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ENTREPRENEURIAL ECOSYSTEMS: A ROLE PLAY

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ABSTRACT

This paper presents a review of the literature regarding entrepreneurship ecosystems, highlighting the fundamental role of the state as a promoter of entrepreneurship, and emphasizing a more compact relationship between the university and industry that allows taking advantage of the policies dictated by the government. With this purpose, this review consists of three sections, the first is a conceptual framework that guides the reader regarding the entrepreneurial ecosystem, then a scheme of roles is proposed for the actors of the border ecosystem, characterized by the absence of CTI platforms and some characteristics of the ecosystem of Santiago de Chile are exposed

INTRODUCTION

The competitive environments faced by large companies not only involve suppliers and the competitors themselves, but they must also be considered policies state, research centers and capitals (Kantis, Federico, & Ibarra, 2017), the latter may have different origins; banking institutions, friends and family, investors and even informal lenders (in Ecuador they are known as chulqueros). Although, these elements, due to the properties of relativity, work according to the context; the culture of the people, history, traditions, among other factors;

they are the conduit to dynamize or operationalize the business environment within the regions (GEM, 2016).

The motivations of this work coincide with the few studies that consider the common effects on the border; such as the exchange rate, the saturation of merchants, smuggling (an alternative source of work, according to some) and the scarce manufacturing development, at least in the cantonal head of Carchi, said locality concentrates 52.7% of the population at the provincial level. (PDOT Carchi, 2015); They are structural problems that can aggravate the economic situation on the Ecuadorian border, as happened during the 2014-2017 period due to the depreciation of the Colombian peso.

Perhaps one of the strongest aggravating factors is the little work articulated between the actors of the entrepreneurial ecosystem, the academy, the private sector, the government, and NGOs (Salazar, 2018), delimiting their action is essential, to achieve a complete transformation in the economic model, dependent on trade and smuggling activities at the border; and of course, reduce the negative effects of the exchange rate.

The work presents three sections, the first is a conceptual framework that guides the reader regarding the entrepreneurial ecosystem, then a scheme of roles for the actors of the border ecosystem is proposed and some characteristics of the ecosystem of Santiago de Chile in its beginnings are exposed, that serve as experience to guide actions for the benefit of the entrepreneurial ecosystem of Tulcán; Finally, some conclusions and recommendations are presented.

This work intends to make a brief exposition of the different theories that have studied entrepreneurship ecosystems, as well as to examine the importance of this for the development of competitive advantages.

MATERIALS AND METHODS

The research was developed under the modality of documentary and bibliographical research with a qualitative approach, with the purpose of understanding the importance and the mechanism of operation of entrepreneurial ecosystems for the development of competitive advantages in border areas.

ANALYSIS AND DISCUSSION OF THE RESULTS

The concept of competitive strategy has been evolving over time. in which companies can achieve competitive advantages through low costs, managing to participate in the market in an attractive way for customers; performing different analyzes of the products to be marketed so that it is perceived by customers as unique, applying strategies in the marketing process, directing them to a particular group of buyers, in a segment of the product line or in a geographic market (Narváez , & Fernandez, 2008).

