y el Modelo del Evento Empresarial, así como la fiabilidad y contraste de hipótesis. Los resultados permiten identificar relaciones relevantes entre la actitud, el control de comportamiento percibido, el comportamiento emprendedor y el control de la conducta actual con respecto a la intención empresarial de los estudiantes encuestados. A partir de estos resultados es posible identificar los factores más influyentes en la intención emprendedora de los estudiantes, que permitan fortalecer desde las instituciones de educación superior y universidades los programas académicos orientados a fomentar el espíritu emprendedor de estudiantes de psicología en la modalidad virtual.

### Keywords | palabras clave

Intent, entrepreneurship, student, psychology, university, attitude, behavior, entrepreneurship.

Intención, emprendimiento, estudiante, psicología, universidad, actitud, comportamiento, espíritu empresarial.

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## 1 Introduction

Entrepreneurship has represented one of the great challenges for the economic development of a country. Although entrepreneurial activities may be very suitable for some people with innate abilities, the entrepreneurial challenge has been encouraged from higher education in the curricula of all levels of education (Arango-Botero et al., 2020). This occurs due to the fact that the economies of many countries have little or insufficient capacity to generate jobs, improve the quality of existing employment and share the benefits of economic growth (Fragoso et al., 2019; Hernández-López et al., 2018). Sustainable economic growth is necessary; therefore, the creation of new opportunities is usually represented in the formation of new companies and entrepreneurship. In this sense, higher education institutions (HEIs) and universities seek to train students in an entrepreneurial spirit as a professional option as a way to counteract the problem of unemployment and expand the labor market (Baaba et al., 2018; Zea-Fernández et al., 2020).

The study of entrepreneurship has aroused great interest, both in entrepreneurship itself and in university students (Valencia-Arias et al., 2016). In recent years, numerous studies have been carried out on entrepreneurship and the phenomenon of entrepreneurial intention. The latter is presented as the central factor to predict the business behavior of university students in studies around this topic. This is how personality traits and the environment have been widely addressed in research on this topic in various contexts (Baaba et al., 2018). In this sense, it is necessary to study the factor of entrepreneurial intention in order to understand the entrepreneurial process of students, since it has been considered the most reflective characteristic of entrepreneurial behavior (Sriyakul & Jermisittiparsert, 2019).

Over time, numerous researchers have been concerned with proposing various models that can predict people's intention to adopt something. The Theory of Planned Behavior (hereinafter TPB) has been widely addressed in the study of the entrepreneurial intention of university students, due to its susceptibility to help understand the entrepreneurial process, particularly in two main currents of research: I. Issues related to personality traits or characteristics such as self-efficacy and II. Issues related to the contributions of the demographic and socioeconomic context (Fragoso et al., 2019). Studies focused on the trend related to personality traits suggest that there is a positive relationship between entrepreneurial intention and the training provided in HEIs and universities (Fragoso et al., 2019; Sriyakul & Jermisittiparsert, 2019; Su et al., 2021).

It should be noted that, when approaching entrepreneurship from the field of psychology, its perspective is presented, considering the possibility of assuming and considering entrepreneurship in psychology as that possibility that allows helping to find a wide range of ideas for the application of this science in line with the needs of society (Martínez et al., 2019).

Based on the above, a space of importance is opened from which the training processes of psychology professionals, as a way to strengthen and consider options in which this area of science can propose as a form of projection, in the same line and as evidenced in the publications that have been identified in this regard, it is important to understand that the teaching and learning processes of skills such as innovation and entrepreneurship must materialize in the training of psychology students. The notion of training for entrepreneurship thus extends beyond simply teaching students how to start a new business, some scholars on the subject speak of creating educational environments that incorporate rich learning experiences that collectively promote factors such as desire, self-sufficiency, the awareness of the opportunity, the adaptability to

change and the risk tolerance to create a new company from individual attitudes, and inculcate, in academic institutions, attributes, intentions, behaviors, knowledge and specific skills that are also useful for all aspects of his life (Ndofirepi, 2020; Valencia-Arias et al., 2021).

Most of the studies on entrepreneurial intention applied in the context of university students are based precisely on the relationship between entrepreneurial education and behaviors focused on personality traits. However, it is important to also consider the context of students in the virtual modality. There is a challenge with e-learning courses and which is to motivate students in entrepreneurship, therefore the entrepreneurship curriculum requires more effort. For this reason, it is interesting to apply a study on the main factors that affect entrepreneurial intention in university students in a differentiated cultural context, within a distance education course, since there are not many studies compared to the traditional ones (focused on the relationship between entrepreneurial intention and student behavior) applied to education in virtual education (Guachimbosa et al., 2019). Taking into account the empirical information available, the objective of this study is to identify the most influential factors in the entrepreneurial intention of university psychology students enrolled in the virtual modality.

## **1.1 Literature review and hypothesis**

There is a trend marked by the study of entrepreneurial intention in university students (Reyes-Cruz et al., 2019), since entrepreneurship is considered an alternative to cross borders (Abrigo, 2018; Jiménez-Marín et al., 2021). Therefore, this phenomenon has registered an evolution in the face of the question of what makes an entrepreneur. Many of the aspects cultivated by entrepreneurs have been studied, ranging from personality to economic, social, political, cultural, and educational backgrounds which represent motivations or obstacles for them (García et al., 2016). Much has been said in the literature that future entrepreneurs can be matured in a context of higher education in all areas of knowledge (including psychology), since it has been in this context that most of the factors that influence entrepreneurship have been identified. the decision of a subject to do it or not (Díez-Echavarría et al., 2020; Lee et al., 2005; Jena, 2020). Currently, entrepreneurship education responds to the particular needs of a country to promote entrepreneurship in people from youth through higher education, which must be adapted to the specific needs, capabilities and organizational structures of each territory so that the sociocultural environment can condition the decision to create a company (Tarapuez, 2016).

Seen in a general way, the process of entrepreneurial intention has been developed from various theories that indicate that entrepreneurs form the intention to create a new business influenced by sociocultural factors that, when strengthened, are carried out through an action (Fragoso et al., 2019). The most developed theory in this regard is the one proposed by Ajzen (1991) and the model proposed by Shapero and Sokol (1982), which are explained below.

### **1.1.1 Theory of Planned Behavior**

This theory is based on a social cognitive approach in which it is postulated that intention can predict human behavior, indicating the degree of effort that a person plans to carry out to assume that behavior (Ajzen, 1991). The TPB has been considered as the most powerful research model in the study of the individual intentions of entrepreneurial behavior, therefore it has been a solid theoretical base for researchers

to theorize the relationship of attitudes, norms, and control with behavior mediated by intentions. (Sharahiley, 2020).

Bearing this in mind, the TPB considers the role of entrepreneurial intention in three fundamental factors: attitude, that is, a favorable or unfavorable evaluation of entrepreneurial behavior, control of perceived behavior, which implies the ease or difficulty perceived by the student about the realization of entrepreneurial behavior and the subjective norm which, in a few words, refers to the social pressure received by the student to carry out an entrepreneurial behavior or not (Al-Jubari et al., 2019; Fragoso et al., 2019). In this sense, what the author states is that the entrepreneurial intention refers to a planned and intentional process. In this process, beliefs and assumptions take on a context in which they can take on the role of predictors of student entrepreneurship. This establishes the applicability of the TPB in the study of entrepreneurial intention, opening the way to the following hypotheses:

*H1: Attitude is positively associated with the entrepreneurial intention of university students in virtual mode.*

*H2: Subjective norms are positively associated with the entrepreneurial intention of university students in virtual mode.*

*H3. Perceived behavioral control is positively associated with the entrepreneurial intention of university students in virtual mode.*

#### 1.1.1.1 Intención emprendedora

The intention to establish a new company in the future is what is broadly defined as entrepreneurial intention. According to Ndofirepi (2020), entrepreneurial intention is a strong sign of entrepreneurial potential. Studies of entrepreneurial intention have generally focused on overlapping with the mainstream literature on entrepreneurship. These may focus on personality traits or personal background. To encourage students and young people to become entrepreneurs, it is necessary to know more about the range of factors associated with entrepreneurial intention in different contexts (Ozaralli & Rivenburgh, 2016). Entrepreneurial behavior has played a predictive role of the personal characteristics of an individual in his entrepreneurial intention; thus, it is appropriate to be studied in relational terms. This introduces the assumption that intention is a good predictor of future behavior. In this sense, the TPB postulates that intention provides a link between antecedents and subsequent behavior (Kautonen et al., 2011). Based on the indirect empirical evidence available in this study, the following hypothesis is proposed:

*H4. Entrepreneurial behavior is positively associated with the entrepreneurial intention of university students in the distance education virtual mode.*

Control of current behavior has also been shown to be a predictor of an individual's intention (Ajzen, 1991). This factor is affected by people's perceptions of access to the skills, resources and opportunities necessary to influence an intention to start a new business. As Nguyen (2017) explains, when a person feels that they can control situational factors, they can promote the intention to perform the particular behavior. That is, if a student perceives that she has the current ability to carry out entrepreneurial activities, there is a greater probability that she intends to carry out such activities. This opens the way to the following hypothesis:

*H5. The control of current behavior is positively associated with the entrepreneurial intention of university students in virtual mode.*

#### 1.1.1.2 Attitudes

As Jena (2020) explains, attitudes are habitual ways in which an individual reacts to a situation. They represent the predisposition to respond in a generally favorable or unfavorable way to an idea. Attitudes can be negative, positive or neutral, also latent and more generalized. In this case, it refers to the predisposition to respond positively or negatively to the possibility of creating a new business as an occupation in the future. A more favorable attitude increases the intention to execute an entrepreneurial action, which means that a person who shows high skills (such as high levels of confidence in their ability to create a new company) firmly believes in their own ability to carry out said action (Lechuga et al., 2020). This, of course, is related to entrepreneurial behavior on the part of the students. According to the TPB, attitudes towards a behavior can be explained from the beliefs that the behavior will lead to particular results, which can be positive or negative (Ajzen, 1991; Botsaris & Vamvaka, 2016). Therefore, the following hypothesis is proposed:

*H6. Behavioral beliefs are positively associated with the personal attitude of university students in virtual mode.*

#### 1.1.1.3 Control of perceived behavior

Although intention has been the best predictor of behavior according to the TPB, it is also necessary to consider the environmental factors of individuals. This refers to behavioral control. As explained by Escandon-Barbosa et al. (2021), people develop a behavior because they have the required skills as well as environmental factors (perceived behavior control), in other words, it can be inferred that they are in control of the current situation. In this sense, the control of current behavior refers to the ability of an individual to control himself in the face of his own actions. This influences the perception of behavioral control. Thus, the following hypothesis is proposed:

*H7. Control of current behavior is positively associated with control of perceived behavior of university students in virtual mode.*

There are also beliefs about the presence of factors that can facilitate or make it more difficult to perform an entrepreneurial behavior and the perceived power of these factors. These beliefs are called control beliefs. In theory, this factor is related to controllability, so a relationship with the control of perceived behavior is deduced (Hamdah et al., 2020). In this way, the following hypothesis is presented:

*H8. Control beliefs are positively associated with the control of the perceived behavior of university students in virtual mode.*

#### 1.1.1.4 Subjective norms

The subjective norm is derived from a set of salient belief components of the TPB that reflect an individual's perceptions based on the opinion of the most important

people in his life and that he could consider as role models, such as family, friends, colleagues, teachers among others. In general, subjective norms account for how an individual perceives himself based on the opinion of those referents that affect self-efficacy beliefs, expectations of results, and, in turn, influence the probability of forming specific control intentions (Santos & Liguori, 2020). The subjective norm can be measured from the normative beliefs. These refer to the beliefs of an individual that can be accepted by those specific important people or groups. This dictates the appropriate behavior in a particular way (Fang et al., 2017), they are also characterized by determining entrepreneurial behavior. Therefore, the following hypothesis is proposed:

*H9. Normative beliefs are positively associated with the subjective norms of university students in virtual mode.*

### **1.1.2 Entrepreneurial Event Model**

According to Al-Jubari et al. (2019), explaining and predicting human behavior is the central purpose for the development of the TPB, as it is for the development of other theories or models of intention. One of them is Shapero and Sokol's (1982) Entrepreneurial Event Model (hereinafter EEM). This model refers to entrepreneurial self-efficacy and has been considered one of the most relevant and used models in the literature on entrepreneurship (Al-Jubari et al., 2019; Sharahiley, 2020).

This model contains three key factors that influence the entrepreneurial intention of university students to start a business: Perceived desirability which refers to the degree to which a student wants to start their own business. According to Tarrats-Pons et al. (2015), this refers to the individual's perception of what the most important people and those closest to his life think about the possibility of starting an enterprise, which translates into social support. The propensity to act is the inclination and preferences of students to start their own business considering the appropriate actions and the perceived viability conceived as the level at which a student is confident enough to start their own business and thus become an entrepreneur, in a feasible course of action for him or her (Sharahiley, 2020). This leads to the following hypothesis:

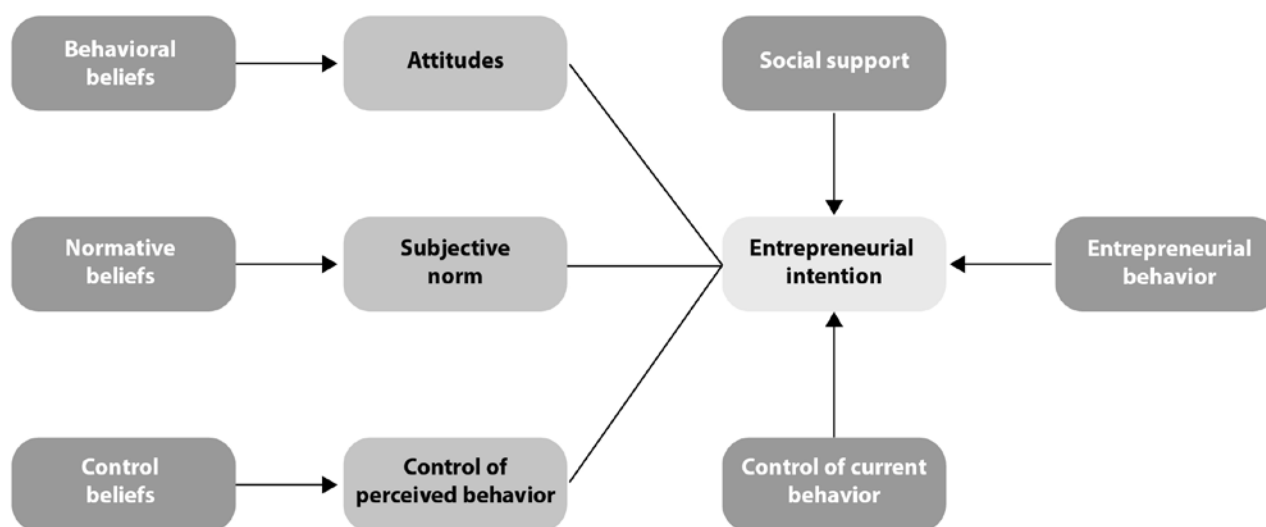
*H10: Social support is positively associated with the entrepreneurial intention of university students in virtual mode.*

### **1.1.3 Integrated model of TPB and EEM**

Empirical evidence of entrepreneurial intentions in this population has found support in both the TPB and the EEM. Some studies have identified that certain elements of the TPB and the EEM overlap with each other, since entrepreneurial intention is the common factor explained by both models in the context of entrepreneurship in university students (Sharahiley, 2020). Some theorists, such as Krueger (1993), have assumed that attitude in the TPB encompasses the notion of perceived desirability in the EEM model, similarly, that subjective norm overlaps with the notion of desirability and feasibility, and that feasibility overlaps with control of perceived behavior. Based on the reviewed literature, the proposed study attempts to integrate the two TPB and EEM models to better understand the development of entrepreneurial intention in university students of the virtual modality. The proposed model can be evidenced in figure 1, based on its hypothetical relationships.

**Figure 1**

*Proposed Model*



Note: Own elaboration based on Ajzen (1991); Shapero and Sokol (1982).

## 2. Materials and method

This study has a quantitative approach in which the statistical technique Factorial Analysis (FA) is used in order to simplify the interconnected metrics that allow discovering patterns in a variety of parameters, focused on the entrepreneurial intention of psychology students in the virtual modality. The 178 participants in this study agreed to participate, most of them from the first academic semesters and in the age range of 18 to 42 years. In the first instance, the students surveyed were questioned about individual expectations upon completion of the degree. Most of them state that they are inclined to create a company, continue studying, look for a job or all of them. They also considered a medium level of training in the field of business creation. Table 1 shows the socio-demographic information of the sample, as well as interesting information about the experience creating and/or directing companies and the knowledge they have about the support and training programs in the creation of companies and the motivation on the areas of entrepreneurship.

**Table 1**

*Sociodemographic information of the sample*

Semester	Percentage	What are your expectations at the end of your degree?	Percentage
1	19 %	Create company	17 %
2	12 %	Keep studying	16 %
3	10 %	Keep studying; To look for a job	10 %
4	8 %	Look for a job	7 %

5	5 %	Keep studying; Create company	6 %
6	10 %	To look for a job; Keep studying	5 %
7	9 %	Create company; Keep studying	4 %
8	11 %	Keep studying; To look for a job; Create company	3 %
9	10 %	To look for a job; Create company; Keep studying	3 %
10	7 %	Other	29 %
Age	Percentage	How do you consider your level of training in business creation?	Percentage
18-22 years	10 %	Medium	45 %
23-27 years	9 %	Low	31 %
28-32 years	24 %	High	18 %
33-37 years	17 %	Null	6 %
38-42 years	16 %	How has your experience been creating and/or running your own company?	Percentage
43-47 years	11 %	Good	65 %
48-52 years	7 %	bad	10 %
Over 52 years old	5 %	Regular	24 %
Is it interesting for you to receive training in business creation?	Percentage	Do you know the support programs for business creation offered by the University?	Percentage
Yes	92 %	Yes	4 %
No	8 %	No	96 %
At some point in your life, have you been through a situation that motivates you to create your own business?	Percentage	Have you ever created and/or managed your own company?	Percentage
Yes	75 %	yes	38 %
No	25 %	No	62 %

## 2.1 Instrument

The collection of information was supported by a survey based on the TPB proposed by Ajzen (1991) and the EEM of Shapero and Sokol (1982), to include the perception of desirability. The survey consisted of 28 items measured on the Likert scale

with the following options: 1. Strongly disagree, 2. Disagree, 3. Neither disagree nor agree, 4. Agree, and 5. Strongly agree. Option 0 was also included. Does not know-does not answer. The survey contemplated ten constructs with their respective items and the statistical treatment was carried out using the IBM SPSS Statistics 22 software.

### 3. Results

This study was carried out from a factorial analysis. Factor analysis seeks to reduce the dimensions of multivariate random variables and identify the factors. According to the authors Härdle and Hlávka (2007), in the statistical field, the purpose of factor analysis is to describe the covariance relationships between many variables in terms of a few underlying but unobservable random quantities, which are recognized as factors. In this sense, from this analysis it is possible to explain the variation of the data, verifying the relationship between the factors and the original variables (Olive, 2017).

The most widely used analysis method to describe the covariance relationships between the latent/factor variables and the original variables is Exploratory Factor Analysis (EFA). The purpose of the EFA is to establish the underlying structure between these variables from correlation structures between them, thus defining the variables that are highly correlated with each other. Similarly, the reduction of variables has been found to be useful, thus explaining a phenomenon such as entrepreneurial intention, in a more detailed way (Méndez & Rondón, 2012).

After using the EFA, a Confirmatory Factor Analysis (CFA) is used. This technique deals with the relationships between observed indicators and latent variables. In this sense, the number of factors that explain the variation and covariation of the indicators is established (Brown & Moore, 2012). Unlike the EFA, the CFA establishes the relationship between indicators and latent dimensions, which ultimately serves as input to formulate specific hypotheses. Thus, in the words of Batista-Foguet et al. (2004), the CFA corrects the deficiencies inherent in the exploratory phase and leads to a better understanding of the hypotheses that must be tested. For this reason, the CFA provides a more parsimonious understanding of the covariation of the variables (Brown & Moore, 2012).

In the first instance, in this study, the EFA is approached from the contribution of the original variables (items) to each of the factors or latent variables (constructs) based on the validity and reliability of the model. In a second instance, the CFA evaluates the degree to which a set of theoretically organized factors fits the data in terms of hypothetical relationships. In this sense, the confidence level is established to evaluate the acceptance or rejection of the hypotheses proposed in the model (Méndez & Rondón, 2012).

#### 3.1 Convergent validity

In factor analysis, as has already been mentioned, each construct contains some original variables, therefore it is considered a requirement to demonstrate that these variables or items measure said construct. In this stage, the factors are interpreted from a factor matrix whose objective is to reduce the data. This matrix contains the weights (loads and weights) of each variable, which correspond to the correlations of each of the items on each construct (Méndez & Rondón, 2012; Rubia, 2019). In this sense, the significance of the factor loads is stated as follows: values lower than  $|0.5|$  are not significant, values between  $|0.5|$  and  $|0.7|$  are considered of significant contribution,

and those values higher than  $|0.7|$  they are considered relevant and can be satisfactory in empirical research (Méndez & Rondón, 2012). Table 2 shows the values obtained from the factor loadings of each of the items. The results reflect values that are mostly relevant and that represent a significant contribution.

**Table 2**

*Factor loads*

Construct	item	Factorial load	Average factor load
Entrepreneurial intention	INT1	0.837	0.851
	INT2	0.872	
	INT3	0.843	
Behavioral beliefs	CC1	0.739	0.714
	CC2	0.850	
	CC3	0.553	
Personal attitude	AP1	0.839	0.864
	AP2	0.884	
	AP3	0.870	
Normative beliefs	CN1	0.847	0.901
	CN2	0.914	
	CN3	0.943	
Control beliefs	C1	0.655	0.718
	C2	0.787	
	C3	0.711	
Beliefs of perceived behavior	CCP1	0.615	0.773
	CCP2	0.843	
	CCP3	0.862	
Control of current behavior	CCA1	0.746	0.746
	CCA2	0.746	
Entrepreneurial behavior	CE1	0.861	0.822
	CE2	0.756	
	CE3	0.848	
Social support	SS1	0.893	0.893
	SS2	0.893	
Subjective norm	NS1	0.899	0.842
	NS2	0.763	
	NS3	0.863	

The positive correlation between the items and their constructs implies an analysis of main components under the assumption of normality of the variables, in order to justify whether the application of a factorial analysis is justifiable or not. In this sense, one of the strategies that can be used to evaluate this assumption is the Kaiser Meyer Olkin (KMO) index and the Bartlett sphericity test. These statistics allow assessing the strength of the relationship between items considering the partial correlations (Acuña

et al., 2017). Thus, these measures are applied and the results are represented based on the criteria established in the measurements. As explained by Arthur-Aidoo et al. (2018), in the factor analysis it is considered that the appropriate values for the KMO index should be equal to or greater than  $|0.5|$  considering the latter as the minimum satisfactory limit and being  $|0.8|$  a desirable limit value. As can be seen in Table 3, the obtained results are between the minimum desirable limit and close to the limit  $|0.8|$ , fulfilling the criteria of this index. Likewise, the results of the Bartlett sphericity test show that the data are interrelated and that, therefore, it is appropriate to carry out a factor analysis, since the values tend to  $|0.000|$  as recommended in the literature.

**Table 3**

*KMO index and Bartlett's sphericity test*

Construct	KMO	Bartlett
Entrepreneurial intention	0.709	0.000
Behavioral beliefs	0.515	0.000
Personal attitude	0.715	0.000
Normative beliefs	0.690	0.000
Control beliefs	0.591	0.000
Beliefs of perceived behavior	0.592	0.000
Control of current behavior	0.500	0.000
Entrepreneurial behavior	0.668	0.000
Social support	0.500	0.000
Subjective norm	0.655	0.000

### 3.2 Discriminant validity

Once the positive correlations of the variables have been validated, the absence of statistical correlations between the variables is evaluated to indicate that these tests do not share the same processes (Acuña et al., 2017). In this process, it is assumed that the items must correlate higher among themselves than with other items of other constructs that, according to the literature, do not correlate in the same construct. This test can be performed using different methods. In this study, the method of Anderson and Gerbing (1988) is used, which consists of establishing confidence intervals of 95% between the correlations, considering not obtaining the value  $|1|$  as a criterion. Table 4 shows the confidence intervals of this study, which all differ from the value  $|1|$ .

**Table 4**

*Confidence intervals of discriminant validity*

Construct	IE	CC	AP	CN	C	CCP	CCA	CE	SS	NS
Entrepreneurial intention	1									
Behavioral beliefs	[0.416; 0.651]	1								
Personal attitude	[0.652; 0.812]	[0.470; 0.669]	1							
Normative beliefs	[0.423; 0.670]	[0.272; 0.530]	[0.344; 0.582]	1						
Control beliefs	[0.094; 0.381]	[0.220; 0.506]	[0.094; 0.392]	[0.077; 0.372]	1					
Beliefs of perceived behavior	[0.606; 0.782]	[0.338; 0.579]	[0.506; 0.717]	[0.486; 0.710]	[0.059; 0.362]	1				
Control of current behavior	[0.477; 0.681]	[0.223; 0.482]	[0.443; 0.652]	[0.259; 0.520]	[-0.020; 0.275]	[0.459; 0.667]	1			
Entrepreneurial behavior	[0.526; 0.737]	[0.407; 0.642]	[0.531; 0.735]	[0.417; 0.654]	[0.073; 0.376]	[0.546; 0.753]	[0.432; 0.647]	1		
Social support	[0.294; 0.562]	[0.306; 0.548]	[0.297; 0.532]	[0.514; 0.724]	[-0.010; 0.296]	[0.391; 0.635]	[0.217; 0.491]	[0.291; 0.573]	1	
Subjective norm	[-0.093; 0.217]	[-0.098; 0.224]	[-0.019; 0.274]	[-0.018; 0.276]	[-0.020; 0.287]	[-0.089; 0.213]	[-0.026; 0.282]	[-0.112; 0.190]	[0.033; 0.340]	1

### 3.3 Reliability

In a factor analysis it is important to consider the measurement as the assignment of a number of items to a construct to identify and conclude the properties of a phenomenon under study according to certain rules and determine the degree of reliability. In this sense, the consistency of an instrument (in this case the survey) with the use of the Likert scale is measured from the internal consistency index. Cronbach's Alpha is the most commonly used statistic to examine the internal consistency or reliability of summed measurement scales. In other words, this statistic measures the degree to which the item responses correlate with each other. In this way, it takes values between  $|0|$  and  $|1|$ , being the values closest to  $|1|$  the most accepted. However, the value that represents the minimum limit is  $|0.7|$  (Vaske et al., 2016). As can be seen in Table 5, the study meets the internal consistency criteria.

**Table 5**

*Internal consistency*

Construct	Cronbach's Alpha
Entrepreneurial intention	0.898
Behavioral beliefs	0.754
Personal attitude	0.904
Normative beliefs	0.936
Control beliefs	0.737
Beliefs of perceived behavior	0.830
Control of current behavior	0.724
Entrepreneurial behavior	0.867
Social support	0.903
Subjective norm	0.888

### 3.4 Hypothesis contrast

To measure the association levels of the hypothetical relationships of the study, Cramer's V statistic is applied in order to determine the strength of association between the variables. According to Idalina (2011), Cramer's V is a nominal association based on the Chi-square that is based on the significance adjustment to factor the sample size and design nominal data. The strength of the association varies between the values  $|0|$  and  $|1|$ , being the values closest to  $|1|$  those of greatest significance. Its interpretation is as follows: values less than  $|0.3|$  are considered of low association, values between  $|0.3|$  and  $|0.6|$  are considered maximum association, therefore the value  $|0.6|$  is commonly considered in the literature as the maximum limit (Babu & Sanyal, 2009). As can be seen in Table 6, of the ten proposed hypotheses, eight are validated.

**Table 6***Hypothesis contrast*

Hypothesis	Variable	influences on	Variable	Cramer's V statistic
H1	Attitudes	à	Entrepreneurial intention	0.551
H2	Subjective norms	à	Entrepreneurial intention	0.189
H3	Control of perceived behavior	à	Entrepreneurial intention	0.444
H4	Entrepreneurial behavior	à	Entrepreneurial intention	0.444
H5	Control of current behavior	à	Entrepreneurial intention	0.435
H6	Behavioral beliefs	à	Attitudes	0.421
H7	Control of current behavior	à	Control of perceived behavior	0.408
H8	Control beliefs	à	Control of perceived behavior	0.546
H9	Normative beliefs	à	Subjective norms	0.191
H10	Social support	à	Entrepreneurial intention	0.307

**4. Discussion of the results**

On different occasions, studies of entrepreneurial intention in university students have tended to use the model proposed by Ajzen (1991), on planned behavior. Some studies have even analyzed entrepreneurial intentions and behavior based on a research model that integrates the two TPB and EEM theories (Eid et al., 2019; Sharahiley, 2019), as was the case in this study. The model postulated eight antecedents of the TPB model (behavioral beliefs, personal attitude, normative beliefs, control beliefs, perceived behavioral beliefs, current behavioral control, entrepreneurial behavior, and subjective norm), while one antecedent was postulated from the EEM model (social support) of entrepreneurial intention.

Similar to Sharahiley's (2020) study, attitude had the most significant influence on the entrepreneurial intent of surveyed students. This then indicates that students' personal assessment of becoming an entrepreneur could positively influence their intention to start a business (Ajzen, 1991). The related literature also considers that the control of perceived behavior is an important factor for the entrepreneurial intention of students (Eid et al., 2019). The findings suggest a relevant relationship between the control of perceived behavior and the student's intention, which implies that the perception of being sufficiently independent, conditioned mainly by the perception of being able to control the environment, influences the student's perceived control over the fate of an entrepreneurial project (Shapero & Sokol, 1982). In line with Contreras et al. (2020), the control of current behavior also proves to have a positive influence on the creation of a company by the students surveyed.

Unlike some studies, in this case the subjective norm had no influence on the entrepreneurial intention (Contreras et al., 2020; Eid et al., 2019; Medina et al., 2014; Sharahiley, 2020). Thus, in this case, the students do not feel pressured in one way or another to start a business by the people they consider most important, such as their family, friends, and colleagues. However, it coincides with the study by Krueger et al. (2000), who was unable to establish a positive connection between these two constructs and also suggest that it is possible that the subjective norm is only important in ethnic groups that have strong traditions of entrepreneurial intention.

In these previous studies it has been shown that students who show entrepreneurial attitudes, intention and behavior have a greater vocation to create a company. Therefore, entrepreneurial behavior has a great influence on the entrepreneurial intention of students, as shown in the study by Guachimbosa et al. (2019). The findings in this study coincide and support these works. This allows showing that the integrated model of the TPB and EEM allows obtaining better predictive results than if the two models were applied separately (Medina et al., 2014).

Finally, social support also proves to be a significant factor in the intention to create a company by the interviewed psychology students. This implies that the environment is a key factor in the intention of creating a company or not by these students, facilitating or imposing restrictions on the creation of value and generating economic opportunities (due to government policies and bureaucratic procedures) and human capital (Palma et al., 2015).

At this point and considering what has already been evidenced in relation to the perspective of entrepreneurship, it is necessary to focus on some of these innovative and entrepreneurial proposals that present a panorama of appropriation that psychology professionals have assumed, acquiring technical, theoretical, and procedural positions that allow us to suppose that they are generating a form of recognition of the possibilities of construction. Thus, it is also possible to evidence a series of contributions that for the attention and intervention of different population groups generate actions of particular attention and follow-up to the cases from the support of the different scientific and technological advances that allow responding to the needs of the market. (Martínez et al., 2019).

As expressed by Toledo (2001), the psychological aspects of the individual who wishes start a business are based on the experiences that anticipate an inspiring future, this also has a close relationship with the life project and the situations that the individual wishes to transform, it is there where the possibility of starting a business is constituted as a social determinant that conditions the life and the objectives of the students.

This study contrasts with research processes such as that of Durán-Aponte and Arias-Gómez (2015) that indicate that these work perspectives from the dynamics of entrepreneurial intention give clear and concise indications about the training perspective of future university professionals and its relationship with entrepreneurship, where aspects such as social support, context and individual beliefs should become more important when starting a business.

## 5. Conclusions

The theoretical and conceptual path considered in the review has allowed us to identify, with great propriety, the recognition that, especially from psychology, it has been built and developed on the aspects that involve entrepreneurship and all those aspects that are present from human characteristics. These approaches and contributions clearly do not represent a reflection that shows businesses that are quite visible

or have generated significant recognition from psychology or those who are in training processes in the area.

With this, it is necessary to recognize and consider that the conditions in which entrepreneurship is thought from an area such as psychology are not clear, which determines the consideration of exposing questions that can determine how, within the field of psychology professionals, thought goes more towards the perspective of innovation than towards the idea of entrepreneurship, which suggests considering a possible dynamic in which psychology, as a science, has elements to take advantage in the construction, from innovation, that will generate a relationship with the development of entrepreneurship.

Recognize that professional experience, understood as years of experience and accumulation of experiences as a psychology professional, has a great impact on the development of proposals that are close to entrepreneurial actions, given that they in themselves and after being developed, generate possibilities to make forms of entrepreneurship visible.

Taking as reference the dynamics of association found in the study, it is important to highlight the connection between the theory of the Integrated Model of TPB and EEM with the entrepreneurial intention of the participants, since they propose a path for training in entrepreneurship in the participants.

In the students who are trained under the virtual modality, socio-personal factors that determine their proximity with entrepreneurial intentions are interpreted, this scenario allows us to identify that there is no different association relationship between the study modalities and the entrepreneurial intention, there are other categories such as personal attitudes and social support that affect the student's decision to start a business.

The curriculum that psychology students have under the virtual modality should be oriented towards the strengthening of structures that favor the relationship of the subject with the environment, and not limit the possibilities of entrepreneurship from the accounting or economic vision exclusively, from this study, is important to balance the search for the development of individual and collective entrepreneurial skills with social, cultural and contextual aspects.

Understanding that entrepreneurial behavior is determined by the dynamics of the structure in behavioral beliefs, normative beliefs and control beliefs, training dynamics that promote an entrepreneurial culture in students can be built, and this scenario can be formulated in academic spaces such as the university, the dynamics of the virtual modality, favor this component, taking into account the conditions it offers in the training processes, in addition to the extracurricular scenario that allows for the development of activities related to entrepreneurship that exposes the permanent relationship between students and entrepreneurial intention.

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# Inclusive business. A biological metaphor model for the agricultural sector

## Negocios inclusivos. Un modelo de metáfora biológica para el sector agropecuario

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### Abstract

*The agricultural sector was one of the sectors that was most compromised during the confinements in the COVID-19 pandemic, guaranteeing the value chain and the necessary inputs. But even so, the problems of the sector are still evident: poverty, inequity, lack of rural and non-rural employment, low profit rates, lack of distribution chains and market development, among others. An alternative that is presented to achieve successful productive chains is that of inclusive businesses, for its better application and understanding, the application of a biological metaphor of coevolution and mutualism is presented in this document, noting that inclusive businesses should not occur only on occasions of vulnerable producers, but to recognize in them their skills, knowledge, and capacities that they can share and put in favour of the integration model to achieve joint developments with the other organizations in the chain. The proposal focuses on strengthening inclusive models from the recognition of diversity and difference, and the development of management alternatives for the entire chain in general.*

### Resumen

El sector agropecuario fue uno de los más comprometidos durante los confinamientos en la pandemia de COVID-19, garantizando la cadena de valor y los insumos necesarios. Pero, aun así, los problemas del sector siguen siendo evidentes, pobreza, inequidad, falta de empleo rural y no rural, bajas tasas de ganancia, falta de cadenas de distribución y desarrollo de mercados, entre otros. Una alternativa para lograr encadenamientos productivos exitosos es la de los negocios inclusivos. Para una mejor aplicación y entendimiento, este documento presenta la aplicación de una metáfora biológica de la coevolución y el mutualismo, señalando que los negocios inclusivos no solo deben darse en productores vulnerables, sino que deben reconocer sus habilidades, conocimientos y capacidades que pueden compartir y utilizar a favor del modelo de integración, para lograr desarrollos conjuntos con otras organizaciones de la cadena. La propuesta se centra en fortalecer los modelos inclusivos desde el reconocimiento de la diversidad y la diferencia, y el desarrollo de alternativas de gestión para toda la cadena en general.

### Keywords | palabras clave

*Biological metaphors, agro-industrial value chain, small producers, anchor companies, inclusive business, coevolution, mutualism.*

Metáforas biológicas, cadena de valor agroindustrial, pequeños productores, empresas ancla, negocios inclusivos, coevolución, mutualismo.

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## 1. Introduction

The Covid 19 pandemic profoundly affected the economies of Latin American countries (Useche-Aguirre et al., 2021, Huerta de Soto, 2021), impacting not only families in their physical and mental health, but also in economic models and generating situations of greater poverty (Chacón, & Ramírez-Chaparro, 2020; DANE, 2020, 2021). By 2020, mobility restrictions, and then the pandemic peaks at the end of 2020 and 2021 came with limitations of all kinds, which made it difficult to sustain the economies of the region. At the end of the first semester of 2021, the vaccination programs began and at the same time, the difficulties of logistics and production of supplies for all industries in the world were evident. The outlook could not be more discouraging (United Nations, 2020).

One of the economic lines that continued to support household consumption was the agricultural sector (Del Carpio et al., 2022), which continued to produce and carry supplies and food continuously, even with difficulties. For UNDP, 61% of the poorest people in the world work in the primary sector UNDP (2021), but it is recognized that the possibilities offered by agriculture are between two and three times more effective in reducing poverty and food insecurity than the growth in other sectors because small-scale production generates self-sustainability, job creation and recovery of the rural community (IFAD, 2021)

The characteristics of this sector make it vulnerable, especially in Colombia, where land distribution, infrastructure problems, insecurity caused by illegal production and poverty in the region are elements that hinder the development of this important sector of the economy.

UNDP (2021) points out how:

It is found that of 90.9% of the population in rural areas of Colombia, in the year 2020, 42.9% was poor and 48% is in a vulnerable condition; while of the 67.7% of the population in the cities, 42.4% are poor and 25.3% vulnerable. (p.1)

In addition, the report points out that there has been a sustained drop in average rural labor income, which is related to productivity losses in the sector (UNDP, 2021). The impacts of the pandemic on rural poverty were a catalyst for the economic difficulties associated with the territorial nature: rural poverty tends to be concentrated in areas with low population density, as well as with lower levels of schooling and illiteracy, ecological and environmental fragility, and distance from consumption centers, among other characteristics (Trivelli, 2020).

For this reason, one of the initiatives of the FAO (2021) proposes investing in agriculture in countries with lower incomes, which will have a greater impact on poverty reduction and must be accompanied by government policies such as social protection, development of business skills, strengthening of infrastructure, technology, innovation, education and support for models of social organization. In addition, it is proposed to strengthen the role of rural women, recognizing that they can represent more than 60% of the rural population, and to develop environmental protection programs, especially in native forests, water sources and natural resources in general.

For this, the FAO (2019) proposes five lines of work to achieve a sustained and sustainable reduction of rural poverty:

- Bet on family farming.
- Move towards an expanded social protection scheme.

- Move towards a sustainable management of natural resources.
- Achieve integrated infrastructure packages.
- Expand rural non-agriculture employment options (p. 6).

Taking into account these difficulties in the social and economic development of the sector, together with the changes caused by the pandemic (Sánchez-Galán, 2020), this document proposes a recognized alternative from the organizational management of the markets to analyze and enable the business development of affected communities under a family farming scheme, based on collaborative work using nature as a model.

## 2. Materials and methods

### 2.1 Conceptual contributions

The methodological proposal for this document is the application of the biological metaphor applied to organizations (Montoya et al., 2010). The development of the metaphor as a field of understanding (Csatár, 2022) is inherent in the human capacity to interpret and relate knowledge from one area to other areas, Aristotle pointed out the metaphor as a powerful mechanism of interpretation, analysis, and teaching, due to the possibilities that the translation of a concept from a known field to another newly born has. For Lakoff and Johnson (2003) and Cornelissen (2005), the way of thinking is metaphorical, in such a way that the brain, when analyzing, compares and proposes new meanings through metaphors.

The metaphor takes advantage of a known interpretation and takes it, hence the etymology of the word “foreign”, to another field of knowledge, for this reason it has a double component, a descriptive one that orders and classifies, and another constructive one that allows innovation and creation, this makes it possible to relate the abstract with the concrete, formal logic with figurative logic, or complexity with simplicity (Mendoza, 2003).

Metaphors can define a problem, delineate the scope of the analysis, and suggest hypotheses to test theoretical propositions (Ge et al., 2022). Metaphors communicate not only facts, but a network of facts and values, and resonate within a particular framework, the use of metaphors enables the discussion of opposing points of view and even can motivate people to take measures and lead to action (Sage et al., 2022).

It is pointed out that the development of the metaphor is useful for science (Aguilar & Arroyo, 2008), because when a new phenomenon is discovered, it needs to be named, but since it is not known by others, it would not have greater meaning. The metaphor becomes a new meaning for words that already have meaning and, in this way, allows a new categorization, understanding and learning tool (Molina-Rodelo, 2021).

In the case of social models, metaphors make it possible to make familiar what is not familiar and make it easier to flesh out knowledge, arrange both ideas and organizations in new ways, and for this reason they are used by organizational researchers to promote alternative ways of economic or social models (Cadavid et al., 2010). Many authors have focused on carrying out these analyzes of organizational theories to understand companies and industries from metaphorical models (Montoya et al., 2010).

For Palma, metaphorical procedures are more the rule than the exception in the constitution of the sciences (Palma, 2005), where it is pointed out that the language

of science is based on this cognitive and analytical mechanism. Palma (2004, 2015) finds throughout the history of science what he calls the “great metaphors”, which can even cross several areas of knowledge, related to the historical moment and that allow explanations to be given at the time of the reality that is lived. The author points out that, for example, the concepts of physics were taken to economics and sociology, the model of atoms to astronomy, and the models of evolution from biology to practically all areas of the social sciences.

Although many of the great metaphorical processes arise in everyday life and in the explanation of the events that take place, it has been possible to characterize the main milestones in the metaphorization process. One of them is presented in table 1 where the main elements and their definition are highlighted.

**Table 1**

*Metaphorization process*

Element	Definition
Identification of the problem	It is the process in which the need to create a new meaning is expressed.
Identification of metaphors	Concepts that can be used in a comparative way or an image are sought. This is how the different domains are connected with the vehicle that makes the transfer of the concept.
Approach Processing	The metaphor is processed in terms of belonging.
Vehicle construction	The vehicle is the figure of speech itself, that is, the image that is included or "carries" the tenor (the subject of the metaphor).
Construction of metaphors	When the understanding of the vehicle as a concept is clear, the metaphor or network of metaphors that make the new understanding possible is created.
Functionalization of the metaphor	The metaphorical concept is internalized and included within the language.
Construction of the context of the metaphor	The current metaphor is connected to the network of metaphors that exists or needs to be developed and alternative metaphors are substituted.
Metaphor Appreciation	It is recognized if the metaphor meets the stated objectives and can really be considered a "creative metaphor".

*Note.* Adapted from Šorm and Steen (2013).

Three types of relationships are found in the construction of metaphors:

- Those of correlation or correspondence can also be cause-effect.
- Those of connection, relate, for example, something with its part.
- Those of similarity, present an idea under the parameter of another better-known idea (Gurillo, 2006).

This metaphorical creation can be useful in many ways, to reason, to create meaning and emotion, to give force to an expression, to joke, to make conceptual or cultural changes, to extend categories, to provide integrated conceptual structures to arrays of non-integrated elements, or to integrate actions (Gurillo, 2006).

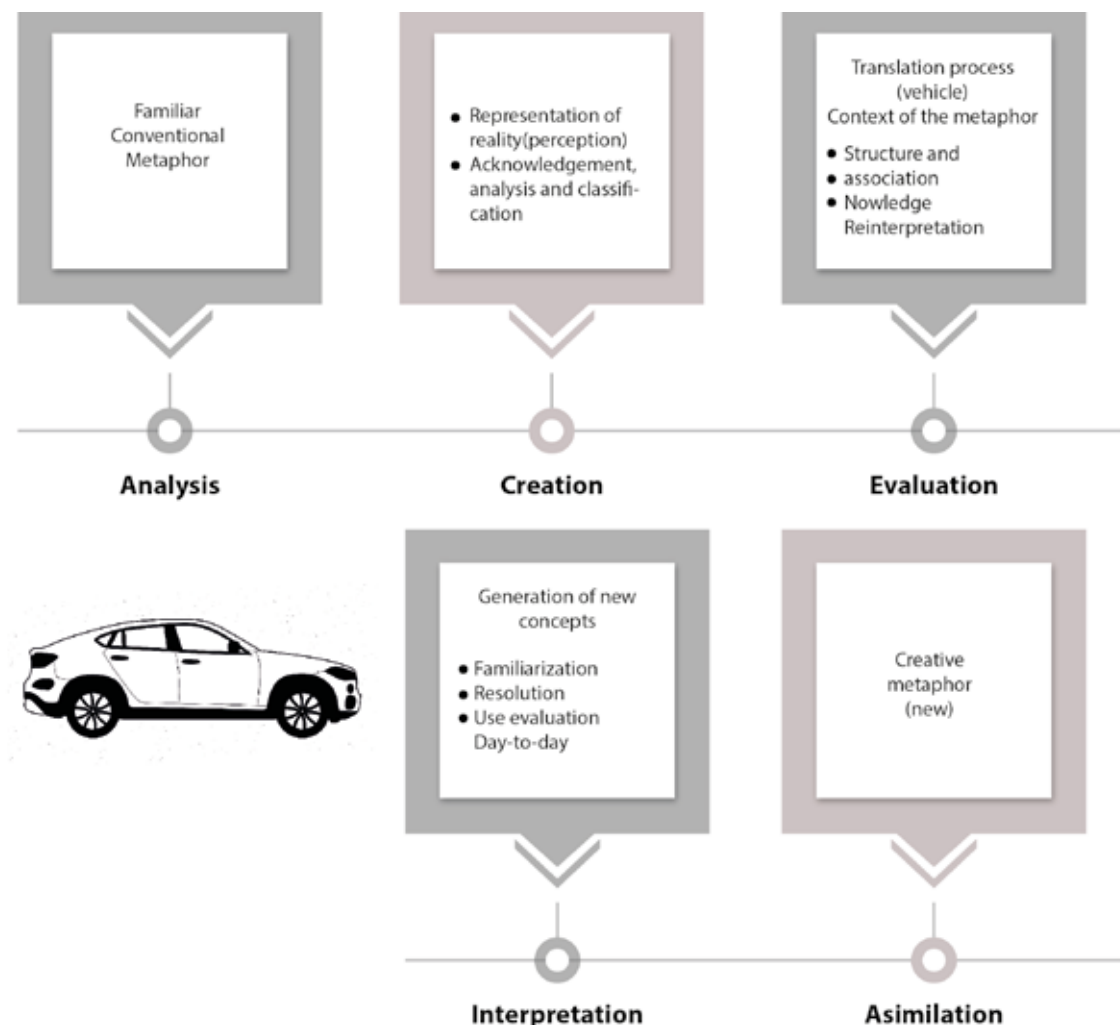
For this work, the following scheme developed for this interpretation will be followed, in which the logical following logical steps are followed:

- Analysis
- Creation
- Evaluation
- Interpretation
- Assimilation of the new metaphor and its accompanying network.

