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TOOLS TO BOOST UNIVERSITY ENTREPRENEURSHIP IN COLOMBIA

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Under the slogan of No one behind that proposes the 2030 Agenda, and with the idea of focusing cooperation towards ownership, it is essential to support local entrepreneurship and the knowledge generated by educational institutions in developing or average income countries, as is the case of Colombia. With this main objective, this paper presents two tools that, in a very simple way, allow to promote the appropriation of knowledge and facilitate the evolution and improvement of the entrepreneurship proposals in two different lines. The first one focused on asssing the viability of entrepreneurship projects, and the second one, on risk management. These two tools, designed from the Universidad Politécnica de Madrid, have been implemented in the Corporación Universitaria Unicomfacauca (Colombia), where they have been validated with business plans proposed by the students of this institution, and are currently being used by both, students and professors, thus enriching the database and making there more complete. The transfer of these tools and the collaboration between both Higher Education Institutions demonstrates the importance of Goal 17 of the 2030 Agenda to establish alliances to address global development problems

Keywords: project management; international development; risk management; entrepreneurship; Colombia

HERRAMIENTAS PARA IMPULSAR DESDE LA EFICACIA EL EMPRENDIMIENTO UNIVERSITARIO EN COLOMBIA

Bajo el lema de no dejar a nadie atrás de la Agenda 2030, y con la idea de enfocar la cooperación hacia la apropiación, resulta fundamental apoyar el emprendimiento local y el conocimiento generado por las instituciones educativas de los países en vías de desarrollo o de renta media, como es el caso de Colombia. Con este objetivo principal, este paper presenta dos herramientas que, de una manera muy sencilla, permiten impulsar la apropiación de conocimiento y facilitar la evolución y mejora de las propuestas de emprendimiento en dos líneas distintas. La primera enfocada a valorar la viabilidad inicial de los provectos de emprendimiento, y la segunda, a la gestión de riesgos. Estas dos herramientas, diseñadas desde la Universidad Politécnica de Madrid, se han puesto en práctica en la Corporación Universitaria Unicomfacauca (Colombia), donde se han validado con planes de negocio propuestos por los estudiantes de esta institución, y actualmente están siendo utilizadas tanto por alumnos como por profesores, enriqueciendo así la base de datos y haciéndolas más completas. La cesión de estas herramientas y la colaboración entre ambas instituciones universitarias demuestra la importancia del Objetivo 17 de la Agenda 2030 de establecer alianzas para afrontar problemas globales de desarrollo.

Palabras clave: dirección de proyectos; cooperación internacional; gestión de riesgos; emprendimiento; Colombia

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1. Introduction

In 2012, with the main purpose of achieving sustainability at sociocultural, environmental and economic levels, hundred ninety-three countries came to establish the *2030 Agenda* and its Sustainable Development Goals (UNO, 2015). Among its objectives is the eradication of poverty throughout the world (Kamruzzaman, 2016). Linked with this and according to Bruton, Ketchen and Ireland (2012) entrepreneurship is seen as one of the key solutions to poverty. Moreover, it is considered one of the main strengths of the countries' development (Baptista, 2005), as it states the United States Agency for International Development, the International Monetary Fund and the World Bank Group (Quadir, 2012). Strengthening entrepreneurship also means to enhance the entrepreneurship culture between the population (Fritsch & Wyrwich, 2017), being the educational institutions one of the main ways to carry out this appropriation of knowledge (Aparicio, Urbano & Gómez, 2016).

Focusing the study on the social level, the importance of extending this type of culture is based on the population being able to satisfy their necessities, as well as, a way to solve their problems (Duarte, 2009). In addition, as Baptista (2005) states, an increase in the entrepreneurship sector would be associated with a reduction in unemployment levels, leading to new jobs which allows poverty reduction. Therefore, entrepreneurship training should be a must-have in the reality of all people, with the main objective of obtaining an individual and social benefit, based on the improvement of standards of living (Luke, Verreynne, & Kearins, 2007).

Based on the above, the importance of entrepreneurship all over the world is imminent, and especially in developing countries (Desai, 2011). In this context, the Universidad Politécnica de Madrid has developed two entrepreneurship tools to be used in the Corporación Universitaria Comfacauca (Colombia), that stand out for the inclusion of people with limited resources in the Higher Education Institutions.

Depending on the grade of development of the territories, entrepreneurship could be divided into two categories: opportunity entrepreneurship and necessity entrepreneurship, based on the rationale of each of them (Hechavarria & Reynolds, 2009). In Colombia, the presence of necessity entrepreneurship is dominant, and it is typical of developing countries. Necessity entrepreneurship is understood as a way to make a living (Noel & Veiga, 2010), along with the possibility of taking advantage of all the natural resources of developing countries (Negocio y economía, 2016).