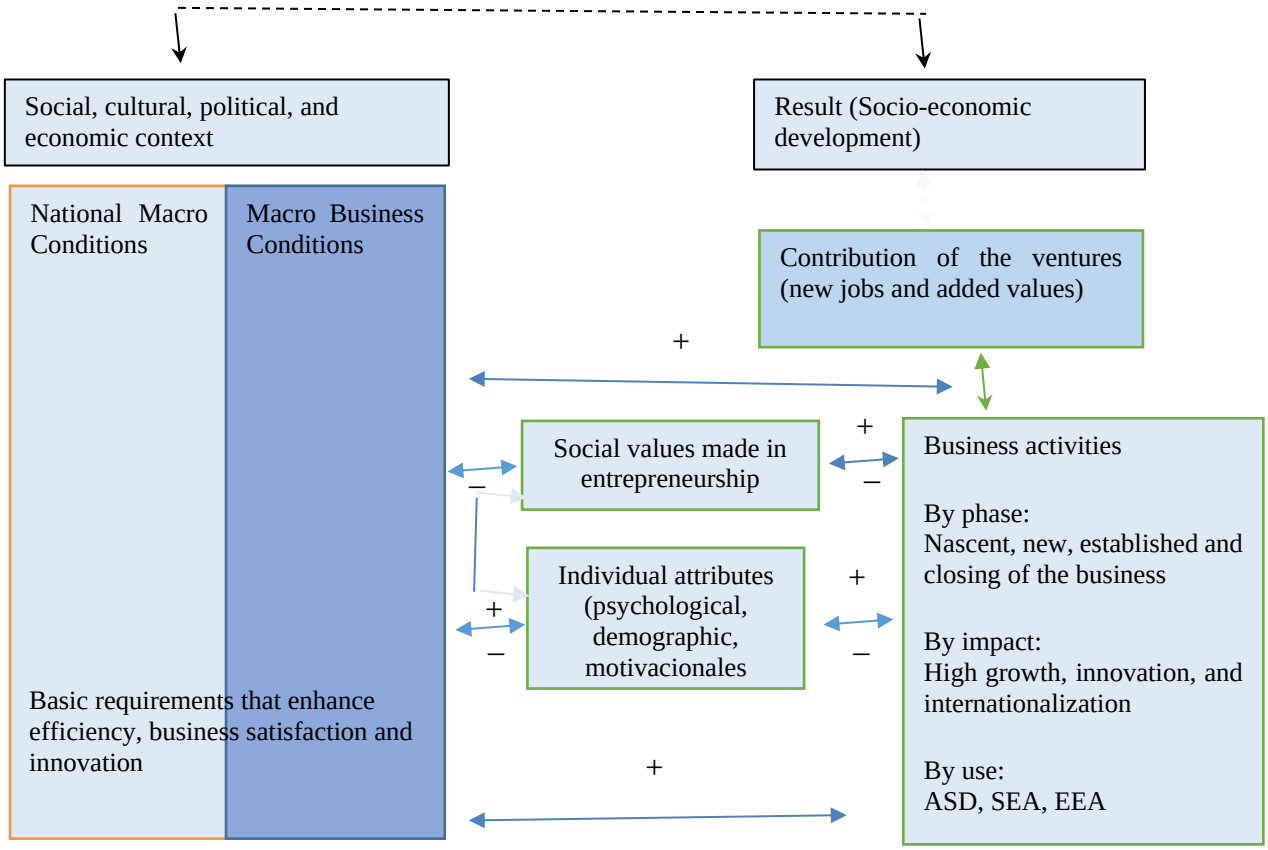
PERSPECTIVES

Entrepreneurship Ecosystems (GEM)

The maximum exponent, regarding the monitoring of entrepreneurial activity is the Global Entrepreneurship Monitor (GEM), the first study was carried out in 1999, it was originally initiated by Babson College and the London Business School (GEM, 2016), Ecuador has participated since 2014. The report provides relevant information aimed at,

(...) managers, businessmen, entrepreneurs, institutions that design and implement public policies, think tanks, entrepreneurship support programs, ministries, sectional governments, chambers of production, trade associations, incubators, angel and risk investors, academia, media, among other organizations. (GEM, 2016, p. 7)

The conceptual framework that the GEM proposes is designed to understand the phenomenon of entrepreneurship, in a broad sense, however, the work is guiding the study of the entrepreneurial ecosystem so that the reader has a notion of the complexity of this, in figure 1 this proposal can be visualized.



To fulfill the purpose of this theoretical review, the analysis falls on the first section of the referential framework, which considers the social, cultural, political, and economic context,

(...) represented through of National Framework Conditions, which impact the development of society through three phases of economic development (economy of factors, efficiency, and innovation), and a set of Entrepreneurial Framework Conditions, which are conceptualized to impact entrepreneurial activity more direct. The latter made up of the following factors: financial support, government policies, government programs, entrepreneurship education and training, knowledge transfer (R&D), commercial and professional infrastructure, openness and market conditions, physical infrastructure, and social and cultural. (GEM, 2016, p. 14)

The description of the previous paragraph is known as an entrepreneurial ecosystem or entrepreneurial climate, during the period 2015-2016 Ecuador was above the average of the region, however, the weaknesses They were focused on policies and access to finance, what has changed during the last three years? The regime, the Moreno government is focused on developing a better business environment.