In this case, we start from the model of perception of the need indicated in figure 1, having awareness of the usefulness of the generation of comparative metaphors, and through the construction (Vehicle), the generation of the concept that allows the interpretation of the reality to be constructed is proposed.

**Figure 1**

*Generation of the comparative metaphor*



Note. Adapted from Birdsell (2018).

The process begins with the recognition of the problem, which in this case is the need to strengthen the development process of agricultural producers after the pandemic, and the application of the biological metaphor will be used as an interaction mechanism.

## 2.2 Methodological development: cooperation metaphors from biological models

The comparison of social sciences with biological metaphors has been a phenomenon that emerged from the beginning of economic sciences, important economists such as Adam Smith, Alfred Marshall, Karl Marx, Thorstein Veblen, Joseph Schumpeter, applied it in their theories and especially, in recent years, thermodynamic and evolutionary models have been used by the social sciences to explain some phenomena and establish new semantics of traditionally known terms. Thus, Lewin and Volberda (1999) propose some similarities with these evolutionary approaches that can be seen in Table 2.

**Table 2**

*Metaphors in selection and adaptation theories and their applications in organizational management*

Conceptual framework	Dominant paradigm
Sociology	Population ecology
Economic models	Institutional theories.
	Industrial organization.
	Transaction costs.
	Behavior theory of the firm.
	Theory based on the resources of the firm.
	Dynamic capabilities, form theory based on knowledge.
Strategy and organizational design	Contingency theory.
	Strategic change.
	Organizational learning.
	Balance of the punctual life cycle.

Note. Lewin and Volberda (1999).

In general, it can be said that the application of the biological metaphor to organizations is an analytical strategy that has allowed us to understand important processes for organizational theory by applying concepts such as entropy, cybernetics, niche marketing concepts, organizational ecosystem or coopetition (Montoya et al., 2021).

The applications of metaphors in organizational theory that have been especially used are those related to the mechanisms of cooperation of individuals or species in nature, with organizational cooperation and integration, and among the emerging concepts are those of reciprocal altruism, the same sociobiology (Wilson, 2002; Alcock, 2001), coevolution, mutualism-symbiosis, and even endosymbiosis models (where one species is directly involved with another, generating a greater alliance with characteristics of both).

It can be concluded that, in biological models, cooperating populations are found to have higher aptitude and adaptation, noting that in “natural selection in well-mixed

populations, assistance is needed for the establishment of cooperation” (Nowak, 2006, p. 1562).

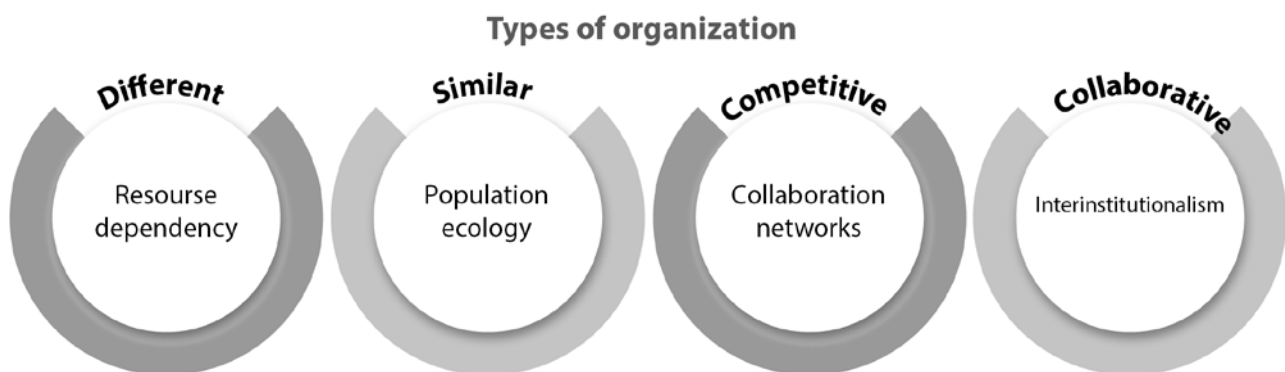
To frame it in a general context, it can be said that the population ecology approach (Hannan & Freeman 1977, 1986, 1989, 1992, 2005) examines how new organizations that work together, position themselves in niches that provide variety and better opportunities for individual organization and interaction model:

Population ecology is a very useful approach for understanding industry performance, especially with organizations that share resources and overlap in a specific niche. These models demonstrate the power of metaphor, especially in the concepts of population ecology and the niche concept widely used in management sciences. (Montoya, 2010, p. 129)

Figure 2 shows Hannan and Freeman’s proposal, which shows how, regardless of whether the type of organization is similar or different, there is an opportunity to have multiple interactions, to move from more competitive environments to more collaborative ones. The ideal, from this metaphor of population ecology, is that organizations can be integrated as similar and collaborative organizations.

**Figure 2**

*Relations between organizations*



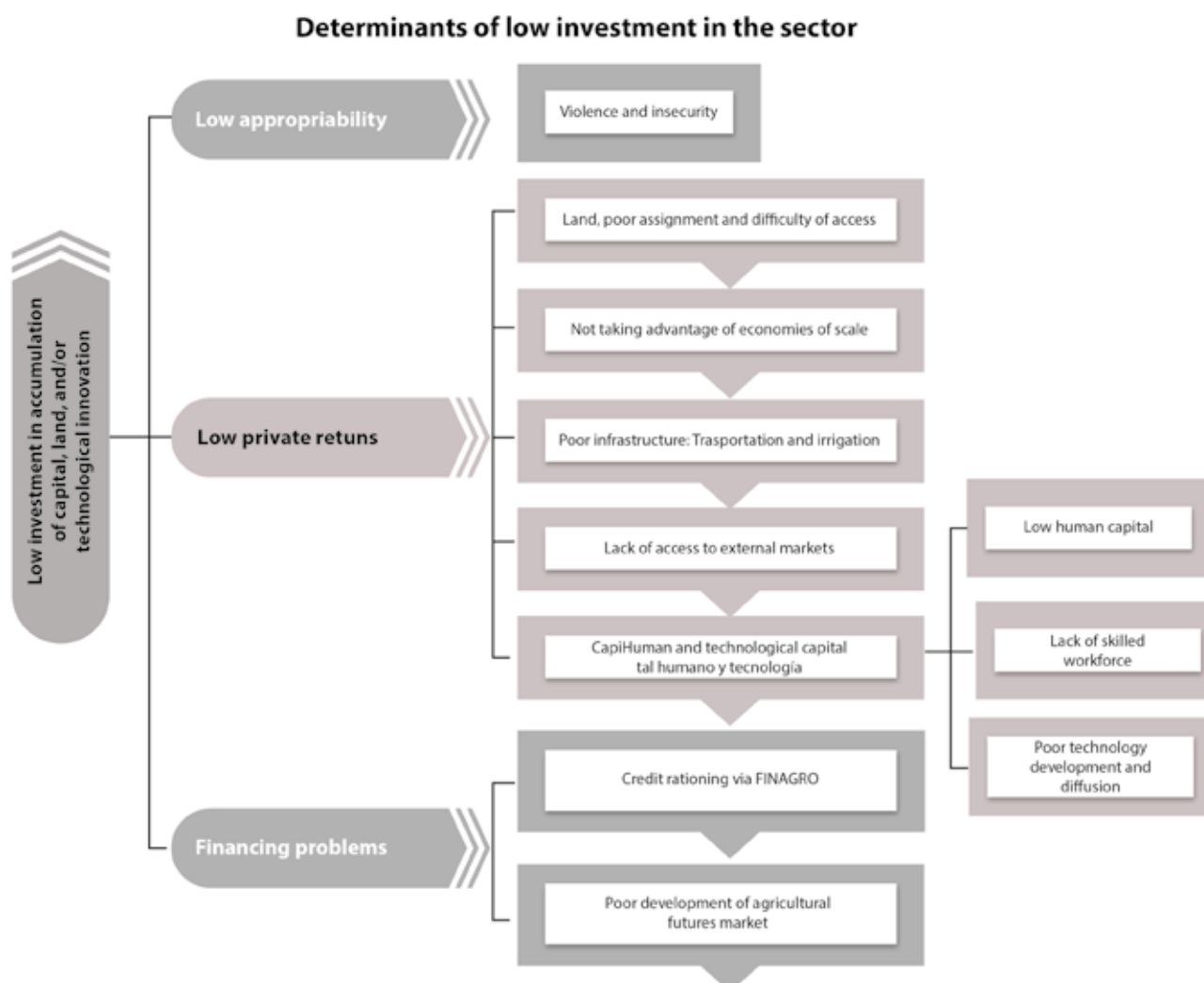
Note. Adapted from Hannan and Freeman (1989, p. 16).

### 3 Results

#### 3.1 Reality establishment (Problem)

The need to integrate the value chain in the agricultural sector (Ubaque, 2021) is presented as an interesting alternative to solve the main problems of the sector, which are characterized in the region by their heterogeneity, the variety of agroecological zones and the topography, as well as the structure of the varied productive systems characterized by small productive units in which there is subsistence and family farming and, in other cases, there is a consolidated business sector with intensive use of capital (Parra-Peña & Puyana, 2021).

In general, the sector in the country has problems on several fronts, it is found that there is low investment due to problems of appropriability such as problems of territory and security (Gómez, 2022), low returns related to the lack of access to markets, development of human talent and, in general, access to resources, as shown in figure 3.

**Figure 3***Determinants of low investment in the agricultural sector*

Note. Colombia competes (2017, p. 151).

Some market failures are also detected that could be remedied with a concatenation model that includes requirements for quantity, quality, logistics management, or traceability, as well as the development of markets in price management and the allocation of profits within the chain. That is why the Productive Development Policy of Colombia Conpes PDP 3866 (Calderón et al., 2016) highlights the importance of the development of linkages to solve the problems of the sector and points out that the low level of both vertical and horizontal linkages, which must be strengthened by a development policy to solve the problems of the sector. Consolidating chains makes it possible to improve productivity, include producers of all sizes, and improve performance in the markets (Bloomfield et al., 2021). Within this chaining system, the need also arises to include inclusive chains which link productive projects for vulnerable populations (ANDI, 2017, p. 142).

The Alliance of the Inclusive Businesses (IB), is constituted as a collaborative agreement of Mutualist Management, in which this relationship builds bridges between companies and low-income populations, for the benefit of both (CECODES,

2008), which takes advantage of the advantages of the producers and improves the competitiveness of the region (FAO, 2017).

UNDP (2014) highlights that these processes are oriented towards carrying out inclusive production that not only reduces poverty and inequality, since the value chain is directly strengthened, redistributing profits equitably (Giunta & González, 2020).

It is for these reasons that modeling is presented from the biological metaphor for the consolidation of inclusive businesses.

## 4 Discussion

### 4.1 Proposal for a co-evolutionary chain for inclusive businesses (Vehicle)

As an alternative to favor linkages between agro-industrial organizations, a business model is proposed that can be called co-evolutionary from mutualism (Montoya et al., 2021) in which the biological metaphor is taken up to understand the degree of integration:

It is the relationship between two or more organizations that are characterized by being independent and autonomous that cooperate and where they share resources and capabilities. In this relationship, all species benefit and improve their biological aptitude and allow them to increase their evolutionary and innovation capacities. (Montoya et al., 2021, p. 3)

This approximation of the mutualism-symbiotic relationship is presented from the integration of association and business cooperation, which allows an evolutionary process to integrate efforts in which reciprocity allows not only understanding but also solving problems in organizations (García et al., 2011).

Inclusive businesses have the characteristic of being networks of joint work (Ickis et al., 2019; Iñaki, 2011) in which large organizations (called anchors) that favor the development of small producers (recognized as vulnerable) can stand out. Within the IB concepts, Table 3 presents the contributions of some authors and institutions:

**Table 3**

*Contributions of authors on inclusive businesses*

Authors	Contribution
Ibero-American Network of Inclusive Businesses (BI) <a href="https://iberinclusion.org/red-iberoamericana-de-empresas-inclusivas">https://iberinclusion.org/red-iberoamericana-de-empresas-inclusivas</a>	Business initiatives, characterized by being profitable and environmentally and socially responsible.
Dutch Service for Development Cooperation-SNV (2012), Avina (2011, p. 3).	The quality of life of low-income people is improved by improving employment.
Cobos, J. S. H., Arbelaes, D. C., & Carrillo, C. B. (2019).	It seeks the insertion of the population in the economic model and hopefully through entrepreneurship.
Garizabal Donado, M. E., Sánchez Otero, M., and Estrada López, H. H. (2017).	Productive and social improvement.
Betancourt Latorre, A.V. (2014).	Generation of co-creation and shared value.

Authors	Contribution
FAO, 2019.	Integration of sellers and buyers for a shared benefit.
For WBCSD an inclusive business model World Business Council for Sustainable Development. <a href="https://bit.ly/3vyG4uC">https://bit.ly/3vyG4uC</a>	The communities participate in the model and improve their quality of life.
Guadarrama and Tavera (2017).	Development of the value chain to improve people's life cycle.
<a href="https://bit.ly/3sQC1It">https://bit.ly/3sQC1It</a>	Anchor companies support and enable the growth of their associates.
Hurtado (2017).	Productive inclusion to reduce social inequalities.
Márquez et al. (2009).	Participation of all actors in the value chain.
FAO, 2016.	Generation of market opportunities and improvement of the quality of life.

Note. The authors

The development of inclusive businesses enables the support of agri-food systems (Guzmán & Varela, 2018), the strengthening of the agro-industrial chain, the consolidation of markets in a rural and urban multi-stakeholder process, strengthening commercial networks (FAO, 2017, 2021, Santacoloma et al., 2017) that can even impact innovation through collaboration networks (Carpio-Gallegos & Miralles, 2021; Rodríguez de Pepe & Cervilla Ruano, 2020). However, although the advantages of this type of productive relationship are clear, it is not so easy to achieve them to be successful (Herrera-Kit et al., 2021). There are various methodologies for the consolidation of inclusive businesses, which can be seen in table 4.

**Table 4**

*Methodologies for the creation of inclusive businesses*

SNV-CECODES Alliance Dutch Service for Development Cooperation-Colombian Business Council for Sustainable Development, Fedepalma and USAID's MIDAS Program- More Investment for Sustainable Alternative Development (USAID MIDAS Program, Fedepalma, & CECODES, 2010, SNV, 2008. Rodríguez, M. C., Carrizosa, A., Bonell, C., and Rengifo, S. (2010).	The guide proposes development alternatives for the oil palm sector.
Practical guide for the facilitation of Inclusive Businesses and Public-Private Projects in agri-food chains of the Consortium of Provincial Autonomous Governments of Ecuador-CONGOPE (2014).	The guide proposes actions to governments to promote these initiatives and generate development in the territories (CONGOPE, PPPS- Public-Private Projects.

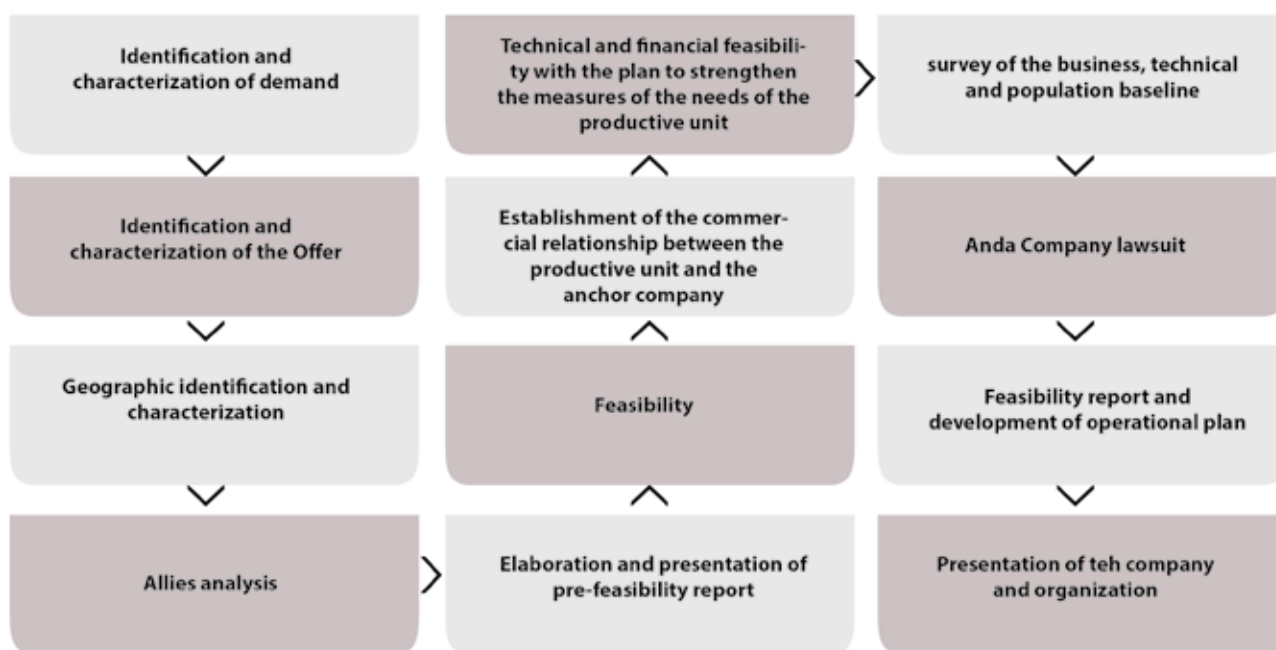
GIZ-PRODES and SENA (2016).	The objective is to guide companies to create inclusive ecosystems from a green economy approach.
Inclusive Business of UNDP, Deloitte UNDP and Deloitte, 2016).	Guide for companies to start, develop or scale their models and meet the 2030 Sustainable Development goals. It contains a self-assessment and a toolbox.
CIAT LINK methodology (2018).	Promotes the role of rural women. This methodology makes it possible to facilitate the articulation of actors in a value chain, and provide the necessary tools to generate opportunities for inclusive businesses.
PNUD (2008)-Program ART-REDES (2018).	It is a proposal within the framework of strategies for peace with the articulation of the actors promoting sustainable socio-economic development.
Negocio Social Yunus-McCain de Campo Vivo.	It seeks the analysis and strengthening of the value chain (in potatoes) to reduce rural poverty.
CECODES Inclusive Territorial Development Strategy (2017).	Methodological framework and orientation to the group of companies that comprise it to generate sustainable and inclusive territorial development.
University of the Andes, Corpoica, and Corocora (2018).	Sustainable Agribusiness Model in Meta – MAS META, for the strengthening of the banana, coffee, passion fruit and cocoa chains.
Innovation Cycle for Inclusive Businesses of the CINI Foundation (CINI, 2017).	The methodology proposes 8 phases of an innovation cycle,
Inclusive Chains of the ANDI Foundation (2017).	Based on productive linkage strategies, they propose alternatives for: employment, linkages, purchases and distribution through interaction in the development of markets.

Note. Adapted from Covo (2019, p. 54).

Figure 4 proposes a consolidation model for inclusive businesses with its various stages.

**Figure 4**

*Inclusive business construction process*



With this present process, the application of the metaphor is proposed.

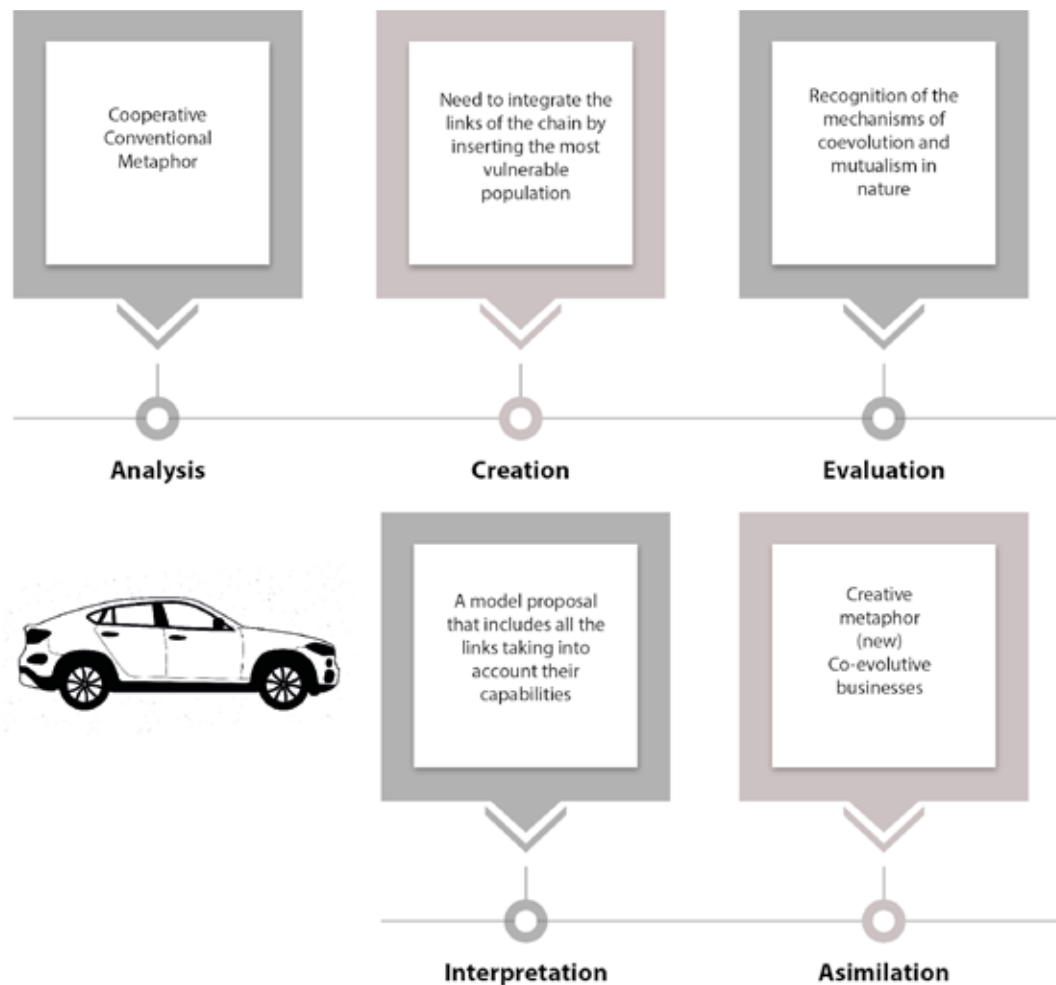
## 4.2 Construction of the creative metaphor

Two biological metaphors are relevant for the consolidation of inclusive businesses, the mutualism model and the co-evolution model, closely related to cooperation in nature. Co-evolution implies the reciprocal evolution of both species in the needs that each one has, to strengthen the relationship and it is not only an adaptive process (Co-adaptation) but a real change in at least two of the species that interact, with three elements that are inherent to it: 1. Specificity: the evolution of each character is due to selective pressures from the character of the other species, 2. Reciprocity: both characters must evolve together and 3. Simultaneity: both characters evolved at the same time (Janzen, 1980; Thompson, 2010 ; Breslin et al., 2021).

In the metaphorical application, the proposed model is taken up again, finding that the two elements of co-evolution and mutualism become mechanisms for the rebirth of the opportunities offered by the system (Figure 5).

**Figure 5**

*Metaphorical application for inclusive business*



Note. Authors.

Among the elements that help build the metaphor as semantic networks are the aspects of the ecosystem, which can be summarized in actors (network) and their relationships (species), adaptation and change strategies (evolution), the behavior of the actors (functions) and health (performance, with four important factors: value co-evolution (niche creation), critical mass (solidity), continuous improvement (productivity/effectiveness or efficiency) and learning and optimization (Moore, 2006; Lansiti & Levien, 2004; Montoya et al., 2011; Haider, et al., 2021; Janzen, 1980).

Among the elements for the coevolutionary process to develop, the following must be guaranteed:

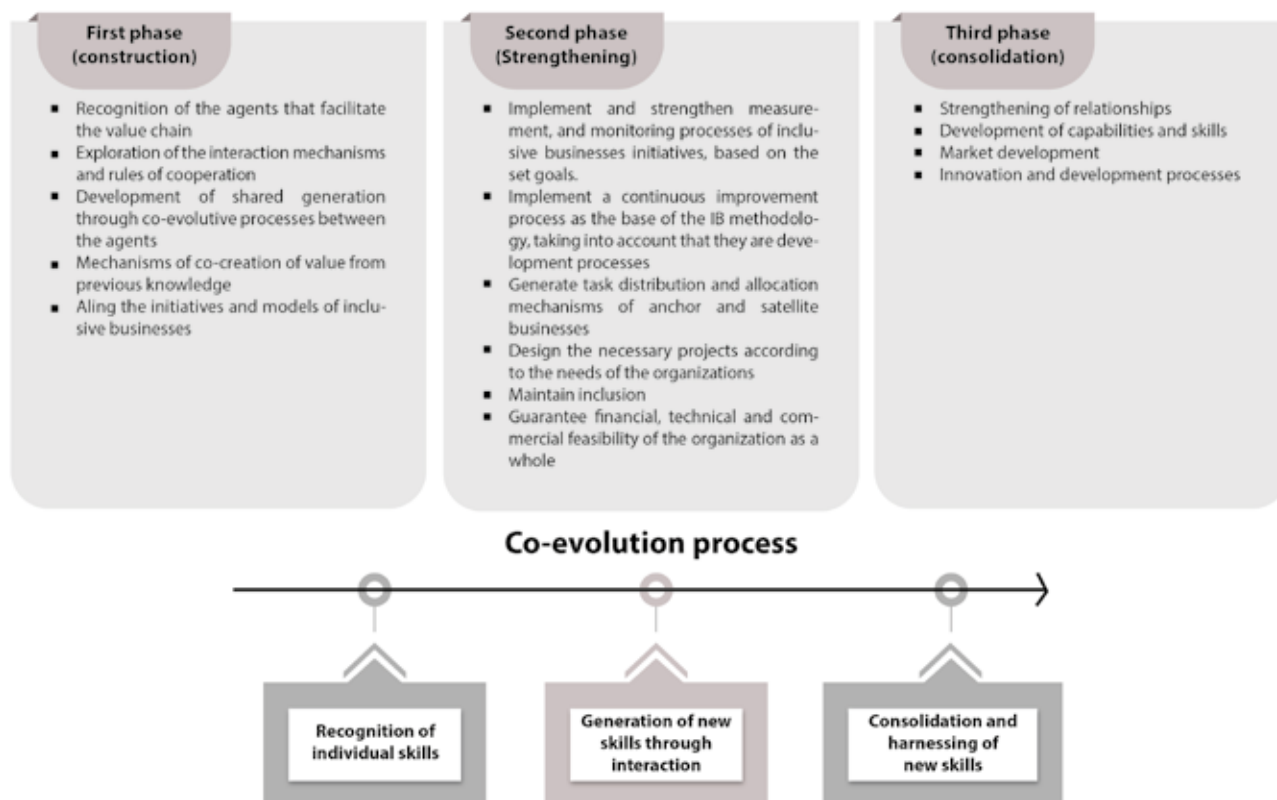
- That the systems are interrelated, interdependent, but maintain their individuality.
- The units in each process can be separated and their mutual influence represented (with adaptation paths and learning process)
- It becomes a conscious response in the case of social sciences in order to improve the performance of the system

- The multiple difficulties of the process are recognized, which should be seen more as an opportunity, because it means that development is improving the parts for progress (Gual & Norgaard, 2010).
- The coevolutionary process is characterized by being unique with variability and interdependence, in which a balance between cooperation and symbiotic relationships occurs.
- It is a complex process due to the network of interactions that occur.
- It has indeterminacy of the consequences of uncertainty and risk.
- The processes are irreversible and irrevocable both biologically and in economic processes (Font & Cuant, 2021). Figure 7 shows the process between the Anchor company and the processes of the producers that are in the integration.

These alternatives study the different phases of the process that can be strengthened in three phases, construction, strengthening and consolidation (Figure 6).

**Figure 6**

*Phases of the applied coevolutionary process*

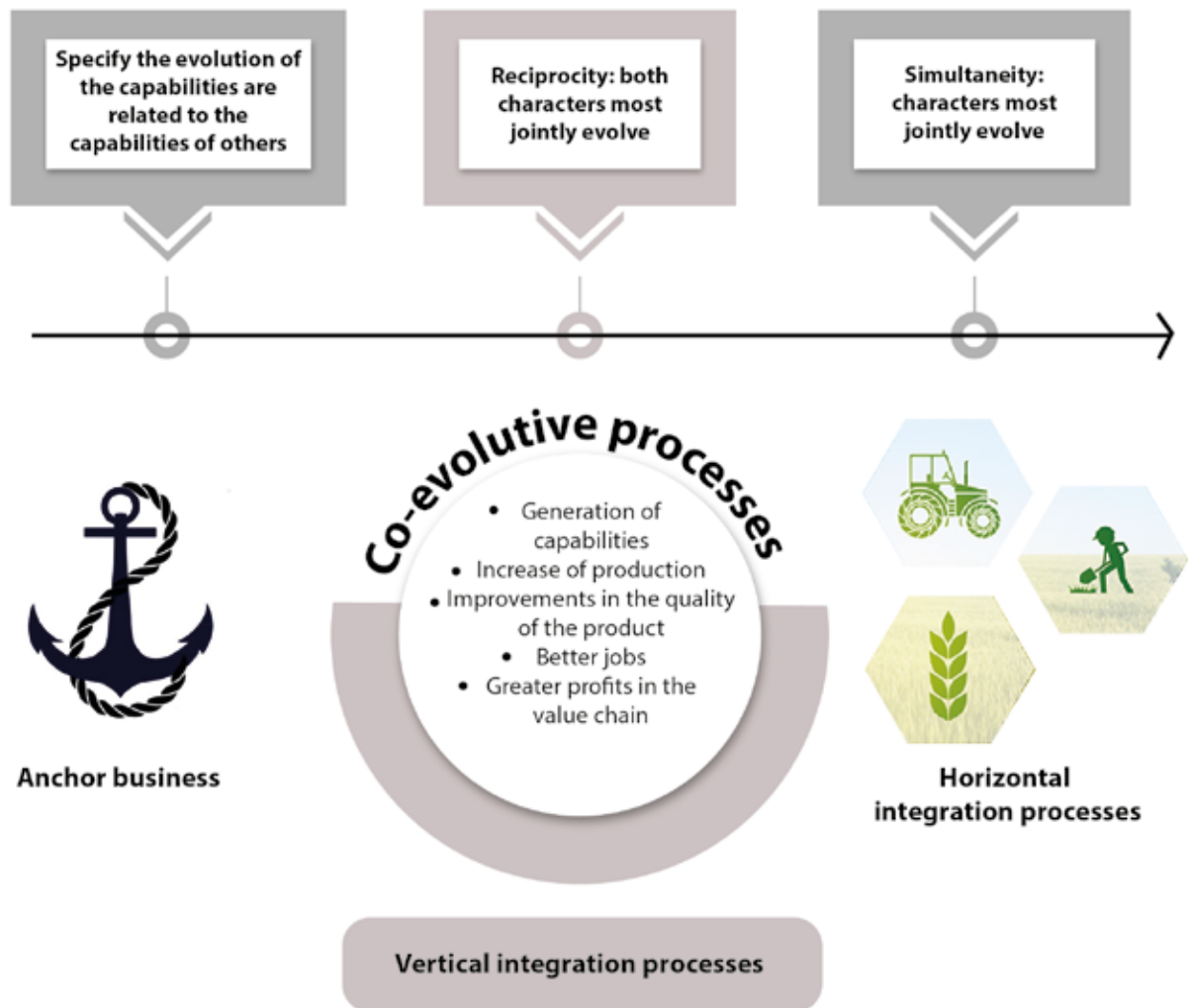


Note. From Covo (2019).

Finally, the role of the anchor company is recognized as a dynamic mechanism of the co-evolutionary processes and generation of mutual alternatives, recognizing a gain in the consolidation of the process (Figure 7).

**Figure 7**

*Co-evolutionary processes in inclusive businesses*



*Note.* The authors

One of the elements that can be taken as an application from the biological model is that in nature the size of the organisms that interact is not important, that is, the anchor company as coordinator of the process does not have to be a large company and the other systems productive units do not have to be so vulnerable or small. Inclusion in nature and in the model, what is recognized is not so much the vulnerability, but the difference, and it is recognized that all the productive units have something to contribute to the ecosystem as a model and that both the anchor and satellite companies have a process of co-evolution and their mutual cooperation is required.

## 4. Conclusions

The Covid-19 pandemic was an unexpected and shocking event in the economic sectors, which affected developing economies to a greater extent, due to their own vulnerability. In Latin America, in particular, the rural sectors were impacted by difficulties in the collection of supplies, transportation difficulties due to mobility restrictions, the absence of health services, and health issues for people due to the disease itself. There were also setbacks in the education of boys and girls, an increase in rural poverty,

commercialization difficulties, and in the production processes themselves. However, the great importance of the agricultural sector in the economy of the countries and its role in rural development and in reducing poverty levels in the region is recognized. As an alternative, the analysis strategy of the biological metaphor is presented, following the process of representation of reality, a translation process through the vehicle that allows the generation of the creative metaphor, that allows giving new meanings to the signifiers that are available to take advantage of its powerful cognitive mechanism.

From the biological metaphor applied to social and productive organizations, we can gather cooperation mechanisms, from the models of nature, which provide interesting elements for organizational collaboration in a special sector. Co-evolutionary models and mutualism provide a reference framework that teaches the evolutionary advantages of collaboration between species in ecosystems, where there is evidence that these alternatives are evolutionarily more successful and stable than even competition mechanisms.

Finally, the opportunity of defining inclusive business was analyzed, in which producers are presented as (species) with weaknesses that can be supported by companies (strengthened species) that can support their development. Inclusive businesses recognize the potential of small producers as families that sustain the economies of the countries and their own subsistence and that are important for the development of the entire value chain.

Although they are small, these producers have family and ancestral knowledge of production and productive capacity that contribute to the development of the region, strengthening the territory and improving the quality of life of small producers. This document emphasizes that producers must be recognized as important, even if they are small and somewhat vulnerable. In nature, species, even if they are small, are essential because they maintain the balance of the system, but they do so because of their ability to interact as a community.

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# Rural entrepreneurship: a historical approach

## Emprendimiento rural: una aproximación histórica

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### Abstract

*This work shows the historical evolution of the role of the rural entrepreneur, the roles assumed according to the changes of context over time and new conceptualizations around rural entrepreneurship that should no longer be seen only as linked to the agricultural function, but to the territory, which gives room for other types of non-agricultural enterprises to be cemented in rurality and be considered as rural entrepreneurship. This work was carried out thanks to an in-depth exploration and subsequent collection of bibliography from databases in the period from 1756 to 2018, defining a search equation that allowed finding 5220 documents and after a refinement and the use of the bibliographic manager Mendeley®, a total of 443 documents remained, which were processed, read and categorized in a bibliographic matrix.*

*As a result, a conceptual evolution of the role of the entrepreneur is observed, characterized by several roles and descriptions, as well as of rural entrepreneurship, which is seen as the creation of a company in a rural environment and where it no longer depends only on the agricultural function, which opens the way for the development of other types of non-agricultural businesses in the territory, bringing with it a new approach to explore in the literature on entrepreneurship.*

### Resumen

Este trabajo muestra la evolución histórica del papel del emprendedor rural, los roles asumidos según los cambios de contexto en el tiempo y nuevas conceptualizaciones entorno al emprendimiento rural que ya no debe ser visto solo como vinculado a la función agrícola, sino al territorio, lo que da espacio para que se establezcan otros tipos de empresas no agrícolas en la ruralidad y sean considerados como emprendimiento rural. Esta labor se realizó gracias a una exploración en profundidad y posterior recopilación de bibliografía de bases de datos en el periodo comprendido entre 1756 a 2018, definiendo una ecuación de búsqueda que permitió encontrar 5220 documentos y después de una refinación y la utilización del gestor biblioFigure Mendeley®, quedó un total de 443 documentos, que fueron procesados, leídos y categorizados en una matriz bibliográfica. Como resultado se observa una evolución conceptual del papel del emprendedor que se caracteriza por tener varios roles y descripciones, así como del emprendimiento rural, el cual es visto como la creación de una empresa en un entorno rural y donde ya no depende solo de la función agrícola, lo que abre paso para que se desarrollen otro tipo de negocios no agrícolas en el territorio, trayendo consigo un nuevo enfoque por explorar en la literatura sobre emprendimiento.

### Keywords | palabras clave

*Entrepreneurship, rural, history, typology, agricultural, entrepreneur, evolution, conceptual.*

*Emprendimiento, rural, historia, tipología, agrícola, emprendedor, evolución, conceptual.*

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## 1. Introduction

At the beginning of the 20th century, rural areas concentrated the majority of the world's inhabitants (Galpin, 1918); however, industrialization in certain territories generated population migration to large cities (Casson & Casson, 2014; Farley, 1937), motivated by the opportunities they generated such as the educational development of children, the possibility of finding better-paid jobs, the search for greater stability and economic certainty, or ease and better propensity to start businesses in an urban environment, in the face of an uncertain rural scenario (De Jong & Fawcett, 1981; Mazumdar, 1987). This brought with it the depopulation of rural areas (Frederick & Long, 1989; Watkins, 1907).

The industrialization of the cities brought with it economic progress; while rural areas became stagnant and isolated in their role as providers of raw materials with little or no added value (Harris, 1969; Tauger, 2010); market conditions have made it necessary for rural entrepreneurs to continually change and assume new roles in the process of creating a business and sustaining it over time, which becomes a constant challenge, given the less competitive rurality compared to urban environments (Harpa & Moica, 2014). A situation that could be improved with the arrival of new settlers who would allow counter-urbanization processes, attracting people from urban environments to rural ones (Stockdale, 2016).

In this process, an evolution of the role of the rural entrepreneur has been noted as well as of the different typologies that it assumes depending on the historical changes of the period and the context (Arias & Ribes, 2019), for this reason, it is necessary to establish a historical perspective that denotes the changes occurred in the entrepreneur and the roles assumed by them over time.

This article shows different milestones related to the historical path from a subordinate farmer from the feudal era, to becoming a businessperson and where the agricultural function, with which rural entrepreneurship was framed and which constitutes the current imaginary, is conceptually delimited in the modern sense, opening space so that non-agricultural entrepreneurs that are developed in a rural area can be considered as rural entrepreneurship.

Taking into account the above, this work has sought to reduce the existing knowledge gap at the historical and conceptual level of the rural entrepreneur, which becomes key to understanding the phenomenon and establishing a baseline for the development of new works in the area.

## 2. Corpus selection criteria

The search for the historical background is key for knowing the evolution of theoretical and research development (Gómez et al., 2015), which in this case is related to rural entrepreneurship; seeking to know the changes related to the role of the rural entrepreneur and entrepreneurship itself over time, for this reason, a systematic and orderly search for information is proposed using bibliographic and analytical content matrices (Corbetta et al., 2007).

The exploration of the information was carried out using the Boolean operators "AND" and "OR", and using the expressions: "entrepreneur", "entrepreneurship", "rural" and "agriculture"; which allowed generating the following search equation, according to the parameters exposed by Codina (2017):

$$(Rural \text{ OR } agriculture) \text{ AND } (entrepreneur) \quad (1)$$

The equation above was used in bibliographic databases such as Scopus, Web of Sciences (WOS), and journals with a JCR impact indicator for the period (1965-2018); and for the oldest documents, JSTOR and Google Scholar were used in order to identify the first allusions regarding rural entrepreneurship.

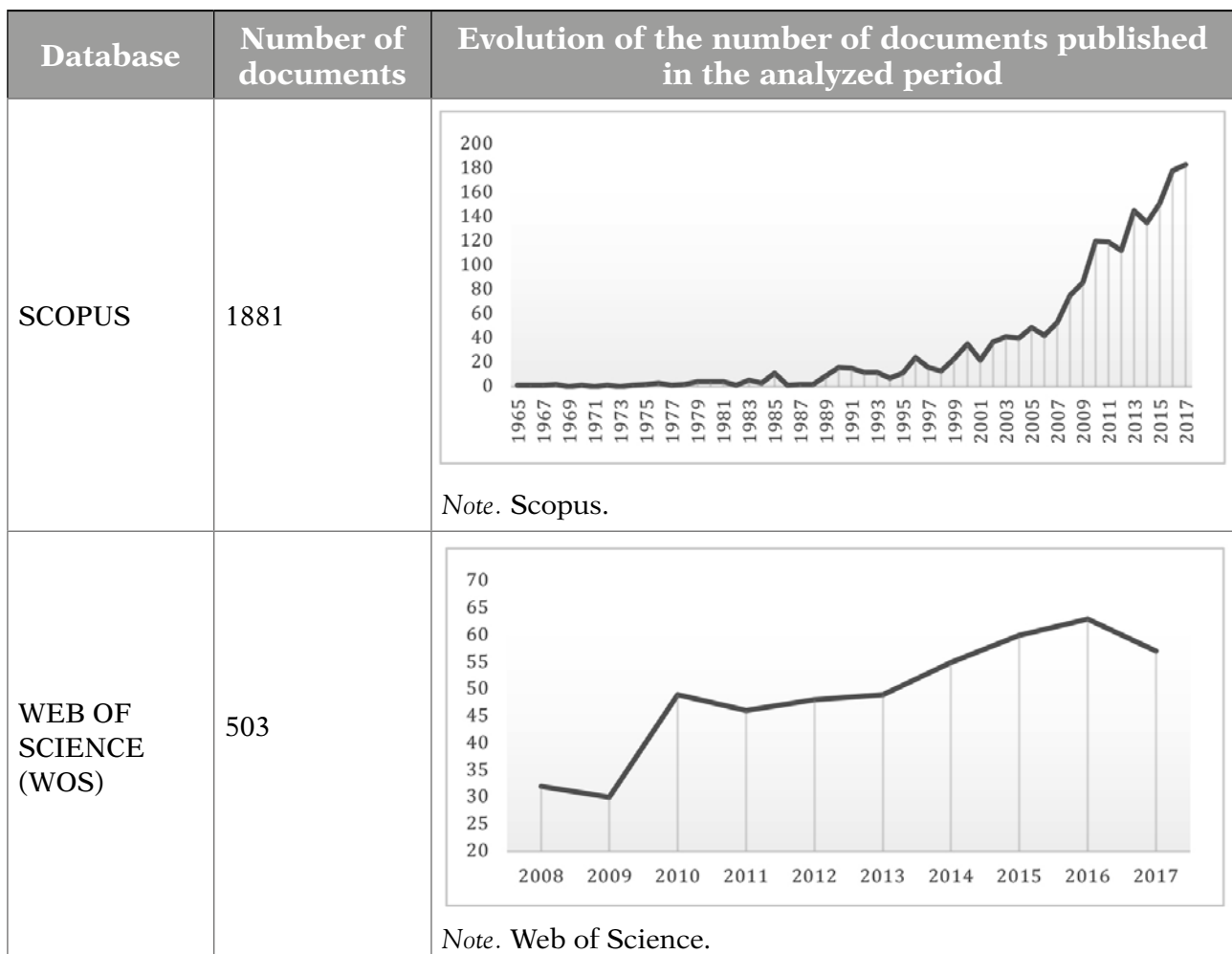
Although Google Scholar collects a greater amount of information in the period 1756-2018 (143,000 results); Only the period 1500 to 1900 was taken into account, given that there were inconveniences previously reported by researchers that still persist; such as incorrect titles and citations (Adriaanse & Rensleigh, 2013, p. 741), in addition to multiple copies of the same document (Pato & Teixeira, 2016); therefore, the following years (1900-2018) were covered with the other databases.

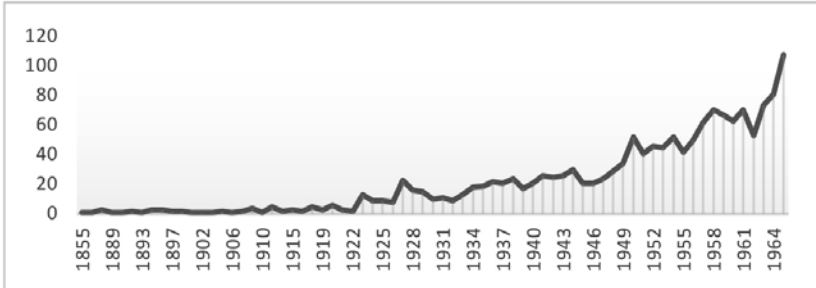
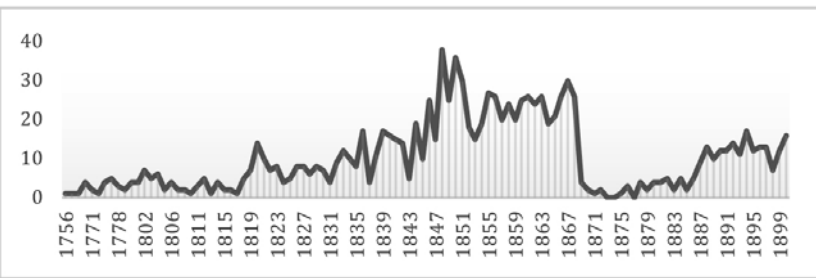
The search yielded a total of 5,220 documents between 1,763 when the oldest publication was found, up to 2018 (See Table 1); Subsequently, titles and abstracts were analyzed, in which it was sought to identify explicitly and as an exclusionary criterion; allusion to the subject of entrepreneurship or the agricultural and/or rural entrepreneur.

