

# Structural Equation Modeling of Gastronomic Tourism in the Face of COVID-19

**Arger Verstapp Bund<sup>1)</sup>, Gilberto Bermúdez Ruíz<sup>2)</sup>, Olga Anaid Diaz Jacinto<sup>3)</sup>, Alfredo Barrera Escobar<sup>4)</sup>, Celia Yaneth Quiroz Campas<sup>5)</sup>, Rosa María Rincón Ornelas<sup>6)</sup>, Francisco Espinoza Morales<sup>7)</sup>, Cruz García Lirios<sup>8)</sup>, Gregorio Elizarraraz Guarneros<sup>9)</sup>**

*1),2),3),4),5),6),7),8),9) Department Administrative Sciences, Universidad Anahuac, Mexico*

*Email: bundestappen@aol.com*

## Abstract

The pandemic has claimed the lives of seven million, affecting the local economy. Anti-COVID-19 policies promote entrepreneurship as a central axis of the economic agenda. In the case of tourism, micro-financing policies encourage the local economy through the promotion of magical towns. The gastronomy trade has benefited from fiscal and monetary incentives. In this sense, the objective of this work was to establish the determinants of innovative entrepreneurship with a sample of 100 merchants. A predictive model was contrasted in which resource optimization determined product innovation. In relation to the state of knowledge, the scope and limits of the study were discussed.

**Keywords:** COVID-19, entrepreneurship, gastronomy, confectionery, tourism

## 1. Introduction

The pandemic caused by SARS CoV-2 and the COVID-19 disease have linked tourism with local entrepreneurship [1]. It is a phenomenon in which political, economic and social actors converge in order to reactivate the local economy [2]. In this sense, the objective of this work was to validate an entrepreneurship scale, considering four dimensions: trust, opportunity, optimization and innovation [3]. An exploratory, cross-sectional and psychometric study was carried out with a sample of 100 coffee growers from central Mexico [4]. Four factors were established that explained 32% of the variance, suggesting the contrast in another sample. In relation to the state of the art, the scope of the study is discussed.

As of April 2021, three million have died from the pandemic caused by the SARS CoV-2 coronavirus and the COVID-19 disease in the world [5]. In Mexico, around 500,000 victims are estimated if the cases of atypical pneumonia and the underreporting of deaths are counted and compared with the national annual average [6]. In this scenario, mitigation policies have focused on social distancing and confinement, as well as the restriction of tests, treatments and vaccines [7]. Faced with such a situation, civil society has organized itself around self-financed or collaborative entrepreneurship with migrant capital. In this way, the pandemic reactivated relationships between family and friends to encourage entrepreneurship and local economic reactivation.

The mitigation and containment policy for the pandemic in Mexico and according to the Ministry of Health [8] is based on the epidemiological traffic light: 1) red corresponds to staying at home, restriction of economic activities, confinement for school activities and mandatory use face mask outdoors and indoors in public spaces; 2) orange means a reduction in community mobility, economic activities are reduced to 50%, the education system remains remote and the use of face masks is only mandatory in public spaces; 3) yellow implies a

restricted use of public spaces, economic activities are reduced to 75%, the educational system is remote, the use of face masks is mandatory in closed public spaces; 4) green without mobility restriction, usual economic activities, mandatory use of face masks only on public transport and distance, hybrid or face-to-face education system.

However, COVID-19 also exacerbated the trade structures subject to economic globalization, as well as the monopoly of products that multinationals place in local stores through strategic alliances to penetrate the community market [9]. Or the entrepreneurship of micro-enterprises has been oriented towards emerging products related to confinement and social distancing, such as contagion prevention devices.

Globalization implies less social equality and greater freedom in the individual [10]. This imbalance characterizes the most globalized and localized liberal democracies [11]. These open societies that hold individuals responsible by disintegrating their groups, their communities, their societies and their present and future cultures [12]. The process of financial globalization and community localization is gestated through technology. In the case of connecting to the Internet from root servers, the United States, Japan, the Netherlands and Sweden are the main nodes [13]. Japan is the nation with the highest connection speed (61.0 mbps), Sweden is fourth (18.2 mbps), the Netherlands is sixth (8.8 mbps), and the United States is tenth (4.8 mbps). In economically emerging countries, the benefits of information and communication technologies (ICT) have only been used by organizations to enter the global market. In contrast, in the communities of these countries where localization processes are deeply rooted, ICTs have not been a factor for individual growth and much less for community development.