Dynamic Entrepreneurship Ecosystems (Prodem)

A study dating from 2017 was developed by the Entrepreneurial Development Program (Prodem), for more than 16 years it developed an index of systemic entrepreneurship conditions (ICSEd-Prodem) and considers a sample of 65 nations, the results are not favorable for Ecuador, which in 2017 reached position 55. In principle, they clarify that,

The ICSEd-Prodem allows measuring the conditions of the National Entrepreneurship System. Likewise, the ICSEd-Prodem conceptual framework has very important similarities with the Entrepreneurship Ecosystem approach, although it is more comprehensive in its considerations and allows us to understand the different structural factors that affect the emergence of entrepreneurs and business opportunities. (Kantis, Federico, & Ibarra, 2017, p. 32)

The proposed conceptual framework considers some interesting aspects, unlike the one proposed by the GEM, it is more explicit with macro conditions. As can be seen in figure 2.

The ICSEd-Prodem is based on 10 key dimensions that affect the quantity and quality of the new companies that are created. The first of these is the existence of entrepreneurs capable of building powerful value propositions: entrepreneurial human capital, these are influenced by different issues such as culture and social conditions and the functioning of the educational system. Later, in adulthood, the companies in which they work will complete a path of continuous training. The systemic approach also considers those factors that influence the existence of business opportunities such as demand conditions, the size and dynamism of the market, the profile of the firms that make up the

business structure and the efforts made in the field of science and technology, which ICSEd-Prodem calls the Platform for Science and Technology for Innovation (CTI Platform).

The conversion of projects into companies, and their subsequent development, depends largely on the skills of entrepreneurs. But, in addition, it is essential that they can access an appropriate Financing offer to create and grow the enterprise. Another key factor is the existence of social capital, that is, an environment of trust that facilitates the construction of bridges to weave contact networks with other key actors (entrepreneurs, institutions and others) and access to resources that, otherwise, , would hinder the creation and development of entrepreneurship. Finally, the entrepreneurship process is affected by the context of regulations and policies. Governments establish different rules (for example, qualifications and permits, taxes and foreign trade regulations) that can be friendly to entrepreneurs (Kantis, Federico, & Ibarra, 2014, p. 29)

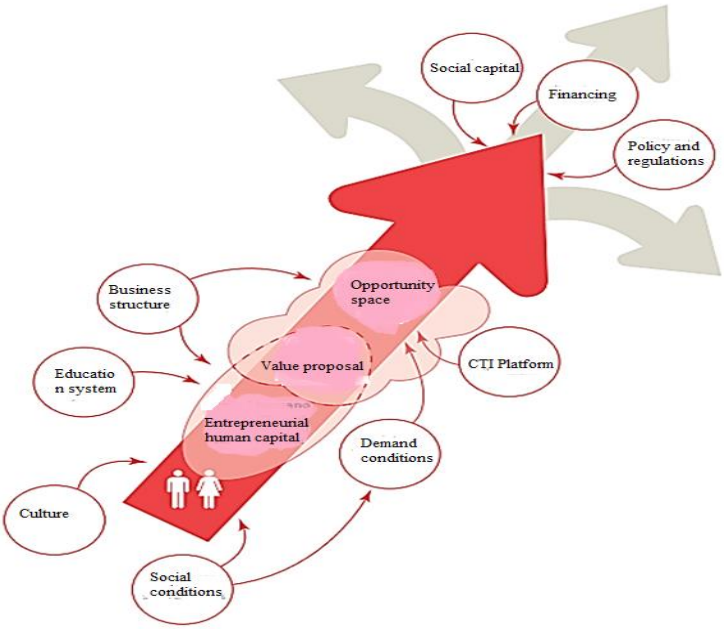


Figure 2. The phenomenon of dynamic entrepreneurship is systemic
Source: (Kantis, Federico & Ibarra, 2014)