As a result of the above, 443 documents were detected; which were introduced to the Mendeley® bibliographic manager; making annotations and index cards during the reading process, which began on May 8, 2017, and ended on April 17, 2018. The bibliography was classified in chronological order, developing a matrix in Excel, allowing the relevance and contribution of each one of the authors for the period addressed to be defined (1756-2018).

**Figure 1**

*Number of documents found*



JSTOR	1711	 <p>Note. JSTOR.</p>
GOOGLE SCHOLAR	1125	 <p>Note. Google Scholar.</p>
Total documents	5220	

The results are presented chronologically, indicating the changes of period, context and role that the rural entrepreneur has suffered in the period from 1756 to 2019. They reflect the path of the subordinate peasant to then become an entrepreneur, but also the roles that rural entrepreneurs have assumed with the aim that their business initiatives prosper over time. It was also found that the concept of rural entrepreneurship has distanced itself from the imaginary that only obeys the agricultural function, to make room for new conceptualizations that include other types of non-agricultural entrepreneurship in the rural sector, generating new typologies of rural entrepreneurs.

### 3. Debates on the state-of-the-art

Agriculture has historically promoted the economic development of nations and access to land and the means of production have been essential for the prosperity of nations, and for those who have historically sought to expand their power and influence (Arias & Ribes, 2019).

The empires based their power structure from the Middle Ages on the development of feudal systems until the 15th century that “distributed power and income among increasingly autonomous landowners, linked to a certain peasantry” (García-Cotarelo, 1979, p. 224) and where the owner was the one who made the decisions about what and how to produce (Cervera Ferri, 2008; Danvila, 1779); In this context, the farmer was subordinate, had no right to property and had to pay taxes (Boutruche & Pontieri, 1995).

The feudal system falls into crisis due to epidemics that reduced the population, famine due to bad harvests, conflicts and ideological changes (Borrero-Fernández, 2007); it weakens the system and creates the basis for the transition to a capitalist economic system that replaced feudalism at the beginning of the 16th century (Stern, 1987).

In the seventeenth century, agricultural work was carried out in Western and Mediterranean Europe by free peasants, “whose taxes, rents and tithes constituted the bulk of the income of the state, the landed nobility and the state. [...] There were also wealthy farmers who hired labor to produce for the market” (Bergin, 2002, p. 27).

This brought discontent to the people, added to an anti-monarchist current that was promoted by the period of enlightenment in the 18th century and where the peasant was considered as a businessman. In this regard, Cantillon (1756) considers that: “the farmer is a businessman who promises to pay the owner for the farm or the land a fixed amount of money, without being sure of the advantage he has” (p. 64) which portrays the individual as a risk taker (Casson, 2010).

On the other hand, Mirabeau (1763) proposes a critique of the role of the peasant and his taxation by the owners and the State itself, mentioning that:

The owner’s interest includes that of the state, and both go against his dearest interests, sending or diverting the benefits of the farmer. This reason touches any farmer, whether he is an entrepreneur or a farm worker. (p. 15)

The French Revolution that occurred in the 18th century sought, among other aspects, the liberation of the peasant and his lands. At the same time, the sale of confiscated goods to the clergy and the aristocracy allowed access of the peasants to the property; however, the capitalist mode of production differentiated the peasantry “due to the polarization between capital and wage labor” (Calatrava, 1996, p. 110), added to this the bourgeois revolutions that allowed the creation of institutions “to develop the capitalist mode of production” (Aparicio, 2013b, p. 60).

Capitalism promoted accumulation and the search for control of the means of production (Hollander, 1894; Smith, 1976); in this context, farmers could work as peasants or tenants and sometimes progress to become owners and generate surpluses to sell on the market as they made good decisions (Ise, 1920).

### **3.1 The farmer as entrepreneur**

Access to land ownership for agricultural purposes became easier for those interested in owning land in the United States, encouraged by the “Homestead” Act of 1862; in which the settlers and the landless could access the securitization of up to 160 acres, per family, on land that belonged to the state (Ross, 1929; Shannon, 1936). This possibility is one of the causes of the population expansion due to the increase in the birth rate and the strong European migration that quintupled the number of inhabitants (105.7 million); during the period from 1850 to 1920, which constituted the largest free market in the world (Aparicio, 2013b).

The industrialization initiated in Europe and the United States generated in the mid-nineteenth century and the mechanization of agriculture, which lowered the labor requirements, promoted the migration of rural workers to urban areas, seeking better living conditions (Frederick & Long, 1989).

In this period (1850-1920), the authors usually considered the field worker who aspired to be a farmer, as a process where the young person had to learn agriculture, to save in order to buy and establish his own farm (Carver, 1911) and where market changes demanded that the farmer be trained for the development of rural businesses based on technique and production (Butterfield, 1905), looking for the rural business to be similar to those developed in the city (Bernard, 1917).

The role of the farmer as entrepreneur is addressed by Schultz (1939), who mentions that:

The farmer as entrepreneur must do two things. He must formulate the price and the technical rates that he expects. He must then develop a production plan based on his expectations that will make optimal use of his resources. The expectations cover the former and the plan covers the latter. (p.577)

### **3.2 The rural entrepreneur as a person who innovates and takes risks**

The literature developed between 1920 and 1970, is wrapped in a context in which the First and Second World Wars took place and in which the hegemonic role of the North American economy is consolidated. In this period, the great depression occurs in 1929, whose effects go until 1932, which originates from the speculation and optimism of investors who did not measure the risks, generating a speculative bubble that caused a great economic depression (Aparicio, 2013a).

The risk and the motivation to obtain profits in an environment of uncertainty seems to permeate the literature of the time; in which authors such as Knight (1921), highlight the role of the entrepreneur as an individual who should take risks, although he would not necessarily receive the equivalent return of what he invested (Frederick & Long, 1989); and even he could lose his money depending on the level of exposure, which can sometimes leave him in debt.

Given the high levels of competition, provided by technical developments in agriculture; it required the farmer to become more technical and incorporate science to improve his productivity, combined with adequate management, reducing financial risk (Nourse, 1930) and expanding his capabilities (Stigler, 1937); to better participate in the markets (Foster, 1953; Schultz, 1939), which is applicable to the rural entrepreneur.

### **3.3 Rural entrepreneur motivated towards multi-activity, specialization or the development of non-agricultural work**

The environment plays an important role and motivates the individual to become a rural entrepreneur (Harris, 1969), requiring a combination of psychological and environmental factors (Chaudhuri, 1976), in which the person collects an idea from their context and transforms it into a commercial opportunity (Bryant, 1989); however, the entrepreneur is limited in their autonomy, due to the external control of others and of forces external to them, which make them limited in making strategic decisions (Benveuti, 1975); where current circumstances raise the need for flexible entrepreneurs that can reorganize their businesses, although they do not necessarily own them (Acs, 2006; Herslund & Sørensen, 2004); sometimes leading to them playing more than one role (Hisano et al., 2018; Pindado & Sánchez, 2017).

Since the market is dynamic and not static, the entrepreneur must be aware of the changes in the environment and must detect the opportunities or dangers that this generates; which is framed in an environment of uncertainty and competition, which translates as pressure from the environment (Anderson, 2000), so that the entrepreneur seeks new sources of income and can ensure the commercial success of the rural business (Georgiana-Raluca et al., 2013); sometimes motivating him to become multi-activity; that is, develop more than one activity (Eikeland & Lie, 1999); seeking to diversify (Mook, 1978) or expand (Gray, 2002).

The multi-activity entrepreneur combines the work of the land, which is usually done part-time (Alsos et al., 2003; Eikeland & Lie, 1999), with other types of complementary activities (Schneider, 2009); which can be, essentially, agriculturally related to

the primary sector, or others where agricultural products are transformed and oriented towards other branches of the economy such as services, commerce, and industry (Schneider, 2009).

The literature on multi-activity mainly reports the development of activities linked to the service sector such as rural tourism (Fortunato, 2014; Urquijo et al., 2017); rental of properties and sport practice (Saito & Kanno, 1990); hunting, fishing, bird watching, and adventure (Eikeland & Lie, 1999); catering, accommodation and food (Bijaoui & Regev, 2015); culture, art, participation in festivals (Hjalager & Kwiatkowski, 2017); crafts, commerce and biodiversity (Müller & Korsgaard, 2018), organic agriculture (Hisano et al., 2018); environmental services and power generation (Ferguson & Hansson, 2015); as well as spa and personal care; being multi-activity the answer to improve the competitiveness of rural entrepreneurs and their businesses in the current situation (Haugen & Jostein, 2008). Although industrial production, commerce, services, or other practices can also be developed; without a necessary connection with agricultural activities but developing in a rural space, which is why Gerard McElwee (2008) calls this subject “non-agricultural rural entrepreneur”.

Specialization is another possible way that the rural entrepreneur can choose to be competitive, given that in a free market economy (Del Pozo & Lasanta, 1992) consumption is specialized, forming new niches that must be covered and that would generate better profit possibilities under a framework of sustainability (Schaller, 1993). This represents an alternative to competing in price as is usually done in the agricultural sector, which harms the interests of producers who end up receiving very little for their productive effort, falling into an intermediary network that takes most of the profits and where the inefficiency of this model ends up harming the final consumer who ends up paying dearly for the cost overruns of this process (Arias-Vargas & Rendón-Sierra, 2015; Molinari, 2006).

### 3.4 The rural entrepreneur and their typologies

The academic production of rural entrepreneurship is approached from different perspectives and contexts starting in 1966, which tried to establish roles and typologies (Arias & Ribes, 2019; McElwee, 2008; Pato & Teixeira, 2016), while the authors who focus on the conceptual themes begin with Fran Hoy in 1987 who pointed out in a conference that:

A popular image of a rural entrepreneur is “. . . independent in nature, risk-taking, achievement-oriented, self-confident, optimistic, hard-working and innovative”. He then stated that entrepreneurship “in a rural context focuses on creating new employment opportunities through the creation of new businesses.” (Today, 1987, pp. 7-8)

Al respecto Max Wortman en 1990 realizó una aproximación al concepto, indicando que “es la creación de una nueva organización que introduce un nuevo producto, sirve o crea un nuevo mercado, o utiliza una nueva tecnología en un entorno rural” (Wortman, 1990); mientras que Lafuente et al. (2007) describen el proceso como un conjunto de tres pasos comenzando con la intención influenciada por los modelos de roles y el contexto, luego la detección de la oportunidad y concreción de la misma y el establecimiento de las condiciones para convertirse en empresario rural.

The truth is that there is no longer talk of rural entrepreneurship as one oriented solely to the agricultural function, making room for other types of non-agricultural enterprises that are developed in a rural environment, such as services and even tech-

nology companies, which opens up a broad spectrum to analyze entrepreneurship in rural areas as a whole (Arias & Ribes, 2019).

Regarding the typologies, evolution is also seen in the way some authors such as Narayana (1966), Leibstein (1968), Lauwere and Verhar (2002), and McElwee (2008) have attempted to classify rural entrepreneurs (See Table 2).

**Table 2**

*Typologies of rural entrepreneurs*

Type	Description	Authors
Innovative	They look for opportunities.	Narayana (1966)
Imitator	They adopt successful innovations.	
Fabiano	Cautious and skeptical.	
Drones	Refusal to take advantage of opportunities.	
Parasites	They take advantage of the government for their benefit.	
Routine entrepreneur	Carries out activities related to the coordination and maintenance of a farm.	Leibenstein (1968)
New type of entrepreneur	Performs activities necessary to create or develop a company.	
Economic	They create significant economic changes.	Lauwere y Verhaar (2002)
Socially responsible	They recognize that success must be balanced with a social and environmental role.	
Traditional producer	They focus on an activity that is guaranteed to be successful.	
New producers	Those who branch out into new but similar areas of activity.	
Shady businessmen	Reluctant to change.	
Farmer as farmer	Farmer whose economic activity is based on working the land.	McElwee (2008)
Farmer as Entrepreneur	Innovative, oriented to opportunities, changes, flexible and diverse economic activities.	
Farmer as a contractor	Farmer contracted for specific tasks.	
Non-agricultural rural entrepreneur	Entrepreneurs who have stopped farming to focus on alternative businesses that are not based on food production.	

*Note.* Own elaboration based on the cited authors.

Likewise, there are other authors who have not attempted to develop a classification of the roles and functions of rural entrepreneurs as such, but who have contributed to the fact of detecting different roles and functions that entrepreneurs can perform in rural areas (See table 3).

**Table 3**

*Types of rural entrepreneurs found in the literature*

Type of rural entrepreneur	Description	Authors
Active	They have a better vision, they look for opportunities, they push themselves and carry out actions to improve the rural company or create it.	(Hibbard, 1922), (Smit, 2004), (Llambí Insua & Perez Correa, 2004), (Llambí Insua & Perez Correa, 2004), (Pyysiainen <i>et al.</i> , 2006), (Vaillant & Lafuente, 2007), (Gerard McElwee, 2008), (Driga, Lafuente, & Vaillant, 2009), (Bosch & Gómez, 2010), (Isiorhovojaq, 2013), (Sserwanga, Isabella Kiconco, Nystrand, & Mindra, 2014), (Beldman, Lakner, & Smit, 2014), (A. Santos, Neto, & Serrano, 2016), (Pindado & Sánchez, 2017).
Passive	They can be profit-seekers, spectators of change, or they are also considered as individuals who depend on others or on the context.	(Smit, 2004), (Llambí Insua & Perez Correa, 2004), (Chaves, Magalhães, Benedetti, Blos, & da Silva, 2010), (Bosworth & Atterton, 2012), (Shahraki & Movahedi, 2017)
Flexible	Those with the greatest ability to reorganize their business.	(Smit, 2004), (Llambí Insua & Perez Correa, 2004), (Chaves, Magalhães, Benedetti, Blos, & da Silva, 2010), (Bosworth & Atterton, 2012), (Shahraki & Movahedi, 2017)
Restricted	Limited capacity that makes them vulnerable to change.	(Herslund & Sørensen, 2004)
Adaptive	Adapt their rural business to changes in the environment and the market.	(Herslund & Sørensen, 2004), (Steiner & Cleary, 2014)
Proactive	High level of recognition of opportunities, anticipation, flexibility and creative development.	(Chen & Yang, 2009), (Lang, Fink, & Kibler, 2014), (George, Parida, Lahti y Wincent, 2016)
Reactive	React to opportunities to take advantage of opportunities that sometimes turn out to be fleeting; for which a factor to consider is its ability to react.	(Michael William Patrick Fortunato & Alter, 2016)
Need	Someone who considers entrepreneurship in the rural sector because there are no options in the market.	(Maritz, 2004), (Acs, 2006), (Naude & Walt, 2006), (Williams, 2007), (Cabus, 2010), (Brünjes & Diez, 2013), (Langevang, Namatovu, & Dawa, 2012) (Figueroa Armijos & Johnson, 2013), (Lang <i>et al.</i> , 2014), (Van der Zwan, Thurik, Verheul, & Hessels, 2016), (Coulibaly, Erbao, & Metuge Mekongcho, 2018)

Type of rural entrepreneur	Description	Authors
Opportunity	Someone who spots a new opportunity or an existing underexploited one and seeks to start the business to take advantage of it.	(Galloway & Mochrie, 2006), (Naude & Walt, 2006), (Acs, 2006), (Williams, 2007), (Laborde & Veiga, 2010), (Langevang <i>et al.</i> , 2012), (Brünjes & Diez, 2013), (Figueroa Armijos & Johnson, 2013), (Michael William Patrick Fortunato & Alter, 2016), (Van der Zwan <i>et al.</i> , 2016), (Coulibaly <i>et al.</i> , 2018),
Multi-activity	It combines the work of the land with other activities of a complementary type.	(Austin, Deary, Gibson, McGregor, & Dent, 1996), (Kodithuwakku & Rosa, 2002), (Eikeland & Lie, 1999), (Alsos <i>et al.</i> , 2003), (McElwee, 2006), (Marchante, Varela, Guerrero, & Navarro, 2007), (Vesala, Peura, & McElwee, 2007), (Haugen & Jostein, 2008), (Gerard McElwee, 2008), (Andersson, Eklund, & Lehtola, 2009), (Schneider, 2009), (Tate, 2010), (Korsgaard, Müller, & Tanvig, 2015), (Soto Villagrán & Fawaz Yissi, 2016), (Viladomiu & Rosell, 2016), (Urquijo <i>et al.</i> , 2017), (Radicic, Bennett, & Newton, 2017), (Anthopoulou, Kaberis, & Petrou, 2017), (Hansson & Kokko, 2018)
Multifunctional	The entrepreneur bases his rural business, under a multi-activity perspective, in addition to developing different functions of agriculture in his business, and seeks the development of sustainable practices.	(Foster, 1953), (Alsos <i>et al.</i> , 2003), (Montiel Molina, 2003), (Gerard McElwee, 2008), (Andersson <i>et al.</i> , 2009), (Aranda, Parrado, & Pachon, 2009), (Bosch & Gómez, 2010), (Cabus, 2010), (Seuneke, Lans, & Wiskerke, 2013), (González, Perpinyà, Tulla I Pujol, Martín, & Belmonte, 2014), (Guštin, Slavič, & Potočnik Slavič, 2015), (Seuneke & Bock, 2015), (Soto Villagrán & Fawaz Yissi, 2016), (Deakins, Bensemann, & Battisti, 2016), (Shahraki & Movahedi, 2017), (Coscia & Russo, 2018)
Governmental	Organizes and guides the community, builds business support systems, and develops rural entrepreneurship policies.	(Li & Matlay, 2006), (Link & Scott, 2010), (Liu & He, 2011), (Flynn, Schröder, Higo, & Yamada, 2014), (Mei, Chen, & Wu, 2016), (Cabrera & Mauricio, 2017).

Type of rural entrepreneur	Description	Authors
Social	Generates initiatives and companies that allow the creation of social value.	(Thompson, 2002), (Peredo & McLean, 2006), (Marquis, 2009), (Núñez, 2010), (Stănescu, Anton, & Cojocar, 2013), (F. M. Santos, 2012), (El Ebrashi, 2013), (Lan, Zhu, Ness, Xing, & Schneider, 2014), (Sserwanga <i>et al.</i> , 2014), (Lan <i>et al.</i> , 2014), (Migliore, Schifani, Romeo, Hashem, & Cembalo, 2015), (Kuratko, Morris, & Schindehutte, 2015), (Makarand, Jonathon, Sandra, & William, 2015), (Steiner & Teasdale, 2016), (Richter, 2017), (Satyalakshmi, 2017), (Ratten, 2018).
Embeddedness	Insertion, “embeddedness” of individual behavior in the social relations of the rural community.	(Llambí Insua & Perez Correa, 2004), (Kalantaridis & Bika, 2006), (Kalantaridis & Bika, 2011), (Bosworth & Atterton, 2012), (Akgün, Baycan, & Nijkamp, 2013), (Akgun <i>et al.</i> , 2010), (Ferguson & Hansson, 2015), (Korsgaard, Ferguson, & Gaddefors, 2015), (Pato & Teixeira, 2016), (Burnett & Danson, 2017), (Hjalager, 2017), (Pindado & Sánchez, 2017), (Shu, Ren, & Zheng, 2018), (Müller & Korsgaard, 2018).
Portfolio	Growth oriented, risk takers, innovators, optimists and having more personal control over their business activities.	(Carter, 1998), (North & Smallbone, 2006), (G McElwee, 2006), (Vesala <i>et al.</i> , 2007), (Gerard McElwee, 2008), (Haugen & Jostein, 2008), (Tate, 2010), (Seuneke <i>et al.</i> , 2013), (Radicic <i>et al.</i> , 2017)
Rural entrepreneur who inserts himself and/or builds networks.	Enables the connection of individuals and their rural initiative inside and outside the territory, allowing access to resources and the market.	(Smit, 2004), (Herslund & Sørensen, 2004), (Stathopoulou, Psaltopoulos, & Skuras, 2004), (Peng, 2005), (Galloway & Mochrie, 2006), (Marchante <i>et al.</i> , 2007), (Casson, 2010), (Gülümser, Baycan-Levent, & Nijkamp, 2010), (Zampetakis & Kanelakis, 2010), (Zarazúa, Almaguer-Vargas, & Rendón-Medel, 2012), (Bosworth & Atterton, 2012), (Freire-Gibb & Nielsen, 2014), (Steiner & Cleary, 2014), (Tunberg, 2014), (Lan <i>et al.</i> , 2014), (Migliore <i>et al.</i> , 2015), (Huggins & Thompson, 2015), (Ferguson & Hansson, 2015), (Reidolf, 2016), (Soto Villagrán & Fawaz Yissi, 2016), (Morris & James, 2017), (Jianyong, 2017), (Newbery, Siwale, & Henley, 2017), (Gretzinger, Fietze, Brem, & Ogbonna, 2018), (Gilliam, States, Mehta, & States, 2018),

Type of rural entrepreneur	Description	Authors
Social franchise	Social franchising is an entrepreneurial business model that provides market coordination and support systems to rural businesses so that they can achieve social goals in a financially sustainable way.	(A. R. Anderson & Lent, 2017), (McKague, Wong, & Siddiquee, 2017)
Lifestyle	Person or group who decide to start a rural business looking for perspectives to improve their quality of life.	(Rutten, 1986), (Gladwin <i>et al.</i> , 1989), (Stathopoulou <i>et al.</i> , 2004), (Galloway & Mochrie, 2006), (F. T. Dos Santos, 2007), (Vaillant & Lafuente, 2007), (Baylina & Gunnerud Berg, 2010), (Akgün, Baycan-Levent, Nijkamp, & Poot, 2011), (Markantoni & van Hoven, 2012), (Tunberg, 2014), (Hernández-Maestro & González-Benito, 2014), (Guštin <i>et al.</i> , 2015), (Korsgaard, Müller <i>et al.</i> , 2015), (Makarand <i>et al.</i> , 2015), (Lafuente & Gómez-Araujo, 2016), (Finke & Bosworth, 2016), (Fortunato y Alter, 2016), (Stockdale, 2016), (Burnett & Danson, 2017), (Hedlund, Carson, Eimermann, & Lundmark, 2017), (Anthopoulou <i>et al.</i> , 2017), (Hisano <i>et al.</i> , 2018), (Hustedde, 2018), (Gorbuntsova, Dobson, & Palmer, 2018), (Hansson & Kokko, 2018) (Ye, Xiao, & Zhou, 2019)

#### 4. Contributions to the state-of-the-art

The role of the rural entrepreneur as a man who starts or operates an agricultural business has changed with the development of the academic literature; making room for the possibility of other types of businesses and activities that are not necessarily agricultural, but that are located in a rural area and that can be related to it.

Context and market changes have encouraged individuals, individually or as members of a group, to seek new ways and means of being able to grow and sustain themselves in a free market economy, through the adoption and development of new roles and functions that enable the rural initiative to prosper.

Currently, international institutions, governments, society and academia are concerned with finding effective formulas and mechanisms to revitalize rural areas, which have been impoverished by the displacement of opportunities for urban centers, which has caused the locals feel motivated to leave their territories; in addition to the limitation that this supposes, to favor the migration of new settlers towards them.

Taking into account the above, rural entrepreneurship emerges as a response to the current need to generate employment in the face of the current economic crisis and the development needs of rural areas that have suffered abandonment. Faced with this, many authors consider that not only should public policies be created, but also effective mechanisms should be sought to implement them adequately in reasonable times, at the same time, creating conditions to encourage the establishment of institutions and actors in the rural territory that would mobilize resources to make this possible.

Although other subfields of entrepreneurship are currently gaining ground, such as those proposed in the service economy and in the internet age; it is necessary to begin to seriously work on the development of rurality, promote the generation of wealth as in times of yore, where the rural had greater importance, promote the migration of trained people willing to contribute to the development of inclusive businesses generating profitability.

## 5. Discussion and conclusions

As a result, there is a conceptual evolution of the role of the entrepreneur that is characterized by having several roles and descriptions, as well as rural entrepreneurship, which is seen as the creation of an organization in a rural environment, where this phenomenon should no longer be just seen from the agricultural function, allowing the development of other types of non-agricultural activities that can be developed in these territories.

Taking into account the above, it is possible to generate an approximation to the concept of rural entrepreneurship as one that promotes and consolidates organizational initiatives in a rural environment, where these can be agricultural and non-agricultural, and may or may not be for-profit, which expands the scenario by bringing with it a new approach to explore in the literature on entrepreneurship

It is also found in the literature how 34 defined typologies appear in rural entrepreneurs, which in recent years is marked towards multi-activity, where the entrepreneur must do more than one activity in order to achieve the sustainability of the business initiative through income diversification.

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# Relationship between profile and entrepreneurial vision of university students

## Relación entre perfil y visión emprendedora de estudiantes universitarios

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### Abstract

Entrepreneurship can be defined as the execution of a project or purpose where the person is fully prepared to take the risk and carry out the project. In Peru, business entrepreneurship is highly recognized, at the Latin American level, it is the first country with the highest perception, in relation to the simplicity when starting a business; and the third with respect to the faculties and competencies, as well as with greater possibilities for the citizen to become an entrepreneur. The present study determines the relationship between the entrepreneurial profile and the entrepreneurial vision of university students. The research is developed under a quantitative approach with a descriptive correlational scope, the sample was represented by 135 students enrolled in the faculty of business sciences of the Program of Study Administration and Human Resources of the Continental University in the academic cycle 2022- 2. A Pearson correlation coefficient of 0.78 was obtained, which indicates that there is a positive correlation between the variables of the study, such as the entrepreneurial profile and the entrepreneurial vision of university students. This proves the research hypothesis: the entrepreneurial profile has a positive correspondence with the entrepreneurial vision of the students of the faculty of business sciences of the Program of Study Administration and Human Resources of the Universidad Continental in the academic cycle 2022- 2.

### Resumen

El emprendimiento puede definirse como la ejecución de un proyecto o propósito donde la persona se encuentra totalmente preparada para arriesgarse y efectuar el proyecto. En el Perú, el emprendimiento empresarial es altamente reconocido, a nivel de América Latina, es el primer país con mayor percepción, en relación con la simplicidad a la hora de dar comienzo a un negocio; y el tercero respecto a las facultades y competencias, así como con mayores posibilidades para que el ciudadano pueda emprender. Este estudio determina la relación entre el perfil emprendedor y la visión emprendedora de estudiantes universitarios. La investigación se desarrolla bajo un enfoque cuantitativo con alcance descriptivo correlacional, la muestra estuvo representada por 135 estudiantes matriculados en la facultad de ciencias de la empresa del Programa de Estudio Administración y Recursos Humanos de la Universidad Continental en el ciclo académico 2022-2022. Se obtuvo un coeficiente de correlación de Pearson de 0,78 lo que indica que existe una correlación positiva entre las variables del estudio, como el perfil emprendedor y la visión emprendedora de estudiantes universitarios. Esto comprueba la hipótesis de investigación: el perfil emprendedor tiene una correspondencia positiva con la visión emprendedora de estudiantes de la facultad de ciencias de la empresa del Programa de Estudio Administración y Recursos Humanos de la Universidad Continental en el ciclo académico 2022-2022.

### Keywords | palabras clave

Autonomy, creativity, business, entrepreneurship, university students, entrepreneurial profile, entrepreneurial vision, leadership.

Autonomía, creatividad, empresas, emprendimiento, estudiantes universitarios, perfil emprendedor, visión emprendedora, liderazgo.

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## 1. Introducción

In entrepreneurship, there are three philosophical currents that carry out research on it: psychological theories, Austrian theories and neoclassical equilibrium theory. Starting with the latter, neoclassical perspectives analyze the particularities of entrepreneurs that differentiate them from those who are not (Achiquen et al., 2021). For their part, psychological theories analyze the attitudes and abilities of individuals in order to initiate them with economic actions. While the Austrian theories recognize the different information that individuals need in order to perceive commercial possibilities. Therefore, it is worth mentioning García-Cabrera et al. (2015), who see it as a procedure for preparing economic actions, for which the expansion of unquestionable leadership capacities is needed in order to accept risks and use innovation and creativity. Likewise, Mayer et al. (2020), conceive it as a chain of correlations between the behavior of the entrepreneur and the possibilities offered by the market. From another point of view, it is presented as behavior aimed at fostering transformations in the work of individuals and their lifestyles, through original decisions and financing of the means to achieve it.

Likewise, entrepreneurship can be considered as an execution of a project or purpose where the person; that is the entrepreneur, is fully prepared to take risks and carry out said project. In this way, Rodríguez and Urbiola (2019) describe it as a style of existence or a philosophy of life, whose purpose is to make a dream, an objective, or an ideal come true. In addition, in the administrative method, it is possible to observe the distinction of tasks, how maneuvers and management of those tasks are carried out, as well as the dynamism of the entrepreneur and the invention that he takes advantage of. In another order of ideas, in the psychological area, motivation, challenges, incentives, creativity, communication channels, the need for autonomy are manifested; while, in the area of sociology, it is oriented towards values, natures, networks, experiences, and capabilities; these dualities favor the importance of the individual and his conduct in correspondence to society.

In this order of ideas, business entrepreneurship has been analyzed from socio-psychological, economic, and behavioral perspectives. In the first place, the socio-psychological perspective proposes that entrepreneurship is understood by the particularities of each entrepreneur. Second, in the economic perspective, entrepreneurship is a procedure of perceiving possibilities through creativity and innovation (Alaña et al., 2017; Batista-Canino et al., 2016; Romero et al., 2021). Finally, the behavioral perspective highlights that there are certain precise behaviors of entrepreneurship. In other words, there are entrepreneurs out of opportunity or necessity.

On the other hand, when entrepreneurs establish their own business, they want it to be successful, for this reason most of them manage to achieve it (Batista-Canino et al., 2016). However, many of them take into account that the success of a company is due to innovative projects; but it is relevant to highlight that there are other elements that intervene in the achievement of business success, not only monetary but also personal elements; which gives the entrepreneur the possibility of having a platform to carry out their purposes (Karabulut & Dogan, 2018). Given these approaches, this study analyzes what are the personal elements that an entrepreneur must possess and how these elements affect the entrepreneurial vision. It should be noted that, over the years, research on entrepreneurship has been increasing.

Indeed, in Peru, business entrepreneurship is highly recognized, at the level of Latin America, it is the country with the highest perception in relation to the ease of doing business; and the third regarding the faculties and abilities of entrepreneurs, as

well as having greater possibilities for the citizen to be able to start a business. On the other hand, Mendoza (2018) indicates that there are numerous institutions and companies that promote training through workshops, courses or advice for entrepreneurs who are just starting out, such is the case of Emprendedor Peruano, which is sponsored by the Ministry of Production.

Similarly, there are cases of entrepreneurs who, even when they received advice, are unable to perfect their business projects not only due to lack of finances, but also due to various individual components that make it impossible to determine the consummation of the business. However, entrepreneurship externalizes various atmospheres; which are appreciated in the present study, examining the personal elements that guide entrepreneurs in the consideration of their success, either by the level of studies, age, family environment, gender, the influence of the government and the average investment. (Krauss et al., 2020). In this sense, the objective is to determine the relationship between the entrepreneurial profile and the entrepreneurial vision of students of the Faculty of Business Sciences of the Administration and Human Resources Program of the Continental University in the 2021-2022 academic year.

## 1.1 Entrepreneurial profile

It is determined that entrepreneurs are those who have a notion of business but are still in execution procedure. Therefore, Guachimbosa, Lavín, and Santiago (2020) argue that entrepreneurs emerge as creators of opportunities and are formed by an obligation. In this order of ideas, an entrepreneur can be defined as an individual who not only deploys a transformative idea or a project but, at the same time, carries it out with the support of a sequence of actions and particular skills that will favor him to achieve success. On the other hand, the entrepreneurial culture is the accumulation of skills, knowledge, and essential qualities that an individual retains, to manage a specific purpose (Orlandini-González, 2021; Reyes-Cruz et al., 2019). From what has been said above, it is possible to establish that an individual who has an entrepreneurial culture is capable of achieving their goals and successfully achieving any project or business that they wish to start.

Lastly, entrepreneurial energy is the sensitive phase of an entrepreneur seeking to reform their culture. Similarly, individuals with this energy have the ability to listen and evolve everything that is heard into plans to transform the world. Therefore, a peculiarity of entrepreneurs is knowing how to listen, which is reflected at the moment of: Knowing how to listen to users, history and change, as well as particular personal and social characteristics. In this sense, Favretto et al. (2003) present the Entrepreneurial Aptitude Test (TAI), which proposes the following variables: goal orientation, leadership, adaptation, achievement motivation, personal fulfillment, innovation, flexibility, and autonomy. However, for the purpose of this study, we employ the variables proposed by Rubio-Rodríguez et al. (2020), which are similar and describe entrepreneurial activity in more detail, are expressed in nine essential values in an individual with entrepreneurial energy, they are contextualized and specified below.

### 1.1.1 Creativity

The entrepreneur has the ability to perceive ideas or projects and, at the same time, propose innovative results in the face of a complication. For this reason, Borjas (2012) states that creativity is one of the most relevant characteristics in the profile of an entrepreneur, and this is nothing more than the individual's ability to solve problems

in an original way, in other words, the power to create. Likewise, the great designations of entrepreneurship did not manage to reach where they are pursuing habitual behaviors, such as those that are generally observed. At the same time, it is recognized that certain individuals are more creative than others from birth, but it should be noted that creativity can be encouraged (Romero et al., 2021). Therefore, to broaden an enterprising mind, extend creativity and intellectual faculty; you can stimulate the brain with simple actions, for example; meditating, going to museums, playing sports or learning new things on a daily basis; leaving aside the routine.

### **1.1.2 Autonomy**

This value refers to the adjustment of behavior through rules that emerge from the person himself; since the term autonomous mentions an individual capable of consciously deciding the rules that guide their behavior (Salazar et al., 2019). Therefore, when an entrepreneur has the value of autonomy, it means that they have the power to do what they really think they should do, and it also means that they have the ability to analyze what they think they should do with all the data available and reflects if it really should be done or if they are deceiving themselves.

### **1.1.3 Self confidence**

When this value is present in an entrepreneur, they perceive themselves in a positive way, that is, they have security in their particular resources and take into account all the possibilities to bet on their abilities and skills, since having their own business it is necessary to work on their self-confidence to fortify these capabilities and put aside fear and all those doubts that may arise because fear is a great enemy of entrepreneurs, a limitation when it comes to wanting to achieve success (Brandle et al. al., 2018). In this order of ideas, in order to transmit credibility and trust to employees, partners or clients, the predominance of self-confidence is fundamental, since it is the strength that one has to carry out projects, make decisions and be sure of the actions themselves, in other words, feeling proud of themselves and being aware of their capabilities, always trying to innovate in the weak points to turn them into strengths.

### **1.1.4 Tenacity**

The entrepreneur has the resolve and will when starting a venture, at the same time, establishes perseverance, vehemence, and security in their actions. Likewise, an individual has the possibility of falling numerous times, however, if he/she is willing to learn from his mistakes and continue insisting, it is possible that he/she achieves his/her goals (Omidí et al., 2016). A este respecto, el vocablo está relacionado a la concepción de perseverancia. Además, muchas personas estiman que la tenacidad es un valor indispensable para lograr el éxito. Cabe resaltar que en la expresión «quien triunfa nunca abandona» se exterioriza la relevancia de insistir una y otra vez hasta ver realizadas las metas; de igual manera, deja sobreentendido que realmente el decaer radica en darse por vencido, en dejar de guerrear. In this respect, the word is related to the conception of perseverance. In addition, many people consider tenacity to be an essential value for success. It should be noted that in the expression «who succeeds never gives up» the relevance of insisting again and again until the goals are achieved is externalized; in the same way, it goes without saying that the declining really lies in giving up, in stopping the fight. On the other hand, certain individuals mistakenly accept that tenacity requires a succession of personal integrity, which not everyone possesses (Hoyte, 2019).

In contrast, a tenacious quality seeks the use of 100% of the faculties and enthusiasm for the execution of a purpose.

### ***1.1.5 Sense of responsibility***

Responsibility is an intrinsic value, that is, it is found in the way of reasoning of each individual, giving them the opportunity to manage, reflect, guide and assess the effects of their actions, always in moral matters (Barajas et al., 2020). Therefore, immediately when moving on to ethical matters; that is, implementation, these four ideas remain in order to decree the dimensions of said acts and face them in the most comprehensive and positive way, constantly in favor of labor, social, personal, cultural and natural progress. In addition to this, the entrepreneur has an inclination to take care of the duties of themselves and their team, for this reason, the sense of responsibility will be set in motion by the simplest circumstances of daily life and in the interactions, one has, since childhood, with parents, teachers, and peers.

### ***1.1.6 Ability to take risks***

The ability to take risks according to Ramos et al. (2021) is a quality that links the attraction to achieve an objective and the ability to examine the probable circumstances that may arise, both favorable and harmful. In other words, what is required is that the person be able to carry out the numerous capacities and that it allows them to make a contingency assumption linked to the probabilities of things happening, that is, the alternatives that would exist and the way to anticipate the scenarios that would hinder the achievement of the objective or, failing that, reduce the results. It is important to highlight that the entrepreneur has an inclination to proceed with determination in circumstances that undoubtedly entail conflict when making a decision.

Likewise, risk or danger is constantly linked to transformations and determination. On the other hand, the search for opportunities for organizations is always an invariable aspect (Karabulut & Dogan, 2018). Therefore, making the aforementioned opportunities profitable implies accepting commitments. In addition, when every leader makes a decision, they are forced to know how to value and consider the chances of winning or losing, and opt for the best alternative. In turn, mastery of risk and the ability to accept it is a relevant administrative aptitude.

### ***1.1.7 Leadership***

Leadership is one of the most outstanding values in the profile of the entrepreneur, because they have the ability to influence others, recognize their particular abilities and incorporate them into their projects (López et al., 2021). However, the leadership phase cannot be reduced to the representation of the guide. Therefore, a good professional who tries to have their own business understands that leadership is the ability to motivate and inspire acts in a group of individuals, that is, it is the ability to generate followers. At the same time, there is the possibility of fine-tuning one's attitude as a leader, giving importance to the work of initiating new ideas, emotional balance and thirst for knowledge. Also, to appreciate the agreement and disposition of the group whenever it is required, taking into account that all are significant to design and achieve the proposed objectives. It is worth mentioning that accepting projects is also something that requires a lot of commitment and that is highly appreciated in great leaders.

### **1.1.8 Team spirit**

The entrepreneur has the ability to work in harmony with others, where they share purposes and performance techniques. Therefore, according to Casanova et al. (2019) team spirit refers to the affections that the participants feel when belonging to that group, to the knowledge about the accumulation of values that they have in common and that distinguish them as a team; It is not only being part of a workgroup or being in one, nor does it arise from the simple fact of having created a team; but the team spirit resorts to that feeling of belonging, of collaboration and of feeling part of that team. Said team feeling has a quite positive and stimulating derivation, since it is the force, the motor and the impulse to move forward, with responsibility and in correspondence with the objective.

In the same order of ideas, Shirokova et al. (2016) state that the team spirit is based on the fact that the commitment in derivations is shared, in such a way that success and failures are the product of the will or shortcomings of all the participants. Likewise, that same feeling allows them to remain united in the face of calamity and conflict, making them much more emotionally resistant, because it makes them stand firm in the face of failure and allows the development of resilience, which is the ability that the individual possesses to adapt easily to the difficulties and traumatic circumstances that arise in life.

### **1.1.9 Solidarity**

With this value, the entrepreneur is able to assume and feel responsible for the decisions he/she makes either in his organization or group, that is, it is characterized by the reciprocal contribution between people (Tarapuez-Chamorro et al., 2021). In this regard, solidarity can be defined as a virtue because through it people feel united with others; exchanging their concerns, interests, and needs, without the obligation of having an affectionate bond that connects them. In other words, solidarity is a virtue because it brings together individuals who require compassion or a helping hand in their lives.

## **1.2 Entrepreneurial vision**

Referring to business terms, the approach or vision can be defined as the long-term goal of a corporation. In addition, it can be seen as the point where you want to get to, what you want. Given this approach, the vision of an entrepreneur is extremely relevant because it is the platform of their work, because if they do not know where they are going, they will not know which way to go (Eyel & Vatansever, 2019). Therefore, by understanding the vision as a kind of purpose, strategies can be designed and planned to provide the opportunity to reach that goal.

Likewise, in a simple way, vision can be defined as dreams in action; it unifies the expectations, the goals, and the desires that one wants to achieve in life, in different spheres and orders, located in the field of work, located in the daily context of what is done, of the programming of activities that are carried out and, above all, those that are executed (Nowiński & Haddoud, 2019). At the same time, the vision scheme allows tracing the future that is desired to be achieved. For this reason, it is relevant to recognize the goals to be achieved, specify them in their elements, to later reflect on them, and write them on paper, which will make up the instrument that will serve as a guide at times when conflict arises. Therefore, it is worth mentioning that every individual has dreams and every entrepreneur too; and these dreams are what give meaning to

daily work, for which the entrepreneur activates the energies to start the difficult task of starting a business. In short, the vision is a conceptualization that exceeds the distinction of objectives, being an integral, homogeneous, and complete representation that provides form and orientation to the life of the entrepreneur.

Finally, when the term vision is handled, it is framed in the sensorial area, which means that the entrepreneur must use the description in images of what they want to achieve. It should be noted that the vision, whether professional, personal or entrepreneurial, seeks to achieve a sequence of previous components in order to plan and carry out the entrepreneurial purpose. Therefore, the entrepreneur must, through the commitment to the vision, bear in mind, according to Serrano, García-Minguillán, and Jareño (2013), the aspects related to prediction, forecasting and presentiment, which are described below.

### **1.2.1 Prediction**

The entrepreneur must predict what he is trying to achieve, developing a detailed narrative of what the achievement of the objectives is like, because the greater the level of detail, the greater the probability of recognizing aspects that elucidate fields of action or work facing the future (Krauss et al., 2018). Consequently, this technique is specified in the practice of conversation, and writing, since, immediately after specifying what it is that you really want to achieve, it must be presented to different participants, that is, to those individuals who, one way or another, will be involved in the entrepreneurial project (Aloulou, 2016). In the same way, it should be kept in mind that when what you want to do is transmitted to others, in a certain way, a commitment is established in its execution.

### **1.2.2 Forecasting**

Every day many predictions are made, many times without conferring the meritorious relevance to them. However, in business matters, this should not be done, because decisions cannot be made correctly without making the necessary forecasts (Suárez-Álvarez & Pedrosa, 2016). In a few words it is necessary to prevent; carrying out an analysis and evaluation of aspects that will complete the achievement of the entrepreneurial goal.

### **1.2.3 Presentiment**

It refers to the energy, the reasons that the individual has to act, the feeling, the emotion that achievement presupposes, that is what allows the person to start the entrepreneurial project (Soria-Barreto et al., 2016). Therefore, it is necessary to remember the different sensations and moods that will allow the results to be obtained and will facilitate the energy and strength to begin to extend the planned activities and tasks.

## **2 Materials and method**

This research was developed with a quantitative approach and a correlational descriptive scope, since according to Hernández, Fernández, and Baptista (2014) descriptive studies consist of “describing phenomena, situations, contexts, and events; that is, to detail how they are and how they manifest themselves. Descriptive studies seek to specify the properties, characteristics, and profiles of people, groups, communities, processes, objects or any other phenomenon” (p. 92). Indeed, the variables entrepreneurial profile and entrepreneurial vision of university students of the Continental University of Peru are

described. In addition, the relationship between both variables is determined. Therefore, it also has a correlational scope, since these “are intended to know the relationship or degree of association that exists between two or more concepts, categories or variables in a particular sample or context” (Hernández-Sampieri & Mendoza, 2018, p. 93).

On the other hand, the design was non-experimental with cross-sectional correlational-causal classification, “these designs describe relationships between two or more categories, concepts or variables at a given time. Sometimes, only in correlational terms, others based on the cause-effect relationship” (Hernández et al., 2014, p. 157). Particularly, in the present study, only the correlation of the variables is determined, without establishing causes and effects. Regarding the population, it was represented by 205 students enrolled in the Faculty of Business Sciences of the Administration and Human Resources Study Program of the Continental University in the 2021-2022 academic year. The sample was calculated with the “STATS” program, using a margin of error of 5% and a confidence level of 95%, resulting in 135 students, who were randomly selected and their consent was requested for their participation in the study.

The formula used to determine the sample size was as follows and its components are detailed in table 1.

Formula to calculate the sample:  $n = (4 \cdot N \cdot p \cdot q) / (E^2 \cdot (N - 1) + 4 \cdot p \cdot q)$

**Table 1**

*Components of the formula for the calculation of the sample*

n	Sample size
N	Population Size
p	Success Chance=50%
q	Failure Chance = 50%
E <sup>2</sup>	Investigator Selection Error
4	Constant

On the other hand, the technique used was the survey and the instrument was a questionnaire called “profile and vision of entrepreneurs”, designed for this purpose, with 36 items and three alternative answers, which were: always, sometimes, and never. The questionnaire was validated by five (5) experts and its reliability was determined with a highly reliable Cronbach’s Alpha coefficient of 0.93.

It is important to point out that the questionnaire was made up of two large parts that cover the variables: entrepreneurial profile and entrepreneurial vision, and these aspects in turn contain the indicators of each of them, of the first they are: creativity, tenacity, self-confidence, leadership, autonomy, solidarity, responsibility, team spirit and ability to take risks, and the second are: prediction, foresight and presentiment. The responses of the aforementioned instrument were coded and tabulated with the help of the statistical program SPSS through which the data processing was carried out, determining the arithmetic means, percentages and Pearson’s correlation coefficient.

For the analysis of the data, two scales were designed through which the categories and ranges used for the study of each variable with their respective indicators are established. In this regard, for the entrepreneurial profile, the categories are: not very pertinent, pertinent, and very pertinent, while for the entrepreneurial vision they are: low, medium, and high, as specified in table 2.

**Table 2**

*Scale used for data analysis of the study variables*

Study variables	Analysis categories	$\bar{x}$ ranges
Entrepreneurial profile	Not very pertinent	0 – 1
	Pertinent	1,1 – 2
	Very pertinent	2,1 – 3
Entrepreneurial vision	Low	0 – 1
	Medium	1,1 – 2
	High	2,1 – 3

### 3. Results

The report of the arithmetic means is presented in Table 3 according to the indicators of the entrepreneurial profile variable, observing that the highest arithmetic mean is obtained by the autonomy indicator with 2.7, reporting this characteristic in a very pertinent manner according to the established scale, as well as the characteristics of responsibility and self-confidence; while the lowest arithmetic mean is obtained by the team spirit indicator with 0.5, which indicates that this characteristic is of little relevance in students of the Faculty of Business Sciences of the Administration and Human Resources Study Program of the Continental University. The same can be seen for the characteristics of solidarity and the ability to take risks. On the other hand, it is important to emphasize that the characteristics of tenacity, leadership, and creativity are assumed by the students in a pertinent manner according to the indicated scale.