In fact, economic and technological globalization has only benefited corporations by widening the economic and digital gap with communities [14]. This process of globalization, in its social dimension, implies decision-making by groups, communities, unions, organizations and corporations based on ICTs [15]. Such entities are transformed into networks and flows of power that first compete and then monopolize the market [16]. A model is a data management, production and transfer system organized in explanatory trends of past, present and future relationships [17]. The emphasis on each suggests decision making and strategy execution [18]. Thus, the objective of this work was to specify a model for the study of the perception of usefulness, considering the dimensions provided by the literature regarding the acceptance of technology, propensity for information and achievement motivation.

Are there significant differences between the dimensions of entrepreneurship reported in the literature with respect to the factors to be established in this work?

The premise that guides this study indicates that the pandemic is a scenario of risk of contagion, disease and death. In this sense, entrepreneurship opts for the optimization of resources that are discreetly assigned by the State, forcing the use of family contacts of migrants to inject capital into new entrepreneurial projects arising from the business opportunities that the pandemic and distancing as the social confinement they demand [19]. They are products and services intended for the protection of people, as well as entertainment and recreation in confined, crowded and poorly ventilated places [20]. This is the case of the contagion prevention devices suggested by the government, such as the mask or alcohol gel, but also those that emanate from innovation, such as masks. Or those that measure pressure, oxygenation or CO2 emission.

## 2. Literature Review

### 2.1 Entrepreneurship Theory

This section reviews the theoretical and conceptual frameworks that explain the use of opportunities and the optimization of resources, as well as the innovation of processes based on the requirements of social distancing and confinement [21]. These are theories that propose the balance between the demands of the environment and the internal resources of confined people, as well as the contradiction between them to establish levels of exposure to risks of contagion, disease or death.

The economic, technological and social consequences of globalization are described to propose the Mobile Consumption Theory that explains the consumption of products and services through mobile telephony [22]. A model is presented that includes and demonstrates that the perception of usefulness is the determinant of mobile Internet use.

Based on the previous scenario, it is proposed that individuals, being immersed in information communication flows and networks, become potential consumers when purchasing a mobile phone [23]. Precisely, the following section explains the Mobile Consumption Theory (TCM), which explains the determinants of consumption through a mobile phone.

The Mobile Consumption Theory establishes that individuals make their purchases through a mobile phone based on their utilitarian perceptions and purchase decisions [24]. TCM holds that people consume basic products and services through the consumption of secondary products [25]. When individuals acquire a mobile phone or any technological information communication product and service, they expose themselves to the consumption of basic products and services that are advertised and sold through technologies [26]. Therefore, the TCM argues that it is the perceptions of usefulness, innovation and efficiency that determine the consumption of the products and services that are advertised and sold through the mobile phone.

TCM provides the indirect effect of the perception of a technological innovation on the consumption of products and services through said mobile technology [27]. It explains the relationship of ICTs with individuals saturated with multiple activities, people who buy and people who work as supervisors or sellers [28]. The TCM predicts the use of mobile Internet from a cognitive process that begins perceptually and ends behaviorally. From the TCM the study detailed below was carried out.

In summary, the theoretical and conceptual frameworks warn that it is possible to observe the implementation of preventive devices for COVID-19 if they are registered or offered on electronic networks [29]. The anticipation of the consumption of these products and services related to the distancing and confinement of people will allow anticipating biosafety scenarios for the reactivation of the local economy and tourism.

### 2.2 Entrepreneurship Studies

This section reviews the studies related to the entrepreneurship underlying the pandemic, including the relationships with the local reactivation of tourism as a collateral objective in the face of the pandemic [30]. The axes and topics of discussion are established on the local agenda to anticipate risk thresholds [31]. These are decision-making criteria for possible entrepreneurial scenarios according to the colors of the epidemiological traffic light and the exposure to contagion caused by the purchase and sale of protection devices [32]. In this scenario, the reactivation of the local economy will be foreseeable from tourism that is aware of its protection.

In the process of converting human capital into intangible assets for organizations, the perception of usefulness explains the intensive use of information and communication technologies if organizations adopt knowledge management, production and transfer systems (Carreón, Fierro & Garcia, 2019).

It is a process in which the formation of intellectual capital assimilates knowledge, experiences and skills to achieve objectives and goals through specific protocols for information processing [33]. The perception of usefulness is the central axis of the knowledge management agenda because it translates statistical data into meanings of commitment, entrepreneurship and innovation, as well as generating new protocols for information processing as long as the objectives and goals are subject to climate of tasks, supports and relationships between the parties involved.