Dynamic Ecosystem of Entrepreneurship

Like animal ecosystems, startups require adequate conditions to survive, for entrepreneurs the value proposition is the brain, capital represents the flow of oxygen and food, but, without the skills of "hunting", the above cannot be maintained, in these ecosystems
. For example, different actors can be found such as: a) universities, both in their educational role through different chairs and/ o business courses, such as occurring with a number of administrative bodies, agencies and business organizations in the city, - sometimes in collaboration with u Universities - in the field of supporting and connecting potential entrepreneurs (for example: incubators, accelerators, entrepreneur centers); b) R&D institutions, generating and transferring innovative knowledge; c) the media, disseminating success

stories and role models; d) business entities promoting the development of networks with the world of business and business mentoring; e) banks committed to the creation of investment funds in undertakings or sponsoring entrepreneurship centers; f) private investors providing capital, advice and contacts to entrepreneurs; g) providers of consulting services specialized in various topics (eg: legal, commercial, technological); h) the companies that make up the productive fabric, which can favor the emergence of entrepreneurs through spin offs and providing corporate support, and i) governments, seeking to facilitate and promote the development of the entrepreneurial ecosystem (Kantis, Federico, & Menéndez, 2012 cited in Salazar 2018, p 36).

The interrelationships with the different actors in the ecosystem need to be channeled through a mixed institution as a nexus, which must ensure that the transition from a nascent undertaking to a stable business occurs in less than 3.5 years.

The Actors Of The Entrepreneurial Ecosystem

The diversity and nature of the different actors cause certain frictions that prevent a consensus regarding the roles, the contributions and in which stage of the entrepreneurship they should intervene. At this time, the ecosystems are considered premature, the links and responsibilities are not defined, the agreements are not clear, and the political environment is not conducive to joint work on entrepreneurship (Kantis, Federico, & Menéndez, 2012).

In this sense, the appreciations developed in the triple helix theory are used, where certain responsibilities and roles of the ecosystem actors are presented, which allows the development of innovation, a common term in the knowledge society and evolutionary economies (González, 2009), and which has an important relationship with the creation of new business models (entrepreneurship).

The Triple Helix starts from considering that innovation is not a stable unit of analysis, but rather a unit of operation in an interface" (Leydesdorff, 2001: 2) in (González, 2009); this same author explains that this interface is the meeting area between the subsystems of the university, knowledge-based industries, and governments.

a) Universities have a strategic role, because they must contribute to the development of the locality (linkage); In fact, with the third academic revolution, entrepreneurial universities assume the creation of companies or business nests in their laboratories and facilities.
b) For obvious reasons, the private sector participates by financing research and capital for new innovations, while the government designs the instruments (support policies for entrepreneurship and innovation), which facilitates the interrelationship between these actors and directs the operation of the apparatus. productive (González, 2009).

But the ecosystem contains more participants, NGOs represent important opportunities regarding access to capital; training programs and projects that

impact the territory, in fact, the relationships that the Decentralized Autonomous Governments (GADs) maintain with these entities allow to boost productive development and comply with territorial planning (Salazar, 2018).

The University and The Industry

One can frequently ask how a business project is consistent with the approach of the academy to science? In this regard, the industry is not alien to science, but seeks practical solutions to specific problems" (Nordin, Rundquist, & Pemberthy-Gallo, 2013, p 47).

Based on what was stated by Nordin, et al (2013), the links between the university and society include industries, because they validate the sense of relevance of university mansions, linkage programs and pre-professional practices. they are a connection mechanism, but the problems that organizations go through take more than 370 hours, hence the proposal to link companies to develop the students' degree work, and undertake new solutions, the special addition that is practiced in Sweden is teamwork.

The methodology suggests an agreement with the organization, a diagnosis to determine support courses, the appointment of a tutor in the area and establish the relationship between mentor and apprentice, which produces the expected results (Nordin, Rundquist, & Pemberthy-Gallo, 2013), in this case, the axis of entrepreneurship is also anchored. The process must contain the path described in table 1.

Table 1. The final degree project that links the university and the industry

Graduation project (engineering tradition)	Undergraduate thesis (academic tradition in social sciences)
Solve the applied problem / based on existing knowledge.	Solve the general problem. Generate new knowledge.
Rational/logical	method General research method based on reflection.
Specific results – experimentation method	General results – methods validated by academic peers
Credibility is achieved through practice.	Credibility is achieved through prior analysis of the literature.
Abstraction – inverted pyramid	Abstraction – hourglass.

Source: (Nordin, Rundquist, & Pemberthy-Gallo, 2013)

Policies

The stages of entrepreneurship suggest awareness, identification, formulation, start-up and acceleration (Crissien, Ortíz, & Matiz, 2013), government intervention through the development of policies that follow the route shown in figure 3 proposed by (Kantis, Federico & Ibarra, 2017) cited in Salazar (2018).