**Table 3**

*Arithmetic means of the entrepreneurial profile variable by indicators*

Indicators	Arithmetic means $\bar{x}$
Creativity	1,2
Tenacity	1,8
Self-confidence	2,1
Leadership	1,6
Autonomy	2,7
Solidarity	0,8
Responsibility	2,3
Team spirit	0,5
Ability to take risks	0,9
<b>Arithmetic mean per variable</b>	<b>1,5</b>

Table 4 shows the arithmetic means of the indicators of the entrepreneurial vision variable, where it can be seen that the prediction indicator is the one that obtains the highest arithmetic mean with 2.4, which indicates, according to the established scale, that it is highly developed in students of the Faculty of Business Sciences of the Administration and Human Resources Study Program of the Continental University,

while the lowest score is obtained by the presentiment indicator with 0.9 and according to the established scale. It is important to point out that the forecast indicator develops moderately according to the indicated scale.

**Table 4**

*Arithmetic means of the entrepreneurial vision variable by category*

Arithmetic means $\bar{x}$	Prediction	Forecast	Presentiment
By indicator	2,4	1,7	0,9
By variable	1,6		

Figure 1 shows the percentages by students of the Faculty of Business Sciences of the Administration and Human Resources Study Program of the Continental University with an entrepreneurial profile by category, in which it can be seen that 55% have a relevant profile, while 25% have a very relevant profile and only 20% have a slightly relevant profile according to the established scale.

**Figure 1**

*Percentages of students with an entrepreneurial profile by category*

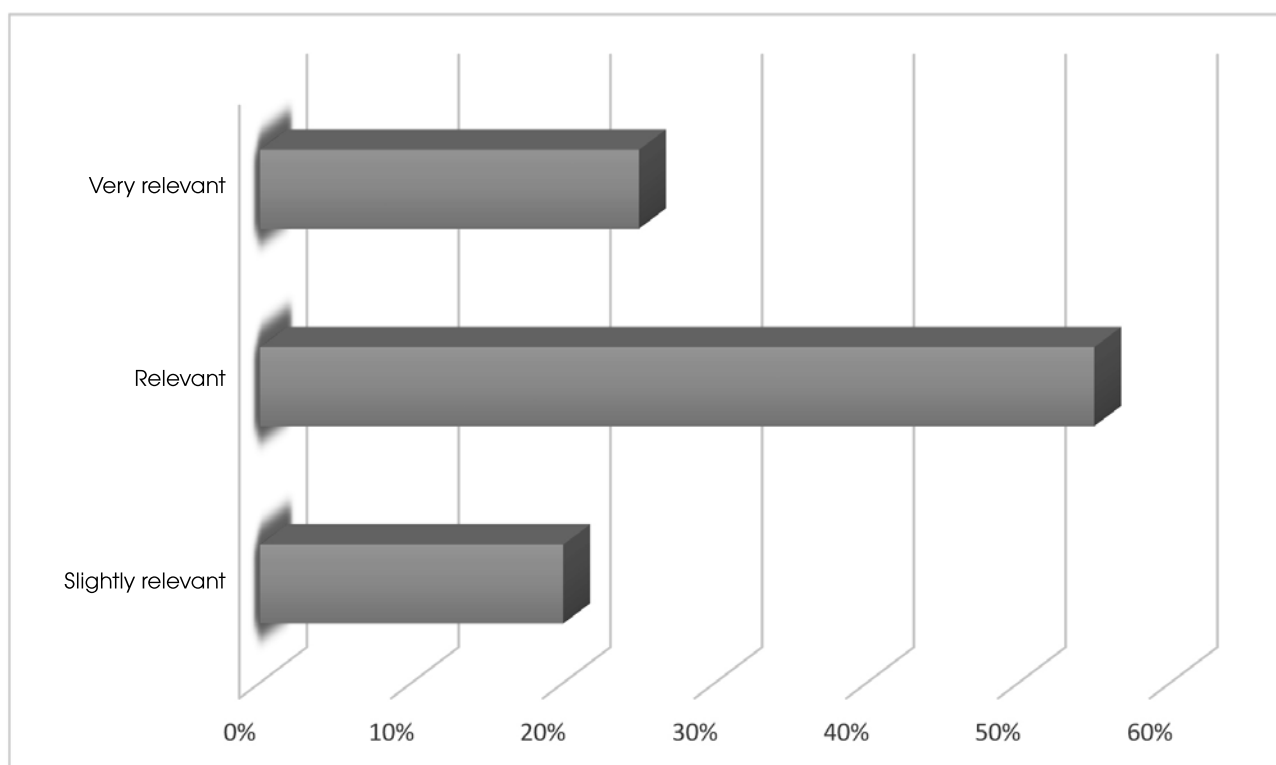
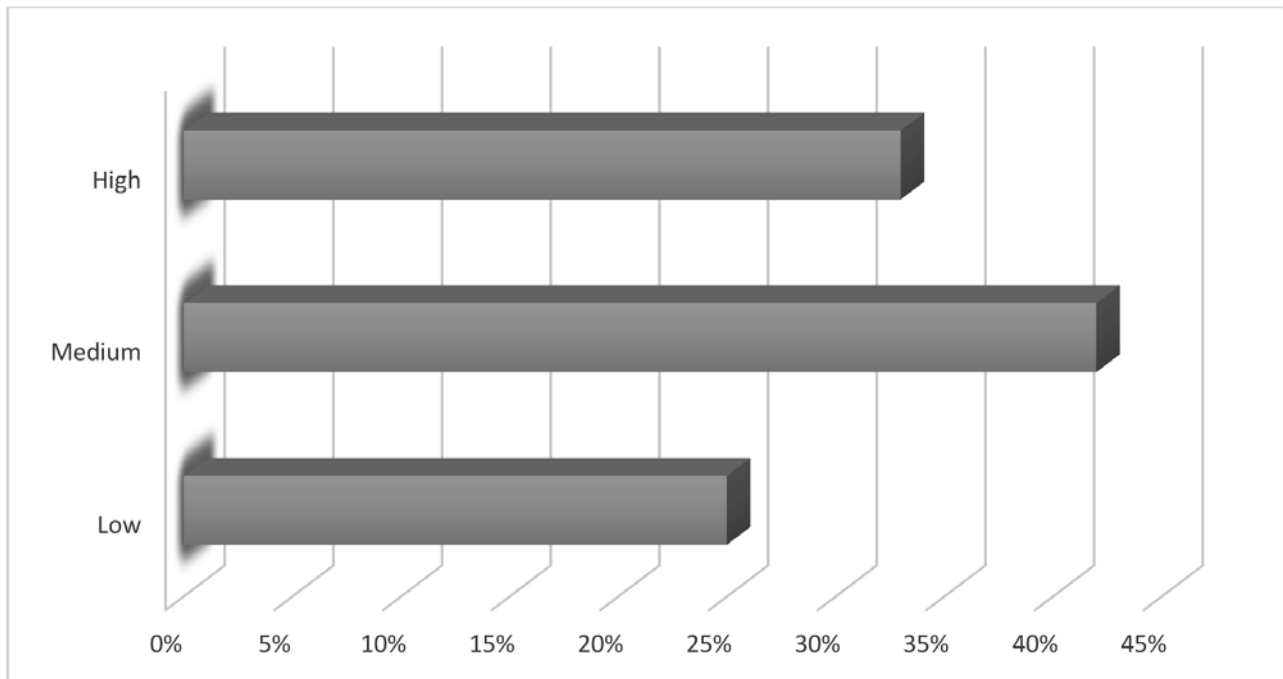


Figure 2 shows the percentages by students of the Faculty of Business Sciences of the Administration and Human Resources Study Program of the Continental University with an entrepreneurial vision by category, in which it can be seen that 42% have a medium entrepreneurial vision, while 33% have a high vision and only 25% have low vision according to the established scale.

## Figure 2

*Percentages of students with entrepreneurial vision by categories*



On the other hand, before determining the relationship between the study variables, the Kolmogórov-Smirnov normality test was carried out, in which it was established with a p-value greater than 0.05 significance, and that there is evidence to affirm that the data examined have a normal distribution, with a level of risk of 5%. Therefore, to determine the correlation coefficient, the Pearson statistic was used.

Table 5 details the Pearson correlation coefficients between variables and indicators, among which it is observed that there is a perfect positive correlation between self-confidence and presentiment, as well as between leadership and prediction. This is especially relevant if we consider Soria-Barreto et al. (2016), who argue that the presentiment provides the reasons that the individual has to act, allowing them the impulse to start an entrepreneurial project. On the other hand, Krauss et al. (2018) argue that the entrepreneur must foresee what they intend to achieve, therefore the probability of recognizing aspects that conjecture fields of action or work in the future is greater.

While between responsibility and prediction there is no linear relationship between responsibility and presentiment. It can also be seen that the lowest coefficient is in solidarity and presentiment and the highest is represented by creativity and presentiment. It is important to highlight that the Pearson correlation coefficient between the study variables is 0.78, which indicates that there is a positive correlation between the entrepreneurial profile and the entrepreneurial vision of university students. This confirms the research hypothesis: the entrepreneurial profile has a positive correspondence with the entrepreneurial vision of the students of the Faculty of Business Sciences of the Administration and Human Resources Study Program of the Continental University in the 2021-2022 academic year.

**Table 5***Pearson correlation coefficient between variables and indicators*

Indicators	Prediction	Forecasting	Presentiment
Creativity	0.96	0.99	0.93
Tenacity	0.79	0.81	0.97
Self-confidence	0.64	0.75	1
Leadership	1	0.96	0.71
Autonomy	0.37	0.94	0.52
Solidarity	0.91	0.79	0.29
Responsibility	0.67	0.92	0
Team spirit	0.89	0.59	0.38
Ability to take risks	0.98	0.72	0,86
Variables	Entrepreneurial profile		
Entrepreneurial vision	0,78		

#### 4. Conclusions and discussion

The study determined a positive relationship between the entrepreneurial profile and the entrepreneurial vision of students from the Faculty of Business Sciences of the Administration and Human Resources Study Program of the Continental University in the 2021-22 academic year. The results agree with those presented by Gómez et al. (2018), who found in their research on the relationship between the entrepreneurship profile and the possibility of creating companies successfully, that there is a close relationship between both variables, as well as the study carried out by Valreymond (2020) which shows that one of the factors that positively and significantly influence the entrepreneurial attitude is work expectation, which is closely linked to prediction, forecasting, and presentiment, which also report a positive relationship with the rest of the analyzed variables. Likewise, Gorostiaga et al. (2018) found that personal initiative in students is positively related to the entrepreneurial attitude and, of course, the indicated initiative is also linked to the prediction, foresight, and presentiment of students to act in an entrepreneurial manner. On the other hand, Jiménez et al. (2021), report that in the entrepreneurial profile there is an emphasis on being attentive to new opportunities, and the skills that should be developed include being persevering and dealing with efficiency and willingness to succeed, as well as those of proposed by Quezada et al. (2021) who indicate that most individuals consider that starting a business is a very viable alternative, due to the satisfaction of achieving success, however they do not consider the characteristics and vision that they must have as entrepreneurs and the relationship between both variables.

On the other hand, according to Serida et al. (2020) the reports of the Global Entrepreneurship Monitor (GEM) project show that entrepreneurship in Peru has been increasing longitudinally over time. In this way, it is opportune to mention that the GEM is allusive at a global level, it analyzes the progress of entrepreneurship in the nations that have joined this proposal, and thanks to the follow-up of its actions, the GEM has managed to be of great support for the private and public decisions about

entrepreneurship. Likewise, Serida et al. highlight that Peru was linked to this proposal and therefore, every year surveys are carried out on millions of entrepreneurs, in order to obtain an analysis about the conservation of entrepreneurship in this country, which maintains a good score in relation to others economies of Latin America, since these percentages exceed the average of the countries of the continent, which are the ones based on efficiency. In this same sense, the analysis of valuations, perceptions, and intention of entrepreneurship carried out by the GEM emphasizes that, compared to the perspective, it has been observed that Peruvian citizens as entrepreneurs have skills, experiences, and knowledge at 69%, a highly positive figure in relation to the faculty to engage in entrepreneurship, however, this does not mean that everyone has training in administration, therefore, most people have the possibility of empirically acquire training.

On the other hand, entrepreneurship represents a start to exercise something hard and difficult; place in progress and/or performance; create. Therefore, it symbolizes that entering this subject is accepting challenges and examining the relevant skills to expand the business, such as courage or a perspective that exceeds what is desired. From another point of view, since it is not the most frequent professional path, most of the people who are starting on their entrepreneurial path observe the trajectory of the most recognized entrepreneurs in the world and consider that it can become an impossible goal to achieve; many people long to start their own business, but they run into uncertainty and don't even finish taking the first step. All this is due to the fact that, when trying to plan a different method than usual, it is normal for questions or mistrust to appear. Even when there is no rigorous and conclusive pattern, because individuals have different ways of thinking, certain particularities tend to prevail among those who are successful.

The vision has a multidimensional point of view. In other words, it is not rectilinear in a single aspect of the life of an individual; rather, it is a matter that alters multiple personal aspects, but each one of them is interrelated with the others, that is, when the individual builds the image of what he wants to be, there are aspects that make up the complete picture, these aspects are friends, family, learning and training, the economic and professional element, the spiritual and imaginative side, all of this forms components that allow reaching the goal of what the individual wants to be. Likewise, the entrepreneur must start with what they wish to build in their professional repertoire, understanding "professional" from this sphere as the producer of one's own action for which one will receive monetary compensation, which will be based on the reconstruction of a valued entrepreneurial purpose and, from this aspect, establish the paths and relationships that should be facilitated with the rest of the personal phases.

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# Quality, knowledge, and innovation of manufacturing processes in Ciudad Juárez, Mexico

## Calidad, conocimiento e innovación de procesos de manufactura en Ciudad Juárez, México

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### Abstract

Quality consists of the standardization of manufacturing processes, the establishment of controls in operations and continuous improvement, in turn, knowledge promotes process innovation, so the constant learning in companies allows them to stay competitive in the market. The objective of this research is to determine the relationship of significance between quality and knowledge in the innovation of production processes in the manufacturing industry in Ciudad Juárez, Mexico. The study was correlational, cross-sectional with a quantitative approach using the factor analysis method and the modeling of structural equations using the survey technique. The sample was 236 valid questionnaires applied in 30 industrial companies in the maquiladora sector in the locality. The results of the convergent validity test showed that the variables are correlated and that according to the values of the average variance extracted the correlation is strong, likewise with the indicators of goodness-of-fit was obtained the degree to which the model predicts the correlations, in this case, what is observed in the data corresponds to some extent to what was proposed in the model. The relationship between quality, knowledge and innovations is positive and significant, so the research hypothesis is not rejected. Strategies implemented to improve quality and manage knowledge have a positive effect on the development of process innovations.

### Resumen

La calidad consiste en la estandarización de los procesos de manufactura, el establecimiento de controles en las operaciones y la mejora continua, a su vez el conocimiento promueve la innovación en los procesos, por lo que el constante aprendizaje en las empresas les permite mantenerse competitivas en el mercado. El objetivo de esta investigación es determinar la relación de significancia entre la calidad y el conocimiento en la innovación de los procesos de producción en la industria de manufactura en Ciudad Juárez, México. El estudio fue de tipo correlacional, transversal con enfoque cuantitativo mediante el método de análisis factorial y el modelo de ecuaciones estructurales utilizando la técnica de encuesta. La muestra fue de 236 cuestionarios válidos aplicados en 30 empresas industriales del sector maquiladora en la localidad. Los resultados de la prueba de validez convergente mostraron que las variables están correlacionadas y que conforme los valores de la varianza media extraída la correlación es fuerte. Con los indicadores de bondad de ajustes se obtuvo que lo observado en los datos corresponde con lo que se propuso en el modelo. La relación entre calidad, conocimiento e innovaciones es positiva y significativa, por lo que la hipótesis de investigación no se rechaza. Las estrategias que se implementen para mejorar la calidad y gestionar el conocimiento pueden tener un efecto positivo en el desarrollo de las innovaciones de proceso.

### Keywords | palabras clave

Quality, knowledge, innovation, process, industry, manufacturing, offshoring, production.

Calidad, conocimiento, innovación, proceso, industria, manufactura, maquiladora, producción.

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# 1 Introduction

Of the 131 countries that make up the classification of the Global Innovation Index 2020, Mexico occupies position number 55; from upper-middle income countries, 11th place; and from Latin America, the second position after Chile (Cornell University, INSEAD and WIPO, 2020).

The foregoing shows that it is necessary to continue promoting innovation in economic activity since with it is possible to increase quality standards and the region's competitiveness. Therefore, continuous improvement in processes and products is necessary, as well as the search for factors that help generate greater innovation (García et al., 2014). In this regard, the Organization for Economic Cooperation and Development [OECD] states the following:

What seemed like effective innovation strategies (for example, policies designed to strengthen the R&D capacity of local companies) are no longer sufficient in the current environment. The more open and global nature of innovation makes innovation policies more difficult to design and implement at the national level alone. Such challenges are further complicated by new phenomena such as global value chains and the fragmentation of production, the growing role of global corporations, and the ICT revolution. (Primo et al., 2013, p. 1)

According to Villarón et al. (2012), innovation is the creation and improvement of products and/or processes based on creative ideas; that is to say, its implementation is a complex, crucial and high-priority process for companies (Schmuck & Benke, 2020). Haro et al. (2017) maintain that innovation has to do with a change that provides something new, which can be useful for those who require it or even for the environment, which is the result of intelligent thoughts that provide a long-term benefit.

Schumpeter (1943) went so far as to affirm that innovators have control over what they have created, and this allows them to have an advantage over their competitors, which is why innovation is considered a key element in economic growth. For this reason, Maldonado-Pinto and Portilla-Barco (2020) assure that innovators or managers must be aware of the importance of innovation processes in companies and create the right environment to stimulate ideas and projects in the development of improvements and inventions.

Garcia et al. (2014) argue that one of the reasons why organizations decide to innovate is that it allows them to satisfy their customers with products of better quality, durability and price. Meanwhile, Alemayehu et al. (2020) argue that companies develop innovations because it is one of the main reasons for achieving high performance. In this way, innovation generates added value in traditional production processes due to the implementation of improvements, which results in better-elaborated products, cost reduction, and increased productivity, with which a better positioning of the company in the market can be achieved. (Fernández et al., 2013). Even Onufrey and Bergek (2020) comment that innovation is the response of companies to technological changes and commercial pressures from the industrial sector in which they operate. Thus, the sequential process of innovation begins with the knowledge and conception of a creative idea, to then follow strategies until its implementation (Hyvärinen et al., 2020).

García-Fernández (2016) points out that there are certain agents that influence innovation, among them are "strategic planning, finance, rivalry in the technology sector, size, culture, degree of collaboration" (p. 45), the author himself has focused his attention on quality and knowledge management as additional dimensions, pointing out that both foster innovation. In this regard, there are studies that relate quality to the development of new products, and even show a significant relationship between

quality and innovation (López et al., 2009). However, there are few studies that jointly address the relationship between quality, knowledge and innovation (McAdam & Leonard, 2001).

Miller and Shamsie (1996) state that innovation is an exploration strategy, since it allows resources to be directed towards improving inputs based on knowledge of the production process in the industry. Studies such as those by Paula and Silva (2017) even show that company innovation increases when there is a balance between internal investment in research and development, specialized education of human resources, and the collaboration of interest groups.

Regarding quality, in companies, the strategies on it translate into redesign or reengineering of processes to achieve a strategic positioning (González & Ortega, 2011), by virtue of the fact that quality provides new ways to improve processes and products, which is why organizations commit to continuous improvement processes (Ramos, 2018). In fact, quality is one of the strategies most used by companies to achieve sustainability and competitiveness (Hernández et al., 2017).

Quality is measured in standards and control parameters of the characteristics that a process or product must have, which are established to be effective (Sosa & Martín, 2015). Gimenez et al. (2014) note that the advantages of implementing quality strategies are: compliance with customer expectations, improvement of production processes, analysis and correction in production, as well as fostering a culture of continuous improvement. Therefore, quality and innovation are tools that companies use to improve their performance (Carranza et al., 2020).

In this regard, it is required that organizations adopt and generate an attitude of continuous change and that all departments and functional areas cooperate to improve performance, quality and cost reduction (Fajardo et al., 2012). In this sense, quality oriented towards changes and continuous improvement, as well as innovation, are strategies that companies implement to maintain their level of competitiveness (Bourke & Roper, 2017). In turn, knowledge allows companies to be in constant learning, hence Sosa and Martín (2015) suggest that its management and implementation as a strategy provides solutions and encourages continuous improvement in production processes.

In the study by Quezada-Sarmiento et al. (2019) it is pointed out that quality in companies responds to factors related to the management of products and processes, as well as a knowledge system, fluid communication and an innovation approach. Ganguly et al. (2020) highlight that knowledge comprises an integral part of the strategies of businesses and organizations, since it helps their growth and innovation in the market, with which they can obtain a competitive advantage.

Knowledge is a faculty and aptitude that is used when thinking, it consists of the interaction of an individual with reality through their senses, this information is processed with the aim of using it later (Gómez et al., 2014). In companies, knowledge management allows them to develop skills to face their competitors (González & Álvarez, 2019) and as a basis for economic growth (Villarón et al., 2012).

Knowledge management consists of planning, coordinating and controlling the information and learning that occurs within companies with daily interaction, which implies the management of three resources: talent, knowledge itself and collective experience (Pérez & Perez, 2004). This knowledge management allows the skills and talents of workers to be transformed into problem solving (Sosa & Martín, 2015).

Gomez et al. (2014), as well as Solleiro and Colin (2017) mention that it is the employees who end up perfecting and developing skills and techniques learned in daily experience until they become innovations. Therefore, if a company develops compe-

tence in knowledge management, it will be more innovative in the business environment (Rojas & Torres, 2017).

Thus, knowledge is considered as a fuel that allows the prosperity and development of companies through the dissemination of creative and innovative knowledge (Fagiolo, 2012). For this reason, Pérez and Pérez (2004) suggest that companies promote organizational processes with the aim of generating a synergistic combination to increase the capacity to innovate and process information, as well as the creative ability of people and collective knowledge. For small companies that lack a research and development department, knowledge management is also an important factor in generating innovation (Parrilli et al., 2020), as they can stand up to their competitors (Hossain, 2020).

Meanwhile, Kurniawan et al. (2020) point out that companies must improve quality through a greater exchange of knowledge in favor of factors such as the capacity for innovation. In this regard, Ganguly et al. (2019) analyzed the quality, knowledge, and capacity for innovation, and concluded that the role played by the exchange of knowledge in determining the capacity for innovation of an organization is important.

In addition, Honarpour et al. (2018) examined the relationship between total quality management [TQM] and knowledge management [KM] and its effect on process and product innovation through a survey of 190 directors of research and development units [R&D] in Malaysia, then did a structural analysis; the results revealed that there is a reciprocal relationship between total quality management and knowledge management, as well as an association with the innovation of processes and products, that is, companies are not only capable of managing their activities efficiently, they can also function effectively in innovative ways.

Quality strategies allow the standardization of production and manufacturing processes, as well as the establishment of controls in operations, thereby generating knowledge for self-learning and continuous improvement. Therefore, to respond to the challenges of competitiveness, as well as the uncertain and dynamic environment, knowledge is a factor that is capitalized for problem solving and strategy formulation, since according to Urgal et al. (2011), some studies show a positive relationship between knowledge and innovation as a result of the application of certain practices of creating and transferring.

Meanwhile, innovation causes organizational changes that allow companies to increase productivity (Camacho et al., 2020) and is related to improvements in production processes (Kim et al., 2012). Ramos (2018) argues that companies see quality, knowledge and innovations as essential activities to achieve high performance and better positioning in the industry, they are also important because they create a competitive advantage by making imitation difficult (Barasa et al., 2017).

This is how innovation in companies raises the need to identify the factors that contribute to its development, as is the case of knowledge and quality. Hence, the research question is: Is there a significant relationship between quality and knowledge in the generation of process innovations in manufacturing companies in Ciudad Juárez, Mexico? In this way, the objective of the research focused on determining the significance of the relationship between quality and knowledge in the generation of process innovations in manufacturing companies in Ciudad Juárez, Mexico.

## 2 Materials and method

This research is correlational, cross-sectional with a quantitative approach. Correlational because it is intended to demonstrate the significant relationship

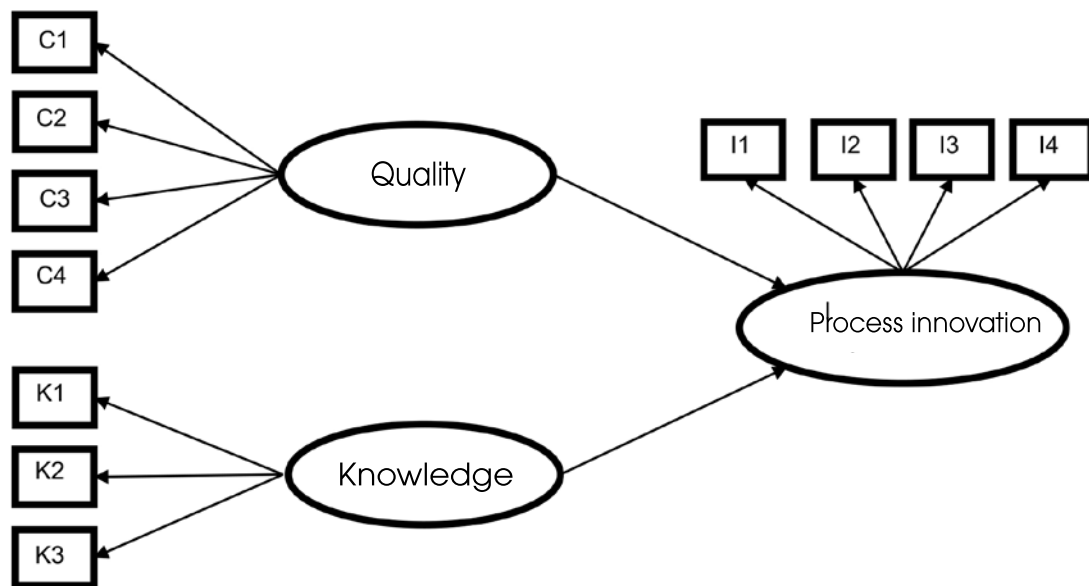
between different variables. Cross-sectional, since the information was collected on a single occasion. It is not experimental because the information is examined without altering variables and it is ex post facto because the events that have already occurred were examined.

The research element was the manufacturing industry in Ciudad Juárez, Mexico, especially the sector called *maquiladora*, which is characterized by the work of product assembly. This sector is made up of 327 factories distributed in different industrial parks in the locality, according to information provided by Index Juárez, Asociación de Maquiladoras, A.C.

The hypothesis of this research is that quality and knowledge contribute significantly to the generation of process innovations in manufacturing companies in Ciudad Juárez, Mexico. In order to contribute to the correlation analysis, a structural model was previously designed, which is included in Figure 1.

**Figure 1**

*Structural model composed of the variables quality and knowledge, which promote process innovation in the manufacturing industry in the maquiladora sector*



The data collection technique was the survey. The instrument used consisted of an 11-question questionnaire with a five-point Likert scale. The questions were divided into three sections. The first were questions related to the quality variable, which are based on the Molina-Castillo and Munuera-Aleman (2009) criteria; Jiménez-Jiménez and Sanz-Valle (2011); and Song et al. (2011). These questions address the quality policies followed by the company in the production of its products, as well as the procedures necessary to implement continuous improvement systems in a process, the use of Six Sigma, statistical process control, and other tools for quality.

In the second section, questions regarding the knowledge variable were included, according to the criteria of Jiménez-Jiménez and Sanz-Valle (2011); Chen et al. (2009) and Zhang et al. (2009), who refer to aspects related to the academic level, the technical skills of the employees, as well as the acquisition and application of knowledge for the development of innovations in the processes.

In the third section, innovation in processes is included. The questions about this variable were based on the studies by Pla-Barber and Alegre (2007); Chen et al. (2009); Jiménez-Jiménez and Sanz-Valle (2011); and Laforet (2008), these questions focus on the number of innovations in the processes that were carried out, the improvements made, the inclusion of machinery and the automation of processes, as well as questions about company data, such as the size and line of business or economic activity.

Regarding the validity of the instrument, this was carried out through a pilot test of 40 applications of the questionnaire, as suggested by Levy and Varela (2003). Cronbach's Alpha for this pilot was 0.96, which is greater than the 0.70 minimum validity index suggested by Hair et al. (2010).

Once the questionnaire was applied, the data was captured and analyzed in the Statistical Program for the Social Sciences [SPSS]. In the first stage, those questionnaires that presented missing data were eliminated, for which a total of 236 surveys were obtained. Then, to check if the sample was adequate for an Exploratory Factor Analysis [EFA], the Kaiser-Meyer-Olkin and Bartlett's sphericity tests were performed, as well as the Varimax rotation method for understanding the correlation matrix, as suggested by Levy and Varela (2003).

The measurement instrument was applied in 30 companies of the maquiladora industry in Ciudad Juárez. 250 questionnaires were obtained, of which 14 were eliminated because they were not answered completely, therefore a total of 236 valid questionnaires were obtained.

### 3. Results

Cronbach's Alpha index was 0.965, which indicates that the instrument was reliable because this test has to exceed the value of 0.70, which is the minimum recommended value. Likewise, the same index was determined for each variable, the results are shown in table 1.

**Table 1**

*Cronbach's alpha by variable*

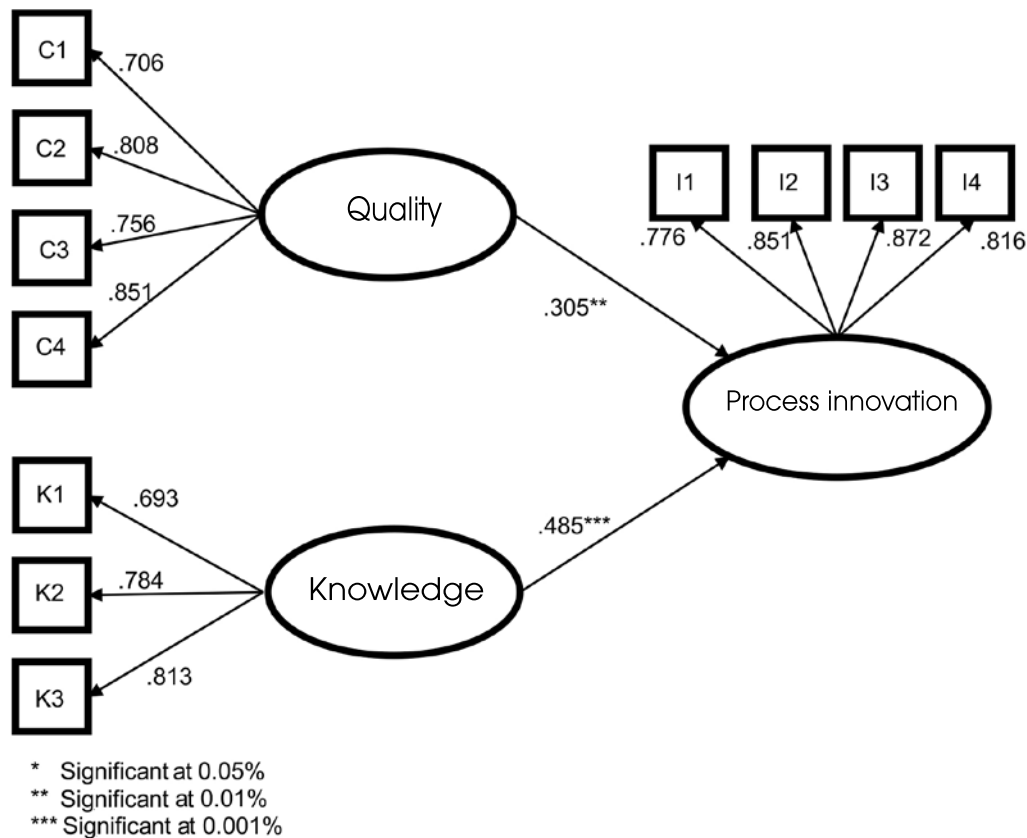
Variable	Cronbach's Alpha
Quality	0.849
Knowledge	0.819
Process innovations	0.904

*Note.* Cronbach's Alpha values for the independent variables of quality and knowledge, as well as the dependent variable of process innovations.

The sample adequacy test using the Kaiser, Meyer, and Oklin [KMO] coefficient was carried out, with which a significance of 0.926 was obtained, which shows that the variables are correlated in the measurement instrument, that is, the variables are grouped into the factors they belong to. Regarding Bartlett's sphericity test, a significance tending to zero was obtained, which indicates a correlation between the variables of the questionnaire without collinearity between them and a pertinent factorial analysis. Next, the structural model of the study is shown in Figure 2.

**Figure 2**

*Structural model that includes the significance values of each component of the independent variables of quality and knowledge, as well as the correlation values with the dependent variable of process innovation and its respective components for the manufacturing industry in the maquiladora sector*



With the purpose of corroborating the information, a confirmatory analysis was carried out in the AMOS program, through which the causal relationship between the study variables was established. Table 2 is included below with the convergent validity data.

**Table 2**

*Convergent validity*

Variable	Item	AVE	I	I (Average)
Quality	C1	0.611	0.706	0.78
	C2		0.808	
	C3		0.756	
	C4		0.851	
Knowledge	K1	0.585	0.693	0.772
	K2		0.784	
	K3		0.813	

Variable	Item	AVE	1	1 (Average)
Process innovation	I1	0.688	0.776	0.828
	I2		0.851	
	I3		0.872	
	I4		0.816	

Note. Convergent validity shows the causal relationship between the study variables.

The convergent validity test of table 2 is used to demonstrate that the variables that belong to or are grouped in the same construct are correlated. Table 2 shows the values of the average variance extracted (AVE), which are greater than 0.5, this indicates that there is a strong correlation, as suggested by Hair et al. (2010), therefore, there is a convergent validity for the variables of the structural model.

The goodness-of-fit indicators show the degree to which the model predicts the correlations, that is, that what is observed in the data corresponds to a certain extent with what was proposed in the model. One of the indicators is the CMIN/DF, which has a value of 1.807, which means that the data support the relationships between the variables, this is because the value of this indicated is less than 4, while the indicators of Comparative fit such as NFI, CFI and TLI should have values close to 0.95.

According to the values obtained, the model is valid, since the goodness-of-fit (GFI) must have a value close to 1 to indicate that the model is well adjusted, while the corrected goodness of fit index (AGFI) is an extension of the GFI and displays the model fit and degrees of freedom. Regarding the root mean square residual of approximation (RMSEA), it must have values between 0.05 and 0.08, the value obtained in this study was 0.059, which means an approximation value of the model with the population and not with the sample.

The results show that there is a positive and significant relationship between the variables of quality and knowledge with process innovation, therefore the research hypothesis is not rejected. It is possible to assume that the strategies implemented to improve quality and manage knowledge can have a positive effect on the development of process innovations.

Knowledge positively and significantly affects the development of innovations, while this variable is favorable to the company's performance. In any case, if activities and strategies aimed at knowledge management are carried out within companies, it will promote the development of innovations and productivity.

Meanwhile, the results of the research show that quality is a preponderant and highly significant factor in the development of process innovations due to the strategies implemented for continuous improvement in manufacturing processes.

#### 4. Discussion and conclusions

This research confirms the results of the study carried out by Quezada-Sarmiento et al. (2019) where they state that quality and knowledge are positively and significantly related to process innovation. Regarding knowledge, it coincides with the statements of Ganguly et al. (2020) by pointing out that quality, knowledge and innovation are positively related.

It should be taken into account that companies today face an intense level of competition, which requires companies to be more innovative (Gómez, 2016). Hence, it can be affirmed that the variables of quality and knowledge strengthen the process

innovation development model, that is, those companies that strategically manage quality and knowledge will have greater possibilities of facing the changing and competitive environment of the market. Therefore, as González and Álvarez (2019) suggest, knowledge is a tool that helps companies to generate strategies that cannot be imitated by their competitors, which in turn contributes to increasing their productivity (Pérez & Pérez, 2004).

This study confirms the interaction of quality and knowledge variables with respect to process innovation for development in the manufacturing industry of the maquiladora sector. The results are valid due to the statistical analysis of the information and the measurement instrument used. In this way, quality is a factor that affects production processes, thus increasing the performance of companies (Ramos, 2018), being a strategy used to achieve business sustainability (Hernández et al., 2017).

The model proposed in this research shows that knowledge and quality have an effect on the development of process innovations, since the positive and significant correlation can be increased by developing the appropriate strategies to improve performance.

The results confirm that companies must learn, apply and transfer knowledge in order to respond promptly to changes in the environment and new opportunities in the market, as it is a key factor in the development of innovations. Thus, high performance in companies requires greater training and implementation of knowledge management and quality strategies aimed at developing innovations.

Finally, it is suggested to corroborate the robustness of the model and the correlations of the constructs in other types of industry and contexts or markets, with the purpose of analyzing the behavior of the variables under study in different circumstances.

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# Internet traffic and firm performance in big-ticket sectors: there are two sides of the coin

## Tráfico de internet y desempeño de las empresas en sectores de alto costo: hay dos caras de la moneda

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### Abstract

The importance of well-established and customer-friendly firms' websites has increased in the context of the digitalization of the economy. The COVID-19 pandemic has become a new driver for the development of Internet communications between manufacturers and consumers. This article explores the relationship between the Internet traffic of companies' websites and their sales volumes and profitability. We apply panel data regression analysis and model of Prais-Winsten regression with panel standard error adjustment, which provides conservative and reliable estimates. In the sample of 268 observations drawn from 67 Russian firms operating in the big-ticket industries of car manufacturing and real estate development during the period of 2017-2022 characterized by a major exogenous shock, we demonstrate that internet traffic exerts a positive effect on firm sales. At the same time, this positive effect on sales is accompanied by a negative effect of internet traffic on firm profitability. The negative effect on profitability is particularly pronounced for younger firms that are likely to face severe resource constraints and can thus be said to sacrifice profitability to ensure sales. In such situation, application of cost-effective strategies may be critical for younger firms. Younger firms should pay particular attention to the contents of their websites to ensure that they provide enough adequate information that will help win the trust of new customers.

### Resumen

En el contexto de la digitalización de la economía ha aumentado la importancia de los sitios web de las empresas, bien establecidos y fáciles de usar. La pandemia de COVID-19 se ha convertido en un nuevo motor para el desarrollo de las comunicaciones por internet entre fabricantes y consumidores. Este artículo explora la relación entre el tráfico de internet de los sitios web de las empresas y sus volúmenes de ventas y rentabilidad. Aplicamos el análisis de regresión de datos de panel y modelo de regresión de Prais-Winsten con ajuste de error estándar de panel, que proporciona estimaciones conservadoras y confiables. Sobre la muestra de 268 observaciones extraídas de 67 empresas rusas que operan en las industrias de gran valor de la fabricación de automóviles y el desarrollo inmobiliario durante el período 2017-2022 caracterizado por un gran impacto exógeno, demostramos que el tráfico de internet ejerce un efecto positivo en la empresa. Al mismo tiempo, este efecto positivo sobre las ventas va acompañado de un efecto negativo del tráfico de internet sobre la rentabilidad de la empresa. El efecto negativo sobre la rentabilidad es particularmente pronunciado para las empresas más jóvenes que probablemente enfrenten severas limitaciones de recursos y, por lo tanto, puede decirse que sacrifican la rentabilidad para asegurar las ventas. En esta situación, la aplicación de estrategias rentables puede ser fundamental para las empresas más jóvenes. Las empresas más jóvenes deben prestar especial atención a los contenidos de sus sitios web para asegurarse de que proporcionen suficiente información adecuada que ayude a ganar la confianza de nuevos clientes.

### Keywords | palabras clave

Internet traffic, sales, profitability, big-ticket items, economic crisis, exogenous shock, firm age, e-commerce.

Tráfico de internet, ventas, rentabilidad, artículos caros, crisis económica, choque exógeno, antigüedad de la empresa, comercio electrónico.

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## 1 Introduction

Over the last two decades industries have witnessed the emergence of Web 4.0 and adopted their practices to correspond to the fast-changing environments. Companies maintain multiple channels in order to reach existing and potential customers, signal their positioning to the market, and build the brand (Herhausen et al., 2020). The importance of well-established and comprehensive websites has increased even further with the Covid-19 pandemic. Administrative restrictions on the number of people inside the buildings, reduced open hours, and other constraints have created significant challenges for companies by minimizing customer exposure and direct communication with customers. As a result, a lot of companies have failed to quickly adjust to these external shocks and went out of business. Companies that survived have managed to upgrade their Internet presence and start providing their offerings and communicating with customers online (García-Madurga et al., 2021; Loupiac & Goudey, 2019). Although websites and their traffic became one of the staples of a company's operations and means of establishing and understanding a company's strategic position, the effects of Internet traffic that a company generates on a company's performance remains unclear. While a significant body of research is dedicated to the challenges of developing the efficient and attractive website, there are a limited number of studies that highlight the managerial difficulties of maintaining the web presence. This research is dedicated to fulfilling this gap by highlighting the relationship between Internet traffic generated by companies' websites and company sales and companies' profitability. Consistently with general knowledge, we demonstrate that big-ticket companies are able to stimulate sales with Internet traffic. However, companies may experience diminished profitability due to resource requirements to maintain higher Internet traffic, especially during external shock, such as the Covid-19 pandemic. Furthermore, we demonstrate that the requirements for maintaining Internet traffic are more detrimental to younger firms that may not possess sufficient resources.

This paper is organized as follows. First, we summarize existing literature and context of the study. Second, we highlight how maintaining Internet traffic may affect company sales and profitability, as well as distinguish that effect for younger and older firms. Third, we discussed the methodology that was applied to investigate proposed relationship. Fourth, we present the results of our study and elaborate their implications for both practitioners and researchers. Finally, we discuss how this study contributes to the existing research, overview its limitations, and suggest directions for future studies.

## 2 Literature review and hypothesis development

In the most general sense, firms strive to build and sustain competitive advantage understood as above-average performance and typically measured with firm valuation, sales (size), and profitability. In many developing countries, due to the lack of a highly liquid stock market, valuation as a business goal does not resonate with business owners quite as well as it does in the United States or Western Europe. Sales and profitability, on the other hand, have universal appeal as performance metrics.

Nowhere is sales performance more important than in big-ticket industries, that is, industries dealing with high-price items such as cars and real estate. Even a small decline in sales in this case may be overly costly for firms to bear given the disproportionate value of lost business it brings about. When economies within which such firms are embedded are plagued by the exogenous shock, their ability to close sales is severely undermined, which calls for a broad search of tools to stimulate sales or at least minimize the loss of

clients. This was the case in Russia post 2014 due to the Western sanctions imposed on the country for its alleged involvement in the Ukrainian crisis, and the ensuing loss by the Russian ruble of about 50% of its value (Anokhin et al., 2021), which in turn rendered the products offered by the big-ticket industries inaccessible to many customers. In response to this crisis, many firms turned their attention to the multitude of channels to promote their products, including heavy investments in their online presence meant to drive the internet traffic to their websites in hopes of winning their customers' business.

Both practitioners and academics have established that companies' websites play a crucial role in companies' operations. Well-established and maintained website enables companies to educate and attract the customers (Demangeot & Broderick, 2016), establish brand positioning and reputation (Bravo et al., 2012; Constantinides, 2002), communicate with stakeholders (Abeysekera, 2019), attract new employees and collaborators (Hausdorf & Duncan, 2004), just to name a few.

Big-ticket industries are characterized by high priced items, which require customers to have high levels of psychological comfort to make a purchase (Abrell et al., 2018; Shaw et al., 1989). Such items tend to have higher profit margins, but due to the pricing, the amount of sales may be lower comparing to cheaper products. Maintaining constant sales in big-ticket industries is crucial for companies' survival, however achieving this is complicated since online shopping is usually perceived risky (Bashir et al., 2021; Bhatnagar et al., 2000). Big-ticket items create hesitation among the customers due to the price and uncertainty. As a result, customers engage in extensive information search about the product. During the pandemic, retail locations can be closed and customer traffic are minimized, so regular communication channel between the company and its customers may be unavailable, forcing customers to rely on companies' websites (Agus et al., 2021; Kwak, 2001). Once consumers collect enough of valuable information, they will consider the product for purchase. However, if customers have difficulty finding required information or have difficulties recognizing the brand or understanding the website, they will not reach the point when they will be ready for a purchase (Wu et al., 2014). Customer's perception of ease, adequacy, and completeness of information on companies' websites plays a crucial role in forming a positive customer perception that may result in sales (Carlson & O'Cass, 2011). As a result, companies should strive for creating the website that will efficiently educate the customers and create a positive experience of interacting with the company. Yang, Pan and Song (2014) have demonstrated that the online traffic can be efficiently used as an indicator and predictor of the demand. In other words, a well-built website plays a crucial role in forming communicating with customers and forming their perceptions, especially during the pandemic (Auger, 2005; Burt & Sparks, 2003). Therefore, we hypothesize that:

*H1: In big-ticket industries under crisis, there is a positive relationship between the internet traffic attracted by the firm and firm sales*

As discussed above, companies' websites play a crucial role in generating sales, and existing research tends to focus on the positive aspects of that role. However, industries have demonstrated that companies that heavily invest into their e-commerce activities may fail as well. Burt and Sparks (2003) noted that e-commerce may create a negative effect if implemented incorrectly. Therefore, the presence of the website itself does not guarantee profitability for the company. Instead, the quality of the company's website defines whether the effect is going to be positive or negative (Kim & Peterson, 2017; Agrebi & Boncori, 2017). Existing research dedicates significant efforts to explain how to build and maintain the website that will create the best perception among the

customers and increase sales. This area of research is currently emerging, and consensus has not been reached. However, extant research is congruent on the idea that companies' websites should be adapted to and congruent with the given customers and company's offerings (Bartikowski et al., 2022). In particular, efficient structure of the company's website allows customers to find necessary information about the brand easier and faster, which in turns tends to minimize uncertainty and helps to develop trust (Loupiac & Goudey, 2019; Nam et al., 2014). The abundance of relevant information about the company, its products and mission also influences viewers attitude toward the website itself and impact their purchase intentions (Bartikowski et al., 2022). In addition to the functional content, the website should be designed with aesthetic appeal and efficient performance which are necessary for forming positive attitudes toward the website (Bolton et al., 2022). Such design requirement cannot be achieved and maintained automatically. Companies should invest into market and customer research in order to obtain relevant and up-to-date information and be able to integrate it into the website (Freixanet et al., 2020). These processes create continuous expenditures to support qualified personnel or contract a third party. In addition to the maintenance of the website, companies have to dedicate additional expenditures to the promotion of the website in order to generate internet traffic (Lee et al., 2015; Nieto et al., 2014). While websites help companies to generate additional sales, the creation and maintenance of the website require continuous investments (Guerra Villalta et al., 2021). Therefore, we hypothesize that:

*H2: In big-ticket industries under crisis, there is a negative relationship between the internet traffic attracted by the firm and firm profitability*

Constantly changing industry conditions and intense competition can cast a significant pressure on companies to maintain their website activities on higher levels. Such pressure is even stronger when a regular communication channel between the company and its customers is jeopardized by the pandemic. These rough conditions demand significant resources and may put the companies with limited resources to a serious disadvantage. Extant research has highlighted numerous significant differences between younger and older companies (Ewerth & Girotto, 2021). In particular, older companies tend to possess more resources, knowledge, and experience comparing to their younger counterparts. Maintaining website and sufficient Internet traffic is a complex task that requires knowledge and significant dedication of resources. Moreover, younger firms may not have a well-established brand, which will increase customers' uncertainty. Jarvenpaa et al. (2000) have demonstrated that the size of the e-vendor may serve as an indication of trust that consumers may have for it since better companies tend to survive and grow over a period of time (Zambrano-Farías et al., 2021). As a result, younger companies have higher requirements for well-organized and appealing website comparing to older firms. Younger firms can experience even higher expenses if they don't possess enough capabilities to own and maintain the websites and have to rely on a third-party to do so.