Based on the Mobile Consumption Theory, a new model was designed with the variables that met the criteria of reliability (alpha greater than .60) and validity (factorial weight greater than .300) [34]. The convergence (indicated by the weight of the factor) of the items with respect to the factor [35]. Considering the factorial weights of the perceptive variable of self-efficacy, the convergence of four items is demonstrated [36]. A multiple linear regression was calculated to establish the determinants of the dependent variable and the non-linear relationship between the independent variables [37]. The diagram shows that the perception factor of academic usefulness is the main determinant of the factor level of Internet use for academic purposes [38]. This finding indicates a modification of the TCM measurement model by proposing a direct, positive and significant effect of the utility factor on use for academic purposes [39]. In other words, a person looking to buy a book, for example, could get it if they had a virtual library connected to their mobile phone [40]. A similar reasoning would imply the self-efficacy perception factor as a determinant of the academic use of the mobile [41]. An individual looking for academic information can find it through his mobile phone.

However, the causal relationship that lacks the required significance suggests the exclusion of the variable [42]. The strength of association between independent variables indicates their spurious involvement [43]. Finally, the level of mobile Internet use for academic purposes is explained by the two independent variables in 22 percent of its variability [44]. Of the original measurement model, only two variables maintain a causal relationship that selects them for inclusion in another measurement model [45]. These consequences and implications are discussed below [46]. The perception of usefulness has been the fundamental construct in the models developed to predict the behavior of a consumer on the Internet [47]. This research has shown that the academic factor of said perception determines another factor referring to the use of mobile phones for academic purposes [48]. The validity of the instrument that found a unidimensional variable that explained 32% of the variance was established, but the research design limited the results to the research scenario, suggesting the extension of the work.

However, the relationship between the perception of usefulness with other variables such as the perception of self-efficacy, reported by other studies, has been spurious [49]. This means that the variables could belong to different cognitive processes [50]. The perception of utility could belong to a set of affective variables while the perception of self-efficacy could belong to a group of rational variables [51]. This would explain why in the use of mobile Internet for academic purposes, the perception of usefulness is the variable that predicts it. However, it will be necessary to demonstrate the relationship between the perception of usefulness and affective variables [52]. Values, norms and identity could be those variables that, associated with the

perception of usefulness, could configure a measurement model with the necessary credibility to explain the use of mobile Internet.

In summary, the investigations alluding to the implementation of contagion preventive devices suggest that electronic networks instruct the usefulness of tourism through self-care [53]. This is so because the parties involved develop trust mechanisms in products, technology and science [54]. In this framework of empathy, the reactivation of tourism and with-it local development will additionally allow the social responsibility that the observance of preventive measures entails.

### *2.3 Modeling Entrepreneurship*

In this instance, the relationships between variables that explain and anticipate local entrepreneurship can be established from the sale of preventive devices for tourism, following two principles [55]. One that reflects the phenomenon involved in the investigation of the indicators of trust, opportunism, optimization and innovation [56]. Another related to the relationships between these factors in order to anticipate the decisions and possible actions to be compared based on a hypothetical green traffic light [57]. The TCM proposes three explanations about the consumption of products and services through the mobile phone.

The first trajectory includes: perception of innovation  $\rightarrow$  propensity to consume  $\rightarrow$  use of mobile Internet [58]. Such is the case of people who acquire a sophisticated and multifunctional mobile phone that exposes them and leads them to accept and consume seasonal promotions [59]. However, this type of consumer can purchase a phone only for some function [60]. It may happen that the consumer buys a phone for its functions of playing digitized mp3 files and is not interested in seasonal promotions [61]. It can be inferred that technological innovation translated into multiple functions is an added value for users that can lead to secondary consumption.

The second path includes: perception of innovation  $\rightarrow$  perception of usefulness  $\rightarrow$  propensity to consume  $\rightarrow$  use of mobile Internet [62]. In addition to analyzing the impact of technological innovations on human behavior, the second way explains the association between an innovation and its usefulness as determinants of mobile decisions and consumption [63]. The perception of utility, being a variable that indicates the selection and categorization of objects, influences consumption decisions and the subsequent purchase of a product or service [64]. A person who buys a mobile phone with the latest technology differs from the consumer who seeks secondary benefits derived from the use of technologies [65]. It is a potential consumer who acquires some technology to consume exclusive products and services of the elite communication network or flow of information [66]. A person looking for mp3 files only available in online stores will buy a mobile phone connected to the online store.

