

Innovation Management in the Entrepreneurship Units of the University of La Guajira

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Abstract

The objective of the present study was to analyze the management of innovation in the entrepreneurship units of the University of La Guajira, methodologically typified as a descriptive, field application, with transversal or cross-sectional design, not experimental. The results show that the results of technological innovation are rarely taken into account for the development of new products, however, almost always using innovative techniques, and consider the capabilities of the institution as strategies. It is recommended to reinforce knowledge of technological profitability and resource management, to self-assess knowledge and results on a quarterly basis.

Keywords: Innovation, Strategies, Technology, Education, Entrepreneurship, Business Education

Introduction

Entrepreneurship is a growing field of study that has received increasing attention in recent decades, because it plays a fundamental role in the creation of value and the generation of wealth and employment [1]. It also has a much broader meaning that includes not only the acquisition of theoretical knowledge, but also the promotion of creativity, innovation and self-employment [2]. Innovation, on the

other hand, is crucial in the business world and turns out to be an indispensable tool in entrepreneurship. In the case of technological innovations, means are considered to optimize the efficient and clean use of vital resources in social, biological and economic systems. However, the partial theoretical perspectives and the experiences of their effects can lead to an important supervision of their potential and limitations [3].

On the other hand, business skills and business education are undergoing changes, giving them a much broader focus, that is, in the context of developing commercial skills in the education system [4]. Currently, educational institutions, as a sign of these changes and demands require new administrative approaches where the goal is to achieve efficient work with decisive results, capable of transforming and innovating their environment in creative actions with high human productivity. However, decision making tends to be irrational, as university administrators who normally have not received formal training in administration often do not know how to judge the merit of an administrative request [5]. For this reason, the consequence is that there are a few lessons learned.

In this regard, the literature reflects the concern of the foregoing, for example, in [4] the management of business education is evaluated and guidelines are proposed to improve it. In [6] innovation is applied to entrepreneurship through a new business model. Similarly, in [7] a Kuznets curve model was used to improve the understanding of the critical roles of innovation, institutional quality and entrepreneurship in structural change. Likewise, in [8] the management of technology and the creation of value are analyzed. Finally, in [9] and [10] they explore the innovative future of the service industries.

Attending to the observation of this reality, this research aims to analyze Innovation Management in the entrepreneurship units of the University of La Guajira, with the aim of offering selected institutions, strategic guidelines to optimize innovation management and to improve its evolution, competitiveness in order to guarantee the impulse to progress.

Methodology

The research was typified as descriptive, because it seeks to specify the properties, characteristics and important profiles of people, groups, communities or any other phenomenon that is subject to analysis, is an investigation [11]. Now, according to what has been expressed, the study specifies the most relevant aspects in relation to establishing innovation management criteria in the entrepreneurship units of the University of La Guajira, which allow knowing the process of innovation management. On the other hand, research is also field, because the information was collected directly at the place of events, that is, the specific reality coming from the entrepreneurship units of the University of La Guajira [12].

The design of the research is transversal or cross-sectional, because the data are collected in a single time at a single moment, and its purpose is to describe the variable and analyze it according to the criterion of [13]. In the same way, the

design is non-experimental, because the behavior of the variable is described without manipulating reality or changing the conditions [11]. As for the population, it is constituted by 90 teachers who are distributed in the entrepreneurship units of the University of La Rioja Hacha, Maicao, Fonseca and Villanueva (Table 1).

Table 1. Population characteristics

Headquarters	Faculties of the university	Teachers
-Riohacha -Maicao -Fonseca -Villanueva	Faculty of Economic and Administrative Sciences.	11
	Faculty of Engineering	19
	Faculty of social and human sciences	25
	Education Faculty	23
	School of basic sciences	12
	Total	90

In this sense, the population, being finite and accessible, was taken as a whole, which is why it is called the census population or a population census [12].