*H3: In big-ticket industries under crisis, the negative relationship between the internet traffic attracted by the firm and firm profitability is moderated by the firm age such that it is more pronounced for younger firms*

## 3 Methodology

### 3.1 Data

We have compiled secondary data from several secondary sources to test our hypotheses. According to the SPARK information system (Spark, 2021), we formed samples of firms manufacturing expensive goods for the retail consumer (population). To ensure homogeneity of the sample, we have used the following criteria for including a firm in the sample:

- Receipt of revenue in the amount of at least 100 million rubles (Around \$1.7M) annually during the period 2017-2020.
- Compliance of the real type of economic activity with the declared main type of economic activity in the SPARK system;.
- Sales of products to retail consumers (population).

As a result, our final is represented by automotive industry (CAR) – 38 firms or 152 firms\*years of observations; developers of residential real estate (CONS) – 29 firms or 116 firms\*years of observation. The sample includes 67 firms observed across four years, from 2017 to 2021, total sample is 268 observations. We then obtained the data on financial performance and age of firms from the SPARK information system. We have then obtained data on website traffic from The Serpstat service (Serpstat, 2022). This database tracks information on the attendance (demand) of firms' websites from buyers – an indicator of “organic site traffic”, which we have aggregated by company on annual basis.

### 3.2 Variables

#### 3.2.1 *Dependent variables*

The firm's sales variable (Sales) acts as a dependent variable when we test hypothesis #1. A similar dependent variable is considered in Suhardiyah et al. (2016). The Sales variable is defined as the company's annual sales volume in billion rubles. The data was obtained from SPARK.

To test hypotheses 2 and 3, we consider the company's net return on assets (ROA) as a dependent variable that characterizes the efficiency of the enterprise. This approach to measuring firm performance is widely used in modern economic research (Lovallo et al., 2020; Munjal et al., 2019; Chatterjee, 2012; Vaicondam & Ramakrishnan, 2017). ROA is calculated as the ratio of net profit to the firm's assets, multiplied by 100%.

#### 3.2.2 *Independent variables and moderator variables*

In accordance with the purpose of the work and the formulated hypotheses, the independent variable is the organic Internet traffic of firms' websites (Traffic), which is measured as the estimated number of clicks on the analyzed website. The data for this variable was obtained from the Serpstat Internet service. Given the nature of the data, we utilize the natural logarithm of this variable of Traffic in our modelling (Holland et al., 2021; Plaza, 2011).

The moderator variable is the firm's age (Age), measured as a number of years since company's establishment according to SPARK database. This variable is considered as a control variable as well as a moderator variable in many modern economic studies (Vithessonthi & Tongurai, 2015; Spitsin et al., 2020).

### 3.2.3 Control variables

In accordance with the generally accepted methodology of econometric calculations, we include in our regression models a wide range of control variables that can affect the dependent variable in order to control for alternative explanations. We control Size of the enterprises (Size), defined as the natural logarithm of revenue, adjusted for the inflation index (Ibhagui & Olokoyo, 2018; Munjal et al., 2019):

- Share of fixed assets in total assets (FATA) is used to control for amortization costs of fixed assets, which are very relevant for big-ticket industries (Anokhin et al., 2021; Chatterjee, 2012).
- Current liquidity ratio (CACL) measured as the ratio of current assets to current liabilities and controls for company's ability to launch and sustain capital-intensive initiatives (Le & Phan, 2017; Anokhin et al., 2021).
- Leverage measured as the share of debt in the balance sheet of firms controls for company's ability to meet its financial obligations (Vithessonthi & Tongurai, 2015; Ibhagui & Olokoyo, 2018).
- Sales growth (Growth) measured as the ratio of difference in Revenue between years  $t$  and  $(t-1)$  to Revenue in year  $(t-1)$ . This variable controls for a company's size and growth rates, which is crucial given a panel nature of our data (Le & Phan, 2017).
- Asset turnover (Turnover) measured as the ratio of revenue to the company's assets serves as a control for company's efficiency to generate sales (Liang et al., 2020).

## 3.3 Statistical procedure

This research applies regression analysis to the panel data. The regression model based on the least squares' method (pooled OLS model) is evaluated as inadequate for this case. The panel nature of the data does not allow the use of a model based on the least squares method. Also, a number of shortcomings are noted in regression models with random and fixed effects (Blackwell, 2005). The preferred method appears to be Prais-Winsten regression with panel standard error adjustment, which provides more conservative and reliable estimates according to Beck and Katz (1995). This method has been successfully applied in existing literature that deals with similar research topic, the influence of factors on the profitability of high-tech firms in paper (Spitsin et al., 2020) and will use it in the present study.

## 4 Results

Table 1 reports the descriptive statistics and correlations for the independent and control variables for the full sample of enterprises. The data in Table 1 shows that there

is no strong correlation between the predictor variables ( $r < 0.70$ ), therefore, we can use them in regression analysis without violating multicollinearity assumption. To further minimize the problems of multicollinearity, all independent variables and controls in regression models were standardized according to Marquardt (1980).

**Table 1**

*Descriptive statistics and correlations between variables*

N	Variables	Mean	Standard deviation	Correlations (r) and their significance (p)						
					2	3	4	5	6	7
1	Size	22.18	1.49							
2	FATA	13.25	12.38	0.21***						
3	CACL	2.34	2.77	-0.16**	-0.09					
4	Age	20.25	6.52	0.13*	0.15*	0.24***				
5	Growth	0.14	0.48	-0.01	-0.06	0.03	-0.13*			
6	Leverage	66.67	27.53	0.11†	-0.15*	-0.56***	-0.29***	0.01		
7	Turnover	145.58	100.67	0.13*	0.13*	-0.25***	-0.11†	0.04	0.06	
8	Traffic	10.23	2.05	0.47***	0.23***	-0.1†	0.04	-0.07	0.03	0.01

† $p < 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

We have built five regression models sequentially to test our hypotheses and demonstrate incremental effects on the main and moderator variables.

**Table 2**

*Results of regressions: dependent variable - Sales volume of the firm, standard errors are shown in parentheses*

	Model 1.1	Model 1.2
FATA (Share of fixed assets in total assets)	8,13* (3,73)	5,56 (3,76)
CACL (Current liquidity ratio)	-0,41 (0,89)	-0,21 (0,47)
Age (Firm age)	1,19 (0,91)	0,40 (1,04)
Growth (Sales growth)	0,27 (0,41)	0,25 (0,29)
Leverage (Total debt in assets)	3,01* (1,25)	2,33† (1,36)
Turnover (Asset turnover)	2,30*** (0,61)	2,40*** (0,53)
Traffic (Internet traffic)		11,06** (3,43)

	Model 1.1	Model 1.2
Intercept	17.20*** (1.14)	17.04*** (1.76)
R2	0.088	0.165
Wald statistic	47.87	74.94
Probability	<.001	<.001

Note. Estimation: Prais-Winsten regression, heteroskedastic panel corrected standard errors with AR-1 common autoregression.

† $p < 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

Model 1.1 includes only control variables and serves as a base model, the variables FATA, Leverage, and Turnover have a significant positive effect on firms' sales, which is consistent with existing literature. The model contains only control variables and explains 8.8% of the variation in the dependent variable.

We then add our main independent variable, Traffic, to model 1.2 to test hypotheses 1. Traffic variable significantly improves the regression result. R-square increases to 16.7%. At the same time, the variable Traffic has a strongly significant positive effect on the volume of firms' sales. Therefore, increased internet traffic is positively associated with firms' sales. Therefore, we obtain support for Hypothesis #1 ( $\beta = 11.28$ ,  $p < 0.01$ ).

**Table 3**

*Results of regressions: dependent variable - ROA, standard errors are shown in parentheses*

	Modelo 2.1	Modelo 2.2	Modelo 2.3
Size (Firm size)	-0.37 (0.65)	0.60 (0.90)	0.58 (0.84)
FATA (Share of fixed assets in total assets)	-1.31* (0.57)	-1.00† (0.60)	-0.78† (0.60)
CACL (Current liquidity ratio)	-0.97** (0.35)	-1.04* (0.44)	-0.78† (0.41)
Age (Firm age)	0.16 (0.51)	0.07 (0.55)	-0.04 (0.49)
Growth (Sales growth)	1.64*** (0.36)	1.54*** (0.35)	1.51*** (0.33)
Leverage (Total debt in assets)	-6.19*** (0.87)	-6.24*** (0.92)	-6.03*** (0.86)
Turnover (Asset turnover)	2.72*** (0.72)	2.55*** (0.76)	2.71*** (0.75)
Traffic (Internet traffic)		-2.17*** (0.62)	-1.85** (0.57)
Traffic * Age			1.31** (0.45)

	Modelo 2.1	Modelo 2.2	Modelo 2.3
Intercept	3.80*** (0.42)	3.81*** (0.51)	3.75*** (0.49)
R2	0.409	0.437	0.462
Wald statistic	441.26	752.30	915.37
Probability	<.001	<.001	<.001

Note. Estimation: Prais-Winsten regression, heteroskedastic panel corrected standard errors with AR-1 common autoregression.

† $p < 0.10$ , \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

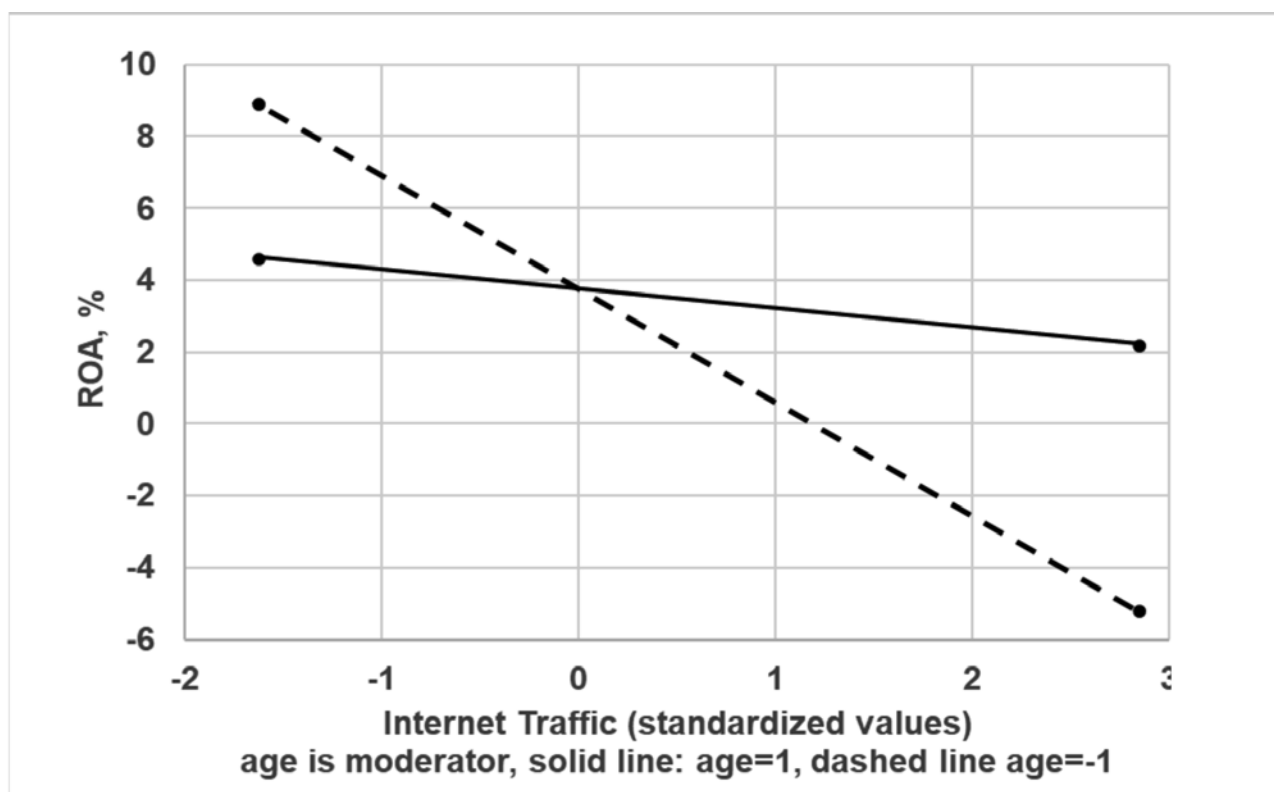
We then use ROA as a dependent variable in models 2.1, 2.2, and 2.3. Model 2.1 serves as a base model for ROA dependent variable, and it includes only control variables. In the base model (Model 2.1), variable Growth and Turnover have a highly significant positive impact on firm profitability. The Leverage ratio and the Current liquidity ratio have a highly significant and strongly significant negative impact. The model contains only control variables and explains 40.9% of the variation in the dependent variable.

We include Traffic variable in model 2.2 to test hypothesis 2. includes control variables and the tested variable Traffic. Inclusion of the Traffic variable to model 2.2 significantly improves the regression results by increasing R-square increases to 43.7%. The variable Traffic has a highly significant negative effect on the profitability of firms. Therefore, increase in internet traffic on company's website is negatively associated with firms' profitability. Thus, we obtain support for Hypothesis 2 ( $\beta = -2.17$ ,  $p < 0.001$ ).

Finally, we utilize model 2.3 to test our moderation hypothesis 3. Inclusion of the moderation term to model 2.3 (Traffic \* Age) further improves the quality of the model as indicated by R-square increase to 46.2%. The variable Traffic remains negative and strongly significant, which provides further support to hypothesis 2. The moderation term between age and traffic is positive and also strongly significant ( $\beta = 1.31$ ,  $p < 0.01$ ). Therefore, we have identified significant differences in the impact of traffic on profitability depending on the age of firms.

The visualization of these differences is shown in Fig. 3. When constructing Fig. 3 (according to model 2.3), we take into account that all variables, except for the dependent one, are standardized. Therefore, their means are 0 and their standard deviations are 1. Figure 1 shows two lines:

- A solid line of the influence of Traffic on profitability for mature firms. When constructing it, the moderator Age differs from the mean age by plus one standard deviation (takes the value +1), and we get the dependence:  $ROA = \text{Intercept} - 0,04*1 - 1,85 * \text{Traffic} + 1,31*1* \text{Traffic}$ .
- Dotted line of influence of Traffic on profitability for young firms. When constructing it, the moderator Age differs from the mean age by minus one standard deviation (it takes the value -1), and we get the dependence:  $ROA = \text{Intercept} - 0,04*(-1) - 1,85 * \text{Traffic} + 1,31*(-1) * \text{Traffic}$ .

**Figure 1***Moderation effect between internet traffic and age*

The chart shows that the impact of Traffic on profitability is more pronounced for young firms, thus providing support for Hypothesis #3. We find a rapid decline in profitability with increasing traffic in young firms. Note that the increase in traffic and sales is extremely important for young companies that have recently entered the market. Consequently, they have to sacrifice more profitability, including the risk of incurring losses, in order to increase sales.

## 5 Discussion and conclusion

### 5.1 Theoretical contributions

A new digital era creates constant pressure for companies to establish and expand their internet presence. The rise of new technologies and changing internet trends demand companies to continuously invest in improvement of their online capabilities. Such demands are even higher during external shocks, like the COVID-19 pandemic, when regular communication channels with customers are severed. While existing research is congruent on the idea that companies have to establish themselves in the internet in order to survive and the majority of the companies follow that advice, we still see both theoretical and practical evidence that companies fail despite their best efforts. This research attempts to shed some light on this discrepancy by shedding some light on the connection between performance of company's websites, e.g. internet traffic, and company's performance. Our panel data estimations have provided support evidence to the hypothesized relationships between internet traffic, company's sales,

profitability, and age. In particular, we demonstrate that a company's website traffic helps generating additional sales. However, companies have to allocate certain expenditures towards stimulating internet traffic via updating website and performing marketing campaigns, which in turn, tends to reduce company's profitability. Such a backfire is even more pronounced in younger companies due to the differences between older and younger companies, such as the amount of resources available and brand recognition among others.

Therefore, our first contribution is the extension of the nomological nets of company's performance and website's performance. Company's online presence is a necessity in modern industries that incorporates tangible stores and distribution with online websites. The demand for a well-structured informative website is even greater during the pandemic, when companies may experience difficulties communicating with customers in a regular face-to-face fashion. In such situations, companies' websites become a primary media of communication and sales. Our hypotheses provided significant empirical evidence that company's online traffic is associated with company's performance.

Our second contribution goes beyond a basic assumption of uniform company's performance. In particular, we further distinguish between sales and profitability of the company and demonstrate how companies may increase overall sales using the website traffic at the expense of profitability. Online traffic of companies' websites provides necessary information and communication means to customers in order to minimize their uncertainty and generate sales. This hypothesis is congruent with existing literature. However, we further investigate the company's profitability as another operationalization of company's performance. Our second hypotheses demonstrates that generating online traffic is negatively associated with companies' profitability due to the expenditures required to generate that traffic. These findings highlight dual nature of internet traffic and suggest that website traffic maximization should not be a sole goal.

Our third contribution is a further extension of aforementioned relationships by highlighting the differences between older and younger firms. Extant research differentiates companies depending on their age across multiple dimensions, such as experience, size, resources, to name a few. Younger firms tend to experience higher costs associated with building the online presence and educating their customers. Consistently with existing knowledge, younger firm who tend to possess less resources comparing to older firms, will suffer greater losses when generating website traffic.

## 5.2 Implications for practitioners

First of all, this research connects the traffic performance of companies' websites to the performance of the company. Creation and maintenance of the website is a complex process that requires significant efforts and resources, and although websites provides multiple communication and signaling functionalities, the primary function is to communicate with customers and increase companies' performance. It is important to note that this paper distinguishes two types of financial performance: sales and profitability. A well-structured website with a lot of information and appropriate appeal tend to increase company's sales. On the other side, companies incur additional expenses associated with creation, managing, and maintaining the website. These expenses tend to decrease companies' profitability, which may be especially severe during the market shocks such as COVID-19 pandemic. Given the opposite relationship between sales and profitability from the internet traffic, managers should carefully consider both performance indicators in order to maximize overall company's performance and ensure

company's survival. Second, our findings suggest that younger companies may experience more difficulties when creating and maintaining websites. Younger companies tend to have less resources, capabilities, and market knowledge comparing the older firms. As a result, they may not be able to achieve the website goals as easily as older and resource-rich firms. In such situation, application of cost-effective strategies may be critical for younger firms. They may spend extra time and train existing personnel to perform website routines instead of continuously hiring a third-party. In addition to the resource issues, younger firms may experience hindered online sales due to the less-known brands. Younger firms should pay particular attention to the contents of their websites to ensure that they provide enough adequate information that will help win the trust of new customers.

### 5.3 Limitations and future research

We acknowledge that this paper has several limitations that need to be addressed by the further investigations. One limitation is the utilization of secondary data as a means of studying the internet traffic that companies generate. This data does not uncover the in-depth processes that companies have in place for the e-commerce activities. In particular, we cannot say if companies have dedicated employees and/or department that handles website management. Future studies should address these gaps by collecting primary data from the companies to fully uncover the processes companies have in place and their effect on performance. Second limitation is that this study is restricted to Russia exclusively. While we expect that our finding will hold in other countries, there might be some economic conditions, such as economy health, internet penetration, just to name a few, that may impact the relationship between companies' website traffic and company's performance. Future research should address this shortcoming by collecting the data from other countries to make sure a better generalizability of the results. Third limitation is that our sample consists of big-ticket industries during the pandemic. Authors believe that highlighted relationships will be magnified in the conditions of big-ticket items and additional market pressure from pandemic. Additional studies should be implemented to uncover these relationships in other industries.

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# Proposing a multiple infrastructure model for the utilization of bitcoin

## Proponer un modelo de infraestructura múltiple para la utilización del bitcoin

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### Abstract

Today, one of the most important reasons for the pervasiveness of digital currencies is the unique benefits it provides to users, which can be attributed to the speed and efficiency of payments, especially overseas payments. This study aimed to provide a multiple infrastructure model for bitcoin use. This research has been done qualitatively using interview tools. The survey community consists of academic experts including Profesor universitarios specializing in the fields of digital currencies, e-commerce, international finance and finance, and empirical experts consisting of managers and experts of monetary and financial organizations (banks, stock exchanges). The selection of samples is saturated and purposeful. Finally, 18 people were selected to answer the interview questions. Data analysis was performed with the context theory (GT) approach. Based on the obtained results, 6 main networks, 14 main components and 77 sub-components were obtained as multiple infrastructures for bitcoin use. The results also showed that economic and social infrastructure can affect the use of bitcoin. If there is funding to buy the necessary devices and welcome bitcoin in the community, bitcoin will be more usable as a digital and acceptable currency.

### Resumen

Hoy en día, una de las razones más importantes de la omnipresencia de las monedas digitales son los beneficios únicos que brindan a los usuarios, que pueden atribuirse a la velocidad y eficiencia de los pagos, especialmente los pagos en el extranjero. Este estudio tuvo como objetivo proporcionar un modelo de infraestructura múltiple para el uso del bitcoin. Esta investigación se ha realizado de forma cualitativa utilizando herramientas de entrevista. La comunidad de la encuesta está formada por expertos académicos, incluidos profesores universitarios especializados en los campos de monedas digitales, comercio electrónico, finanzas y finanzas internacionales, y expertos empíricos formados por gerentes y expertos de organizaciones monetarias y financieras (bancos, bolsas de valores). La selección de muestras es saturada y propositiva. Finalmente, se seleccionaron 18 personas para responder las preguntas de la entrevista. El análisis de los datos se realizó con el enfoque de la teoría del contexto (GT). Con base en los resultados alcanzados se obtuvieron seis redes principales, 14 componentes principales y 77 subcomponentes como múltiples infraestructuras para el uso del bitcoin. Los resultados también mostraron que la infraestructura económica y social puede afectar el uso del bitcoin. Si hay fondos para comprar los dispositivos necesarios y dar la bienvenida al bitcoin en la comunidad, será más útil como moneda digital y más aceptable.

### Keywords | palabras clave

Cryptocurrencies, bitcoins, electronic, money, infrastructures, digital cash, Grounded Theory (GT), Iran.

Criptomonedas, bitcoins, electrónica, dinero, infraestructuras, efectivo digital, Teoría fundamentada (GT), Irán.

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## 1 Introduction

In recent years, cryptocurrencies have been strikingly welcomed since the introduction of the bitcoin concept by Nakamoto (Saiedi et al., 2020). Cryptocurrencies, particularly bitcoins, have been labeled new gold by many well-known financial media like CNN. Most importantly, the Commodity Futures Trading Commission (CFTC) has officially announced that virtual money, similar to gold and crude oil, is a commodity (Jin et al., 2019). At present, many countries such as the United States, Canada, Australia, and China legalize the exchange of cryptocurrencies. Among the essential reasons for the widespread use of cryptocurrencies is the unique advantages they provide to users. Some of these benefits are the speed and efficiency of payments, especially overseas payments, as well as the elimination of additional operating costs received by intermediaries. The pervasiveness of these currencies has caused Bitcoin, as one of the most famous ones, to come into the transactions of Iran's people.

This is while cryptocurrencies are one of the current issues of the country and governance, and policy-making institutions of Iran need to enact laws and regulations regarding the exploitation of these currencies, like other countries. Hence, this study intended to present a multiple infrastructure model for the use of Bitcoin. The World Economic Forum (WEF) predicts that approximately 10 percent of the world's gross domestic product (GDP) will be based on virtual currencies by 2027 and that governments will take into account alternatives to the development of virtual currencies because of missing their monetary power. Thus, the dollar's strength in the world will be declined (Farzin Bilandi, 2017). Bitcoin has been dramatically welcomed by the public among virtual currencies. Even if supposing that bitcoin itself cannot survive, it will undoubtedly have a worthy contribution to the boom of virtual currencies.

In Iran, digital currencies have also attracted the attention of many investors for a short time (Ghavam, 2018). In recent years, bitcoin mining in the country has found a substantial spread because of its high profitability. Parallel to the huge consumption of electricity consumed by the country, other national and governance concerns and challenges of cryptocurrency and bitcoin mining, specifically the way of calculating income tax, the likelihood of financial instability disappearing and capital outflows from productive markets, weakening the national currency and jeopardizing the reputation of the central bank, and the risk of destroying the assets of legal persons have been in the center of attention of policymakers and decision-making centers of the country such as the government and the Islamic Consultative Assembly.

There are numerous legal gaps and problems for the legalization of bitcoin in the country, as well as for providing conditions to prevent tax evasion and money laundering, etc. in the field of bitcoin. It appears that elucidating the position of Bitcoin in law and economics requires the adoption of a single and comprehensive policy on Bitcoin, attention to the legislature and electronic payment system on the basis of upstream (high level) laws and documents, and inclusion of other countries' laws in connection with Bitcoin. In the cases that the juridical, social, legal, economic, technological, and managerial infrastructure to employ and exchange bitcoin digital currency in the country is not provided, its mining and exchange operations by real people will be exposed to a variety of hazards such as theft, extraction slow, and deprivation of equal conditions against foreign competitors and so on. Moreover, if the government accepts this reality like some countries of North America, Western Europe, and Eastern Asia ... (Naderi, 2017; Sadeghi, 2019) and facilitates its mining and exchange, it can even possibly benefit government institutions, including the tax administration with balanced and calculated legislation and be a guarantee for citizens' accumulations.

It is inferred from all these contents that mining and trading with cryptocurrencies are regarded as a necessity; however, professional entry into this category requires the enjoyment of multiple infrastructures that not only the above-listed low-level countries like Iran do not have these infrastructures, but apparently have no intention of entering them. This is while the necessity and reality of the capital market, world trade, and the tendency of real and legal owners of capital will persuade governments to accept this modern trade and codify the essential juridical, social, legal, economic, technological, and managerial infrastructure.

Iran is one of the countries that has been cautious about this unsanctioned virtual currency. This virtual currency is currently controlled outside the borders of Iran due to its non-recognition by the Central Bank. Examining details such as advantages and disadvantages as well as negative or positive regulations for the use of this new financial instrument by various organizations and institutions such as the Central Bank, Parliamentary Research Center, Stock Exchange and Securities Organization, Anti-Money Laundering Headquarters, Ministry of Communications and Information technology, FATA police and the National Cyberspace Center started in 2014, but unfortunately these measures have not yet been implemented. This shows the need for applied research such as the present study.

## **2 Theoretical Literature of the Research**

### **2.1 Electronic money (e-money)**

Electronic money is a mechanism for paying stored or prepaid value where an amount of funds or value, which can be used by the consumer, is stored in an electronic device and is available to the user (Nasiri Ahmadabadi, 2018). The European Union in its draft directive has defined “e-money” as follows: E-money is a mechanism for paying stored or prepaid value in which an amount of funds or value that can be exploited by the consumer is stored in an electronic device and are in the possession of the customer (Kahn et al., 2019).

Electronic value is purchased by the consumer and the customer, and its account balance is reduced each time it directly connects to other devices or the consumer uses the device to make a purchase through a sales terminal or even from computer networks like the Internet. Contrary to a variety of multipurpose prepaid cards (such as telephone cards), e-money products are designed and manufactured to be extensively exploited and are considered versatile payment devices. E-money contains both prepaid cards (sometimes called smart cards or e-wallets) and prepaid software products that utilize computer networks such as the Internet (sometimes referred to as e-cash) (Jack et al., 2010).

#### **2.1.1 Features of E-money**

1. Store of Money Value: The value of e-money is stored electronically in an electronic device. 2. Transfer of Money Value: The value of e-money is transferred in various methods. Some types of e-money provide the possibility of parallel electronic transfers directly from one user to another one without the intervention of a third party (Widayat et al., 2020). 3. Record of Transfer: Most schemes record some details of transactions made between the consumer and the seller in the central database, and monitoring the registered information is possible. 4. Number of Partners: The number of partners and parties who are effectively involved in e-money transactions is much

more than contract transactions (generally in e-money trading, network operator, hardware and software vendor, transaction transfer, and settlement). 5. Existence of Technical Barriers and Human Errors: These barriers can make the implementation of transactions difficult or impossible (Nasiri Ahmadabadi, 2018).

## 2.2 Virtual Money (Virtual Currency)

Following entering money into the people's daily exchanges, the banks occasionally attempted to implement their economic policies by issuing or collecting money with the support of governments. Besides, monetary policies sometimes caused that, by pouring large amounts of money into the market, they influence its value. Moreover, banks and financial institutions, as financial intermediaries, in the current global exchanges receive remarkable amounts of money as money transfer costs and cost of money transactions (Manahov, 2021).

To facilitate doing financial affairs and making money without the presence of intermediaries (banks and financial institutions), the notion of virtual money, meaning cryptocurrency, was first raised by Wei Dai. He proposed a new type of money that employs computer encryption to control money generation and conduct transactions without intermediaries and central authority (Ballis & Drakos, 2020). However, the idea was merely a theory until 2009. In this year, simultaneously with the recession, a person named Satoshi Nakamoto introduced a virtual currency called Bitcoin along with a mathematical algorithm for its production in the world and presented an article and put it into practice. Virtual money has no central server for transfer control since everything is founded on the basis of peer-to-peer communication.

This is a phenomenon that governments and banks could not increase or decrease its value (Seyyed Hosseini & Doaei, 2014). Because it has intangible nature, virtual money is regarded as a kind of digital money, and its distinction is that digital money represents banknotes, which its mechanism has solely become non-physical. This is while virtual money has nothing to do with bank money and is a novel currency with a unique mechanism backed by solving mathematical algorithms. However, digital money is sometimes employed in scientific articles rather than virtual money, for the term "virtual" evokes a negative concept as opposed to "real" (Chuen, 2015).

## 2.3 Cryptocurrency

Cryptocurrency is a type of digital money that utilizes cryptography for its own security. Because of this security feature, counterfeiting in cryptocurrencies is difficult (Bouri et al., 2019). The characterization of cryptocurrency is that its issuance is not in the hands of the supervisory authority, and this independent management theoretically prevents governments from interfering in financial matters (Härdle et al., 2020). The "anonymity" nature of cryptocurrency transactions has caused this kind of currency to be highly welcomed by money launderers, criminals, and tax evaders. The first type of cryptocurrency that attracted public attention was Bitcoin, which was introduced in 2009. The success of Bitcoin led to the emergence of rival cryptocurrencies such as Litecoin (LTC), Namecoin (NMC), and Pepcoin (PCN). Cryptocurrency makes the possibility of the transfer of money between the parties to a transaction easier (Caporale et al., 2018).

This facility is because of using public and private keys for security purposes. The transfer of funds is done by paying the minimum processing fee and exempts users from paying various types of fees to banks and financial institutions in network transfers

(Haryanto et al., 2020). It is worth mentioning that one will lose all his/her bitcoins in the absence of a backup of the contents of the computer with a computer crash; ultimately, as prices are determined on the basis of supply and demand, the exchange rate of cryptocurrencies has many fluctuations relative to other currencies (Lo & Wang, 2014).

Declaring cryptocurrencies and challenging the traditional monetary system in the world, many opportunities and ideas were presented to policymakers, economists and entrepreneurs. The development of cryptocurrencies has put pressure on all stakeholders to reconsider the fundamental idea of a financial instrument's ability to be used as money (Dyhrberg, 2016). Exploring Bitcoin investment opportunities as one of the most well-known cryptocurrencies and the first cryptocurrency introduced to the world financial and monetary world by Satoshi Nakamoto in 2008 can be a window to diversify the investment portfolio of governments, legal entities and to be considered natural and legal persons in different countries, including Iran.

### **2.3.1 Bitcoin**

Experts (e.g., analysts) can be information intermediaries who perform dual roles in information discovery and information interpretation. The value of expert predictions is studied extensively for stocks (Ramnath et al., 2008), for commodities, such as gold, silver and for exchange rates (Pierdzioch & Rulke, 2015). For these asset classes, forecasts prove to be informative with respect to future price movements, thereby improving market efficiency (Davies & Canes, 1978).

Cryptocurrencies represent an emerging asset class (Härdle et al., 2020) with Bitcoin being the largest of all cryptocurrencies. The characteristics of Bitcoin are significantly different from traditional securities (Klein et al., 2018). Bitcoin is an unregulated, decentralized, peer-to-peer cryptocurrency enabling users to process transactions through digital units of exchange. The market capitalization of Bitcoin was about USD 690 billion in May 2021 and is thereby the largest of all cryptocurrencies, representing around 46 percent of the total market capitalization of all cryptocurrencies. Despite its relatively small market capitalization in comparison to traditional investment assets, research shows various kinds of investors could benefit from augmenting their portfolios with Bitcoin if liquidity is taken into account (Petukhina et al., 2021; Trimborn et al., 2019; Trimborn & Li., 2021; Gerritsen et al.; Walther, 2021).

The global financial crisis, which occurred in 2008 following the inadequacy of government institutions such as the Federal Reserve System (central banking system of the United States of America) and other US financial institutions, led people to seek more seriously the rejection of central institutions, particularly the dominance of the dollar and unsupported money (Crotty, 2009). This distrust of government institutions in a period when the United States refused to give gold for every dollar and completely denied the support of dollars, which was gold, had previously peaked (as did the Austrian school, which believed that the gold monetary base should be returned); however, the United States was able to end the affair with the coordination of Saudi Arabia and the sale of oil merely in dollars.

Nevertheless, after the crisis of 2008, this time an anonymous person introduced a completely private currency to the world in 2009 without the need for a regulatory, intermediary, and central institution called Bitcoin (a kind of cryptocurrency). "Bitcoin" is regarded as an innovation in the domain of e-commerce and finance, which has spread during the past five years (Gandal et al., 2018). Indeed, Bitcoin is an Internet innovation with the function same to unprotected money, whose value in global markets has enhanced from a few hundred dollars to thousands of dollars over the years.

### 3 Methodology

The cryptocurrency of different currencies and their use are new concepts in economics and financial markets. Few studies have been done to identify the nature and mechanism of operation and their various consequences in various domestic and foreign fields, so it is considered a new topic in Iran, which in this study by studying the main concepts such as: electronic money, money Virtual, digital currency and bitcoin as the core of the study Using qualitative research, we seek to examine the concepts, functions and infrastructure of the use and prevalence of bitcoin, which is a kind of cryptocurrency.

This is applied developmental research by purpose and is exploratory research by the method of data collection and analysis. The survey is conducted qualitatively, and the research method is descriptive-analytical. Thus, this study deals with the description of the existing conditions, and it attempts to identify and analyze the relevant variables by developing a causal model.

The population of this study comprised academic experts including university professors specializing in the fields of cryptocurrencies, e-commerce, finance, and international finance, and empirical experts constituting managers and experts of monetary and financial organizations (banks, stock exchanges). The choice of samples is of the saturation level and purposive type. In this method, the researcher makes a purposeful selection of the intended sample of the research, by knowing the target community of the research and by awareness. It should be noted that the interviews continue until a new component or discussion is raised; in other words, theoretical saturation is achieved. Hence, with regard to the principles of qualitative methods, eventually, 18 experts were chosen for the interview. The respondents' demographic characteristics are illustrated in table 1.

**Table 1**

*Individual characteristics of the interview respondents*

Row	Age	Gender	Education Level	Work Experience	Job Position
1	41	Male	Master's degree	15 years	Bank manager
2	40	Male	Master's degree	10 years	University professor
3	67	Male	PHD	32 years	University professor
4	50	Male	Master's degree	25 years	Bank manager
5	38	Male	Master's degree	15 years	Bank manager
6	35	Male	PHD	7 years	University professor
7	36	Male	PHD	7 years	Expert of financial organization
8	46	Male	Master's degree	21 years	Advisor of financial organization
9	45	Female	Master's degree	10 years	Expert of financial organization

Row	Age	Gender	Education Level	Work Experience	Job Position
10	36	Male	PHD	15 years	Expert of financial organization
11	45	Male	Master's degree	23 years	Bank manager
12	33	Male	Master's degree	2 years	Expert of financial organization
13	42	Male	Master's degree	10 years	Expert of financial organization
14	36	Male	Master's degree	7 years	Stock Financial Manager
15	33	Male	Master's degree	2 years	Stock Financial Manager
16	50	Male	PHD	25 years	University professor
17	41	Male	PHD	20 years	Financial manager
18	35	Female	PHD	7 years	University professor

The methods of data collection in this research are library and field. The tool used in the field method is interview. In the interview, experts are asked questions and the qualitative part is analyzed by recording the interview.

In this survey, data analysis was performed as a qualitative analysis with the assistance of the grounded theory (GT). Grounded theory builds checks into the research process that contribute to its quality, such as engaging in focused coding. Simultaneously, using focused coding helps you to expedite your analysis and streamline your subsequent data collection to gather targeted data that answer questions in your emerging analysis (Charmaz & Thornberg, 2021). In order to extract data from the interviews, there are two techniques of microanalysis and key point analysis. Strauss and Corbin (1994) recommend that coding should be conducted through microanalysis.

In this type of analysis, the data is analyzed word for word, and the meanings found are encoded in the words or open groups of words. This approach has two bugs; the first is that it is time-consuming and the second is that it sometimes leads to ambiguity and confusion. Moreover, the division of data into words sometimes results in becoming defiled of the nature of the analysis, and there is a kind of skepticism about what should be searched in the text. In accordance with this method, the main network that is ultimately identified in six networks of central category, contextual conditions, causal conditions, intervening conditions, strategies, and consequences, and the identified components were placed in these six main networks.

## 4 Results

### 4.1 Implementation of Grounded Theory (GT) Method

In accordance with the steps of the Grounded Theory (GT), the results of open coding, axial coding, and selective coding were achieved in the form of 6 main networks of grounded theory method, i.e., central phenomenon, causal conditions, contextual conditions, intervening conditions, strategies, and consequences. The results are mentioned in the following.

### 4.1.1 Results of Open Coding

In open coding, the content of all interviews was implemented and written firstly and then their open coding was done by key point coding method. Open coding was performed in three stages including, first stage, second stage, and third stage. At each stage, the number of data decreases compared to the previous stage (Markey et al., 2020). Thus, after merging similar codes, a total of 77 codes were extracted from the open coding of the third stage. Among these codes are increasing economic value, cryptocurrency, e-commerce innovation, information technology, and digital currency protection law.

In the next step, axial coding was performed for the classification of open coding

### 4.1.2 Results of Axial Coding

Axial coding is the second step of analysis in the foundation data (Grounded Theory) method. The purpose of this step is to establish the relationship between the classes produced in the open coding step (Creswell & Cheryl, 1998). This operation is based on the paradigm model and helps the theorist to simplify the theory-making process. The code generated in the previous step is linked to each other by creating communication networks between the codes, a process that is analyzed by the data obtained from open coding. Therefore, the purpose of axial coding is to sort the relationship between each concept (Sun, 2011). While establishing connections on the network, it is necessary to examine how these categories relate to each other.

This step was done by networks formation to create connections between concepts, categories, and components in accordance with table 2. According to the results of axial coding, finally, six main networks, 14 main components, and 77 sub-components were identified as multiple infrastructures for the use of cryptocurrencies (Bitcoin). It is worth mentioning that contents are briefly expressed in this table because of the large volume of results gained from axial coding.

**Table 2**

*Axial coding results*

Network	Main component	Sub-component
Central phenomenon	Economic value	Store of value
		Increasing economic value
	Use of Bitcoin	Cryptocurrency
Contextual conditions	Technology infrastructure	Business infrastructure
		Knowledge and skill
		Organizational architecture
	Law and regulation infrastructure	Virtual Currency Consumer Protection Act
		Legal monitoring and supervision
Casual conditions	Economic infrastructure	Economic growth
		Infrastructure financing
		Lowering management costs
	Social infrastructure	Social welfare
		Mental health of the community
		Social participation

Network	Main component	Sub-component
Intervening conditions	Political infrastructure	Sanctions
		Exchange rate fluctuations
Strategies	Attention to the target market	Right understanding of the market needs
		Ecosystem of business models
	Training	Information technology (IT) training
		E-money training
	Financing	Empowerment through financial statements
		Supply chain financing
	Development and implementation of strategy	Team and teamwork
		Providing and raising enough capital
Consequences	Transparent information	Hiding of personal information
		Bitcoin security
	Freedom of payment	Sending and receiving money all over the world
		Possibility of 24-hour support
	Decline of costs	Eliminating bank fees
		Lower costs relative to credit cards

#### 4.1.3 Results of Selective Coding

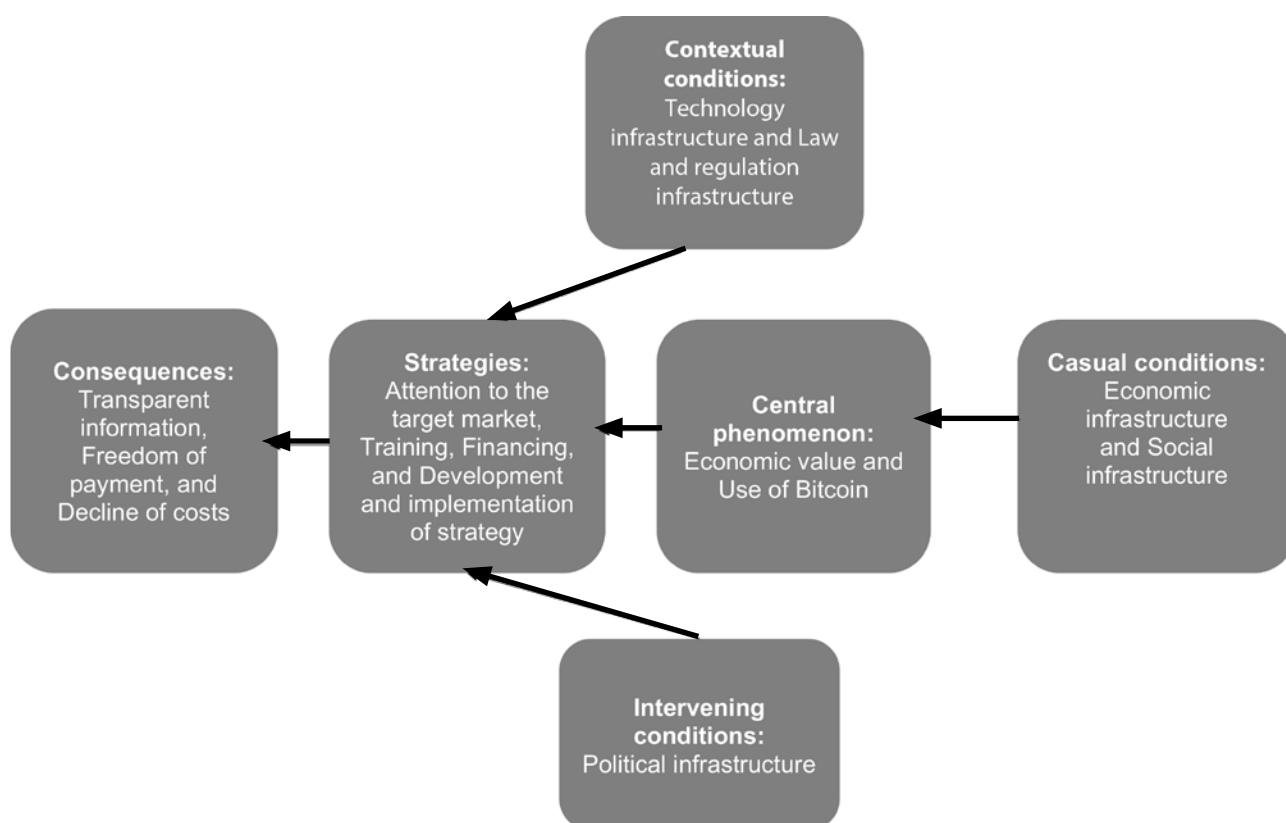
Selective coding is the process of integrating and improving categories. The point to be considered at this stage is that if the purpose of the research is to theorize, the findings should be presented in the form of related concepts and not just a list of topics. It is important to note that there is always more than one way to show relationships. In order to achieve the desired integration, it is necessary for the researcher to set the main line of the subject and describe the main line of the story with commitment. In selective coding, the researcher discovers a principle and regularly associates the main category with other categories (Dunn, 2011). Selective coding results, i.e., providing a multiple infrastructure model for the use of cryptocurrencies (Bitcoin), are based on figure 1.

As is evident in the figure above, the multiple infrastructure model for using cryptocurrencies (Bitcoin) consists of 6 main networks and 14 components.

The results obtained from the model show that in order to achieve outcomes such as freedom of payment and cost reduction, it is necessary to put effective strategies such as training and attention to the target market on the agenda, of course, considering the underlying conditions such as Technological infrastructure and interventionist conditions such as political infrastructure in Iran is very necessary.