The third route includes: perception of innovation  $\rightarrow$  perception of efficiency  $\rightarrow$  propensity to consume  $\rightarrow$  use of mobile Internet [67]. Consumer behavior, explained by this third way, denotes a person dedicated to the purchase and sale of products and services [68]. Precisely, the perception of efficiency suggests the use of a technology for its competitive advantages rather than for its comparative advantages [69]. A sales supervisor will purchase a feature-rich phone if he perceives that these features will allow him to supervise his salespeople.

In short, trajectories and relationships are outlined that explain and anticipate the reactivation of the economy based on responsible and preventive tourism [70]. These are possible decision

paths built from possible biosafety thresholds. In other words, the prevention of contagion would be an additional value to tourist services.

### 3. Research Method

The setting in which the study was developed was the municipality of Huehuetoca, State of Mexico, located in the center of the country, bordering the states of Michoacán, Tlaxcala, Puebla, Morelos and Mexico City. 10,023 people live in the town, the houses reach 24,872, with an average size of four people. 4,582 families are managed by heads of families, the average schooling is 9.1 years and they have 108 middle and higher schools. 34.1 is in a social deprivation, 8.1 is vulnerable in terms of income, 21.4 is neither poor nor vulnerable, 30.7 is located in the moderate poverty line and 5.7 in extreme poverty (see Figure 1).



Figure 1. Huehuetoca, State of Mexico

Source: INEGI (2022)

Services in the town of Huehuetoca are linked to Central American migrants on their way to the United States. From shelter to food, the municipality provides basic services to migrants [71]. Migration is a local, regional and transnational phenomenon, since various media outlets cover migratory flows [72]. The economic spillover from media coverage of migrants, conflicts with authorities and disappearances activates the local economy [73]. In addition, the town has tourist attractions related to recreation and ecotourism [74]. The services provided by coffee cooperatives range from the sale of handicrafts, derived products and lodging.

Since the study of tourism as a determinant of the adoption of preventive devices is recent, an exploratory and cross-sectional investigation was proposed, considering the possible reactivation scenarios, but assuming that the pandemic is a risk event that could be contingent and volatile. In this sense, a psychometric study was proposed since the perception of entrepreneurship, trust and tourism diffusion are phenomena that can be measured from expectations.

There were 100 coffee farmers ( $M = 35.4$   $SD = 2.13$  age;  $M = 9'832$   $SD = 342.1$  USD).

*Confidence perception scale.* 5 items ("COVID-19 brought me closer to clients who care about their respiratory health for tourists") with response options from "strongly disagree" to "strongly agree".

*Scale of perception of opportunism.* 5 items ("COVID-19 opened my eyes to the health prevention business for tourists") with response options from "never" to "always".

*Perception Optimization Scale.* 5 items ("COVID-19 forced me to offer the sanitary devices that tourists need") with response options from "less than ten minutes" to "more than twenty minutes".

*Innovation perception scale.* 5 items ("COVID-19 forced me to offer products that tourists do not find elsewhere") with response options from "very useful" to "very useful".

The reliability and validity of the instruments that measured the five variables were constructed and established. The probability of adjusting indirect and direct, negative and positive and significant causal relationships between the study variables was modeled and demonstrated. Twelve indicators were established that configured three dimensions for the five variables of the measurement model that were subjected to a confirmatory factorial analysis of the main components with varimax rotation and maximum likelihood. The results reject the hypothesis of factorial unidimensionality for three variables of the measurement model. The psychometric properties of the instruments that measure the study variables are detailed in the table where they meet the requirements for multivariate analysis.

#### 4. Findings and Discussions

##### 4.1 Findings

The values reached the minimum levels necessary to carry out deeper analyzes such as the establishment of factors from the normal distribution of responses to the instrument (see Table 1).

Table 1. Descriptive instrument

R	M	SD	A	F1	F2	F3	F4
r1	4.32	1.43	,762	.632			
r2	4.35	1.54	,783	.512			
r3	4.81	1.89	,751	,430			
r4	4.53	1.54	,704	.623			
r5	4.29	1.21	.735	.603			
r6	4.38	1.34	,792		.439		
r7	4.56	1.70	,743		.325		
r8	4.68	1.54	,703		.476		
r9	4.12	1.45	,793		.405		
r10	4.30	1.65	.752		.549		

r11	4.89	1.24	,722			.623	
r12	4.65	1.90	,703			,571	
r13	4.23	1.78	,793			,539	
r14	4.13	1.54	,789			.623	
r15	4.39	1.35	,783			.605	
r16	4.54	1.82	,793				.573
r17	4.32	1.43	,752				.632
r18	4.41	1.24	,761				,548
r19	4.58	1.41	,704				,521
r20	4.56	1.50	,742				.519

