Article

Forgotten Motivational Factors of Boyacense Colombian Entrepreneurs: A Subjective Analysis of Second-Generation Incidences

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Abstract: The main aim of this article was, using subjective information, to analyze the forgotten factors that influence the motivation of Boyacenses to become entrepreneurs. The study was carried out with entrepreneurs enrolled in the Boyacá Region Brand Program (BRBP). For the treatment of the collected data, the method of the experts and the theory of forgotten effects were used to identify second-generation incidences involving motivational factors in Boyacense entrepreneurs. The research questions that guided the study were as follows: What are the forgotten effects among the motivational factors of entrepreneurship? What are the intermediate factors that generate the second-order effects? What are the economic, psychological, cultural, and environmental factors that have second-order effects among them? Among the main findings, it was possible to visualize second-degree relationships between economic, cultural, and psychological factors. Additionally, in the case of entrepreneurs from Boyacá, the primary motivation for most of them to develop their business idea was economic independence, while the least motivating was the improvement of social status. Likewise, the need for achievement was highlighted. Finally, the country's economic situation was found to work against the development of entrepreneurship.

Keywords: entrepreneurship; motivational factors; forgotten effects; experton; Colombia

1. Introduction

Entrepreneurship is an activity that creates and implements new opportunities in economic markets that are marked by complexity and uncertainty [1]. The promotion of an entrepreneurial culture is a solution to low productivity, economic stagnation, and unemployment, and is a priority area for public policies [2]. In this sense, entrepreneurship education has been expanded in most industrialized countries [3], thereby generating many programs to support entrepreneurship in higher education [4,5]. The main problem with this type of program is that not all the persons who attend them necessarily start a new business [6]; for this reason, it is essential to study and understand the underlying motivations of entrepreneurs in order to learn factors which may increase the number of successful cases based on the local characteristics and economy.

Motivation is undoubtedly the first variable in the model of entrepreneurship with regard to becoming an entrepreneur or starting a new business. There are many traits and conditions related to personal motivations, knowledge, opportunity, and availability of resources [7] that drive motivation. Likewise, entrepreneur motivation can be understood from economic [8,9] cultural [10], psychological [11], and environmental [12] perspectives. Hence, the motivation of the entrepreneur can arise from particular situations that destabilize lifestyles and result in the search for better options and self-realization. Likewise, the

motivation to start a new business may be latent, related to factors such as frustration in a job, unemployment, underemployment, little stability, or opportunity, among others [13]. In this sense, understanding the simple reasons why people are motivated to persist in creating a business is a complex problem that involves the interrelationship between multiple factors, some of which are generally difficult to perceive by entrepreneurs.

This complexity is in part due to the subjective aspects of entrepreneurs that shape their own criteria for starting an entrepreneurial project [14–17]. Subjectivity itself is fluctuating and unstable, as it is affected by impulses and the environment, and is constantly conveyed by the use of language, words, and opinions. Analyzing subjectivity is a highly complex process, for which many measures and tools are not well equipped. To address these levels of subjectivity, different propositions have been developed that seek to give meaning and explain, using formal models, the elements of reasoning that are difficult to deal with or measure. In this sense, these explanations are provided from the perspective of relativism and not in absolute terms, offering a wide spectrum of arguments where possibility plays a prominent role. Here, "terms" relate to the incidence of relationships, which are related to intensity and linkage. Hence, the subjective information of the entrepreneur in starting and sustaining a business may potentially be explained and understood.

Based on the above, this study aims to use subjective information to analyze the forgotten factors that influence the motivation of Boyacenses to become entrepreneurs. The study was carried out with entrepreneurs enrolled in the Boyacá Region Brand Program (BRBP). For the treatment of the collected data, the experton method [18], adequacy coefficient [19], and forgotten effects theory [20] were used to analyze the second-generation incidences among the motivations, i.e., they were used to identify the second-order effects that generate an important interrelationship between variables that initially seemed nonexistent. The findings showed that economic, psychological, and cultural motivators act as mediating variables to explain a cause–effect relationship in the motivation to start an entrepreneurial activity. This article thus proposes the following assumption:

Among the motivational factors of entrepreneurship, there are second-order effects (forgotten effects) between economic and psychological factors (which are initially seen as mutually exclusive) and cultural and environmental factors that motivate the creation of companies.

Based on the above, this research will be guided by the following three research questions: What are the forgotten effects among the motivational factors of entrepreneurship? What are the intermediate factors that generate the second-order effects? What are the economic, psychological, cultural, and environmental factors that have second-order effects among them?

Likewise, it is noted that the study has limitations related to the sample size and the nature of the data (being of a subjective nature) and the results and interpretations are based on the subjective perceptions of those surveyed. Economic, cultural, and psychological motivational factors have a relevant incidence, which presumes a positive effect on the determination and strengthening of positive behaviors to launch a business.

The remainder of the paper is organized as follows. Section 2 shows the theoretical framework of entrepreneurship and its motivations; Section 3 analyzes the methodology used to obtain the results; and Sections 4 and 5 present the main results and discussion. Finally, Section 6 summarizes the main conclusions of the paper.

2. Theoretical Framework

Entrepreneurs, as active agents in the creation and dynamization of the business fabric, are driven by different factors that feed their motivation to continue with a business project despite the difficulties faced. Thus, their ability to maintain motivated depends on both external and internal factors. This section presents a summary of the central features of entrepreneurs and their motivations.