In essence, entrepreneurship is in the hands of all people, regardless of their economic situation and social position. Hence the importance of the pre-commissioning analysis to obtain the best results, as well as, to know all the possible situations that these new activities have to face.

2. Objectives

The purpose of this project is to create a way to help the Colombian entrepreneurship works and promote them. The work has been realized in collaboration with the Corporación Universitaria Comfacauca (Unicomfacauca) and aims to promote the appropriation of knowledge to facilitate the evolution and improvement of the university entrepreneurship proposals. To achieve this, two different tools have been created to allow, in the one hand, to study the viability of each entrepreneurship, and on the other hand, to deal with the risk management of these projects.

The first tool studies the viability of the proposals of the entrepreneurs and give them some advice on what strategy to follow. This tool is focused on the development of a SWOT matrix

to assess on the best way to reinforce strengths, correct weaknesses, seize opportunities and react to threats. The second tool identifies the risks associated with the proposal of the entrepreneur. The information obtained will be used by a professor or by the mentor of the project to assess on the better way to minimize the threats and potentiate the opportunities. It is necessary to highlight that both tools have been created in a way that allow to implement future changes, so an ongoing improvement process is expected to be carried out on them.

Finally, this project boosts the SDGs focusing especially on the first, fourth, eighth, tenth and seventeenth SDGs. It contributes to the reduction of poverty, the first SDG, as it promotes the entrepreneurship of young students belonging to all social strata, including people from the lower classes, aiding also to reducing inequalities, the tenth SDG. Also, since it is a project developed by higher education institutions, it promotes quality education based on the exchange of knowledge, the fourth SDG. Furthermore, promoting the appropriation of knowledge contributes to expand the economic growth and the decent work, eighth SDG. Finally, the transfer of these tools and the collaboration between both Higher Education Institutions demonstrates the importance of the seventeenth SDG to establish alliances to address global development problems.

3. Methodology

This project uses a qualitative method. The purpose of this approach as Creswell (2014) defined, is to understand and analyze certain project results done through perceptions of people involved in the project. A qualitative case study allows researchers to explore a phenomenon in context and collect data by using several sources like interviews, observation, record keeping and case study (Baxter & Jack, 2008).

To be able to fulfill the purpose of this study, lots of interviews had been carried out, as well as the observation technique and the study of some successful entrepreneurship cases. By looking through a variety of lenses, it is possible to reveal and better understand the multiple facets of the studied phenomenon.

Firstly, to make a draft structuration of what was going to be the main points of both tools, a study of the main approaches of the viability in terms of matrix SWOT was made, as well as, a research of the main risks' categories in different projects in the studied area. Once the principle risks' categories were established, it starts the central part of the data gathering process, which consists of the study of the previous entrepreneurship proposals made by the Unicomfacauca's students with the supervision of the Entrepreneurship Department. With that important information, some of the points considered in first place were deleted and some others not considered initially were included.

Once fixed the main areas of the study, the meetings with the Entrepreneurship Department, students and entrepreneurs came. These meetings allowed creating questions associated with the areas of study. Interviews were used as the mean of data collection to fully capture the complexity of the real situation. Eight interviews were performed with the director of the Unicomfacauca Entrepreneurship Department and five with the students or entrepreneurs from Colombia, all of them were held in person.

The interviews had a similar frame, based on a semi-structured nature. However, the ones with the Unicomfacauca's Entrepreneurship director differed from the ones with the students and entrepreneurs. The first was thought to get the most information about reality and particularities of the entrepreneur, as well as to establish a ponderation system related to the questions. On the other side, the second type of interview was focused on the entrepreneurs' proposals and activities. In these second type of interview, the first step was to make an introduction and background of the project presented, in order to focus the meetings. Then a

set of predetermined open-ended questions were asked. The interview questions were structured as main and sub-questions to provide a clear idea of the specific area of the topic.

During the weeks in which the meetings were taking place, CREA-TIC gave workshops that were attended by the authors. CREA-TIC is a Colombian program that is focused on the integration and innovation of the use of Information Technology (IT) in the educational field (Álvarez, 2016). This permit to acquire more knowledge of the situation of Colombia and to get in touch with educational professionals of other institutions.