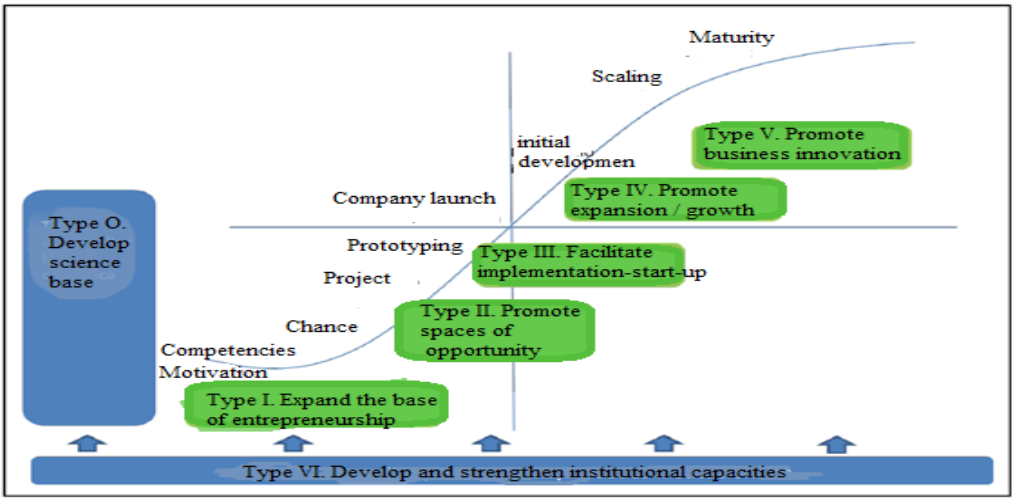


Figure 3. The entrepreneurial cycle and policies.
Source: (Kantis, Federico & Ibarra, 2017)

Type 0 (T0): they are related to the existence of weaknesses in the characteristics of the CTI platform and in the training of advanced human resources.

- Type 1 (T1): they seek to act on the weaknesses in entrepreneurial human capital and the formative factors.
- Type 2 (T2): they act on the limitations to the emergence of opportunities
- Type 3 (T3): they encourage their realization in new companies
- Type 4 (T4): they aim at business growth
- Type 5 (T5): they promote business innovation.
- Type 6 (T6): promote the development and strengthening of institutional capacities and, in this way, complement and underpin each of the previous types of policies.

Type 0 policies are necessary and with a strong emphasis, that, in the case of the Tulcán ecosystem, said CTI platform does not exist in this locality, perhaps this role can be assumed by the Carchi State Polytechnic University, although the implementation of said unit that, in addition: on the way to the famous poles of competitiveness. Yachay's failed attempt was the only initiative at the level of zone 1, but it was not affected by the sources of corruption in said work.
On the other hand, for the GEM, the elements of the Entrepreneurial Framework Conditions can guide the roles of the actors in the ecosystem, among them are:

✓ **Access to physical infrastructure:** The existence of roads, telecommunications, etc. stands out in this factor. that constitute a support for new and growing companies.

✓ **Social and cultural norms:** Emphasizes the assessment of individual achievement; and skills that encourage or restrict entrepreneurial activity.

✓ **Entrepreneurial education:** The strength in this factor is professional training and continuing education, as well as that in business administration that adequately prepares for the creation and management of companies.

✓ **Financial support:** it is the ease of obtaining a credit to undertake, that is, debt for new and growing companies. It is characterized by informal investment, family, friends, private third parties.

✓ **Government Policies and Programs-** The presence of direct policies and programs to assist new and growing businesses (GEM, 2016, p. 23).

Each one of these elements needs to be channeled and directed to strengthen the ventures in their different stages, each one of these elements can be understood as the food of the entrepreneur, because it nourishes each one of the aspects to keep their business afloat (Salazar, 2018).

Roles Within the Tulcán Ecosystem

To begin this section, some economic statistics are presented, then the results of the condition of the Tulcán entrepreneurship ecosystem developed by Salazar (2018) are presented; a diagram of responsibilities of the identified ecosystem representatives is outlined.