Research technique and instruments

The technique applied was the survey in the form of a questionnaire, which allowed obtaining information from the people selected in the sample on the variable under study, in order to perform an analysis and interpretation of said result. For the purposes of this research, one (1) questionnaire will be conducted, with thirty-three (33) items, consisting of questions with Likert-type response alternatives: Always, Almost Always, Sometimes, Almost Never, Never. The validity of the instrument was made with the expert judgment technique, who read, evaluated and corrected each of the instrument's items. For reliability, a pilot test was carried out on 10 individuals of similar characteristics and processed in an automated way, using the division method by halves, the Cronbach's Alpha coefficient was calculated and a value of 0.955 was obtained, which confirms a high reliability.

Data analysis

The statistical treatment of the data obtained after the application of the questionnaires to the selected population was that of descriptive statistics, for which the application of a distribution of relative frequencies and percentages was used, which is a set of scores ordered in their respective categories, which are presented by the average of each dimension as observed in the scale presented in Table 2.

Table 2. Scale for the interpretation of the answers

Numerical scale	5	4	3	2	1
Alternative	Always	Almost Always	Sometimes	Almost never	Never
Intervals	4.04– 4.79	3.28–4.03	2.52–3.27	1.76–2.51	1.00- 1.75
Categories	Very high	High	Moderate	Low	Very low

Results

Table 3 shows the results obtained through the application of the previously approved instrument, to perform the analysis of the variable Management of Innovation by dimension with each of its indicators.

Table 3. Statistics of the Dimensions, variable: Innovation Management

Indicator	Always		Almost Always		Sometimes		Almost Never		Never		X	σ
	Af	Rf	Af	Rf	Af	Rf	Af	Rf	Af	Rf		
Dimension: Types of Innovation Management												
Technological innovation	0	0	0	0	13	15	45	50	32	35	1.79	0.12
Commercial innovation	0	0	0	0	55	61	23	25	12	14	2.47	0.09
Organizational innovation	0	0	38	42	44	49	8	9	0	0	3.34	0.03
Average	2.53 - Moderate level											
Dimension: Innovation Management Factors												
Strategies	0	0	53	59	7	8	28	30	2	3	2.89	0.96
Resources	1	2	17	19	68	74	3	3	1	2	3.31	0.21
Capacities	4	5	54	59	23	25	7	8	2	3	3.47	0.13
Average	3.22 - Moderate level											
Dimension: Innovation Management Processes												
Focalization	0	0	48	54	30	33	12	13	0	0	3.43	0.09
Surveillance	5	6	65	71	16	18	4	5	0	0	3.74	0.15
Training	20	22	57	62	12	15	1	1	0	0	3.83	0.19
Implantation	20	23	36	40	25	27	9	10	0	0	3.76	0.23
Learning	47	52	31	34	12	14	0	0	0	0	4.39	0.09
Average	3.83 - Moderate level											
General Average	2.88											
Standard deviation	0.01											

Dimension: Types of Innovation Management

It can be seen that for the Technological Innovation indicator, 50% of those interviewed said that the results of technological innovation are almost never taken into account for the development of new products, or that there is an innovative product that is immediately commercialized, to develop productive processes in the industrial application, on the other hand 35% agreed that these guidelines are never established and 15% said that sometimes these advances are taken into account in the institution.

The Commercial innovation indicator, evidenced that 61% of the respondents sometimes consider commercial innovation, as a new product intervening in new markets or the introduction of new products, however, 25% said that they are almost never taken into account these factors, finally 14% thought that never the handling of new products has any transcendence. On the other hand, the Organizational Innovation indicator, showed that 49% of interviewees sometimes present new ways of organizing in the institution, where new designs are proposed based on the structure of the company, however, 42% said that these designs are almost always taken into account and 9% answered that this practice is almost never taken into account within the functions of the institution.