Moving to the validation, it is necessary to implement the results obtained from the interviews and data sources. According to Shenton (2014), in gualitative research projects, four main points are required for ensuring trustworthiness. Firstly, the credibility is presented. In order to ensure this, iterative questions and reflective commentaries were made in the interviews. Also, at the beginning and during the work a description of the background of the project topic was collected. Secondly, to approach transferability, an attempt to inform the reader of the boundaries of the project was done in the introduction. Another relevant part of the transferability is that the information obtained in different articles and books shows the relevance of the viability analysis and the risk management in the entrepreneur activities (Pinto, 2019; Chapman, 1997; Jaafari, 2001). Thirdly, previously presented an in-depth methodology of how the information was collected to reinforce the dependability of the investigation based on numerous interviews with different stakeholders. In addition to guaranteeing the dependability of the tool through validation using different business plans. Lastly, the confirmability is present thanks to the alignment of the results obtained from the interviews and the information in the articles, which allows the integrity of results (Shenton, 2014).

Finally, after the meetings and when all the questions were established, the last step was the validation of the tools. This was made, in the first place, with two existing entrepreneurship projects and, in the second place, with three different entrepreneurship's proposals from students.

4. Results

The conventional way of realizing a general project is by Pinto (2019) and Brady & Maylor (2010) described as a quite straightforward process, where the whole project plan is defined prior to the execution. However, as Dvir and Lechler (2004) established, "plans are nothing, changing plans is everything", and therefore, to work according to the planned just happen in an ideal world.

Taking this into account, it is impossible to predict how things are going to happen in an exact way. However, to prevent some of them and to consider the greatest number of possible situations before the beginning of the business, it is really useful to do the initial viability plan before the start of any activity. This is in order to get most of the economic activity. For this main reason, two tools are presented.

4.1. Tool for studying the viability of the project

For the study of the viability of the projects, a website was created using the HTML5 language, understood as the combination of HTML, CSS, and JavaScript. This first tool consists on a user-friendly websitewith sixty-three questions that give the user the main strengths, weaknesses, opportunities, and threats related to the project planning (see Figure 1). This tool also gives the user some advice, proposing the best strategy to go through the idea, based on the SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis obtained. On the other part, every question has a weight established together between Universidad Politécnica de Madrid, and Unicomfacauca, and this weight is out of nine for each question, being the

score of nine the most grade of importance and one the least. Multiplying each answer obtained from the survey, filled out by the user, and the weighting corresponding to each question, two numbers are obtained depending on whether they are related to the questions of external or internal analysis. Finally, the percentage of each of the two numbers over the maximum attainable is obtained, and with the classification based on the matrix (see Table 2), the strategy to follow is presented.

Análisis de actividades de emprendimiento: análisis DAFO	
P60. ¿Las compras de los clientes representan gran parte de los ingresos obtenidos por la empresa?	
P61. ¿El producto/servicio que se ofrece es crítico en algún proceso productivo del cliente?	
- 1 • 2 • 3 • 4 • 5 • No aplica	
P62. ¿El cliente tiende a convertirse en tu competencia integrándose verticalmente en su mismo sector?	
- 1 - 2 - 3 • 4 - 5 − No aplica	
P63. Valore la existencia de una estructura organizada de clientes	
I 2 3 4 5 No aplica Enviar DEBILIDADES Número total de debilidades:6 • • • Baja capacidad productiva o de compra • •	
• No es posible acceder a mejor tecnología o a la propiedad intelectual • No se tiene conocimiento de los precios o de las estrategias de los competidores • El nivel de comunicación externa es pobre • Existe una falta de organización del personal • No se tiene acceso a precios de compra competitivos	
FORTALEZAS Número total de fortalezas:7 Puena estructura de costes Alta diferenciación y valoración A través de las campañas de publicidad se obtienen buenos resultados A través de las campañas de colercialización A lata capacidad de comercialización Existe fexibilidad en la organización Existe fexibilidad en la organización Usuas fuenciar	
Buena situacion innanciera	Powered by 從 000webhost

Note: The tool was developed in Spanish since it is the most common language in Colombia.

The logic of the program consists of sixty-three questions with a rating of 1 to 5 depending on the impact of the question on business activity and the particular situation of Colombia. The questions are divided into two large blocks depending on whether they are related to external factors, associated with threats and opportunities, or with the internal ones, related to strengths and weaknesses. The two large blocks of questions are divided into smaller subgroups to which several questions belong.

Each of the questions is used to classify if there are any threats, opportunities, weaknesses, and strengths. There is also the possibility that some question does not apply to the case analyzed, so it is possible to leave it blank and not be included in the results. To obtain the relevant information to the type of strategy to be carried out, a scoring system is proposed. The scores are given according to the importance or relevance given to each factor and taking into account the valuation imposed. The points are divided according to whether they refer to external or internal factors. Table 1 and Table 2 presents the areas of study based on which the questions have been formulated and the weighting system out of 9 associated with each of them. Each of the following key points has a question associated and an associated weighting.