In 2011 Tulcán registered 3,502 establishments, these reached 330 million dollars in sales (INEC, 2011); According to statistics from the Municipality of Tulcán, of the 3,502 establishments, 2,052 premises are dedicated to commercial activities, that is, 58.6% suggest a border with an innate commercial area. The people employed were 12,078 during 2011, the investment in fixed assets in 2009 was 27,825.00 dollars (INEC, 2011).

State Of the Ecosystem

Salazar (2018) recoded variables and based on the following scale, "very unfavorable = 1 to 2; Unfavorable = 2.01 to 3, unfavorable = 3.01 to 4; and very favorable = 4.01 to 5" (p. 59), determined that the Tulcán ecosystem is unfavorable, as shown in table 2.

Table 2. State of the Ecosystem

Score of the pillars of the entrepreneurial ecosystem	
Criterion	**Score**
Conditions financing	2.48876104
Infrastructure	3.49802287
Education conditions for entrepreneurial development	3.72091616
Social and cultural	3.02916585
conditions	2.36579426
Tulcán Ecosystem average	2.97270047

Source: (Salazar, 2018)

These results were compared with the state of the entrepreneurship ecosystem at the national level, where the largest gaps are concentrated in infrastructure and sociocultural norms. To a lesser degree, there are also gaps in the work of public institutions and the educational system.

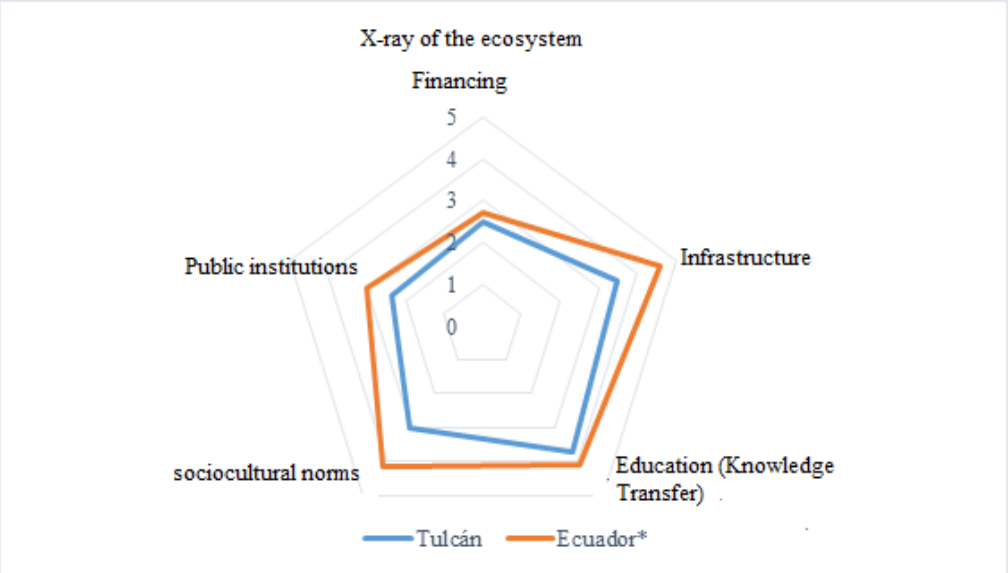


Figure 4. Ecosystem of Tulcán and Ecuador
Source: (Salazar, 2018)

Based on the Macro Entrepreneurial Conditions proposed by the GEM, figure 5 outlines the scheme of action and responsibilities for the entrepreneurial ecosystem of Tulcán.