**Figure 1**

*Multiple infrastructure model*



## 4.2 Validation of Qualitative Data

Validation of the data in the grounded theory (GT) process is carried out in three ways. In this survey, these methods were exploited. These three approaches include:

- Enhancing the transparency in the research process: Validation is elaborately achieved by increasing the transparency of the research process through the distribution of the steps and phases taken, the techniques and instruments exploited by the sections where the information was collected. Regarding the transparency that exists in the information gained in the three stages of open coding, axial coding, and selective coding, so the research data validity is confirmed by the research process transparency.
- Providing the results to the participants: Among the principles of qualitative methods, especially the grounded theory is its participation-oriented nature. In this investigation, the researcher did not make any attempt to lead the results in a particular direction, and all the achieved results were the interviewees' responses. For validation of the grounded theory method, the findings were provided to the interviewees, and all the interviewees confirmed the research findings.
- Continuous comparison of results with raw data: At each stage of the higher-level coding, the gained data were compared with the data of the first stages of interview and open coding so that the validity of the higher coding data is confirmed.

## 5 Discussion and conclusion

At present, many countries such as the United States, Canada, Australia, and China legalize the exchange of cryptocurrencies. Among the essential reasons for the widespread use of cryptocurrencies are the unique advantages they provide to users. Some of these benefits are the speed and efficiency of payments, especially overseas payments, as well as the elimination of additional operating costs received by intermediaries.

The pervasiveness of these currencies has caused Bitcoin, as one of the most famous ones, to come into the transactions of Iran's people. This is while cryptocurrencies are one of the current issues of the country and governance, and policy-making institutions of Iran need to enact laws and regulations regarding the exploitation of these currencies, like other countries. Hence, this study intended to present a multiple infrastructure model for the use of cryptocurrency (case study: Bitcoin).

This research was done by qualitative research method and grounded theory (GT). On the basis of the gained results, six main networks, 14 main components, and 77 sub-components were achieved as multiple infrastructures for the utilization of cryptocurrencies (Bitcoin).

The results of this survey indicated that the technology infrastructure and the law and regulation infrastructure affect the utilization of Bitcoin as contextual conditions. Technology infrastructure should be taken into account in using information technology, having the skills of the workforce and managers, enjoying knowledge, and using the Internet of electronic devices and computers. Thus, using electronic devices and technology infrastructure, Bitcoin could be employed. Besides, the other critical factor for the use of Bitcoin is enacting rules and licenses to use Bitcoin since bitcoin does not exist as an official currency in Iran. Hence, generating technology infrastructure and law and regulation infrastructure can provide the necessary grounds for using bitcoin in the country.

Economic infrastructure and social infrastructure can affect the utilization of Bitcoin as causal conditions. Bitcoin will have more functionality as a digital and acceptable currency in the community in the event that financing is provided for the purchase of the necessary devices and there is bitcoin acceptance in the community.

Political infrastructure, including sanctions, policies, and government policies, affects the utilization of Bitcoin as the political condition. In Iran, political infrastructure usually acts as a barrier to the use of bitcoin. Thus, for greater utilization of Bitcoin, the political situation of the country and relations with other countries should be so that the political problems for using bitcoin are minimized.

For the utilization of Bitcoin and its deployment in the community, the necessary training should be provided to the people who want to work in this domain. Because of the progression of technology in the present era, cryptocurrencies and electronic money (e-money) should be trained in schools and universities so that individuals in the community can do their buy and sell and trade with digital money in the future years. Hence, strategies and programs in this respect should be formulated to enhance using bitcoin in the country. Financing people and financial aid such as providing bank loans can also be a major contribution to use bitcoin.

Ultimately, the consequences (outcomes) of implementing and using Bitcoin are freedom of payment, transparent information, and cost reduction, leading to increased international trade, ease of payment, increased corporate sales, the possibility of exchange with all countries of the world, and so on. Whereas the payment of so-called provider and recipient fees, as well as occasional deposit fees between cryptocurren-

cy exchanges, is considered a standard, Bitcoin users are not required to pay bank charges in the traditional way associated with Fiat currencies. This means no account maintenance or minimum balance fee, no overdraft fee, and no return deposit fee relative to other cryptocurrencies. All final transactions are available for viewing using blockchain technology; nevertheless, personal information is confidential. The user's public address is what is visible to all users but personal information is not related to this issue. At any time, anyone can approve transactions in the Bitcoin blockchain. The Bitcoin protocol cannot be manipulated by any person, organization, or government that this is due to the security gained from bitcoin cryptography.

## 5.1 Recommendations and limitations of the research

Taking into account that training is introduced as one of the strategies for using Bitcoin, it is proposed that the utilization of Bitcoin be trained in schools and universities for different people in the community. It is also necessary that the legal barriers to the use of bitcoin in the country be reconsidered. By offering low-interest loans, banks can have a major contribution to use bitcoin and promote it in the country. It is suggested that the necessary strategies and planning for the use of bitcoin be carried out by the government and the private sector to spread bitcoin in the country. Ultimately, because of the requirement for coordination with the world of the present age, the necessary infrastructure for the implementation and utilization of bitcoin in the country needs to be executed.

The most important consequences of creating the necessary infrastructure in the use of bitcoin are: expansion of international transactions to develop e-commerce, high liquidity, cost reduction through direct and unmediated exchange, and most importantly security Exclusive.

Considering that grounded theory is exploited in this study to provide a multiple infrastructure model for the utilization of cryptocurrencies (Bitcoins) and given that it is assumed that studies of qualitative research represent a large community, we faced the challenge of being constrained in terms of conclusions. Hence, it was attempted the impact of this limitation on the conclusion to be declined by providing rich descriptions in connection with the subject of research. Furthermore, this research was a cross-sectional study; therefore, it makes conclusions about causality (causal relationship) difficult.

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# Behavioral Economics: its influence on the prediction of sports results

## Economía conductual: su influencia en la predicción de resultados deportivos

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### Abstract

*Behavioral Economics provides valuable knowledges on the operation of economic agents, away from the conception of unlimited rationality. Currently it applied in many areas of social life such as behavioral finance, neuromarketing, public policies, savings, public health, etc. Games activity generates random significant economic results and the number of people who bet grows every year. In this scenario sports predictions must be analyzed from the insight provided by behavioral economics to understand the determinants of the decisions of individuals. The present study aims to analyze the presence of cognitive biases affecting the prediction of sports results. an experiment in theoretical orientation of pre-experimental type was designed with the participation of 66 subjects, who were to make estimates sports scores from 6 scenarios created. It can be concluded that sports predictions operate under the principle of limited rationality, presenting characteristics of intuitive thinking in decisions, as well as the representativeness heuristic and optimism biases, over-inference, hot hand and small numbers. The findings of this pre-experiment point to the presence of excess confidence in previous knowledge, experience and intuition, undervaluation of statistical information and influence of affective components in decisions about sports prediction.*

### Resumen

La economía conductual aporta valiosos conocimientos sobre el funcionamiento de los agentes económicos, alejándose de la concepción de racionalidad ilimitada. Actualmente se aplica en múltiples áreas de la vida social como las finanzas conductuales, el neuromarketing, las políticas públicas, el ahorro, la salud pública, etc. La actividad de juegos de azar genera importantes resultados económicos y la cantidad de personas que apuestan crece cada año. En este escenario, las predicciones deportivas deben ser analizadas desde el conocimiento que aporta la economía conductual, para comprender las determinantes de las decisiones de las personas. Este estudio pretende analizar la presencia de sesgos cognitivos que influyen en la predicción de resultados deportivos. Se diseñó un experimento de orientación teórica de tipo preexperimental con la participación de 66 sujetos, quienes debían realizar estimaciones de resultados deportivos a partir de seis situaciones hipotéticas creadas. Se puede concluir que las predicciones deportivas operan bajo el principio de la racionalidad limitada, al presentar características del pensamiento intuitivo en las decisiones, así como el heurístico de la representatividad y los sesgos del optimismo, la sobre inferencia, la mano caliente y los pequeños números. Los resultados de este preexperimento apuntan hacia la presencia de un exceso de confianza en el conocimiento previo, la experiencia y la intuición, subvaloración de la información estadística e influencia de los componentes afectivos en las decisiones de predicción deportiva.

### Keywords | palabras clave

*Economics, behavioral economics, bounded rationality, intuition, cognitive biases, sports economics.*

Economía, economía conductual, racionalidad limitada, intuición, sesgos cognitivos, economía deportiva.

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## 1 Introduction

The conception of *homo economicus*, a pillar of conventional economic thought, is supported by the theories of rational choice (Abitbol & Botero, 2005; Vidal, 2008) and expected utility (López, 2016), respectively. These theories establish the criterion that man has the ability to correctly analyze the probabilities and benefits of each alternative in a decision of any nature; consequently, he will opt for the option that generates the highest dividends. However, the rational character of the human being has been overestimated in economics throughout its history as a science, surpassing the true potentialities of cognitive and metacognitive processes (Stanovich, 1999); which generates continuous failures in his decisions.

Behavioral economics is a branch that has gained significant space in the contemporary epistemological construction of economic sciences. Therefore, it is impossible to ignore the main results obtained through social experiments and theoretical research, and the consequent epistemological implications for the economy, traditional economic mechanisms such as finance, public policies, consumption, etc.; and the conception of man (Elster, 2002).

Behavioral economics is considered to be “an evidence-based discipline focused on the development of empirical research. In this sense, it is not something revolutionary, but rather a return to the type of discipline with an open and intuitive mind” (Tejedor-Estupiñán, 2020, p. 11). Therefore, it focuses attention on the human conditions and characteristics of this social science, providing a more human, committed, complex and interdisciplinary dimension.

According to Matute (2019), the vulnerability of the human mind is the cause of multiple contemporary social problems, associated with public health, energy consumption, violence, etc. The uncertainty under which these decisions are made generates a significant risk that influences the processing of information and enables the implementation of adaptive-evolutionary mechanisms of the human species. Therefore, his main contribution and scientific novelty lies in the discovery of the determinants of the decisions that the human being makes and, consequently, acts on.

The ideas about the presence of failures in the cognitive processes that do not allow the maximum benefit to be achieved, are accepted by a greater number of professionals in the economic sciences; consequently, they propose strategies to influence decisions. According to the contribution of Arenas (2021):

The problem of bounded rationality leads to the fact that, based on biases of availability, representativeness, confirmation of hypotheses, among others, consumers can make decisions that do not maximize their well-being or correspond to the perfect realization of the assumptions of microeconomics. (pp. 6-7)

The scientific literature on behavioral economics, including authors such as Daniel Kahneman, Amos Tversky, Richard Thaler, Cass Sunstein, Dan Ariely, among others, have paid increasing attention to heuristics and cognitive biases, understood as systematic errors in thought, where the individual's judgment deviates from what would be considered desirable from the perspective of accepted norms, or from what is correct in terms of formal logic. Their constant and predictable presence in human decisions and their influence on production, exchange, and consumption processes lead the areas of interest of behavioral scientific research applied to economics. However, its application in other non-economic activities gains more importance every day, where human judgments, evaluations, and decisions have consequences on the results of these actions.

The discovery of heuristics and cognitive biases was due to the creative and disruptive research of Daniel Kahneman and Amos Tversky in the 1970s (Tversky & Kahneman, 1971, 1974), although there was already enough evidence to question the paradigm of rational man beforehand (Katona, 1951; Simon, 1955, 1957). Its rise is due to the interest in understanding the determinants and human functioning within economic relations, trying to predict various behavior patterns. However, these classical authors could not imagine the multiple areas of application of their postulates.

It is important to recognize that all human beings incur cognitive biases and that these are to some extent predictable. The information processing capacity is limited, as well as the concentration of attention in this process. These errors are not random, but are the result of heuristics or mental shortcuts, so they are largely predictable (Kahneman, 2017).

People's responses can be more intuitive and quick than thoughtful and rational at times. Many of these distortions or anomalies have been experimentally studied (Sunstein & Thaler, 2017), demonstrating the possibility of testing behavioral economics theory.

Experimental designs are widely accepted and relevant to the construction of knowledge in the social sciences, specifically in the behavioral sciences. The importance of the application of theoretically oriented experiments lies in recognizing the existence of empirical regularities that affect the conventional explanation about the functioning of economic and social institutions.

An area where knowledge on behavioral economics has been applied is in sports betting (Varela & del Corral, 2019). The prediction of sports results is considered a rational process that depends on the experiences, and information available to the agent at the time of doing it. However, reality points to the diversity of alternatives selected by people in the same situation, calling into question the supposed rationality and optimization of the result.

The objective of this research is to analyze the presence of cognitive biases that affect the prediction of sports results, based on the application of a theoretically oriented experiment designed for this purpose. An applied field research was carried out, with a pre-experimental design, due to the low control of the participants and the variables that can influence the obtained results.

The structure of the research is oriented to the development of a pre-experiment, based on the design of situations so that the participating subjects make decisions based on sports predictions. This allows corroborating the presence of certain heuristics and cognitive biases, contributing to the theoretical foundation of these failures of rationality in this type of prediction.

## 2 Materials and method

There is an agreement with the authors Arechar, Brandt and Díaz, when they state that experimentation is "one of the main tools that Economics and other Social Sciences have in order to obtain information that allows them to understand, first-hand, people's decisions, including testing interventions in a controlled environment" (2018, p. 1).

The methodology used for this study is based on Miller's (2006) proposal of the theoretical orientation experiment. This has antecedents such as the works of Maurice Allais (1953) and those of Tversky and Kahneman (1974, 1983). Since then, there has been a tradition of conducting field or laboratory experiments to demonstrate and

argue the presence of heuristics and cognitive biases, which are the fundamental theoretical pillar of behavioral economics (Giarrizzo & Maceri, 2019).

Theoretical orientation experiments seek, through an intentionally designed situation, to reconstruct or contrast the validity of a certain theory, theoretical hypothesis, or explanatory mechanism. According to Greenwood (1976), the experimental method is defined based on the following characteristics: it presents a causal hypothesis; uses contrast situations to study theory, and contrast situations are applied under the control of the researcher. "Theoretical orientation experiments aim to reconstruct a certain theory in the laboratory and, in this way, study the effect produced by the explicit manipulation of its different components" (Miller, 2006, p. 98).

The approach of the proposed research is a descriptive pre-experiment, designed in a process of choice context. The pre-experiment was applied since it is not possible to randomly recruit the participants in the groups that will receive the experimental treatments, nor is it possible to control all the variables that influence individual choice (Arechar et al., 2018).

Following the proposal of Miller (2006), the first step is to have a theory whose scope is well defined, pretending that the specifications of the experiment adjust to the scope and conditions of said theory. When analyzing a theory, its confirmation or refutation will depend on the ability to recreate the essential aspects in the experiment.

## 2.1 Participants

For the development of the study, the participation of three groups of students from the Vicente Rocafuerte Lay University in Guayaquil was requested, as shown in Table 1. The selection of these groups was made based on the criterion of intentionality.

**Table 1**

*Composition of the experimental group*

Group of origin	Total people	Voluntary participants	%
Cohort I Masters in Education (2021-A)	23	21	91.3
First Semester in Economics (2021-A)	20	17	85
Fifth Semester in Economics (2021-A)	29	28	96.5
<b>Total</b>	<b>72</b>	<b>66</b>	<b>91.6</b>

The participants became involved in the study by volunteering to collaborate. Therefore, the selection does not correspond to probabilistic criteria, but to the availability and accessibility of the researcher with the subjects, recognizing that this topic is alien to their student interests.

Due to the characteristics of the designed study, sociodemographic variables (age, sex, economic level, etc.) are not recognized, since this research only intends to demonstrate the presence or absence of cognitive biases in sports predictions, regardless of the influence of sociodemographic variables mentioned above. However, for future studies these criteria can be taken into consideration if the aim is to determine the incidence of these in the cognitive biases that influence sports prediction.

## 2.2 Design

One of the elements to consider in this type of experimental design is its artificial nature, since the researcher constructs the situation that best recreates an existing theory.

The recognition of the internal validity of this type of experiment depends on the adequate relationship established between three essential components: reality, theoretical knowledge and experimental design. It is essential that the theory adequately explains reality, allowing it to be reproduced at the laboratory level (Miller, 2006).

For the design of the theoretical orientation pre-experiment carried out, a sequence consisting of four steps was applied, from the definition of the study to the analysis of the information collected.

### 2.2.1 Step 1: Study Definition

The definition of the investigation is carried out. The information to be obtained is delimited, from the lines of analysis to the interpretation of the results, as well as the control of the environment. This study aims to demonstrate the influence of cognitive biases in predictions of sports results, through the violation of the principle of invariance (the choice of one element over another will be maintained in any situation that arises), by stating that the selected option is a decision that must be maintained, even if the way in which the information is presented changes (Belaus et al., 2016).

The scientific ideas to be contrasted, based on the theory of behavioral economics, through the design of the research are the following:

- People tend to change their preferences when receiving increasing information about a sporting situation, without changing the initial conditions.
- Intuitive thinking, such as the representativeness heuristic, optimism biases, overinference, hot hand and small numbers, influence decisions about sports predictions, causing people to make decisions that deviate far from the expected results.

Taking into account these scientific ideas, probability estimates are investigated in situations in which chance intervenes, taking predictions of sports results as a context. In front of each situation designed in the reagent, the presence of elements of intuitive thought is evidenced, which guide the person to make mistakes in their decisions.

The designed experiment does not use incentives (Arechar et al., 2018b; Arechar et al., 2018a). It is recognized that this aspect can influence the results of the study, since performance incentives can affect behavior and decisions, guaranteeing the involvement of the subjects participating in the experiment.

### 2.2.2 Step 2: Recruitment of participants

To carry out the recruitment of the participants, the invitation was made through email, indicating the link that they could access if they decided to participate in the study. It was made clear that the experiment was completely voluntary and anonymous.

### 2.2.3 Step 3: Application of the designed reagent

From the moment they access the designed situations reagent, they can answer the questions. No question can be left unanswered. The estimated duration when doing it did not exceed three minutes. Results were automatically recorded, therefore subjects only have to choose their answer option.

### 2.2.4 Step 4: Information Collection

For the collection of information, the results offered by the Survey Monkey software were used. This allowed performing percentage analyzes and frequency analyzes (mode) for the different situations.

## 2.3 Materials and instrument

The reagent was built from the hypothetical (but probable) proposal that two teams meet in a Soccer Tournament on the 6th matchday, with the same number of points. It is known that in this sport the victory has a value of 3 points and the tie of 1 point; therefore, for the team to have 9 points in five games, it can only be if: a) they have won three games and lost two games; b) has won two matches and drawn three matches. For both cases, the same number of points is obtained, but with a different sequence of results.

The reagent is composed of six situations and three response options each. The designed situations are based on uncertainty, where chance intervenes. It was placed on the specialized Survey Monkey platform for surveys. The answer options are the same for all six situations:

- Team A beats team B.
- Team B beats Team A.
- Teams A and B tied.

The situations created and their characteristics are as follows:

**Situation 1:** Teams A and B are playing a soccer tournament. Both teams have 9 points and face each other on the sixth matchday. What do you think will happen? This situation was designed with little information on how both teams obtained the points and without any affective involvement on the part of the participants.

**Situation 2:** Teams A and B are playing a soccer tournament. Both teams have 9 points and face each other on the sixth matchday. Team A has 3 wins, 0 draws, and 2 losses. Team B has 2 wins, 3 draws, and 0 losses. What do you think will happen? This situation introduces a higher level of information than in the previous situation, therefore the numbers of wins, losses, and ties for each team appear.

**Situation 3:** Teams A and B are playing a soccer tournament. Both teams have 9 points and face each other on the sixth matchday. Team A has 3 wins, 0 draws, and 2 losses. Team B has 2 wins, 3 draws, and 0 losses. Their results are displayed in the following sequence: Team A: Win-Loss-Win-Loss-Win. Team B: tie-tie-tie-win-win. This situation shows the sequence of the results that the teams obtained; therefore, it contains more information than the previous two situations.

**Situation 4:** the FAVORITE teams (the team of your choice) and the RIVAL (any other team) are playing a soccer tournament. Both teams have 9 points and face each other on the sixth matchday. What do you think will happen? This situation is similar to situation 1, but elements of affective involvement are introduced to obtain possible

variations in the probabilities of occurrence of the expected result, according to the criteria of the participants.

**Situation 5:** the FAVORITE teams (the team of your choice) and the RIVAL (any other team) are playing in a football tournament. Both teams have 9 points and face each other on the sixth matchday. Your FAVORITE team has 3 wins, 0 draws, and 2 losses. The RIVAL team has 2 wins, 3 draws, and 0 losses. What do you think will happen? It is related to situation 2, elements of affective involvement are introduced.

**Situation 6:** the FAVORITE teams (the team of your choice) and the RIVAL (any other team) are playing in a soccer tournament. Both teams have 9 points and face each other on the sixth matchday. Team A has 3 wins, 0 draws, and 2 losses. Team B has 2 wins, 3 draws, and 0 losses. Their results are displayed in the following sequence: Team A: Win-Loss-Win-Loss-Win. Team B: tie-tie-tie-win-win. It is linked to situation 3, there is a higher level of information about the results, and the affective involvement in the response of the subjects is also taken into account.

The web link where the reagent is found is as follows: <https://bit.ly/3GGbTmW>

## 2.4 Data collection

The data was collected from the information provided by the Survey Monkey program. For the elaboration of the frequency tables, the EXCEL program and its statistical package were used to determine the percentage values and the mode in the analysis of each situation (Morales, 2008).

## 2.5 Ethical aspects of research

It was determined that the designed situations present a topic without moral implications for people, being in the public domain. The knowledge about soccer and the possibility of predicting the results does not generate contradictions or moral conflicts among the people who participate in the theoretical orientation experiment.

The conditions of anonymity are guaranteed to the participants, since they answer an online survey, in which no personal or socioeconomic data is requested. However, these conditions can become uncontrolled aspects, since it is not possible to control the environment of the subjects when answering the instrument.

## 3 Results

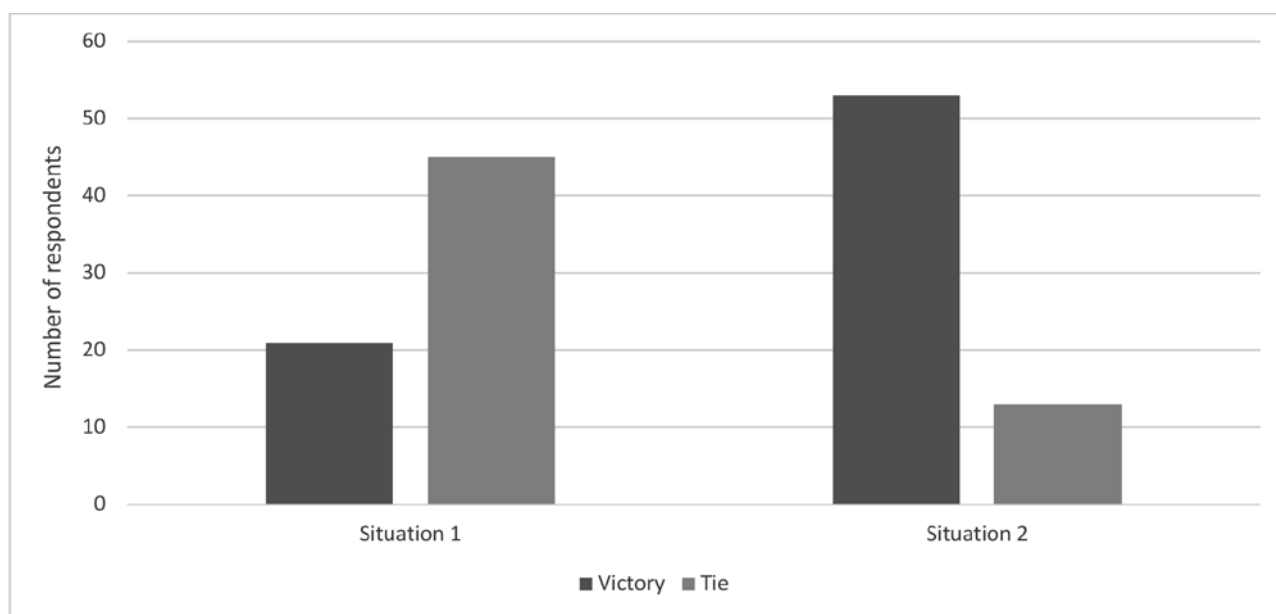
The answers of the 66 students surveyed are collected in table 2. In addition, the percentage analysis and the mode for each of the situations are included.

In the responses to situation 1, a high number of responses can be seen (45 respondents, 68.2%) who indicate a draw as the most likely result when the two teams face each other with the same number of points on the sixth matchday of a tournament; meanwhile, only 21 respondents (31.8%) consider that one of the two teams should win.

In Scenario 2, providing more information about how they obtained the same number of points, significantly increases the number of people who consider a win for one of the two teams (53 respondents, 80.3%) to be more likely than the tie (13 respondents, 19.7%). This result contrasts with that obtained in situation 1, where the majority indicated a tie, as shown in graph 1.

**Table 2***Determination of frequency by response to each question*

Situation	Response	Number of responses	% Of responses	Mode
1	Team A wins	13	19.7	Tie
	Team B wins	8	12.1	
	Tie	45	68.2	
2	Team A wins	24	36.4	Team B wins
	Team B wins	29	43.9	
	Tie	13	19.7	
3	Team A wins	16	24.2	Team B wins
	Team B wins	40	60.6	
	Tie	10	15.2	
4	Team A wins	40	60.6	Team A wins
	Team B wins	21	31.8	
	Tie	5	7.6	
5	Team A wins	24	36.4	Team B wins
	Team B wins	30	45.5	
	Tie	12	18.1	
6	Team A wins	23	34.9	Team B wins
	Team B wins	31	47	
	Tie	12	18.1	

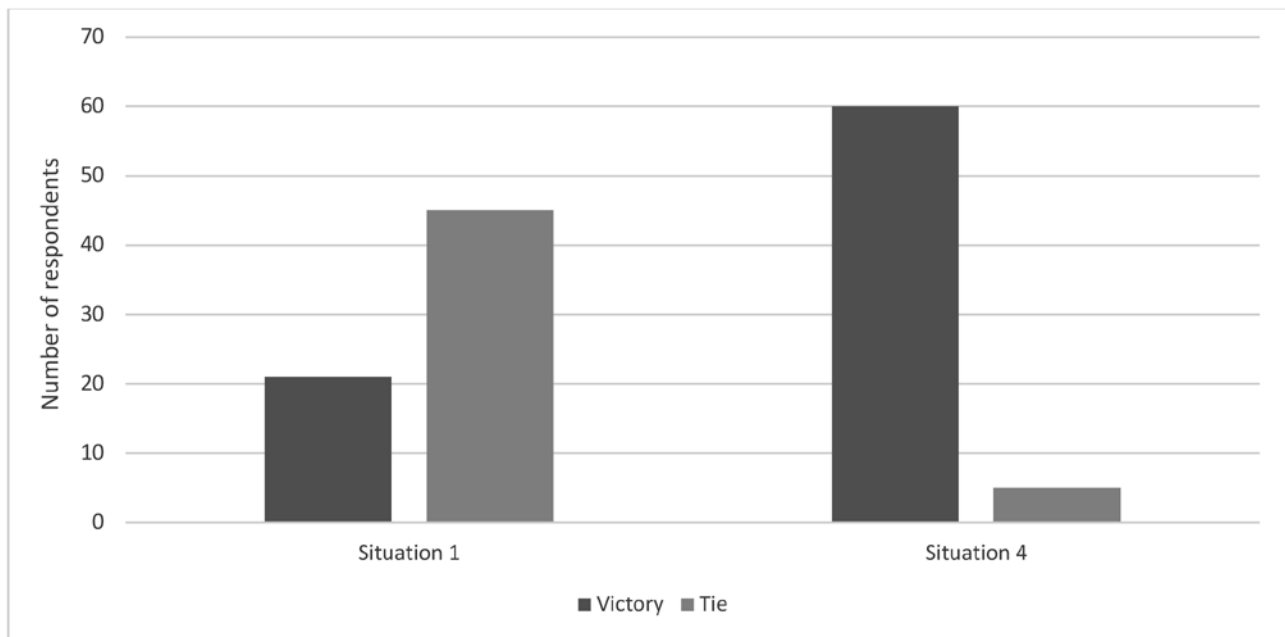
**Figure 1***Representation of the responses of the respondents to situations 1 and 2*

In situation 3, the way in which they obtained that number of points is specified, as well as the type of result obtained by each team in each match. The tendency to choose victory as a possible result (56 respondents, 84.8%) as opposed to a tie (10 respondents, 15.2%) continues. It is evident, through the response of 40 respondents (60.6%) that they consider that it is more likely that the team that has not lost any of its previous matches will win the match, than the other team that has had a sequence of victories and losses (16 respondents, 24.2%).

In situation 4, the lack of information is combined with an increase in affectivity. In this case, a significant group of people (40 respondents, 60.6%) believe that the team of their choice should win the match; while only five respondents say that they should tie (7.6%). It is evident that affective involvement causes a large number of responses to shift from a tie being the most likely result, towards the victory of the preferred team as the main response.

## Figure 2

*Representation of the answers of the respondents to situations 1 and 4*



Analyzing the answers to situation 5, it can be seen that a tie continues to be the least likely result (12 respondents, 18.1%). The answers indicate that the affective factor lost its importance due to the increase in evidence, since 24 respondents (36.4%) consider that the team of their choice can win, while 30 respondents (45.5%) do not consider it so.

When examining the answers to situation 6, it can be seen that the figures of those who consider that the team of their choice can obtain a positive result (23 respondents, 34.9%) remain lower than those who consider that they will not be able to win (31 respondents, 47.0%).

## 4 Discussion and conclusions

The experiment shows that it is not possible to predict the decision with a high degree of reliability, due to the existence of multiple criteria that the subjects use to

determine their prediction. From the study of the obtained results, it has been possible to observe the presence of different heuristics and cognitive biases, which corroborates the theory that supports them. However, it is necessary to recognize, within the limitations of this study, the size of the sample, its application in groups of university students, which influences its external validity, since this study may present this type of research bias.

In the case of situation 1, 45 respondents (68.2%) consider that both teams should tie, this result being higher than the option that states that one of them should win (21 respondents representing 31.8%). However, those surveyed do not recognize that a draw is the less statistically obtained result in football matches.

The outcome of a football match depends on many factors. For Vega (2010) in a statistical study of the nine most frequent results in the history of the Spanish League, only 2 correspond to draws: 1-1 and 0-0, the remaining 7 being decisions in favor of one of the teams. Out of a total of 14,937 games, 3,994 games (26.7%) ended in a draw and 10,943 games (73.3%) ended in a win for one of the teams.

According to Subirán (2018), of the 24,679 games played in the history of the Spanish League until December 2018, the most frequent result (2,891; 11.7%) is a 1-0 victory. According to the specialized football outlet Veinte Minutos (2018), in the European Champions League until 2018, decisions in favor of one of the teams (806) are more common than draws (548).

In the history of the Soccer World Cups until 2010, the most obtained results are: 1-0 (18.8%), 2-1 (14.5%), 2-0 (11%) and 1-1 (9.8%) (Tover, 2014). It can be stated that victory is the most likely outcome in that type of tournament.

Therefore, the heuristic of representativeness can be appreciated, where the response options are chosen by similarity and not by probability; one works by stereotype, but the statistical conditions are ignored in this case (Tversky & Kahneman, 1974). According to Pérez and Rodríguez (2021): "the possibility that a person belongs to a group or category is judged based on some characteristic, then that person is attributed more characteristics of that class or category" (p. 433). Similarity (tie in points, tie in results) and the illusion of validity (there is coherence between the expected result and the initial conditions) are recognized as determinants of representativeness.

In situation 2 two significant elements can be assessed. On the one hand, the difference with situation 1, since the draw as the most likely result has decreased drastically, from 68.2% to 19.7%. This variation is due to the fact that more information is provided on how these teams obtained the points. The other element under analysis is the choice that team B would win the match (43.9%), since it is the team that has not lost, according to the description of situation 2. The excessive optimism bias is revealed (unjustified belief about the occurrence of a phenomenon, stability of a sequence, etc.) by the subjects who have made this prediction. In addition, in situation 2, the biases of small numbers (propensity to make estimates from small-sized samples) and overinference (assumption about the impossibility of manifesting a result that has not appeared or maintaining one that has not appeared) can be seen, while considering that it is the team with the most chances of winning, as well as that winning is more likely than drawing (Attorresi et al., 2008).

In situation 3, despite the fact that the mode indicates that B continues to be the team that should win the match, the number of people has increased: 29 respondents (43.9%) in situation 2 and 40 respondents (60.6%) in situation 3. The sequence shown has a decisive influence on the result since team B has not lost yet, its last two results are victories; while team A alternates victory and defeat, and according to the sequence team A should lose after the last victory. In addition, from the possible biases of excess

optimism, overinference and small numbers, shown in situation 2, it is possible to appreciate the hot hand bias (persistence of positive streaks, negating statistical probabilities) (Gilovich et al., 1985; Koehler & Conley, 2003; Paul et al., 2014).

Excessive optimism is considered as “the strategy of positively distorting the expectation of the future” which can influence the containment of these problems (Torres-Salazar et al., 2020, p. 64). Among the reasons for the presence of this cognitive bias is that “it occurs because people do not review their preliminary assessments sufficiently after obtaining new information, and thus, they do not realize to what extent their estimates are erroneous” (Pérez & Rodríguez, 2021, p. 434).

It is necessary to remember that these biases tend to manifest themselves in situations of uncertainty, where chance plays an important role, such as the results of a soccer match. Their presence indicates that in situations where, despite the level of information, the result will depend on what happens in the game, it is possible that the subjects base their predictions on the presence of streaks, excessive optimism, and analysis of small samples of previous results (Bernoulli, 1954).

Situation 4 shows the same information about the previous results as situation 1, the condition introduced is that one team is preferred by the respondent. In this situation the majority of respondents see victory as the most likely outcome (61 respondents). This difference is due to the fact that there is greater personal involvement, which indicates that the affective aspects influence the predictions of the subjects about sports results, although they have previously decided that a tie is more likely to happen (45 respondents, situation 1).

This finding confirms the results of other sports betting research (Kahneman & Tversky, 1979; Sunstein & Thaler, 2017). For their part, referring to the effect of affective processes on decisions, Pérez and Rodríguez (2020, p. 511) have pointed out that: “Decisions are influenced by affection and emotions; information is more effective if it is endowed with emotional content”.

It is also verified that 40 respondents (60.6%) selected the result that their favorite team wins, this being the only situation where mode points towards this option. When reviewing what happens in situations 5 and 6, where the mode confirms that the most likely result according to the respondents is that the rival team wins, it is considered that the affective elements play a more influential role in situations where there is not enough information.

In situation 5, a similar result to situation 2 was obtained in terms of the prediction of the respondents. This confirms the presence of the cognitive biases noted above. At the same time, the possible influence of the affective aspects did not modify the result obtained in situation 2. In this situation, the evidence points to the determining role of the cognitive elements over the affective ones to the extent that the information increases and with it, the presence of cognitive biases.

In situation 6, very similar results were obtained to the responses of situations 2 and 5; however, the number of respondents who consider that the rival team should win decreases, when compared to situation 3 (31 of 40 respondents). The presence of cognitive biases is maintained, highlighting the distorting role that streaks of results and the analysis of small samples can have. Regarding the role of affectivity, although the result is not higher, it does indicate that the respondents in situation 6 (23 respondents, 34.9%) give more value to the favorite team than in situation 3 (16 respondents, 24.2%).

In general, it can be analyzed that a draw is only the selected result (situation 1) when there is little information and the respondents undervalue the importance of sports statistics and overvalue the similarity and the illusion of validity of correspondence between premises and results.

Other heuristics and cognitive biases appear throughout the different situations, confirming the presence of intuitive thinking. Among the elements found are: the heuristic of representativeness, the bias of optimism, the bias of overinference, the bias of the hot hand, the bias of small numbers. The effect of affective aspects on predictions is also noted, especially in situations with little information.

Like other elements resulting from this research, it is considered necessary to continue delving into the presence of these heuristics and cognitive biases, as well as their manifestations in determining human behavior in situations of uncertainty. In the case of behavioral economics, it is possible to carry out new experiments in strictly economic situations, for which it would be necessary to have monetary incentives to achieve maximum involvement of the respondents in the benefits and results of the experiment.

It can be concluded that sports predictions operate under the principles of limited rationality, by presenting characteristics of intuitive thinking. It can be appreciated that people minimize the importance of previous and significant information, prioritizing their own knowledge and interpretations of situations. This conclusion has implications for behavioral economics theory, confirming their fundamental finding, providing opportunities for the exploration of other heuristics and cognitive biases in predicting outcomes in various sports.

It has been verified the modification of the predictions of the respondents by the increase of the information and of the affective component. Therefore, the principles of dominance and invariance were not fulfilled, as manifested by behavioral economics theory.

The results of this theoretically oriented pre-experiment indicate the presence of overconfidence in previous knowledge, experience and intuition, underestimation of statistical information and influence of affective components in decisions about sports prediction.

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# Brand value of Chilean pisco: contributions from the Pisco region of Chile

## Valor de marca del pisco chileno: aportes desde la región pisquera de Chile

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### Abstract

*In the current competitive environment of pisco industry, it's essential to differentiate the offer in the market. In this context, the brand represents an attribute of significant value that allows the consumer to identify the origin of the good and, to the company to differentiate its products and services. The aim of this research was to analyze the brand value of Chilean pisco (the most important Chilean distillate) in the main pisco area of the country: Coquimbo Region. A questionnaire was developed, based on the multidimensional brand value model of Aaker (1991), which was applied to a probabilistic sample of 254 consumers. The results showed that the factors with the greatest and least relevance are of behavioral type: notoriety and brand loyalty, respectively. This would reveal a customer who recognizes the characteristics of the product (cognitive loyalty), but that doesn't necessarily buy the product (behavioral loyalty). In addition, the examination of the variables according to the participant's profile, allowed to find significant differences, according to sex and income (in the notoriety dimension); and age (in the perceived quality and brand associations dimensions). It's concluded that there are determinant attributes of brand value for consumers, whose right management would allow improving the positioning and competitiveness of Chilean pisco in the market.*

### Resumen

En un entorno globalizado y competitivo como el de la industria pisquera, es fundamental distinguir la oferta propia de la de otros competidores. En este sentido, la marca es un atributo de valor significativo que permite al consumidor identificar el origen del bien y a la empresa diferenciar sus productos y servicios en el mercado. El objetivo de esta investigación fue analizar el valor de marca del pisco chileno (el destilado más importante de Chile) en la principal zona pisquera del país: la Región de Coquimbo. Se elaboró un instrumento de medición, basado en el modelo multidimensional de valor de marca de Aaker (1991), que fue aplicado a una muestra probabilística de 254 consumidores del destilado. Los resultados mostraron que los factores con mayor y menor relevancia son de tipo comportamental: notoriedad y lealtad de marca, respectivamente. Esto devela un cliente cuya lealtad es mayormente cognitiva, que valora y reconoce las características del producto, pero no necesariamente adquiere la bebida (lealtad conductual). Además, el examen de las variables según el perfil del participante permitió advertir diferencias significativas, según sexo e ingresos (en la dimensión notoriedad); y según edad (en las dimensiones de calidad percibida y asociaciones de la marca). Se concluye que existen atributos determinantes del valor de marca para los consumidores, cuyo develamiento y gestión adecuada permitirían mejorar el posicionamiento y la competitividad del pisco chileno en el mercado.

### Keywords | palabras clave

*Brand equity, brand loyalty, quality, Aaker model, consumer profile, distillate, pisco, Chile.*

Valor de marca, lealtad de marca, calidad, modelo de Aaker, perfil del consumidor, destilado, pisco, Chile.

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## 1 Introduction

In the current competitive and global context, consumer satisfaction has become a topic of great research interest, closely linked to customer loyalty and company profitability (Valencia & Nicolás, 2011). For this reason, organizations have focused their efforts on identifying those attributes of the good, tangible and intangible, that are decisive for its achievement.

Among the most recognized intangible elements of a product, the brand stands out, which is understood as the name, term, sign, symbol, or design, or a combination of them, which is intended to identify the goods and services of a seller or group of sellers and differentiate them from the competition (Lin et al., 2021). The brand is attributed the inherent power of positioning companies in a market, by helping a product to be particular and, therefore, manage to mean something different than its competitors in the mind of the consumer (Levy, 2020).

A brand is valuable to consumers because it denotes a series of advantages related to the quality, reliability, safety and recognition of the good; a guarantee that you will acquire a series of benefits for what you are willing to pay. Likewise, a brand is valuable for companies because it is an element that is difficult for the competition to imitate, and therefore constitutes a powerful mechanism to establish a competitive advantage (Gupta et al., 2020; Handayani & Herwany, 2020; Keller, 2013; Levi, 2020). Hence the importance of discovering the value that consumers attribute to it and its determining qualities (brand value).

Chilean pisco is a type of grape alcohol produced in the Atacama and Coquimbo regions. It is made by distillation of genuine drinkable wine and is characterized by the aroma of the original fruit, especially the Muscatel-type grape, whose production requires a dry and highly luminous climate, such as that which identifies the northern zone of Chile. It was delimited as a Denomination of Origin (DO) in 1931, and today it constitutes an essential productive sector for the country, especially for the pisco industry in the Coquimbo region, which has about 95% of the surface of the pisco vines and it generates 89% of the entire national production of pisco (Araya-Pizarro & Ruiz-Vega, 2019).

However, even when it is a distillate with a unique production in the country, its per capita consumption is low (2.1 liters) compared to the consumption of other alcoholic beverages such as wine (16.2 liters) or beer (50 liters) (Association of Beer Producers of Chile, 2018; International Organization of Vine and Wine, 2018). In addition, there is a growing volume of imports from Peru, the only competitor worldwide (Fajardo, 2017).

Based on the above, the research question is: What is the brand value of Chilean pisco according to the perspective of the consumer of the pisco region of Chile? Specifically, the study aims to analyze the brand value of Chilean pisco in the Coquimbo region. It is hypothesized that there are determining attributes of brand value for consumers, the disclosure of which would improve the competitiveness of the local pisco industry. The findings are expected to contribute to the examination of brand value in the spirits market and, in particular, of pisco, a traditional and emblematic drink of Chile.

### 1.1 Brand value

Branding is a strategy that interrelates brands with customers, and consists of transmitting the power of a brand to products and services, essentially, through the creation of factors that distinguish them from other goods (Mancheno & Gamboa, 2018). In other words, branding creates mental structures and helps consumers organize their

knowledge about products and services in a way that clarifies their decision-making and provides, at the same time, value to the company (He & Calder, 2020; Keller, 2013).

This value can be reflected in the way consumers think, feel and act regarding the brand, as well as in the prices, market share and profitability it generates for the company (Orellana, 2016; Sajtos et al., 2021; Sandhe, 2020). For this reason, the importance of evaluating the capital or brand value (or brand equity) which is understood as the added value or differential effect that is assigned to a product or service from the brand (Lim et al. al., 2020).

Among the different measurement proposals collected in the literature, those models that approach the phenomenon from a multidimensional perspective, and that are based on consumer perception stand out (Buil et al., 2013; Forero & Duque, 2014).

Consumer-centric approaches, whether an individual or an organization, recognize that the power of a brand lies in what consumers have seen, read, heard, thought, and felt about it over time (Keller, 2013). In this line, different measurement methodologies have been developed (Aaker, 1991; Dick & Basu, 1994; Green & Krieger, 1995; Keller, 1993) among which the contribution made by Aaker (1991) stands out. It provides the advantage of deepening the origin of brand value, under recognized fundamental dimensions, and its approach has been collected by various authors (Brochado & Oliveira, 2018; Le-Hoang et al., 2020; Orellana, 2016; Sandhe, 2020; Tiwari & Loyalty, 2019; Tsordia et al., 2018).

## 1.2 Aaker's brand value model

Brand equity, according to Aaker (1991), is a multidimensional entity made up of four basic components related to the consumer. The first corresponds to brand loyalty and represents repeated purchase behavior, which shows the consumer's conscious decision to continue buying it. This loyalty can be initiated by a preference based on objective reasons, however, once the brand has been in the market for a long time and has been widely disseminated, it can also cause an emotional bond, based either on the consumer's self-image or in its association with past experiences (Solomon, 2018).

The author also proposes five levels of loyalty that describe the relationship of the commitment to the brand by the consumer. This pyramid shows the existence of different types of buyers, ranging from a price-oriented customer (no loyalty) to a committed buyer (full loyalty) (See Figure 1).

**Figure 1***Pyramid of brand loyalty dimensions*

*Note.* Own elaboration based on Aaker (1991).

The third dimension is perceived quality, understood as the customer's perception of the overall quality or superiority of a product or service, with respect to its purpose among available alternatives. It consists, therefore, in a subjective assessment of the excellence of the good, which is commonly pointed out in the literature as one of the key components in the construction of a strong brand (Buil et al., 2010).

Finally, there is the association of the brand (or brand image), which is defined as a set of thoughts and ideas that individuals have in their memory in relation to it (Colmenares et al., 2009). These links give rise to a strong network of brand knowledge organized in the buyer's memory, based on verbal, visual, sensory impressions (taste, aroma or sound), and emotional impressions. Therefore, the brand image is understood as the reality perceived by the consumer (Vega & Egüez, 2017). This dimension, according to Aaker, is evaluated through three perspectives of brand associations: (i) measuring the perceived value as a product, (ii) measuring the personality of the brand, and (iii) measuring those responsible for managing the brand (as an organization) (Aaker, 1996; Buil et al., 2010).

## Figure 2

### *Brand awareness dimensions*



*Note.* Own elaboration based on Aaker (1991).

It should be noted that studies referring to the brand value of spirits are scarce, with no recent articles being found that apply Aaker's model in the scrutiny of pisco or other similar types of distillates. However, it is possible to find works that have used this method to study the brand value of alcoholic beverages such as beer and wine (Brochado & Oliveira, 2018; Calvo-Porral et al., 2013; Vinh, 2017) or soft drinks. (Atilgan et al., 2005; Jarquin et al., 2019; Khudri & Farjana, 2016; Sahari et al., 2015).