Area	Key points	
	Fundamental capabilities in key activity	
	Production or purchasing capacity	
	Cost structured that allows to be competitive	
Production	Innovation capability	
	Competitive price	
	Access to better technology and intellectual property	
	Product/service differentiated and valued in the market	
	Image among customers	
Markatin	Market positioning	
Marketing	Advertising campaigns	
	Commercial and marketing resources	
	Price and strategy knowledge of the competition	
nternal and external logistic	Structuring of functional strategies	8
	Special manufacturing capacity	
	Management capacity	
	Oversized structures	
	Customer Loyalty	6
Customer service	Special Marketing Capability	5
	Adequate level of external communication	7
	Staff Organization	6
Human resources	Organizational flexibility	6
	Work team	9
Financial direction	Financial situation	6
Financial direction	Access to economies of scale	
Dreviesian	Ability to react to changes	
Provioning	Access to competitive purchase prices	
Management	Company management skills	7

Table 1: Internal areas studied on the initial viability

A	rea	Key points			
	Politic factors	Changes in the legal context			
	Politic factors	Supports or grants to entrepreneurship or job creation	6		
	E	Unstable and hostile economic context			
	Economic factors	Favorable forecasts as for the economy growing	5		
	1001013	Market globalization			
Macro		Trend of the consumer habits aligned with product/service			
environment	Social factors	Unpredictable market			
		Adverse Demographic Changes			
	Technology factors	Positive influence of information or internet technologies			
	Environmental	Environmental laws that require strong investments	7		
	factors	Pressure from interest groups or NGOs	3		
		Necessary investment	6		
	D	Deterrent price upon admission	7		
	Potential competitors	Administration Policies	6		
		Access to distribution channels	9		
		Tendency to imitate the product / service	9		
	Actual competitors	Number of competitors	6		
		Differentiation from the rest of the competitors	9		
		Productive capacity available from other competitors	3		
		Stagnant or decreasing demand	9		
		Exit Barriers	6		
		Online Market	8		
	Substitute products	Substitute products with better or similar benefits that meet the same need	6		
		Substitute products with better or similar prices that meet the same need	9		
Micro		Substitute products with better or similar yields that meet	6		
environment		the same need	-		
		The costs of switching to a substitute product/service are high	3		
		Propensity of the buyer to change	5		
		Similar price-benefit ratio of the substitute product / service	9		
	Bargaining power of suppliers	Existence of substitute products, with respect to those offered by suppliers, that can be used in the production	8		
		process Volume of purchases made to suppliers represents a large part of the total sales	6		
		Critical product in the production process	9		
		Supplier's willingness to integrate vertically forward	3		
		Volume of purchases made by customers represents a large part of the company's total sales			
	Bargaining power of customers	Product / service is critical for some customer production process	9		
		Customer's willingness to integrate vertically backwards	5		
		Organized Customer Structure	6		

Table 2: External areas studied on the initial viability

Based on the information obtained a different strategy is proposed. The strategy is obtained by multiplying the score of each answer obtained from the survey, filled out by the user, and the weighting corresponding to each question. Then the sum of the previous numbers is carried out depending on whether they belong to the internal or external analysis. Finally, the percentage of each of the two numbers over the maximum attainable is obtained. Having these two values for internal and external analysis, the strategy is proposed (see Table 3). In addition to showing the most suitable strategy to follow, the tool also gives some tips to implement it.

		Results of internal factors	
		<0,5	≥0,5
Results of external factors	<0,5	Survival strategy	Defensive strategy
Results of external factors	≥0,5	Reorientation strategy	Offensive strategy

Table 3: Strategies associated with the results obtained

In conclusion, the objective of this tool is that the Unicomfacauca's students use it for the application of the SWOT matrix and rely on it to determine the most relevant factors that affect their business activity. It is an open-access Spanish webpage that has the following route associated: https://analisisemprendimiento.000webhostapp.com.

4.2. Tool for risk management

The second tool is a survey focused on the risks associated with the projects' proposals. This part allows the professor or mentor guiding the students through the improvement of their entrepreneurships by minimizing the threaths and maximize opportunities. This part needs to be specially considered since there is a lack of development of the risk management methodologies in these territories. This tool makes possible for the students to know different areas of risk in entrepreneurship activities through the identification of risks' categories, and to prioritize the risks thanks to the probability-impact matrix.