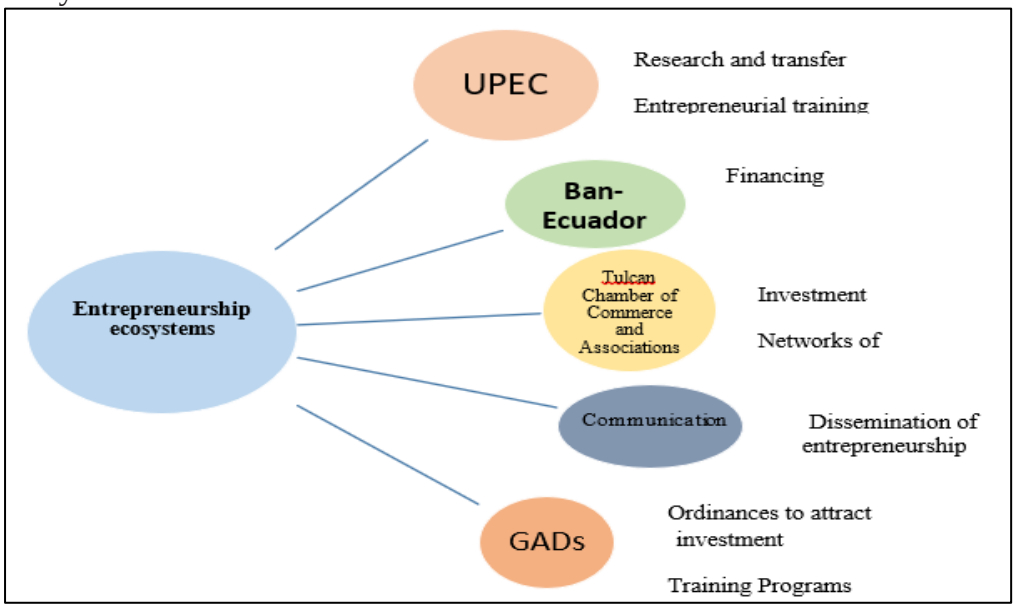


Figure 5. An approximation to the roles of the entrepreneurial actors

After the extensive conceptual review, certain shortcomings can be pointed out within the Tulcán ecosystem, among them, the CTI platforms are not present, the main actors identified, who have developed entrepreneurship initiatives; they are UPEC as a representative of the academy, however, the academy involves the entire educational system, primary schools and high school institutions, this to fulfill one of the attributions of forming entrepreneurial human capital; On the other hand, the financial aspect falls to BanEcuador,

while the networks of collaborators are the responsibility of the Chamber of Commerce and the Institute of Popular and Solidarity Economy (EPS) (Crissien, Ortíz, & Matiz, 2013).

There is currently a border development law, available in the official registry since 2017, which has not yet triggered specific ordinances by the municipal GADs mainly. At least from the central government, through the SRI, certain supports included in the law "Organic Law for the reactivation of the economy, strengthening of dollarization and modernization of financial management" are promoted (SRI, 2017); The main points of this initiative are summarized in figure 6. At the end of last year, tax remission was also promoted, at least from this tax aspect, entrepreneurs have a benefit, provided that the previous requirements are met.

Finally, entrepreneurial initiatives can also be spread not only in the traditional media, but social networks are also a powerful tool, the business can be known worldwide.

Tax benefits for micro (Impact in millions of USD)			SRi
		Impact	Beneficiaries
	Currently, micro-enterprises do not pay income tax in advance. The income range is expanded from USD 100,000 to 300,000.	-30	29,291
	Microenterprises start paying income taxes from USD 11,270 (exempt band).	-24	36,000
	New microenterprises are exempt from paying income tax in the first 3 years of activity, provided they generate net employment and added value.	-23	118,485

Figure 6. Tax incentives
Source: (SRI, 2017)

The Ecosystems of Reference: Santiago De Chile

The Prodem brief's part B, presents some facts that marked the development of the entrepreneurial ecosystem in Santiago de Chile, in principle certain criticism of the thinking of entrepreneurial ecosystems, suggesting that they are static, based on these observations it is considered that ecosystems have two moments in time, developing and mature ecosystems (Kantis, 2017).

According to the Prodem Brief, Santiago Innova, created in 1992, is the first initiative promoted by the Municipality of Santiago de Chile to promote a culture of entrepreneurship and job creation. Endeavor waited 6 years to install its operations in Santiago; however, this entity closed its offices due to the lack

of support from businessmen and the government, only being able to reopen it two years later.

The experience of Chile suggests that the state is the main actor for the development of the ecosystem, in that sense the Chilean government through CORFO, at the end of the 90s; They implemented a pilot fund together with the MIF under the management of a North American company. The main drawback was that there was neither a continuous flow of innovative entrepreneurial projects to be invested nor a venture capital industry; Against this, in 2000, seed capital and incubators were launched as initiatives to counteract the effects described above, these initiatives were redesigned in 2007.

This phase of the ecosystem also included the development of some new and more sophisticated tools, such as support for the investor network (Angeles, 2005) or spin-off platforms (2007), although none of them did not obtain the expected results (Kantis, 2017, p. 6).