Note: Prepared with data study: R = Reactive, M = Mean, SD = Standard deviation, A = Value of the item excluded alpha. Method: Main Axes, Rotation: Promax. Adequacy (KMO = .765), Sphericity [ $\chi^2 = 13.21$  (16 gl)  $p < .05$ ]. F1 = Confidence (14% total variance explained and alpha with .782), F2 = Opportunism (10% total variance explained and alpha with .724), F3 = Optimization (7% total variance explained and alpha with .770), F4 = Innovation (1% total variance explained and alpha with .725).

Once the four factors that explained 32% of the total variance had been established, the structure of their relationships was estimated, considering the associations and covariances between the four dimensions (see Table 2).

Table 2. Relations between factors

	M	SD	F1	F2	F3	F4	F1	F2	F3	F4
F1	25.32	13.24	1,000				1,783	.436	.532	.346
F2	22.31	15.46	.543*	1,000				1,802	.657	.438
F3	24.36	17.68	.325**	.680*	1,000				1,532	.650
F4	20.43	14.69	.578***	.543*	.412*	1,000				1,141

Note: Prepared with data study; M = Mean, SD = Standard deviation, F1 = Confidence, F2 = Opportunism, F3 = Optimization, F4 = Innovation; \*  $p < .01$ ; \*\*  $p < .001$ ; \*\*\*  $p < .0001$

The validity of the instrument indicates four predominant and convergent dimensions with the general scale. These are trust, opportunism, optimization and innovation, although the latter explains the lower percentage of variance, it is possible that they correlate with a common factor that is considered the entrepreneurship observed in the era of Covid-19. In order to be able to



estimate the structure of gastronomic tourism reactivated by local entrepreneurship, a model of structural equations was contrasted (see Figure 2).

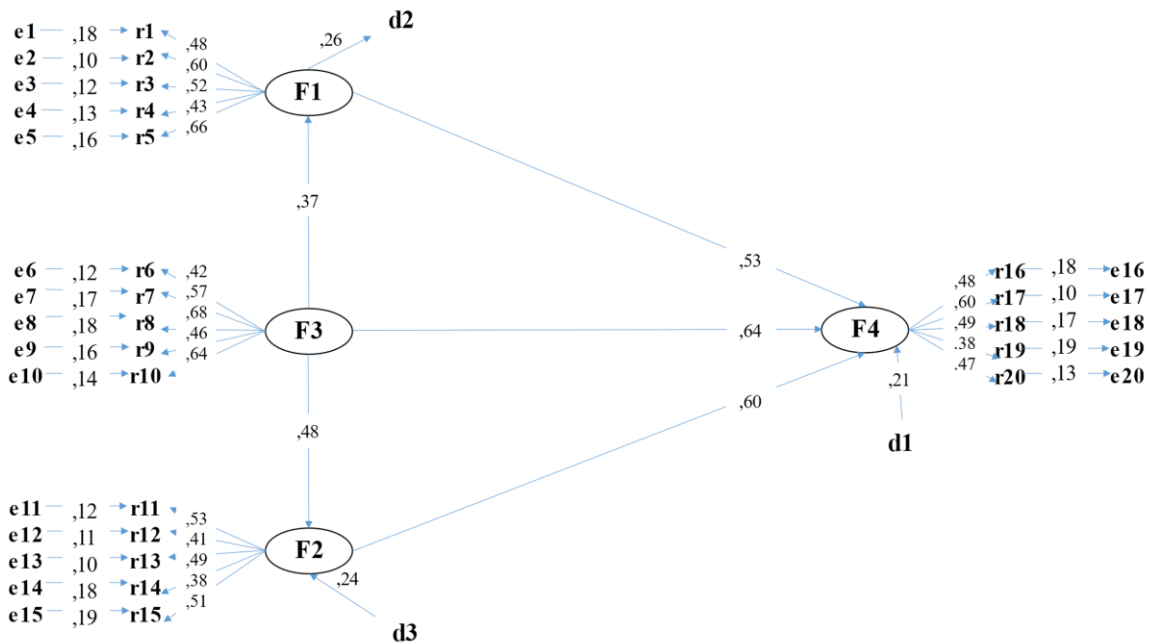


Figure 2. Structural equation model

Source: Prepared with study data; F = Factor, F1 = Trust, F2 = Opportunism, F3 = Optimization, F4 = Innovation, r = Reactive, e = Measurement Error, d = Measurement Disturbance