The identification of risks from the beginning of the project is of vital importance. According to this, the proposed tool is a survey, focuses on the process of risk management. Based on the high amount of business plans that students make during the year, it has been concluded that the best solution for identifying risks in the students' proposals for entrepreneurship was the development of a survey with a different question related with different areas and to suggest a "checklist" that addresses the different fields to be studied. This tool allows us to get the risk categories identified and propose solutions to mitigate the impact of those risks.

The survey has a total of forty-one risk categories and, for each of them, there are two associated questions. The first one is focused on the existence of a risk related to the category of study so that if the student does not identify any risk, jumps directly to the next possible area. While, if it is identified any risk associated with the category, it leads to the second double question, in which the user should select one of the risks proposed for that category, or in case it does not appear, to write it. Then the risk is assessed by the respondent in terms of probability of appearance and the impact that such risk may have on the project's goals.

The different categories of risk considered are included in Table 4. Since the questions included in the survey are very general, a checklist has been proposed in those questions that have been considered more general, with the possible subsequent inclusion of other risks identified by the students. For the other risk categories, the respondent is asked what risk he/she identifies, with the objective that with an annual review of all questions the risk's checklist can be drawn up. The reason why these categories of study have been selected is to address all possible fields and that students have an overall perspective of the risks.

However, the importance of particularizing these risks to the different business plans must be stressed.

	Classification							
	By nature Meteorological conditions							
a			conomical conditions					
External	D to		Political conditions					
	By country		Social conditions					
		(Cultural conditions					
		Problems associated with the	incorrect definition of plans/structures/programs					
		Wrong	distribution of resources					
	Strategic risks	Bad adaptation of the structure to internal and external changes						
		Deviated strategic direction						
		Problems associated v	with the supply and distribution channels					
		Losses cause	ed by poor management by staff					
		Losses produced by the	he bad elaboration of the steps to follow					
	Operational	Risks associated with ir	nadequate or defective internal processes					
	risks	Risks o	caused by system failures					
-		Risks res	sulting from external events					
			Reputational risk					
			Exchange risk					
		Market risks	Merchandise risk					
		Market Hoko	Market risk, change of financial instruments					
	Financial risks		Interest rate risk					
nal		Credit or insolvency r	isk due to non-payment of any creditor.					
Internal		Liquidity risk	Asset liquidity risk					
5			Financing liquidity risk					
			aptation of the activity to the regulations					
			with the interpretation of the rules					
	Legal risks		he legitimacy of business documentation					
			contract with people outside the company					
			o ignorance of tax obligations					
	Techonological	Hardware: Risk associated with the non-updating of personnel work teams						
	risks	Software: Due to the absence of a protection system						
	Labor risk	Disease risk						
	Physical risks	_	Short circuits					
			Physical explosions					
		Da	amage to machinery					
			For your activity					
			For your design					
		Equipment damage	For its manufacture					
			For its assembly					
		_	For its maintenance					
			roduct Deterioration					
	Damages caused by vehicles							

Table 4: Areas studied on risk management

The survey was made in a way that, at the end of it, user receive their results through the email they include at the beginning of the questionnaire. In the second place, the Unicomfacauca's Entrepreneurship Department gets all the results, so it allows a subsequent analysis and to think about some measures to prevent them, and also to keep a risk record very useful for all the projects developed by the institution.

5. Conclusions

This paper is based on entrepreneurship seen as a source of development that must be supported to boost the growth of Colombia's economy. It is important to highlight that the entrepreneurship initiatives analyzed are mainly in the area of subsistence, based on the developing character of the country, and the particular critical situation of the Department of Cauca. This particularity influenced the weighting associated with the questions.

The tools created are intended to offer the students the basic principles to analyze the viability and risk management of their proposal. They pretend to add value to the process of identifying and providing an overlook of the main opportunities, weaknesses, strengths, and threats, as well as the main risks of their business plan.

However, there are some limitations to these claims. Firstly, these tools are appropriated for their use in Colombia, specifically for Popayán, the city where Unicomfacuaca is located. Moreover, due to the limited time and resources, the number of people interviewed is reduced, and it means a quite limited data collection was obtained.

Knowing these limitations, the tools have been designed as an open source, and are intended to be subjected to an ongoing improvement process. The availability of new data, either from the use of these tools or after the information obtained for other experiences, will be essential to validate, reject, or add to the results of this study. It would be interesting to interview other stakeholders to get more perspectives on this specific case, which will help to perfectionate the effectiveness of the tools created. Lastly, by adapting the weights of the questions, the use of these two tools could be extended to other territories. To contribute to this expansion, these tools could be translated to other languages such as French or English.

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