The results of this first incursion "left 13 evaluated incubators supported by CORFO; 2,575 applications and 9% of approved projects, 29 graduate projects per institution (5.8 per year), 1,500 jobs created (4 per company on average) and only 62 companies export" (Díaz, 2013) cited in Kantis, 2017.p7).

These results gave way to the second stage in the development of the ecosystem; the two main axes were the redesign of the Seed Capital and the incentives for incubators and the launch of the famous Start Up Chile. These initiatives, which showed positive aspects, caused private initiatives in 2011 such as Wayra, the Telefónica accelerator, Claro, 3M to support the generation of entrepreneurship from different R&D programs.

In 2014, Inti Nuñez, entrepreneurship manager at CORFO, questioned to what extent the ecosystem was a "bag of feathers", that is, a lot of bulk, but little specific weight. And it anticipated, to modify this situation, the implementation of a new dynamic entrepreneurship policy in which issues such as: a) the inclusion of a scale-up instrument to achieve an elevation of the entrepreneurs of Start-Up Chile who end up settling (at that time only 15%); b) incentives for early-stage venture capital funds, an issue still pending; c) the creation of networks of mentors to give greater depth to support services for entrepreneurs (which implies recognizing limitations in incubators); d) moving towards the interior of the country, with seed capital instruments and regionalizing Start Up Chile; e) encourage social innovation entrepreneurship. All this within the framework of the multiplication of the CORFO budget allocated to the promotion of entrepreneurship (Kantis, 2017, p. 9).

The Chilean experience presents two interesting clues, the first suggests an opening in the economy that, unlike the Ecuadorian reality, at least during the past decade, is the opposite; the Ecuador Emprende program loses strength when competition is transferred to decentralized autonomous governments (Salazar, 2018).

The second clue is the government's commitment and alliance with the private sector, unlike Ecuador and its commercial nature, 36.6% of companies nationwide are dedicated to commerce (INEC, 2011); Chileans are characterized by the activity of large companies dedicated to the exploitation of natural resources in mining, agribusiness, and the trade and services sectors, within the framework of a highly concentrated economy. Even in activities such as ICTs, at that time, it was already possible to find a Chilean company like Sonda, born in the 70s and converted into a multi-Latin company. (Kantis, 2017, p. 5).

While in the last 10 years, the government stigmatized and demonized business activity and introduced new tax burdens and scared away foreign investment with the tax on foreign exchange outflows (ISD) that required paying 5% on capital leaving the country.

This suggests a high commitment from the academy, since they form human capital with technical skills that allow them to take advantage of entrepreneurial opportunities, both for the companies themselves and for those who want to start a company, according to Prodem. Chile is the first country in the region to rank 34th (this in 2017). Ecuador is in position 55 of this same report.

The border entrepreneurship ecosystem is incomplete, it suggests an unfavorable environment; Unlike the Chilean experience, CTI platforms do not have a presence in this context. Regarding the role of the government and support policies, despite the border development regulations, the GADs have not developed ordinances that allow the establishment of investment and support mechanisms for entrepreneurship.

Initiatives such as Ecuador Emprende must be resumed, because it implies a work of the government, the main leader, closer to the other actors of the ecosystem, while the process of economic opening of the country must be gradual but consistent with the context.

Efforts must be concentrated on the culture of the people, characterized by little association and fear; From a systemic approach, it is essential to change the educational model, to mitigate the symptom described. On the other hand, financing (optimally, coming from investments) is linked to the work that government institutions and the GADS must develop to establish new investment mechanisms. (p.59).

CONCLUSIONS

The nexus and the articulation strategy that must exist between the actors of the entrepreneurial ecosystem are rescued, where the coordinating institution must have a mixed nature, with collaborators and mentoring networks that facilitate the orientation of entrepreneurs.

El trabajo de la academia emprendedora sugiere el desarrollo de nuevos negocios, estos deben provenir de los procesos sustantivos como la investigación y la vinculación, que permita fortalecer el centro de emprendimiento mediante el diseño de programas y mallas curriculares, donde

la universidad debe vincularse mucho más con la industria, mediante el desarrollo de trabajos finales de grado, porque permiten la solución de problemas que pueden desembocar en intra-emprendimiento. El reporte GEM (2016) destaca cuatro puntos que deben abordarse dentro del fortalecimiento del ecosistema de emprendimiento, considerando el alto grado de innovación y generación de empleo que estos generan

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