The fit and residual parameters [  $\chi^2 = 23.45$  (13df)  $p > .05$ ; CFI = .990; GFI = .997; RMSEA = .008 ] suggest the non-rejection of the null hypothesis of significant differences between the theoretical structure with respect to the observations made in this study. It means then that the gastronomic tourism that takes place in Huehuetoca, State of Mexico is determined by trust between the actors, the optimization of public resources coupled with remittances and the opportunities generated by migratory flows and the services that were created.

#### 4.2 Discussion

This work provides a model for the study of coffee entrepreneurship in the reactivation of local tourism. The proposed model warns that trust, opportunism, optimization and innovation of products and services related to coffee farming contribute to the local economy [75]. Trust between political and social actors leads to a cooperative synergy in which the local government finances the projects of local merchants [76]. The budget allocated as seed capital complements the remittances received by migrant families and both are oriented towards the production and sale of confectionery [77]. The optimization of resources is a business skill that the locality develops by being able to finance itself with remittances and credits in cooperatives led by heads of families [78]. The innovation of coffee-based confectionery explains the local entrepreneurship [79]. The sale of these products in archaeological or ecotourism zones represents a stable income for families.

The contribution of this work to the state of the art lies in the establishment of the validity of an instrument that measured four dimensions related to trust, opportunity, optimization and

innovation [80]. These are explanatory factors of entrepreneurship because they reflect it in four aspects that link the purchase and sale of contagion prevention devices with the reactivation of tourism [81]. The four axes explained 32% of the variance, indicating the inclusion of another factor that the literature identifies as coupling to account for the convergence of the first factors in a common factor of second order. The empirical test of a model with the exposed dimensions will allow to increase the construct validity of the instrument in question.

Identify the key to entrepreneurship in the culture of success. He warns that the responses to the pandemic are already latent through its materialization in opportunism [82]. In this way, the differences between cultures explain the levels or degrees of entrepreneurship according to attachment to place, identity or social pressure. In the present work it is observed that innovation explains the lowest percentage of the total variance. This is so because the culture of optimization is related to the effort and resilience that distinguishes Mexico from other cultures. Therefore, innovation is an area of opportunity that could arise in the absence of public microfinance.

States that entrepreneurship is the result of the inclusion of social actors and financial agents that converge in the pandemic [83]. It is a strategy of opportunity, competitiveness and dual growth between government, society and market. The competition of the private sectors in public spaces and state investment in business consortiums will increase the supply of products and services, generating employment and competitiveness, as well as innovation by consolidating itself as a local development strategy. In this study, opportunity is distinguished from innovation based on trust. In other words, empathy between actors can generate competition without innovation. this is so for more cultural reasons.

State that entrepreneurship is a process of permanent formation in interaction with the levels of academic learning that take place in the classroom, but its implementation in professional practice implies going beyond the consensus of trust and opportunity [84]. In the present work, optimization has been considered as a factor of academic specialization that reflects entrepreneurship from a risk perspective. It is a skill that can be computational in the dissemination of products and services, as well as the establishment of networks for the permanent formation of opportunity, purchase and sale criteria.

In relation to the state of the art, the lines of research can be carried out with the inclusion of competitiveness in the reflexive model, transforming it into a hybrid proposal. Entrepreneurship reflected as opportunity and innovation would be determined by the trust between the parties involved and this would indirectly affect competitiveness as an objective variable for the prediction of cultural, social, organizational and cognitive factors.

## **5. Conclusion**

The objective of the present work was to specify a model for the study of the perception of utility, considering the dimensions reported in the literature, as well as those established in the present work, but its design limited the contributions to the analyzed sample, suggesting the extension of the work towards other scenarios and other samples of study. Unlike the literature, this work assumes that entrepreneurship has not been developed in the sample surveyed and therefore it is necessary to observe it with respect to a new modeling of its factors and trajectories. The measurement of entrepreneurship would include two dimensions related to opportunity and optimization as determinants of competitiveness. In turn, trust would directly affect these three variables and innovation indirectly. In other words, the proposed model would anticipate innovation and competitiveness scenarios based on work culture and entrepreneurial

skills. In relation to public microfinance policies, the model to be contrasted will allow evaluating the effect of austerity or public investment in micro, small and medium-sized enterprises in the Covid-19 era.

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