In general, the results show a relevant contribution of all the dimensions of the Aaker model on the brand value of beverages, highlighting, in particular, the significant and direct influence of brand loyalty (Atilgan et al., 2005; Brochado & Oliveira, 2018; Calvo-Porral et al., 2013; Sahari et al., 2015). For example, Brochado and Oliveira (2018), when studying the main determinants of the brand value of a variety of wine from Portugal, found that brand loyalty is the most influential dimension. Likewise, Calvo-Porral et al. (2013), in a study on beer in Spain, found that brand loyalty together with perceived quality constitute the most relevant variables. Also, the research developed by Vinh (2017), in the beer market in Vietnam, highlighted the positive and direct effect on the brand value of the factors: brand loyalty, perceived quality, brand knowledge and brand association. And in the case of soft drinks, Atilgan et al. (2005), Sahari et al. (2015), and Kudhri and Farjana (2016) obtained similar results. This reflects, in terms of brand loyalty, that consumers are emotionally attached to their preferred brand. Therefore, the loyal customer functions as a "brand evangelist", that is, an active promoter of the brand that he prefers.

For the rest, other authors have applied Aaker's model to examine the relationship of brand equity with other commercial variables, such as advertising (Jarquin et al.,

2019) or sponsorship (Adedoyin & Adeyeri, 2019), demonstrating the applicability of the model and the significant contribution of brand awareness and associations.

## 2 Materials and method

The research had a quantitative approach, non-experimental design, descriptive type, and cross-sectional scope. The universe of study consisted of people over 18 years of age, pisco consumers, residing in the Coquimbo Region.

For the calculation of the sample, an infinite universe ( $N > 100,000$ ), a confidence level of 95%, a heterogeneity of 50% and a margin of error of 6.15% were considered. A stratified systematic random sampling was used with proportional allocation based on the three provinces that make up the Region: Elqui (66%), Limarí (22%) and Choapa (12%). In this way, the sample size ( $n = 254$ ) was distributed as follows: 168 for Elqui, 55 for Limarí and 31 for Choapa. The questionnaires were applied in different supermarkets and regional liquor stores, using an elevation coefficient of five ( $k = 5$ ). It should be noted that the instrument included filter questions, which made it possible to exclude those who did not meet the selection criteria.

The data collection technique was an ad hoc survey, whose questionnaire mainly consisted of closed questions to characterize the pisco consumer, and included an open question to evaluate the spontaneous positioning of the distillate brands. This instrument was applied during the months of February and March 2020. It should be noted that a generational categorization was used for the classification of age groups, based on the work of Díaz-Sarmiento et al. (2017). Thus, the Baby Boomer generation was comprised of people born between 1946 and 1964; Generation X, for those born between 1965 and 1981; and Generation Y or Millennials, for those born between 1982 and 2004.

seven-point Likert scales were used (1 = Strongly disagree to 7 = Strongly agree) from which the statements were extracted and adapted from previous research, particularly from the methodological guidelines proposed by Buil et al. (2013). Thus, brand awareness used the proposal of Yoo et al. (2000) and Netemeyer et al. (2004). The scale used for the global measurement of perceived quality was based on the work of Pappu et al. (2006). Brand loyalty was measured through a scale adapted from Yoo et al. (2000). Brand association was measured by items proposed by various authors (Aaker, 1996; Lassar et al., 1995; Netemeyer et al., 2004; Pappu et al., 2005; Pappu et al., 2006) and included, according to with the contributions of Aaker (1996) and Keller (2013), personality and organizational associations (Buil et al., 2013).

In addition, in order to describe the consumer's perception of Chilean pisco with respect to Peruvian pisco, a semantic differential item with seven paired response options was established. The adjectives considered were: modern-traditional; common-exclusive; cheap expensive; lower quality-higher quality; worst taste-best taste; less aromatic-more aromatic; and less accessible-more accessible.

The internal consistency of the instrument scale was measured through Cronbach's alpha coefficient, whose computation showed high reliability (greater than .7) in global and dimensional terms (global:  $\alpha = .94$ ; notoriety:  $\alpha = .83$ ; perceived quality:  $\alpha = .95$ , loyalty:  $\alpha = .81$ , brand associations:  $\alpha = .85$ , brand personality:  $\alpha = .77$  and organizational associations:  $\alpha = .87$ ). Likewise, all the factors showed significant ( $p < .01$ ) and direct correlations, which confirmed the high degree of existing association (Spearman's  $r$  coefficients between .4 and .7). Also, it is worth mentioning that the research included a pilot previously applied to 30 pisco consumers, and had the validation of three experts from the fields of strategic management, communication, and sociology.

The analysis of the information collected included the use of basic descriptive statistics, tests of independence for categorical variables, and tests for contrasting means for quantitative data. Specifically, indicators of central tendency (arithmetic mean) and dispersion (standard deviation) were calculated. In addition, association tests (chi-square test of independence) and parametric (T-test and analysis of variance), and non-parametric (Mann-Whitney U test and Kruskal-Wallis test) comparison of means were performed, on compliance with the criteria of independence, normality, and homoscedasticity (Kolmogorov-Smirnov test and Levene's test).

Finally, it should be noted that all calculations were performed using the statistical program IBM SPSS Statistics, version 24.

### 3 Results

#### 3.1 Sample characterization

Of the total number of respondents, 44% were women and the remaining 56% were men, with incomes below US\$666.67 (68%) and without children (56%). The majority achieved secondary education as their maximum educational level (47%), followed by higher university studies (25%) or professional technical level (15%). 63% were workers and 28% students. By age, 73% were Generation Y, 21% Generation X, and 6% Baby Boomers (See Table 1).

**Table 1**

*Characterization of the sample (n = 254)*

Criterion	Segment	Percentage
Sex	Female	44.1
	Male	55.9
Education	Complete Basic Education	8.2
	Complete middle school	46.9
	Technical Training Center or Institute	15.0
	University education	24.8
	Postgraduate	5.1
Monthly income (in US\$)	Less than 266.67	27.9
	Between 266.67 and 400.00	14.6
	Between 400.00 and 666.67	25.2
	Between 666.67 and 1,333.33	18.5
	More than 1,333.33	13.8

Criterion	Segment	Percentage
Occupation	Student	28.3
	Worker	62.6
	unemployed	2.4
	Homeowner	5.9
	Retired	0.4
	Pensioner	0.4
Children	Yes	44.5
	No	55.5
Generation	Baby Boomers	5.9
	Generation X	20.9
	Generation Y (Millennials)	73.2

Regarding consumer behavior, it stands out that they mainly make monthly purchases (43%) or fortnightly (31%), in supermarkets (64%), and in liquor stores (32%). They prefer to buy the medium format (39%) for which they are willing to pay up to US\$13.33. They consume pisco at home (77%) and with company (99%), mostly with friends (68%) and relatives (21%). In general, they buy it as a complement to other drinks (42%), to share or socialize (25%), and to enjoy its flavor (24%). Otherwise, the respondents indicated that drinking pisco gives them joy (68%), relaxation (26%), and freedom (4%) (See Table 2).

**Table 2**

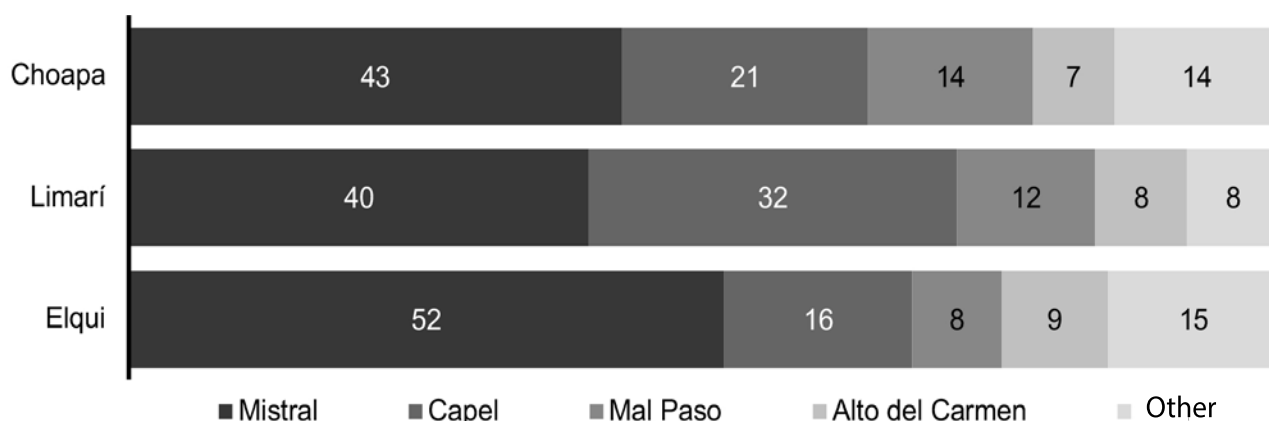
*Pisco consumer behavior (n = 254)*

Criterion	Segment	Percentage
Preferred place of purchase	Supermarkets	64.2
	Liquor stores	31.5
	Pisqueras	2.4
	Other	1.9
Preferred format	Single bottle (up to 250 cc)	0.8
	Medium bottle (700 cc and 750 cc)	38.6
	Large bottle (1,000 cc)	30.7
	Neither	29.9
Frequency of consumption	More than 1 time a week	9.4
	Each 15 days	30.7
	1 time a month	43.3
	Every 2 or 3 months	13.8
	Occasionally	2.8

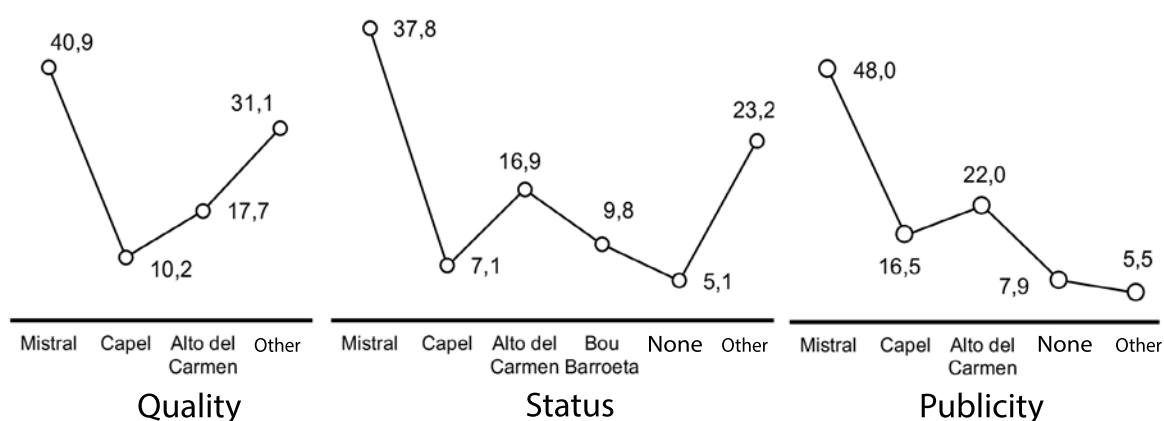
Criterio	Segmento	Porcentaje
With whom do you consume?	Friends	68.1
	Significant other	9.8
	Relatives	21.3
	Alone	0.8
Preferred place of consumption	Restaurant	3.9
	Nightclubs	10.6
	Pub	8.7
	House	76.8
Willingness to pay (700-750 ml)	Less than \$6.67	32.3
	Between US\$6.67 to US\$13.33	53.1
	Between US\$13.33 to US\$26.67	11.8
	More than \$26.67	2.8
Main reason for consumption	Enjoy a product of origin	6.7
	Enjoy its taste	24.0
	Complement of other drinks	42.1
	Share and socialize	25.2
	Other	2.0
Feelings when consuming	Relaxed	26.4
	Happy and sociable	67.7
	Free	4.3
	Drunk	1.6

### 3.2 Positioning of Chilean pisco brands

In order to measure the positioning of Chilean pisco brands, respondents were asked about the first brand they remember (top of mind). The results highlighted four exponents that, in total, comprise almost 87% of the mentions. However, it was Mistral who collected almost half of the responses (48.3%) followed by Capel (20.5%), Mal Paso (9.3%) and Alto del Carmen (8.8%). Other brands mentioned were Tres Erres (3.9%), Campanario (3.4%), Control (2.9%) and Horcón Quemado (2.9%). For its part, the examination of brand positioning revealed significant differences between the regional provinces [ $\chi^2$  (18, N = 254) = 32.51, p = .019]. In particular, it was observed that the Mistral brand is more remembered in the province of Elqui, while the Capel brand is more remembered in Limarí and the Mal Paso brand in Choapa (See Figure 3).

**Figure 3***Positioning of Chilean pisco brands by province (%)*

In addition, in order to identify the attributes that affect the positioning of the brands, three questions were established linked to the attributes of quality, status and publicity. The findings, illustrated in figure 4, show similar appreciations, highlighting Mistral, Alto del Carmen and Capel on all the edges. Only in the case of status, a different brand stood out (Bou Barroeta). Specifically, the brands associated with quality were Mistral (41%), Alto del Carmen (18%) and Capel (10%), while those associated with status were Mistral (38%), Alto del Carmen (17%), Bou Barroeta (10%) and Capel (7%). Lastly, the recognized brands with the best publicity were Mistral (48%), Alto del Carmen (22%) and Capel (17%).

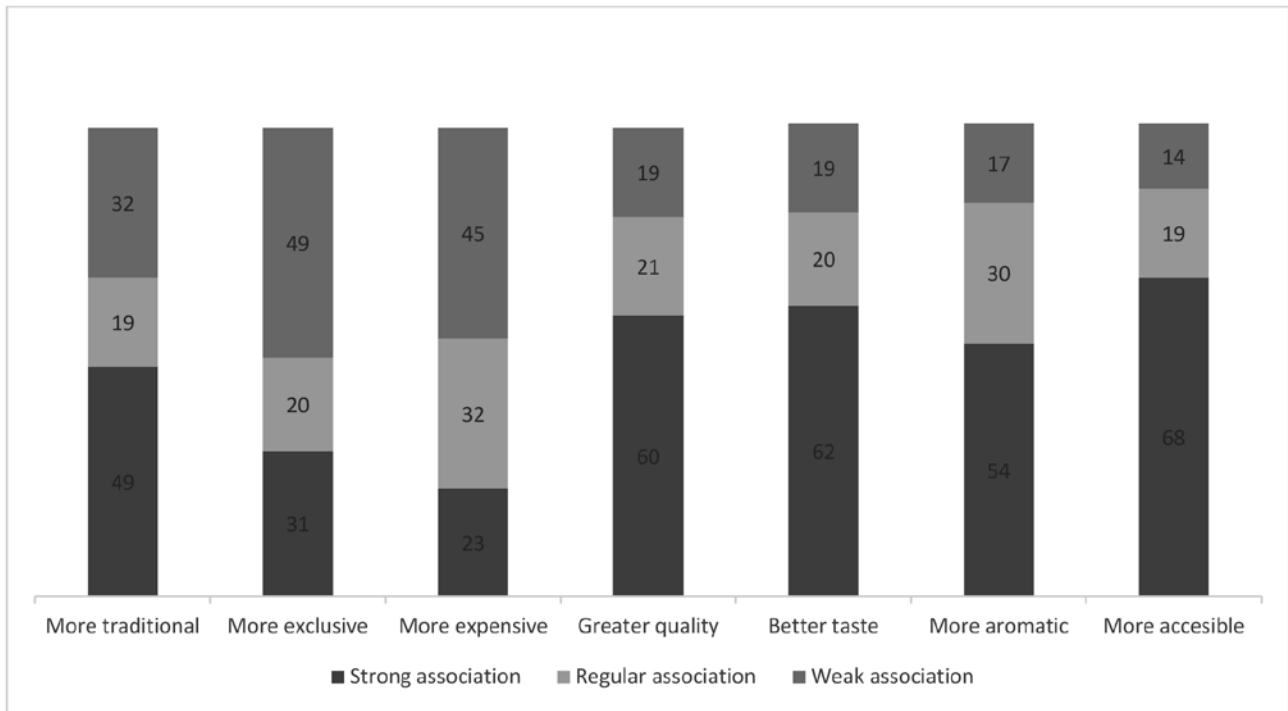
**Figure 4***Positioning of Chilean pisco brands according to quality, status and publicity (%)*

### 3.3 Perception of Chilean pisco in relation to Peruvian pisco

The analysis of the perception that consumers have about the attributes of Chilean pisco with respect to the Peruvian one (the only competitor), determined that the national product is perceived as more accessible (68%), better flavor (62%), higher quality (60%), more aromatic (54%) and more traditional (49%). On the other hand, Peruvian pisco is seen as a more expensive product (77%) and more exclusive (69%) (See figure 5).

**Figure 5**

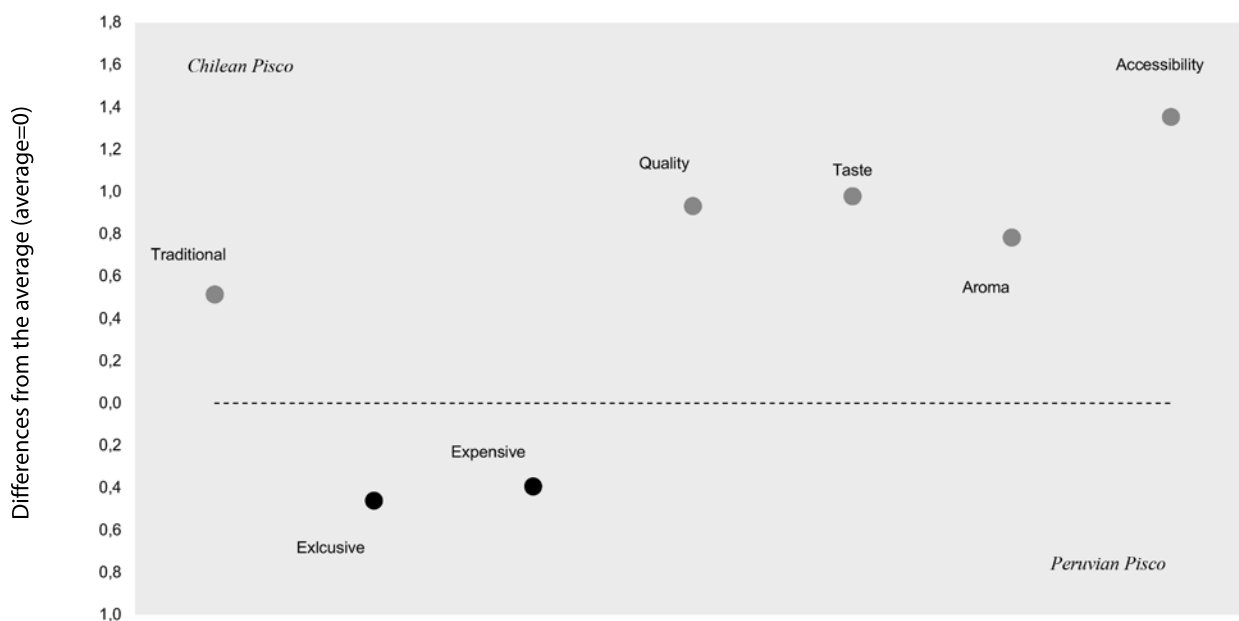
*Perception of Chilean pisco in relation to Peruvian pisco (%)*



From the previous results, it can be concluded that Chilean pisco is recognized as a popular, traditional and quality distillate, whose qualification is based on organoleptic characteristics such as flavor and aroma. Peruvian pisco, on the other hand, stands out as an exclusive product with a high price (See figure 6).

**Figure 6**

*Attributes associated with Chilean pisco and Peruvian pisco*



The examination of the valuation of the attributes according to the consumer profile only revealed significant differences with age, specifically with the factors: quality [ $F(2, 251) = 4.83, p < .01$ ], taste [ $F(2, 251) = 7.24, p < .01$ ], aroma [ $F(2, 251) = 5.78, p < .01$ ] and accessibility [ $F(2, 251) = 9.11, p < .01$ ]. Specifically, even when the hierarchy of the attributes was equivalent, it was the younger consumers who related the least those attributes to Chilean pisco and the older were the ones who showed a stronger association with them (See Table 3).

**Table 3**

*Assessment of pisco attributes according to generation, in percentage (n = 254)*

Attribute/ Level	Generation Y			Generation X			Baby boomers		
	Strong	Regular	Weak	Strong	Regular	Weak	Strong	Regular	Weak
Higher quality	55.4	24.2	20.4	73.6	15.1	11.3	73.3	6.7	20.0
Better taste	54.3	25.3	20.4	83.0	5.7	11.3	80.0	0.0	20.0
More aromatic	48.9	31.7	19.4	62.3	24.5	13.2	80.0	20.0	0.0
More accessible	60.2	23.1	16.7	86.8	5.7	7.5	93.3	6.7	0.0

### 3.4 Measuring the dimensions of brand equity

Table 4 summarizes the results obtained from the measurement of the reagents that make up the dimensions of the brand value of Chilean pisco. It is observed that the highest averages resulted from the questions linked to the categories of notoriety and perceived quality. This reveals that the Chilean pisco brand enjoys positioning due to its familiarity ( $M = 6.3$ ) and brand awareness ( $M = 6.3$ ); and it is preferred for its qualities that distinguish it as a product of excellence, good quality, reliable and consistent ( $M = 5.9$ ).

The brand associations and organizational associations dimensions also presented favorable results, similar to the previous cases. This indicates that consumers appreciate, on the one hand, the convenience of Chilean pisco due to its value for money ( $M = 5.7$ ) and, on the other hand, they recognize that the pisqueras do a good job in the distillate production process ( $M = 5.8$ ).

Regarding the constructs of personality and brand loyalty is worth highlighting that, in terms of the first, the interest that the product presents for the respondents ( $M = 5.8$ ) and, in terms of the second, that pisco of Chilean origin is considered the main option ( $M = 5.6$ ).

In addition, it should be noted that there are four aspects that were evaluated with the lowest scores ( $M < 5.5$ ), two of them linked to loyalty, one to notoriety, and another to brand personality. The joint examination of these antecedents shows that the respondents do not perceive themselves as loyal consumers of Chilean pisco, they are willing to acquire other options. In other words, current loyalty is mostly of a cognitive type, because although they think of the national pisco as the first option, this does not necessarily translate into the final purchasing behavior (behavioral loyalty). For the

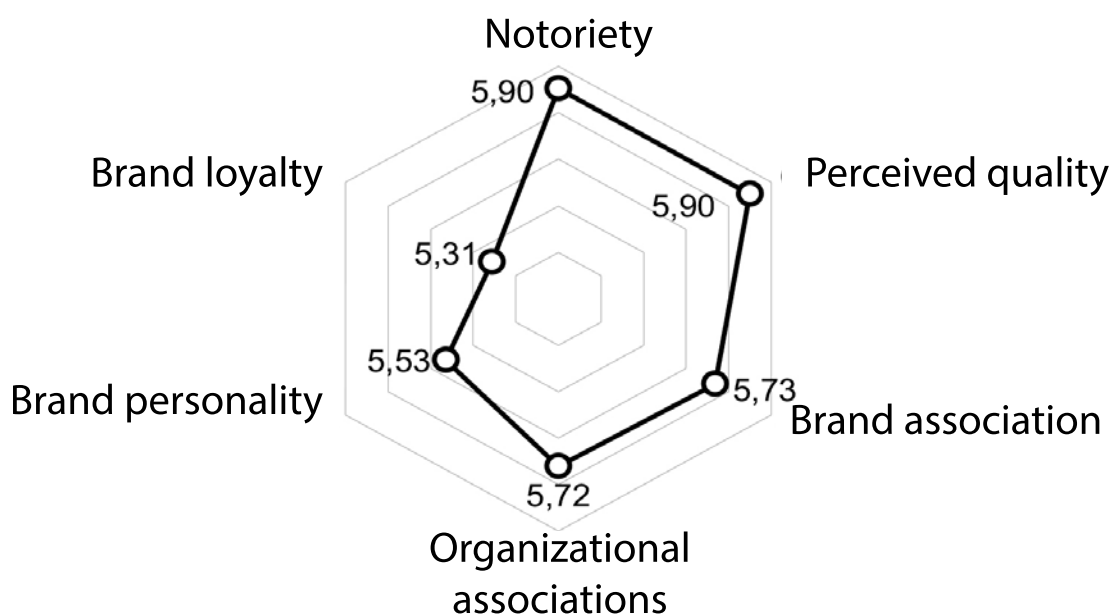
rest, there is some difficulty on the part of the respondents to recognize the brands of Chilean pisco, and to define a clear profile of who consumes it. Limitations that affect the positioning and value of brands in the market.

**Table 4**

*Mean (M) and standard deviation (SD) of the statements according to dimension*

Dimension	Statement	M	DS
Notoriety	I have heard of Chilean pisco brands	6.03	1.29
	When I think of spirits, Chilean pisco comes to mind	6.25	1.15
	The term Chilean pisco is familiar to me	6.32	1.04
	I know different brands of Chilean pisco	5.79	1.47
	I can recognize Chilean pisco brands compared to other pisco brands	5.13	1.63
Perceived quality	The pisqueras in Chile offer very good quality products	5.91	1.25
	Chilean pisco brands have consistent quality	5.83	1.22
	Chilean pisco brands are trusted	5.94	1.19
	The pisqueras in Chile offer products with characteristics of excellence	5.91	1.19
Brand associations	Chilean pisco brands are good quality for money	5.72	1.20
	From the distillate market, I consider Chilean pisco to be a good buy	6.02	1.14
	Chilean pisco brands have good value for money	5.47	1.31
Brand personality	Chilean pisco brands have personality	5.46	1.18
	Chilean pisco brands are an interesting product	5.76	1.12
	I have a clear idea of the type of people who consume Chilean pisco	5.36	1.47
Organizational associations	I trust the Chilean pisqueras that make pisco	5.77	1.17
	I like to consume pisco from Chilean pisqueras that I know or identify	5.69	1.32
	Chilean pisqueras have credibility	5.70	1.18
Loyalty	I consider myself a loyal consumer of Chilean pisco	5.27	1.61
	When buying a pisco, Chilean pisco is my first choice	5.63	1.60
	I would not buy other brands of pisco if Chilean pisco were available	5.04	1.74

Figure 7 summarizes the results of the calculation of the total means of each of the dimensions that make up the brand value construct. It shows that, in general, the results were homogeneous with averages ranging between 5.3 and 5.9 (out of a maximum of 7), which shows a satisfactory assessment, but could be improved. The constructs arranged in decreasing order, based on their average rating, are: awareness, perceived quality, brand associations, organizational associations, brand personality, and loyalty.

**Figure 7***Brand equity dimensions*

The notoriety dimension presented a favorable assessment ( $M = 5.9$ ) that shows that the respondents have the ability to remember and recognize Chilean pisco brands. That is, based on the pyramid of brand awareness (Aaker, 1991), the phase of spontaneous awareness or memorization (third level) is identified, which implies that consumers are able to remember the brand without the need to be previously exposed to it. In this sense, the examination of the reagents reveals that brand awareness is based on familiarity with the Chilean term pisco and the degree of primary memory, however, it is observed that there is still a certain degree of difficulty for consumers to recognize brands of national origin or deeper knowledge about the offer available in the market (variety).

The favorable average obtained in the perceived quality dimension ( $M = 5.9$ ) shows that the consumer distinguishes pisco as a product of excellence, a determining attribute to increase customer satisfaction and boost the intention to repurchase and recommend the good. It should be noted that the perceived quality favors the positioning of Chilean pisco brands and their differentiation from the rest of the alcoholic beverages available on the market, and that is why, given a greater perception of quality on the part of the consumer, a greater willingness to pay, which benefits the brand value of the company.

The average of brand associations ( $M = 5.7$ ) reflects that consumers value Chilean brands for their convenience, in terms of value for money, and perceived value. For the rest, the results of the organizational associations ( $M = 5.7$ ) show that the Chilean pisco brands stand out for their quality and good positioning, which they support based on the credibility and trust generated in the market. Additionally, the personality of the brand dimension ( $M = 5.5$ ) indicates that customers are able to perceive and highlight pisco's own characteristics that determine interest in its purchase.

Finally, the least valued dimension was brand loyalty ( $M = 5.3$ ), which denotes the moderate link between customers and the brand. In this regard, according to the loyalty pyramid of Aaker (1991), the result obtained would be associated with the level of satisfied customer (or at least not dissatisfied), which explains why there is a certain willingness of the consumer to change the type of distillate and, therefore, define the competitive dynamics present in the market.

### 3.5 Brand value and pisco consumer profile

In order to detect significant differences in the valuation of the Chilean pisco brand according to the characteristics of the consumer, tests of equality of means were carried out, which showed relevant results for the variables gender and income (in the notoriety dimension), and age the dimensions perceived quality and brand association). Table 5 summarizes the tests for normality, equality of variances, and means for those variables that were significant.

**Table 5**

*Normality tests, equality of variances and means for the significant variables*

Dimension	Variable		Normality		Equality of variances		Mean	
			Test	p	Test	P	Test	P
Notoriety	Sex	Female	0.136	<.001	8.94	.003	-2.49*	.014
		Male	0.139	<.001				
Notoriety	Income	< US\$ 266.67	0.117	.017	2.32	.058	22.34**	<.001
		US\$ 266.67 – 400.00	0.146	.045				
		US\$ 400.00 – 666.67	0.151	.001				
		US\$ 666.67 – 1,333.33	0.216	.000				
		> US\$ 1,333.33	0.192	.002				
Perceived quality	Age	Millennial	0.147	<.001	1.24	.291	13.13**	.001
		Generation X	0.142	.009				
		Baby boomers	0.221	.046				
Brand associations		Millennial	0.147	<.001	0.831	.437	11.49**	.003
		Generation X	0.142	.009				
		Baby boomers	0.221	.046				

Note: \* The Mann-Whitney U Test was applied.

\*\* The Kruskal-Wallis Test was applied.

In relation to gender, men gave a higher value to notoriety than women. The examination of the statements that explain this discrepancy made it possible to determine significant differences in the questions referring to the level of knowledge of pisco brands (I have heard of Chilean pisco brands, I know different Chilean pisco brands and I can recognize Chilean pisco brands versus to other brands of piscos), all the items turned out to be superior for men.

Regarding income, a correspondence with brand awareness was appreciated, that is, a greater knowledge of pisco brands in the higher income strata. The main (and significant) differences occurred in the statements regarding the knowledge of different brands of Chilean pisco and their recognition compared to other brands that offer the spirit.

Regarding age, it was the younger consumers who valued the perceived quality dimensions and brand associations less. In particular, the discrepancies were found between generations X and Y, where the group of millennials registered a more critical evaluation for all the reagents of the mentioned constructs (quality, excellence and trust) and a lower satisfaction regarding the relationship cost-benefit (See table 6).

**Table 6**

*Means for the statements of the significant variables according to sex, income and generation*

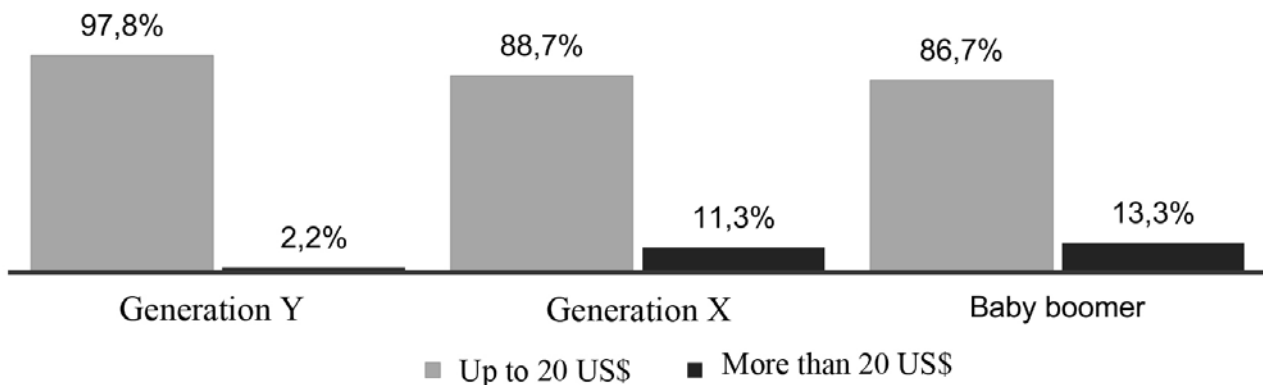
Statement	Sex		Income (US\$)			Generation		
	F	M	< 267	267–667	> 667	Y	X	BB
<b>Notoriety</b>								
...heard of Chilean pisco brands	5.85	6.18	6.10	5.96	6.44	6.08	5.94	5.80
... Chilean pisco comes to mind	6.21	6.27	6.13	6.18	6.39	6.20	6.38	6.33
... Chilean pisco term is familiar to me	6.25	6.38	6.34	6.28	6.45	6.28	6.40	6.53
... different brands of Chilean pisco	5.53	5.99	5.63	5.68	6.31	5.87	5.58	5.47
... recognize Chilean pisco brands ...	4.79	5.40	4.76	4.92	5.79	5.17	5.04	5.00
<b>Calidad percibida</b>								
... They offer very good quality products	5.89	5.92	6.00	5.87	5.82	5.78	6.36	5.93
... Chilean ones have a consistent quality	5.87	5.81	5.89	5.80	5.83	5.72	6.19	6.00
... Chilean pisco brands are trustworthy	5.99	5.89	5.93	5.91	5.92	5.81	6.28	6.33
... Products with excellent characteristics	5.95	5.89	5.92	5.91	5.90	5.80	6.26	6.13
<b>Asociaciones de marca</b>								
... They are good quality for money	5.68	5.75	5.66	5.68	5.64	5.61	6.08	5.80
... Chilean pisco is a good buy	6.09	5.96	5.93	5.93	5.97	5.94	6.34	5.80
... Have good value for money	5.50	5.45	5.34	5.35	5.40	5.34	5.91	5.53

Note. F = Female; M = Male; BB = Baby boomers.

In general, the previous results show that for female and low-income consumers there is a lower link of familiarity or union between brand associations and considerations at the time of purchase. In addition, the younger generations perceive that the value attributes of pisco are less relevant to explain the price they are willing to pay for it (See Figure 8).

**Figure 8**

*Willingness to pay according to generation (bottle 700-750 cc)v*



#### 4 Discussion and conclusions

The analysis of the research results revealed that the Chilean pisco consumer in the Coquimbo Region has a similar profile to that described by other studies carried out in Chile on other alcoholic beverages (Araya-Pizarro et al., 2019; Araya-Pizarro & Ruiz-Vega, 2019; Guíñez & Cornejo, 2016). In other words, he is a young, male, working, middle-class adult who buys the distillate monthly in supermarkets to share with friends and family. These findings would ratify the assumption of pisco as a collective and socializing drink, consumed for recreational reasons.

In relation to the positioning of the pisco brands, a concentrated market was observed. Represented by four exponents, but dominated by a particular brand (Mistral), which stood out for its quality, status and, above all, its advertising. This point demonstrates the importance of properly managing the communication of those attributes that support brand positioning. Especially when there is research that demonstrates the impact of brand advertising on consumer loyalty (Bucheli & Brin, 2016) and the link between brand image and perceived quality (Suhud et al., 2022).

For its part, the contrast between Chilean pisco and Peruvian pisco showed that both distillates have their own positioning attributes, with exclusivity being the differentiating variable of preference for the one made from Peru. In this way, Chilean pisco would be recognized as a convenient liquor (price-quality binomial) that is drunk frequently; while the Peruvian pisco would be perceived as an exclusive distillate, intended for special occasions.

Regarding the brand value of Chilean pisco, it is possible to point out that it is based on recognition (notoriety), and the global quality or level of superiority observed compared to the other alternatives present in the market (quality based on intrinsic attributes). This situation demonstrates that the characteristics and recognition of the distillate (perceived quality) are key components for building a strong brand in the alcoholic beverage industry (Buil et al., 2010).

It was also evident that brand associations are perceived favorably, both in the product categories and at the organizational level, verifying the transcendental role they play in the purchase decision and in customer loyalty. In this line, it is worth mentioning that both brand awareness and brand associations have been highlighted for their significant relationship with the marketing activities of companies in the sector (Adedoyin & Adeyeri, 2019; Jarquin et al., 2019). Therefore, they represent key

elements to configure a sectoral commercial proposal based on the recognition of the product and the credibility of its suppliers.

Likewise, the examination of the personality dimension of the brand showed positive results, revealing that consumers are capable of perceiving and highlighting the characteristics of pisco, which maintains interest in its consumption. On the contrary, brand loyalty turned out to be the least valued dimension, which reveals a customer whose current loyalty is especially cognitive. That is, customers who, although they think of Chilean pisco brands as their first purchase option, do not necessarily buy the product (behavioral loyalty). This finding becomes critical, considering that brand loyalty has been highlighted by other research on beverages, as the most influential dimension in the value of brand capital (Atilgan et al., 2005; Brochado & Oliveira, 2018; Calvo -Porral et al., 2013; Sahari et al., 2015).

The contrast of the valuation of the brands, according to the characteristics of the consumer, noted significant differences linked to gender, income and age. Specifically, female consumers, and those with lower incomes, have less brand awareness (notoriety) and a lower relationship of familiarity or union between brand associations and considerations at the time of purchase. For the rest, the younger generations consider that the value attributes of pisco are less effective in explaining the price they are willing to pay for the distillate, and express that they consume it as a complementary product (mixture). In this line, it is generation Y, who shows less association with the distinctive attributes of Chilean pisco (quality, flavor, aroma and accessibility).

The foregoing entails the challenge for the pisco industry to promote the communication of the differentiating qualities of the national distillate, especially in the younger generations, which would incline the purchasing preferences and the sense of identity for the local consumer, which was not significant. Also, the findings suggest that the quality of pisco is not linked, mostly, with the concept of exclusivity, which explains why it is perceived as a cheaper product and, therefore, its consumers show a lower willingness to pay higher prices. In this regard, there are authors who, after examining the direct relationship between the price and the perception of exclusivity of a good, argue that exclusive products can help justify higher prices or make a product less vulnerable to competition (Heyes & Lashley, 2017; Upshaw et al., 2017). An aspect that is worth taking into consideration, when observing the competitive dynamics of the sector.

In this way, the aforementioned findings allow us to conclude that in the face of a globalized market, and with a highly competitive production sector, it is not enough just to satisfy customer preferences based on the manufacture of a product of high organoleptic quality, but It is also necessary to generate differentiation in the intangible assets of the brands, which could be developed through the adequate management of the attributes that determine the value of the brand capital, the strengthening of the sense of belonging to the territory, and the enhancement of the concept of exclusivity of Chilean pisco.

As for the final recommendations, it is suggested to replicate the research at the national level, in order to investigate, from a wide geographical scope, the brand value of Chilean pisco and its determining elements. It is also interesting to develop a comparative study between the value attributes of the most consumed alcoholic beverages in Chile, in which the brand is included as a decision factor. Likewise, it is recommendable to carry out research with a longitudinal scope, which allows measuring the evolution of the brand value perceived by different consumers and their preferences over time. On the other hand, regarding the methodological approach, it is recommended to adopt a qualitative perspective, which allows to describe in greater depth the psycho-

graphic profile of the consumer and the tangible and intangible elements that support the brand value of Chilean pisco. Finally, based on the findings of the study, two lines of research of interest emerge: (i) examine, from a generational perspective, the value of Chilean pisco brands; and (ii) analyze, from a gender perspective, the factors that explain the differences in brand awareness among consumers.

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# Crowdlending as a financing alternative for MSMEs in Peru

## El *crowdlending* como alternativa de financiamiento para las mipymes del Perú

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### Abstract

The current context in which companies operate has meant that financing is offered in a different way than the traditional one. Technology has made investment and financing alternatives appear that are aimed at reducing financial costs and access to credit by MSMEs in Peru and Latin America. The objective of this research was to establish if the MSMEs of the Piura Region, Peru, are willing to demand financing through Crowdlending. The hypothesis that was raised was aimed at confirming that MSMEs are willing to demand financing through Crowdlending. To test this hypothesis, 382 surveys were applied to MSMEs from the different provinces of the Piura Region. The research was quantitative, descriptive and longitudinal. The perceptions of MSME entrepreneurs regarding Crowdlending were collected from the perspective of financial costs, the speed of access to credit and the flexibility of credit conditions. Ignorance of these financing alternatives and distrust in virtual transactions could have conditioned the answers. The results showed that the majority of entrepreneurs are willing to demand financing through Crowdlending, despite the fact that they perceive that access to credit would be slow, the financial cost low and that there would be high flexibility in the credit conditions to be demanded.

### Resumen

El contexto actual en que se desenvuelven las empresas ha propiciado que el financiamiento sea ofertado de una manera distinta al tradicional. La tecnología ha permitido que aparezcan alternativas de inversión y financiamiento que se orientan a disminuir los costos financieros y el acceso al crédito por parte de las mipymes en el Perú y América Latina. El objetivo de esta investigación fue establecer si las mipymes de la región Piura, Perú, están dispuestas a demandar financiamiento a través del *crowdlending*. La hipótesis pretendía confirmar que las mipymes están dispuestas a demandar financiamiento a través del *crowdlending*. Para contrastar esta hipótesis se aplicaron 382 encuestas a las mipymes de las diferentes provincias de la región Piura. La investigación fue de carácter cuantitativo, descriptivo y longitudinal. Se recogieron las percepciones de los empresarios de las mipymes con respecto al *crowdlending* desde la perspectiva de los costos financieros, la rapidez de acceso al crédito y la flexibilidad de condiciones del crédito. El desconocimiento de estas alternativas de financiamiento y la desconfianza en las transacciones virtuales pudieron condicionar las respuestas. Los resultados demostraron que la mayoría de los empresarios están dispuestos a demandar financiamiento a través del *crowdlending*, a pesar de que perciben que el acceso al crédito sería lento, el costo financiero bajo y que se daría una alta flexibilidad en las condiciones del crédito a demandar.

### Keywords | palabras clave

FinTech, financial market, crowdfunding, SME financing, interest rate, banking industry, electronic banking, market research.

Fintech, mercado financiero, crowdfunding, financiamiento pyme, tasa de interés, industria bancaria, banca electrónica, servicios financieros, investigación de mercado.

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## 1 Introduction

Micro, small and medium-sized enterprises (MSMEs), as a general trend worldwide, constitute an important force in the economic development of a country: this is reflected in the creation of employment — more than half comes from MSMEs — their contribution to the Gross Domestic Product (GDP) —which is really significant—, and even its collaborations with different production methods through technological exploitation. Obviously, its importance is reflected when MSMEs are evaluated as a whole and not individually (INEI, 2019). However, despite their great importance, MSMEs are the ones that, mainly, are affected when it comes to solving their liquidity problems, triggering as a consequence the stoppage of their operation; in this sense, as an apparent solution, there is the financial system, which, of course, has as its fundamental pillar the guarantee of the correct distribution of financial resources, evaluating the financial situation of moneylenders and borrowers —taking into account their levels of liquidity, profitability and risk, to name a few aspects-, trying to maintain a balanced and efficient market.

However, the financial system cannot fully supply the demand for financing by MSMEs, with the consequence that, in the absence of alternatives, they turn to the informal financial sector, where the cost-performance ratio ends up economically harming the companies. In this context, it appears the present research work: it proposes crowdlending as an alternative to the traditional financial system, which will make MSMEs assume lower financial costs and obtain more benefits and facilities when accessing some credit, potentially improving their liquidity problems, which will give them significant support to continue operating or even give them the opportunity to start innovative projects.

Crowdlending has been gaining real importance over time worldwide, achieving very positive results, enhanced by technological development and the correct application in the various jurisdictions; in addition to being a very versatile option and aimed at different types of companies from various sectors. In Peru, the incursion of this option as a financing alternative —although it has a growing trend— is still not as important as in other countries. In the Piura region, located in the north of Peru, knowledge of crowdlending is practically non-existent —which also makes its use absent— so it is important to promote the use of crowdlending platforms, evaluating and determining the potential demand of entrepreneurs —measured through their level of willingness— to be financed through this method; making known, through the correct information and due advice, the benefits of crowdlending that allow them, in addition to overcoming financial problems, the sustained growth of their companies. In this way, the part of the demand not covered by the financial system can be assumed by crowdlending, reducing the financial exclusion gap, consequently causing a positive impact on the country's economy. Therefore, the objective of this research was to establish if the MSMEs of the Piura region are willing to demand financing through Crowdlending.

### 1.1 The financing of MSMEs

MSMEs make up approximately 99% of the business system of each country (Dini & Stumpo, 2018), becoming one of the pillars and engines of the economy worldwide. Its importance lies in the fact that through these it is possible to achieve a competitive economic system and promote sustainable and inclusive growth. MSMEs are a fundamental factor to take into account, because their contribution to reducing poverty is important, to meeting the demand for employment and helping the development of

the economy —benefiting above all those with a low economic level— giving rise to an environment of competition in the market, through specialized services and taking advantage of the increasingly advanced technological opportunities that allow raising the levels of productive capacity, efficiency and effectiveness of the personnel, reducing costs and causing the development of future projects , also supported by state policies —in which the creation of support programs for MSMEs stands out , which allow them to overcome various inconveniences for their operation, such as access to sources of financing— in such a way that a favorable environment is generated for the growth and development of these companies ( Arbulú & Otoya , 2006; Basurco , 2016).

According to Bortesi et al. (2014), small and medium-sized enterprises (SMEs) have sources of financing that range from credit from suppliers, leasing and the usual financing methods of the Financial System. However, SMEs present certain difficulties such as the lack of guarantees that allow them to support the credits they request, the insufficient value of their assets that limit their ability to obtain loans or the contributed capital does not cover the requirements in relation to the requested credit; therefore, most of the SMEs have access to scarce, high-cost credit and very short payment terms. Likewise, the restricted access to different sources of financing is due to the lack of information on the external and internal market, informality, the weakness of the country's economy, the lack of solidity and the inability to cover the national demand and much less compete in the foreign market (Guerrero et al., 2017). In the case of micro companies, the Financial System offers loans for working capital; that is, financing is focused on the short term. This type of financing is done through financial institutions specialized in microfinance and has a higher financial cost than for SMEs, because this sector has operated an extremely aggressive policy, promoting very high interest rates, ineffective credit committee, incipient technology, and with a shared clientele (between 30% and 50% participate in two or more institutions) (Orozco-Gutiérrez, 2019).

In short, the sources of financing to which MSMEs have access are limited; adding the fact that not all these sources are known by the owners of the companies, mainly those that come from third-party financing, those offered by the State and that offered by the Alternative Stocks Market. In addition, many of the MSMEs are limited to making use of the income generated by the activities of the line of business and their own capital, which is often scarce; therefore they have a greater need for credit, which makes them turn to the financial system, but with little success because they do not meet all the requirements that are demanded, which results in resorting to informal credit, which is more flexible in terms of requirements, fees and payment time (Lerma & Martín, 2007).