Dimension: Innovation Management Factors

For the Strategies indicator, 59% of the interviewees said almost always use innovative techniques in the institution; they also develop the principles of high profitability or consider the institution's capabilities as strategies. Likewise, 30% considered that they almost never apply, and 8% answered that they sometimes do. Regarding the Resources indicator, it was evidence that 74% said that sometimes functions are fulfilled with effective use of the resource within the institution and technological strategies are considered to satisfy the innovation process, presenting competitive advantages in the growth of the same, then 19% said that almost always this resource is used, also the 2% thought that always, and another 2% thought that never.

Finally, for the Capabilities indicator, it was known that 59% said that almost always there is an economic information necessary to develop the innovation capacity and the studied innovation of technological generation is applied to the institution, due to the fact that it has the capacity to research with the development of the institution, in this order of ideas 25% said almost always, and it was positive for the 5% who thought that always and 3% considered that almost never is.

Dimension: Innovation Management Processes

For the Focalization indicator, 54% of the respondents almost always pay attention to the strategies to improve the institution where evaluations of projects are considered in the development of the management, and there is an organization for the innovation opportunities of the strategies of the institution, however, 33% said that sometimes this happens, finally 13% said almost never. Likewise, the results of the Surveillance indicator show that 71% said that the search for innovation is almost always presented systematically to determine the opportunity for change in the institution or the visualization of technological innovation is identified to adapt it in the workplace. 18% answered that sometimes, 6% said that always and 5% said that almost never perform these searches. In the case of the Training indicator, 62% said that almost always activities are developed for competencies in the handling of equipment and there is the functioning of innovation processes that are considered key for the institution; 22% responded that these activities are always carried out, while 15% said that it sometimes happens; 1% said that is never the case. Similarly, for the Implantation indicator, 40% said that almost always the technological innovation process is carried out concretely; on the other hand 27% responded that sometimes this is the case, followed by 23% who said that these needs are always taken into account, finally 10% answered the question saying that they are almost never taken into account.

Finally, for the Learning indicator, 52% of the survey learned that there is always a principle of innovation in the process of educational learning, developing feedback phases that allow the operation of the institution, when the knowledge of

the development in the project of the institution, followed by 34% who coincided in saying that these results are almost always seen in practice. In the same way, 14% consider that these changes sometimes take place.

Statistical analysis of the Variable: Innovation Management

According to the result presented in Table 3, it was evidence that the variable resulted in an average of 2.88, which in its range assessment is considered medium or moderate in the investigation.

The average of the Technological Innovation indicator was 1.79 considered low-rank, with a very low standard deviation, presenting weakness, as stated by [14], who points out that technological innovation provides sustained competitive advantages for companies and it must be maintained at high levels. In the case of the Commercial Innovation indicator, the arithmetic mean was 2.47 and was in the middle range and for the Organizational Innovation indicator, the arithmetic mean was in a high range. These results are consistent with the findings presented in [15], which showed that process innovation increases the probability of having a propensity to innovate in the organization by 19.7%, organizational innovation by 63.2% and innovation in marketing in 22.1%. However, previous studies have shown that organizational innovation can act as the prerequisite and facilitator of the efficient use of technological innovation [16].

The mean for the Strategies indicator, was within the margin of 2.89 in the middle range, and a standard deviation of 0.96 very low. These results reveal that existing strategies must be improved or new ones implemented because they have a crucial impact on the performance of companies [17]. For the Resources indicator, the average was 3.31, placing it in a high range with a very low deviation, which shows positive results because the resources and the correct management of these are necessary as a basic input for all activities within the innovation system [18]. In the case of the Capacity indicator, the average was of 3.47 of high rank and a very low deviation. These results are positive, because companies with greater capacity for innovation are in better conditions to take advantage of their digital platforms to improve agility, results that were evidenced in the findings in [19], which showed that organizational agility has a strong positive impact on companies.

The arithmetic mean for the Focalization indicator, obtained a value of 3.43 qualified as high with a very low deviation. This result agrees with that posed by [20] who warns that organizations can not cover all the innovation opportunities offered by the environment and that the key is to focus the company's strategy towards innovation. On the other hand, the value of the arithmetic mean of the Surveillance indicator was 3.74 in the high range, for a very low standard deviation. These results are positive and agree with the theory proposed by [21] when they state that surveillance is an internal search where sources of innovation are selected to detect threats and opportunities for change. In other words, it allows to visualize where the innovation and technology that the company needs to adapt it to work environments.

In the case of the Training indicator, the average was very high, with very low deviation, which warns that the trainings are carried out correctly. These results agree with what is stated in [20], where it is explained that this phase includes activities aimed at providing the organization with the knowledge, people and equipment necessary for the correct functioning of the innovation process, considered key for the company. Likewise, the Implantation indicator obtained an arithmetic mean of 3.76 classified as high and a low deviation, resulting in positive data as stated by the previous actors, who express that implementing an innovation means ensuring that intangible ideas, market data and technologies they become a new product or process.

Finally, the arithmetic mean of the Learning indicator was located in a very high range with a very low deviation. These results are positive and agree with what is stated in [20] where it is stated that this is an organizational learning whose purpose is to reflect on the indicators of this dimension, review experiences of both success and failure, and learn how to carry out this process every time more efficiently; Its purpose is to create routines that help direct the process of change.

Guidelines

Firstly, it was analyzed how the institution is internally and externally to know how it develops in the technological area (Table 4), then the proposal of the guidelines for the development of innovation management in the entrepreneurship units of the University of La Guajira is presented, taking into consideration the indicators with adverse results and weaknesses within the research, in order to maintain progress continue the activities and be effective (Table 5).

Table 4. Current situation analysis (SWOT)

STRENGTH	OPPORTUNITY
Full disposition on the part of the administrative personnel in the development of activities	It has plans for the improvement of technological activities
It has a solid organizational structure, with high academic preparation	Their projects include covering other markets and other products
Performs monitoring of technological heritage regarding its status	Promotes prototypes prior to the implementation of feasible projects
WEAKNESS	THREATS
It does not offer the necessary solutions for the technological issue	High cost of maintenance of technology equipment.
The plans do not reach all sectors or areas of interest	Abrupt changes in the global technology area

Table 5. Strategies Proposal

General Objective: Analyze the Management of Innovation in the entrepreneurship units of the University of La Guajira.			
Strategic objectives	Strategy	means	Measurement
Propose activities that favor the profitability of the institution's technology resources	Develop different strategies to consolidate innovation management in activities Conduct a review of the strategies in order to discuss necessary improvements	Reinforce knowledge of technological profitability and resource management, self-assess knowledge and results on a quarterly basis	Control of activities with positive achievements in the administration of resources-tabulation
Promote the vision of technological changes in the educational complement in managers, administrators and teachers	Implement the exchange of knowledge, create working groups, open talks Involve all personnel in the technological development goals of the institution, with the contribution of their ideas and designs	Computers, internet, extracurricular hours, change arrangement	Specify to cover new markets for technological exchange
Encourage the participation of personnel in activities that involve projects in development	Recognize the usefulness of innovative activities to be implemented Consolidate the harmony of the environment to reduce resistance to change	Create trust environments that facilitate the targeting of actions and stimulate activities	Perform the monitoring of the changes after the start-up of the projects

Conclusions

After knowing the effects that technological management has on the entrepreneurship units under study, it is concluded that: technological innovation has a wide weakness compared to the other elements evaluated, however, commercial and organizational innovation has an acceptance of their practices by the interviewees. Regarding the indicator strategies, there is weakness when using innovative techniques to improve their capacities. Likewise, it is concluded that in the targeting area there is no attention to strategies to improve the institution where project evaluations are considered. Finally, it is concluded that the institution enjoys better acceptance in the face of technological changes, presenting shortcomings with regard to the concrete development of innovation strategies, strategy factors and the focus of its processes.

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Received: May 1, 2018; Published: May 27, 2018