To all this is added the negative impact that the COVID-19 pandemic has generated in the economy, paralyzing the supply and demand of goods and services, suspending the flow of income due to economic inactivity, which directly affected the MSMEs; the ongoing company and its continuity have been endangered, causing many of these businesses to close as their production chain was abruptly interrupted, evidencing the weakness of their operating systems, costs and supply chains. Against this background, the State has implemented economic policies which have focused on granting financing through programs such as Reactivate Peru, the Business Support Fund for Micro and Small Enterprises (FAE-MYPE for its Spanish acronyms) and the flexibility of compliance with payment of tax. However, according to Aguilar and Santillán (2021) in the case of FAE-MYPE, which grants working capital to companies to refinance debts, only 2% has been applied to SMEs. Likewise, according to the Central Reserve Bank of Peru (2021), the SMEs accessed 20% of the credits of the Reactivate Peru program (of a total of 55,276 million peruvian soles), benefiting 439,697 SMEs (90.8% of the beneficiary companies).

## 1.2 Crowdlending

Estarellas (2015) defines crowdfunding as “the process of requesting small contributions from several investors through an online platform, receiving these in return a form of value and avoiding turning to bankers or venture capital fund” (p.11). As one of the crowdfunding modalities, crowdlending appears, with the fundamental purpose of financing projects for natural or legal persons in exchange for an economic remuneration; that means, whoever needs resources turn to a crowdlending platform, where they can find surplus agents willing to make a loan, receiving in exchange the contributed capital plus the agreed interest (Ramírez & Muñoz, 2016).

Taking into account the limited access to financing that MSMEs have and the restrictions on their access, crowdlending has become a new alternative to cover their liquidity needs. There is little scientific literature through which crowdlending has been studied as a source of financing for companies, there are no references to any research where the willingness of MSMEs to finance themselves through crowdlending has been studied. Among the studies carried out, there is San - Jose and Retolaza (2016) who indicate that crowdlending describes a new financing tool as a main form of loan, which allows companies, through its implementation, social development and the participation of interested parties, in addition to guaranteeing the financial sustainability of companies. On the other hand, the study suggests that, in order to use surplus cash efficiently, the collective loan must be relevant to achieve the economic objective of the investors, since collective financing as a social innovation does not in itself guarantee the economic benefit.

Likewise, Ramírez and Muñoz (2016) established that crowdlending has become the perfect complement for the financing of multiple companies, especially those that have suffered more credit restrictions, such as SMEs or those of recent creation, and all this due to its flexibility, speed, and ease of granting as well as other financial characteristics such as lower costs for the company or the implicit circumstance of not consuming banking risk for the requesting companies. On the other hand, Loës (2017) proposed an in-depth analysis of microcredit and crowdlending as an alternative to finance small businesses, in addition to making a comparison of these alternatives to test whether microfinance and collective loans will continue to coexist as alternatives to traditional loans, or if Fintechs will take over and irrevocably change the financial landscape. The work concludes by showing that crowdfunding is a phenomenon that is growing exponentially and that crowdlending is the most important source of crowdfunding in terms of funds raised due to the drastic reduction in fixed costs allowed thanks to Fintechs and the growing lack of confidence in the banking sector by the public.

Boitan (2016) revealed through his study that SMEs or people who want to start a new company are experiencing difficulties in obtaining financing from the banking system or are simply excluded; so, therein lies the importance of crowdfunding platforms, as they act as a point of intersection between the growing demand for money and the money supply. It also maintains that crowdfunding should not be seen as a substitute for banking products, but as a complement to this activity to try to overcome financial exclusion. In the same way, Pesca (2017) concluded that the crowdfunding model is innovative for SMEs —because they adjust to their financing— and can play a relevant role in the search for effective financing alternatives —especially for companies in early stages or for entrepreneurial projects that cannot access the traditional financial system. It also affirms the importance of having a legal framework established in order to protect public savings, thus improving transparency and the promotion of

alternative forms of financing such as crowdfunding, as it will allow the generation of skills regarding the financial culture of the country.

Chen and Han (2012) highlight the appearance of platforms of crowdlending as a revulsive mechanism in a scenario where traditional banking was the only existing source of financing. In this sense, crowdlending makes the most of the technological and economic advantages —internet globalization, popularity of social networks, autonomous investors— to improve competition and monopolize part of the demand for credits. Omarini (2018) states that one of the most important advantages of crowdlending is that it allows a new and strong integration between a direct financial circuit —the market— and an indirect financial circuit —financial intermediaries—; that is, the platforms Crowdlending combines the functions of a market operator and a service provider, achieving an integration of economic functions, eliminating the distinction between market operators and financial service providers. In the same way, it points out that the platforms themselves make loan evaluations —that is, financial advice— providing multiple financial services —such as portfolio diversification— that allow the purchase and custody of products, without necessarily depending on any entity to achieve it.

Through this method, the geographical range of the investment is expanded, since geography is not necessarily a limiting factor for investing or financing on crowdlending platforms. In the same way, the company can use crowdlending as a product support and validation network that allows it to explore its viability, in addition to benefiting from marketing, due to the exposure of the business on the platform (InfoDev, 2013).

For the convenience of investors, most crowdlending platforms offer different diversification options according to the maximum investment amount established, its distribution according to the risk they are willing to face and the loan maturities (Milaap, 2017). The crowdfunder, in this investment model, you can choose the risk you want to take and the return you want to obtain. In addition, the platform allows you the option of choosing the company you want to finance, the term of the investment, the amount you want to invest and the way to receive the return on the investment: the investor may decide to recover his investment in a single installment at the maturity of the loan or redeem it periodically in monthly installments together with the interest earned, being able to even withdraw the money he has available when he prefers it without incurring any extra cost. Together, the commissions charged by the platforms are relatively low —there are even some that do not retain commissions of any kind—; and the crowdfunder has the possibility, additionally, of accessing the risk profile of the borrower, in such a way that the greatest amount of information possible is available to them that allows them to choose the best investment alternative (Gutiérrez, 2018; MyTripleA, 2016).

Lenz (2016) states that the main advantages for the borrower are reflected in lower transaction costs in the loan application process, as well as the use of less time, from the time the application is made until the loan is received, compared to of the banks. These low transaction costs derive from the constant accessibility of the platform, coupled with reduced documentation requirements, complemented by a simple and transparent process. In general, crowdlending solves the most common problem that companies have: restricted access to financing, so that, through this modality, they will be able to obtain funds to develop their products or services; and if it is complemented with a correct financial education, it will also constitute an eventual enhancer of financial inclusion (Oxera, 2016).

On the other hand, Käfer (2016) establishes that there are general and main risks of crowdlending: credit risk, liquidity risk and operational risk. Even the regulation of these platforms poses a risk in terms of its scope and its impact, since instead of

promoting the use of this business model, it may discourage the population due to the emergence of compliance obligations of different requirements resulting from disagreements between the various regulatory agents involved (Zetzsche & Preiner, 2018).

For its part, the promoter or the borrower, being initially analyzed and proving to have repayment capacity, may, at a given moment, be unable to repay the loan from which they benefited. To mitigate this type of risk, it is recommended to opt for short-term loans over long-term ones, taking into account financial strength, giving preference to companies with better solvency indexes; or establishing certain grace periods in such a way that the borrower, after analyzing his credit record, significantly reduces his liquidity risk (López, 2016; Colectual; 2016; Gutiérrez, 2018).

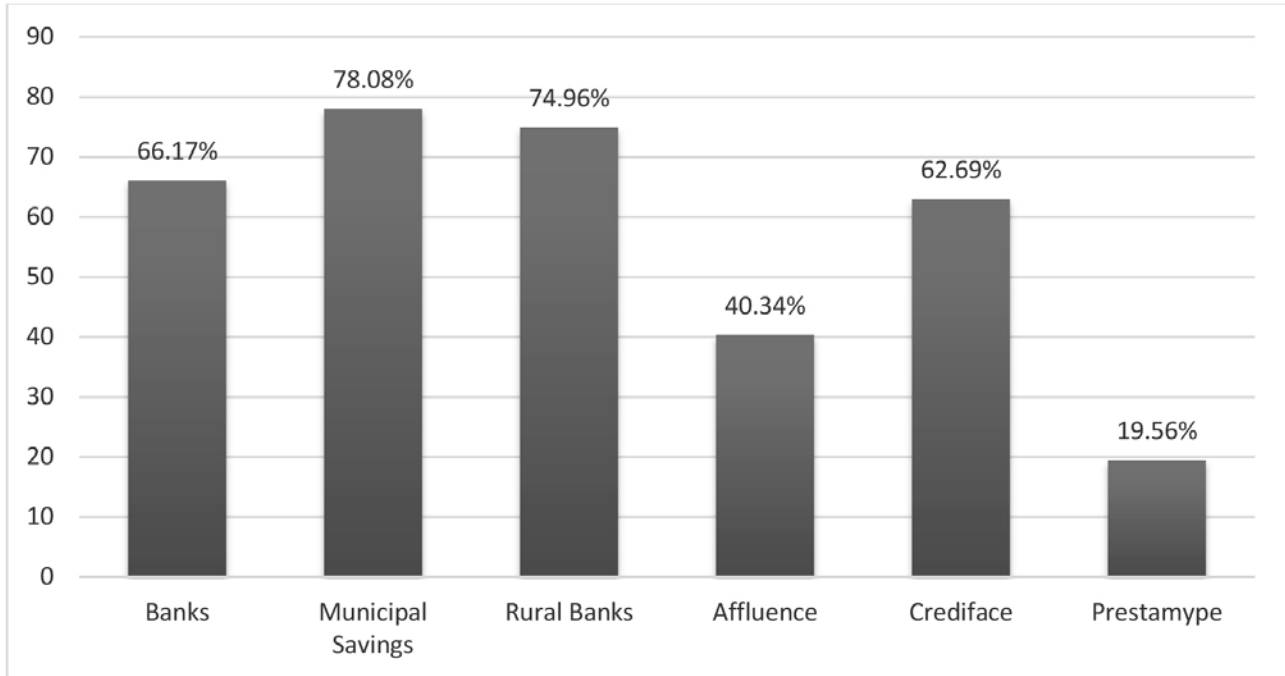
### 1.3 Traditional banking versus crowdlending

Capital LoanBook (2017) details some differences that can lead the user to decide to use a crowdlending platform or opt for traditional banking. The first determining point is the time for analyzing operations: banks, depending on a risk center department, can take even weeks due to the fact that they require more documentation requirements and additional guarantees; crowdlending, however, does not require massive documentation, which is often even unnecessary, which facilitates analysis in less time (Borrego & Gil, 2018). The difference between the interest rates that both options offer to the public is also decisive when deciding on one or the other alternative: the traditional financial system, because it is based on commercial policies and other internal conditions, ends up offering unattractive rates regarding those that crowdlending offers for its potential investors; on the other hand, in the case of companies that require financing, the real financial cost that these companies will assume is lower if they decide to do it through crowdlending because, unlike financial entities, the commissions -for opening accounts or for early cancellations, to cite a few examples- are minimal and almost non-existent, added to the fact that there is no condition to contract additional products to access a financial option —such as an insurance contract or mandatory affiliation to a credit or debit card—. The empowerment that a company that needs to obtain resources in crowdlending has allows it to choose the amount and the repayment period according to its needs, being the opposite of traditional banking, since it is it that imposes these terms (López, 2016; MyTripleA, 2016).

In the case of crowdlending platforms, these generally offer a low average rate for MSMEs in terms of business loans, many of these platforms offer them according to their credit history or their rating in the central risk unit, for which they already they have established percentages; that is why a comparison has been made of the Annual Effective Cost Rate (AECR) shown on the pages of the platforms of crowdlending and those reported in the Superintendencia de Banca y Seguros (SBS, Superintendencia of Banking and Insurance) on a given date. As can be seen in Figure 1, in the case of financial entities —whether banks, municipal savings banks or rural savings banks— the TCEA charged on average is 73.07%. As for the crowdlending platforms, Crediface is the one that offers the highest rate; despite this, below that charged by financial institutions. On the other hand, Prestatype is the one that charges the cheapest AEER, but it should be noted that there must be a mortgage guarantee involved; however, if you do not have a property, the most attractive option is Afluente, which offers the most competitive rate in the market.

**Figure 1**

*AECR offered by the banking system and crowdlending platforms as of December 31, 2019*



Note. SBS rates. Own elaboration.<sup>1</sup>

## 2 Materials and method

From the review of the literature (Bartra et al., 2016; Ramírez & Muñoz, 2015; Cuesta & Torre, 2017) the following hypothesis was proposed:

*H1: The MSMEs of the Piura region are willing to demand financing through crowdlending.*

This is a descriptive research, because it sought to know the perceptions of those who run MSMEs regarding the possibility of accessing financing through crowdlending. From the temporality in the collection of information, the research was cross-sectional, because the data was collected at one point in time. The focus of this research is quantitative because what was sought was to find out if there is a potential demand for crowdlending financing by MSMEs, through three perceptions: financial costs, speed of access and flexibility of conditions.

The study was conducted in the Piura region, which is located on the coast and northern highlands of Peru, 1,100 km from Lima, the capital of Peru, and is the second most populous region after Lima. The sample of this study was made up of 382 MSMEs located in the Piura region that have not obtained financing through digital platforms. The data was obtained through the application of a questionnaire, aimed at MSMEs that have not obtained financing through crowdlending. The questionnaire was applied

<sup>1</sup> AECR calculated for working capital credit, for an amount of S/ 10,000 at 9 months. The financial institutions that offer this type of credit in the Piura region as of December 31, 2019, were taken as a reference.

in the provinces of Piura, Sullana, Talara, Sechura, Morropón, Ayabaca, Huancabamba and Paita.

The questionnaire underwent validity (through expert judgment) and reliability tests. The pilot test (38 questionnaires) was carried out in 2020 between September 3 and October 1, and the rest of the questionnaire was applied between October 7 and November 20, 2020. For the analysis of the information, the technique of the scale by percentiles, the assessment scale for two levels and the chi-square. All calculations were made using the statistical program IBM SPSS Statistics, version 24. For the study of the demand for financing through crowdlending three variables were used: financial costs, speed of access to credit and flexibility in the conditions of access to financing; as seen in table 1.

**Table 1**

*Operational definition of variables*

Variable	Nature	Attribute
Financial costs	Qualitative	High financial costs.
		Low financial costs.
Speed of Access	Qualitative	Quick access to financing.
		Slow access to financing.
Flexibility of conditions	Qualitative	Greater flexibility of conditions.
		Less flexibility of conditions

Fifteen questions of the questionnaire have been taken into account, whose alternatives were constructed based on the Likert scale; Thus, applying the scaling theory, scores were assigned to each alternative according to the different scales or assessments used as specified in Table 2.

**Table 2**

*Score assigned for the alternatives on a Likert scale*

Score	Scale 1	Scale 2	Scale 3
4	Always	Totally agree	Very satisfied
3	Usually	Agree	Satisfied
2	Sometimes	Neither agree nor disagree	Neither satisfied nor dissatisfied
1	Rarely	In disagreement	Dissatisfied
0	Never	strongly disagree	Very unsatisfied

Once these scores were determined, the upper and lower limits of the ranges were established considering the number of questions for each variable and the maximum and minimum score established (see table 3).

**Table 3**

*Upper and lower bounds for each variable*

Variable	Number of questions	Score		Limit	
		Minimum	Maximum	lower	Higher
Financing through Crowdlending	15	0	4	0	60
Crowdlending	6	0	4	0	24
Financial costs	2	0	4	0	8
speed of access	2	0	4	0	8
Flexibility of conditions	5	0	4	0	20

At last, the 50% was applied and together with the limits already established; The ranges were established for each variable, being categorized as shown in table 4.

**Table 4**

*Categories for rating percentile*

Variable	Attribute	Rank
Financing through crowdlending	MSMEs are not willing	0-27
	MSMEs if they are willing	28-60
Crowdlending	Don't know	0-10
	Known	11-24
Financial costs	High financial costs	0-5
	Low financial costs	6-8
Speed of Access	Slow access to financing	0-2
	Quick access to financing	3-8
Flexibility of conditions	Required amount	0-10
	Payment deadline	11-20

### 3 Results

#### 3.1 Sample characterization

Table 5 sets out the characteristics of the MSMEs in the Piura region. From 382 companies samples the 43.46% is dedicated to commercial activities; followed by 25.65% whose business line is the food and beverages sales. In terms of age, 37.43% of the companies range between one and four years of operating time, followed by 32.20% which have between 5 and 9 years. Similarly, the results of the questionnaires show that 41.62% of MSMEs are located in the province of Piura. At last, the responses reflect that 97.64% are classified as microenterprises, which means that the results obtained in this research may reflect, for the most part, the expectations of credit demand of microenterprises in Peru.

**Table 5***Characteristics of MSMEs in the Piura region*

Characteristics		N°	%
Economic activity	Trade	166	43,46
	Restaurant	98	25,65
	Technical service	17	4,45
	Hair salon, barbershop, spa	17	4,45
	Lodging	18	4,71
	Toy/bakery	16	4,19
	Medical services	9	2,36
	Furniture-upholstery	8	2,09
	Other services	33	8,64
	<b>Total</b>	<b>382</b>	<b>100,00</b>
Antiquity (years)	Less than 1	15	3,93
	1- 4	143	37,43
	5- 9	123	32,2
	Oct-14	71	18,59
	15-19	18	4,71
	Over 19	12	3,14
	<b>Total</b>	<b>382</b>	<b>100,00</b>
Size	Microenterprise	373	97,65
	Small company	7	1,83
	Medium business	2	0,52
	<b>Total</b>	<b>382</b>	<b>100,00</b>
Business Location	Piura	159	41,62
	Ayabaca	29	7,59
	Huancabamba	26	6,81
	Morropón	32	8,38
	Paita	27	7,06
	Sullana	66	17,28
	Talara	27	7,07
	Security	16	4,19
	<b>Total</b>	<b>382</b>	<b>100,00</b>

Note. Questionnaire applied to MSMEs in the Piura region.

Regarding the people surveyed, according to table 6, 36.65% are between 25 and 31 years old; precisely 59.95% reached a non-university level of higher education. In the same way, it can be seen reflected in the results that 69.37% of the respondents were the owners or partners.

**Table 6**

*Characteristics of the people surveyed in the Piura region*

Characteristics		N°	%
Age (years)	18-24	60	15,71
	25-31	140	36,65
	32-38	66	17,27
	39-45	54	14,14
	over 46	62	16,23
<b>Total</b>		<b>382</b>	<b>100,00</b>
Degree of instruction	Primary	2	0,52
	Secondary	46	12,04
	Higher Non-University	229	59,95
	Higher University	105	27,49
<b>Total</b>		<b>382</b>	<b>100,00</b>
Position in the company	Owner-partner	265	69,37
	Administrator-accountant	62	16,23
	Worker	55	14,40
<b>Total</b>		<b>382</b>	<b>100,00</b>

Note. Questionnaires applied to MSMEs in the Piura region.

### 3.2 Analysis of results

To reach the level of provision of the demand for financing through crowdlending, it is important to highlight that the lack of knowledge of the existence and operation of this new form of access to credit constitute reasonable factors that can explain the results. If in the Piura region and in general in Peru, there were a base of knowledge and promotion of options or alternatives different from the traditional ones, MSMEs would show a greater willingness to use participatory financing as the main option in their desire to cover their liquidity needs. In this sense, thus the ignorance, there is also fear and distrust in financing through the Internet, evidenced in the high degree of financial and technological exclusion. Being key issues that have, after all, a negative impact when crowdlending is even considered as a viable and beneficial option.

As seen in table 7, medium-sized companies (66.67%) consider that they would have quick access to credit through these platforms. This characteristic is also observed in small companies (83.33%), while the total number of micro-companies, 54.16% consider that it would be slow and 45.84% that it would be fast compared to those obtained in the traditional financial system.

**Table 7***Perception of the speed of access to crowdlending*

Speed of access	Company size						Chi-square test	
	Microenterprise		Small company		Medium business			
	N	%	n	%	n	%	Value	P-value
Slow	202	54,16	1	16,67	1	33,33	3,824	,148
Fast	171	45,84	5	83,33	2	66,67		
Total	373	100,00	6	100,00	3	100,00		

Note. Questionnaire applied to entrepreneurs MSMEs.

Another difference between crowdlending and the traditional financial system are the lower financial costs. Table 8 shows that 66.67% of medium-sized companies consider that the financial cost they will obtain through digital platforms will be high. Likewise, 50% of small businesses think the same while 78.02% of micro-enterprises consider that it would be low. These results are consistent with the information collected from crowdlending platforms regarding the interest rates they offer, where it is verified that they are effectively lower than those offered by the traditional financial system (Figure 1).

**Table 8***Perception of the financial cost of crowdlending*

financial cost	Company size						Chi-square test	
	Microenterprise		Small company		Medium business			
	n	%	n	%	n	%	Value	P-value
Under	291	78,02	3	50,00	1	33,33	5,947	,051
High	82	21,98	3	50,00	2	66,67		
Total	373	100,00	6	100,00	3	100,00		

Note. Questionnaire applied to entrepreneurs MSMEs.

With the above, it is concluded that the main difference between crowdlending and the traditional financial system are the low financial costs in the credits offered, as well as the research on the subject in the different countries of the world where this new financing form is used. Another advantage—according to the review of the literature—is the speed with which credits can be accessed through crowdlending. However, MSMEs in general—due to ignorance of the matter—consider that it would be slow comparing it to the financial system.

The last variable analyzed is the flexibility of conditions, evidenced in the amount to be paid and in the term in which the repayment of the credit will be effective. Together with the evaluation methods that are not as rigorous as in the financial system, the

installments and the repayment time of various loans were determining factors when deciding to opt to use crowdlending. In this sense, the company that has a need for liquidity is attracted by the empowerment that these platforms offer because compared to companies in the financial system—which is the one that imposes the terms—it can choose the amount and the repayment horizon. Naturally preferring the options that best suit their financial structure and payment capacity.

Table 9 shows that 53.35% of micro-businesses, 50% of small businesses and 33.33% of medium-sized businesses agree that crowdlending platforms would provide flexibility of conditions regarding the amounts, payment installments and requirements. It is the micro-enterprises that have a more favorable perception regarding flexibility.

**Table 9**

*Perception of the flexibility of conditions in access to crowdlending*

Flexibility of conditions	Company size						test	
	Microenterprise		Small company		Medium business			
	n	%	n	%	n	%	Value	P-value
Alta flexibilidad de condiciones	199	53,35	3	50,00	1	33,33	,503	,778
Baja flexibilidad de condiciones	174	46,65	3	50,00	2	66,67		
Total	373	100,00	6	100,00	3	100,00		

Note. Questionnaire applied to entrepreneurs MSMEs.

Finally, table 10 shows the general results of the demand for financing through crowdlending. 50.79% of MSMEs expressed their willingness to obtain financing through digital platforms, while 49.21% are not willing to use this type of financing. These results confirm that there is a potential market to be able to offer financing under this modality, thus fulfilling the proposed objective of this research and confirming the proposed hypothesis.

**Table 10**

*Crowdlending financing demand*

Financing through crowdlending	n	%
Willing	194	50,79
Unwilling	188	49,21
<b>Total</b>	<b>382</b>	<b>100,00</b>

Note. Questionnaire applied to entrepreneurs of MSMEs.

## 4 Conclusions and discussion

This research constitutes an important precedent for the study of crowdlending in Peru, given that there is still no efficient diffusion of this financing method in the country. In a scenario like the current one where MSMEs have been the main affected by the pandemic, crowdlending can be applied as an effective measure of economic reactivation. Not only in Peru, but also in Latin America, given that MSMEs represent the largest number of companies. Taking into account the scenarios in which companies close due to lack of liquidity added to the poor supply by the financial system, and the not so efficient scope of the economic measures taken by the central government the Crowdlending correctly spread and already assimilated in society, would constitute a fairly effective method to combat the ravages left by the pandemic. That said and given the uncertainty of the economic situation in Peru and Latin America, the reasons why it is important to spread the multiple benefits and advantages of the crowdlending.

Through the questionnaire application, where the MSMEs of the Piura region were taken as a sample, it was possible to verify that the MSMEs of Peru —especially the microenterprises— are willing to finance themselves through crowdlending, thus accepting the hypothesis that raised at the start. Additionally, its advantages could be verified: interest rates and commissions are low, access to credit is quite fast and efficient, as well as the flexibility of conditions when applying for a loan —where you can choose the term and payment installments, according to the payment capacity of each company—. This is possible because crowdlending efficiently takes advantage of technological advantages, which allow everything to be managed through an online platform which has repercussions in saving multiple costs and operating expenses; compared to companies in the financial system, directly impacting its cost structure and benefiting users. These results coincide with Ramírez and Muñoz (2016), who in their study show the favorable evolution of crowdlending in Spain, increasing by 152% between 2012 and 2014. Evidencing the willingness of people and companies to make use of this modality, and with Cuesta and Torre (2017) who also show the growth in the use of these platforms. Because they offer multiple advantages such as competitive interest rates, easy and quick access to credit, making it considered as a source real financing alternative to banking for small and medium-sized businesses.

Crowdlending is a relatively recent and innovative option, so its use and dissemination worldwide has been progressive. However, since its inception, it has managed to capture the attention of both investors and illiquid companies, who see it as a viable alternative with quite encouraging projections. Obviously, due to the COVID-19 pandemic, the figures have experienced a significant drop, but once again the curve has been rising and is expected to continue to do so in the coming years. After the questionnaire application as an instrument, it was determined that the MSMEs of Peru are willing to resort to participatory financing or crowdlending platforms to cover their liquidity needs, having a viable alternative to the traditional financial system.

The State must implement various training programs regarding financial education, both personal and business. Although the SBS has been carrying out these activities, they should be reinforced so that the scope is greater and more effective. In other words, financial education should not be limited only to university or technical careers related to economic sciences but should be of universal knowledge that applied to the business sector of the region will have a positive impact on the financial structure of the different companies or societies. Which will inevitably result in an improvement in their profitability and market positioning.

Companies in the financial system should not see crowdlending platforms as a threat, on the contrary, as an opportunity. Despite the incursion of this new alternative, the demand for credits is still high, so an alliance between said participants would be convenient so that this demand is covered as much as possible. That is, based on the credit evaluation carried out by both the traditional financial system and the crowdlending platforms, one or another option can be chosen so that both parties benefit: the lender or lenders, receiving financial compensation through the interests, and the borrower or borrowers, accessing loans based on their credit capacity and without the need to exclude them, thus avoiding having to resort to the informal sector.

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## Anexos



Art.01  
Vol. 12 Núm. 23

### Entrepreneurial intention of psychology students of the virtual modality



**The virtual modality of learning is more common than is believed.**

The entrepreneurial intention of psychology students in this modality depends on factors that were analyzed from the models that seek to predict human behavior.

**Over time, the phenomenon of entrepreneurship has been studied**

from various adoption models. This article applies two models: the Planned Behavior theory and the Entrepreneurial Event Model.

**Identifying the factors that influence the entrepreneurial intention of psychology students**

allows strengthening academic circles regarding this matter. In this sense, this study analyzes important factors.

**The research considers the students of the distance psychology major** and identifies the most important factors in the decision to become entrepreneurs.

**Entrepreneurship has been one of the great challenges for the development of a country**

In psychology such as people's attitudes, behavior control, entrepreneurial behavior, and control of current behavior matter.

**... This research starts from the following question:**

What are the most influential factors in the entrepreneurial intention of psychology students in the virtual modality?

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retos.ups.edu.ec



## Inclusive business. A biological metaphor model for the agricultural sector

Agricultural producers are vulnerable to social, economic and production conditions, but their great importance must be recognized and supported.

Coevolutionary models and mutualism provide a framework that teaches the evolutionary advantages of interspecies collaboration,

where ecosystems show that these alternatives are evolutionarily more successful and stable than even competition mechanisms.

To understand the dynamics of coevolution and development of organizations, a biological metaphor can be applied.

Inclusive business models are development alternatives not only for small producers, they also benefit anchor companies.

An alternative to solve the social and economic problems of the agricultural sector focuses on collaborative models.

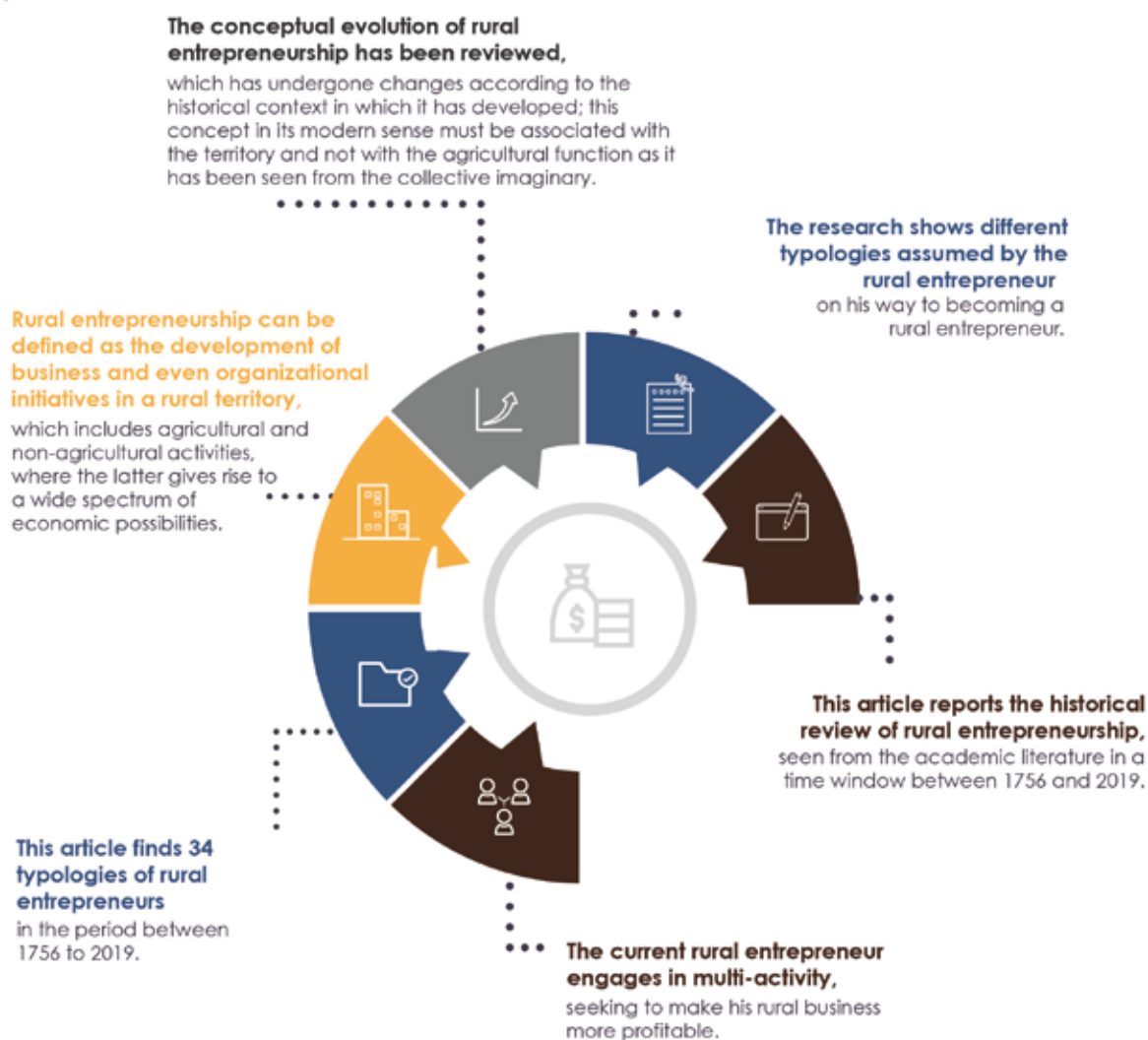
This biological metaphor in the organizations contributes in the agricultural development allowing to obtain advantages of the integration models.

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Art.03  
**Vol. 12 Núm. 23**

## Rural entrepreneurship: a historical approach



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Art.04  
Vol. 12 Núm. 23

## Relationship between profile and entrepreneurial vision of university students



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## Quality, knowledge, and innovation of manufacturing processes in Ciudad Juárez, Mexico

**Knowledge positively and significantly affects the development of innovations;** therefore, this variable is favorable to the company's performance..

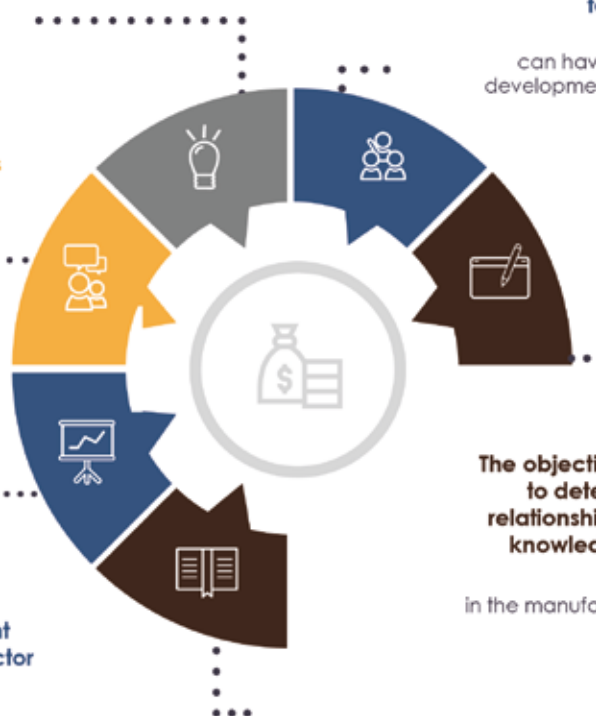
**The strategies that are implemented to improve quality and manage knowledge**

can have a positive effect on the development of process innovations.

**If activities and strategies aimed at knowledge management within companies are carried out,** it will promote the development of innovations and productivity.

**Quality is a preponderant and highly significant factor in the development of process innovation**

due to the strategies implemented for continuous improvement in manufacturing processes.



**The objective of this research was to determine the significance relationship between quality and knowledge in the innovation of production processes**

in the manufacturing industry in Ciudad Juárez, Mexico.

**The model proposed in this research shows that knowledge and quality have a positive and significant correlation in the development of process innovations,** which can increase with the development of adequate strategies to improve their performance.

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## Internet Traffic and Firm Performance in Big-Ticket Sectors: There Are Two Sides of The Coin

**During external crises, such as COVID-19, the usual communication channels between companies and their customers may not be available**

due to sanitary, administrative, or other restrictions. A company's online presence becomes a primary channel through which companies can reach their customers.

**The big-ticket sectors are characterized by higher prices**

and, therefore, are greatly affected by the uncertainty that prevents customers from making a purchase decision. Well-designed and maintained company websites often help consumers by providing them with the information and support they need.

**Businesses can effectively communicate with their customers through their website.**

Websites can be used to attract customers, inform them about the company's offerings and provide them with necessary assistance. Data analysis shows that higher web traffic is positively associated with company sales.

**Generating online traffic can be expensive due to ongoing updating and research requirements, and technology costs.**

If the company wants to generate more traffic, it must be willing and able to invest enough resources in it. Consequently, higher online traffic is negatively associated with company profitability.



**In the new digital age, businesses must embrace new technologies and increase their online presence**

to respond to rapidly changing market demands and consumer expectations. In particular, company websites are beginning to play a crucial role in communicating with customers and facilitating sales.

**Since generating online traffic is a costly and ongoing process,**

companies must have sufficient resources to successfully carry it out. However, younger companies tend to lack large amounts of resources and consequently suffer higher losses from traffic generation when compared to larger companies.

Art.07  
Vol. 12 Núm. 23



## Proposing a Multiple Infrastructure Model for the Utilization of Bitcoin

### Virtual currencies

To facilitate conducting financial affairs and obtaining money without the presence of intermediaries (banks and financial institutions), the notion of virtual money, i.e., cryptocurrency, was first proposed by Wei Dai

### Electronic money

Is a prepaid or stored value payment mechanism in which funds or value that can be used by the consumer in transactions, are stored in an electronic device, which is in the possession of the customer.

### Cryptocurrency

Cryptocurrency is a type of digital money that uses cryptography for its own security. Due to this security feature, counterfeiting in cryptocurrencies is difficult.

### Bitcoin

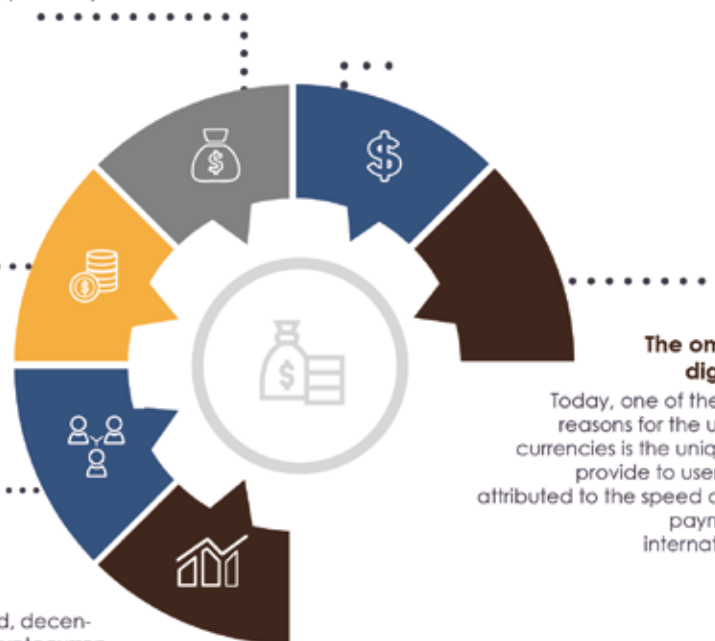
Bitcoin is an unregulated, decentralized, peer-to-peer cryptocurrency that allows users to process transactions through digital units of exchange.

### Impact of infrastructure on bitcoin usage

The economic infrastructure and the social infrastructure can affect the use of Bitcoin as causal conditions.

### The omnipresence of digital currencies

Today, one of the most important reasons for the ubiquity of digital currencies is the unique benefits they provide to users, which can be attributed to the speed and efficiency of payments, especially international payments.



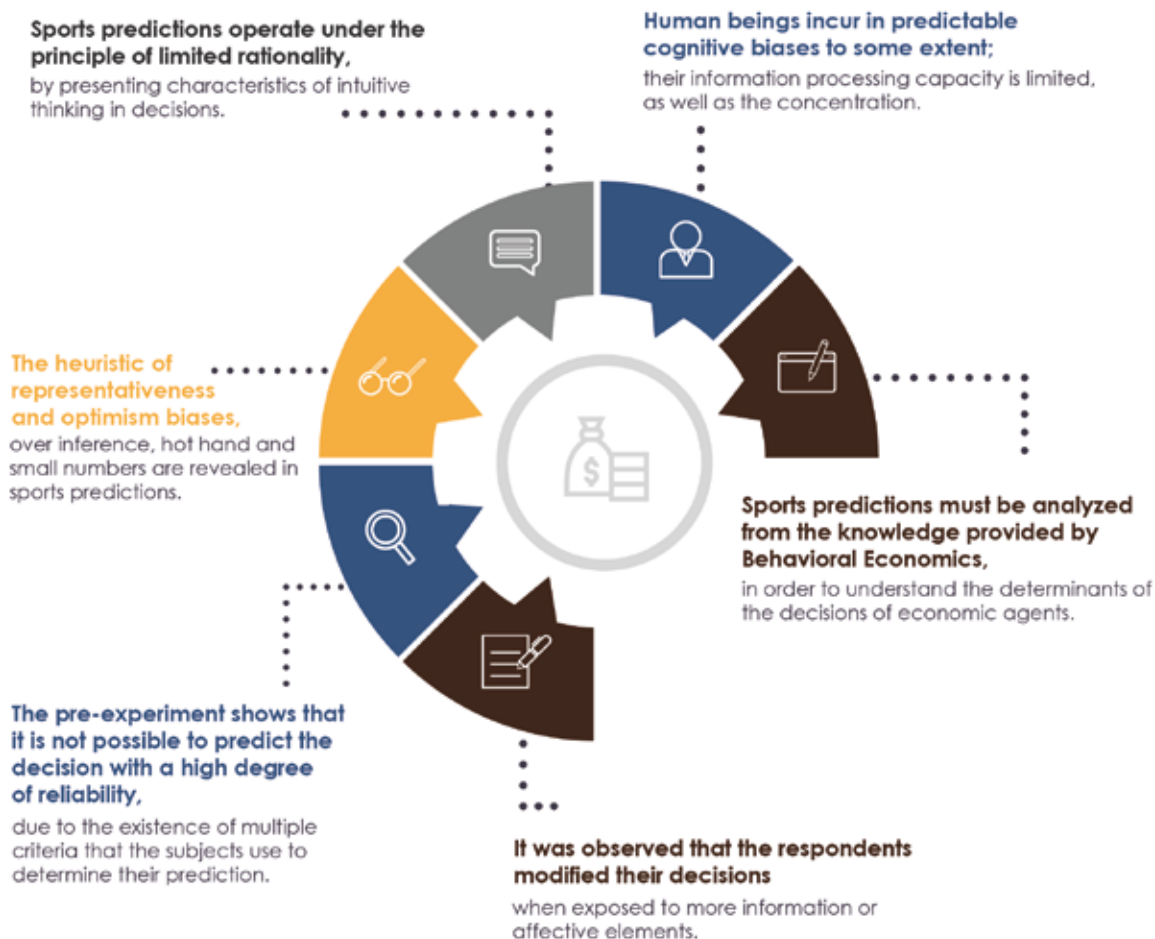
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## Behavioral Economics: its influence on the prediction of sports results



### **Autores:**

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## Brand value of Chilean pisco: contributions from the Pisco region of Chile


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## Crowdlending as a financing alternative for MSMEs in Peru

**One of the fundamental advantages of Crowdlending is that it offers lower interest rates than those of the traditional financial system,** since Crowdlending platforms take advantage of the technological advantages of operating through the Internet, allowing people to lower their costs.

**Crowdlending is a form of financing in which several agents interact on an online platform**

The agents seek access to credit, and the surplus agents seek to receive an economic consideration through the collection of interest.

**Contrary to the perception of a large part of Peruvian and Latin American MSMEs**

-the product of ignorance and distrust to operate online-, Crowdlending platforms offer, as one of their main advantages, access to credits quickly and easily.

**The conditions in a credit offered through Crowdlending**

are more flexible than in the traditional financial system since both the amounts of the installments and the payment terms can be chosen in such a way that they are adapted to the financial structure of the company.

**MSMEs have difficulties when applying for credit**

because they do not have collateral to support them or the value of their assets and capital are not high enough, so they end up with high costs and short-term payment terms.

**This work demonstrated that Peru's MSMEs, mainly microenterprises**

are willing to demand financing through Crowdlending. This result reflects that there is a business opportunity for Fintech investors in Peru and Latin America.

# Basic writing rules

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*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.

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. Manuscript Structure

For papers that are empirical research, the manuscripts are to follow IMRDC structure, while Notes and Contributions epigraphs are optional. Papers that constitute reports, studies, proposals, and reviews are afforded greater flexibility in terms of epigraphs, especially in relation to Materials and Methods, Analysis and Results, and Discussion and Conclusions. All types of papers are required to include References.

- 1) **Title (Spanish) / Title (English):** Concise but informative, the first line in Spanish and the second, in English. Maximum 80 characters are accepted, including spaces. The Editorial Board is allowed to propose changes to the author’s title.
- 2) **First and last names:** of each of the authors, organized in order of priority. Maximum three authors are accepted per original paper, although justified exceptions may be allowed, based on the theme, complexity, and length. The names are to be followed by the professional category, workplace, each author’s email address and ORCID number. It is mandatory to include whether the author has a doctorate degree (Dr. before the name).
- 3) **Abstract (Resumen, Spanish) / Abstract (English):** This section can contain a maximum of 230 words, first in Spanish and then in English. The abstract shall concisely contain the following, and in this order: 1) Justification of the theme; 2) Objectives; 3) Methods and sample; 4) Main results; 5) Main conclusions. It should be written impersonally “This paper analyzes...” In the abstract, automatic translation is not accepted due to its poor quality.
- 4) **Keywords (descriptores, Spanish) / Keywords (English):** Six keywords are to be included for each language, and must be directly related to the paper’s theme. This requirement shall be scored based on whether the keywords can be found in the UNESCO Thesaurus.
- 5) **Introduction and State of the Question:** The section proposes the question, the context of the issue surrounding it, justification, basis, and proposal for the study, using bibliographic references, including the most important up-to-date literature on the theme, both nationally and internationally.
- 6) **Material and Methods:** This is to be composed in such a way that the reader can easily understand how the research was performed. As appropriate, describe the method, sample, sampling, and refer to the type of statistical analysis used. If it is an original method, present the reasons for applying it, and describe any possible limitations.
- 7) **Analysis and Results:** This section should seek to highlight the most important observations, and without including any value judgments, describe the methods used. Throughout the text, essential tables and figures shall be included in a logical sequence, without repeating any data.

- 8) **Discussion and Conclusions:** This section summarizes the most important findings related to any observations from relevant studies, pointing out contributions and limitations, without repeating data from other sections. The discussion and conclusions paragraph is to include inferences and new lines of research for the future.
- 9) **Contributions and acknowledgment (optional):** The Science Editors Board recommends that the author(s) specify the financing source for their research. Priority shall be given to work endorsed by competitive national or international projects. Regardless, for the manuscript to be scientifically evaluated, it is to be anonymized with an XXXX only for the initial evaluation, in order to avoid identification of any of the authors or research teams, which are to be named in the Cover Letter and later, in the final manuscript.
- 10) **Notes (optional)** are included, only if necessary, at the end of the article (before the references). They are to be included manually, since the Word footnotes are not recognized by the layout systems. Note numbers are to be included using superscript, both in the text and in the final note. Notes including simple bibliographic references (without comments) are not allowed, since these are supposed to be included in the references.
- 11) **References:** Bibliographic references are to follow the text references. Under no circumstances should references be included that have not been cited in the text. There should be enough references in order to contextualize the theoretical framework, and be based on criteria of contemporary relevance and importance. They are presented alphabetically, according to the author's last name (if the last name has more than one word, based on the first word of the last name).

## 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 Surrounding. 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).