2.1. Entrepreneurship and the Entrepreneur

This section provides a brief description of three important aspects in relation to the entrepreneur as an economic agent, the entrepreneurial spirit, and the entrepreneurial intention. The main idea is to delimit the importance of the entrepreneur as an agent of change and how his or her intention is essential to starting or persisting with an entrepreneurial activity.

2.1.1. The Entrepreneur as an Economic Agent

Entrepreneurship is understood as a social and multicultural event that impacts economic life, representing a key driver of growth and social development [21,22]. From an economic perspective, it is considered as the ability to start a new business from an idea, and involves an analysis of the environment, the distinctiveness of the product or service, competition, financial feasibility, and estimated profitability [23,24]. In addition, the global trend in economic models focuses on business development, the creation of companies, and the stimulation of entrepreneurial culture, which encourages the emergence of new entrepreneurs to generate economic development [25,26]. Furthermore, entrepreneurship studies are viewed as a guide to economic change and growth [27,28]. Likewise, entrepreneurship has been characterized as a primary eradicator of poverty [29]; thus, governments facilitate and create a propitious environment for entrepreneurs to take the path of business creation as a life project.

Within this process, the role of the entrepreneur as the primary agent of action is highlighted. Being responsible for successfully developing a business idea, the entrepreneur impacts economic development. The entrepreneur is the person who starts up a business initiative and creates a company, alone or in association with other promoters, assuming the financial risks that this entails and the responsibility for the company's management [30]. Hence, economic development involves change, and the entrepreneur becomes the best and leading agent for this [25]. The entrepreneur is an agent of change and a facilitator of entrepreneurial activity [31]. Likewise, entrepreneurs typically have personality traits that encourage entrepreneurial activity and behavior, including the need for achievement, risk tolerance, self-efficacy traits, autonomy or independence, and perceived behavioral control [32]. Entrepreneurs make decisions based on their skills, which can be learned by doing or transferred from parents [32]. Thus, these traits configure the characteristics of entrepreneurs needed to start a new business.

2.1.2. Entrepreneurial Intentions

A critical aspect of entrepreneurship is the set of personal characteristics, such as motivation and spirit, that drive people to carry out their entrepreneurial idea. Entrepreneurial spirit contributes to economic development through fostering innovation, productivity, and growth in job creation [8,33]. Indeed, the entrepreneurial spirit is essential to seeking and understanding the opportunities to create something new (e.g., products or services) [34]. An entrepreneurial spirit is reflected in the behavior and intention to start a business activity that guides this entrepreneurial motivation. According to [35], intentions reflect the motivational factors that influence behavior and are signals of the level of effort people are willing to put forth to carry out the action, which is explained by the relationship between three factors: first, the attitude toward the behavior is given by the degree to which a person has a favorable or unfavorable assessment of the behavior; second, the subjective norm refers to the perception of social pressure to perform or not perform the behavior; and third, perceived behavioral control is related to the perceived ease or difficulty of performing the behavior [35]. This relationship between intentions and behavior allows us to understand and explain entrepreneurship behavior [36,37].

Moreover, the intention and motivation to assume an undertaking can be seen in the decision to change one's life and to create a company (an entrepreneurial event) [13]. According to [37], the interaction of cultural and social factors can lead to firm creation by influencing an individual's perceptions. Entrepreneurship decisions are an alternative

or available option that takes place as a consequence of an external change. Thus, entrepreneurial intentions are explained through two perceptions and one propensity [37]. First, perceived desirability is related to an individual's perceptions of culture, personal attitudes, values, education, family, and feelings [37]. Thus, cultures that value business-related behaviors, such as independence, innovation, and risk-taking, are more likely to create companies [7]. Second, perceived feasibility is related to an individual's perception of available resources, which is a mix of knowledge, resources, guarantees, and experience gained in a particular business or informal education, and thus many entrepreneurs set up businesses in sectors in which they have already worked [7]. Finally, the propensity to act is the personal willingness to act on one's own decisions, reflecting the volitional aspects of one's intentions [37]. In this sense, this research has focused its analysis on the entrepreneur at the individual level, observing the factors that motivate entrepreneurs to start a business and thus become an important agent of economic development.

2.2. Motivation for Entrepreneurship

Motivation is understood as the force that drives a person to engage in a particular behavior to obtain a specific achievement. Motivation is undoubtedly the first variable in becoming an entrepreneur in the model of entrepreneurship. This step groups together the factors that influence a person's effort to achieve business goals and create a new business [38]. Entrepreneurs work to earn money, power, prestige, and status. Nevertheless, these are not the only rewards or motivations for their efforts; they are part of a group of motivators that lead to the development and maintenance of a business idea [39,40]. Entrepreneurs might have an extrinsic motivation oriented towards making money and building their financial wealth, on the one hand, or towards contributing to the community or advancing a particular cause on the other [41]. Hence, motivations are directed towards personal purposes and a collective manner.

Within the literature are studies that focus on factors that motivate entrepreneurs. *Personal motivations* are related to occupational welfare, characterized by the need for achievement and independence, wealth, aspirations, freedom, autonomy, flexibility, family well-being, and financial success [7]. Among other motivations are self-fulfillment [42], internal control [43], and autonomy and independence [44], among others. Likewise, the authors of [45] note that the need for achievement also motivates an individual to become an entrepreneur. They all provide security and self-realization. Other motivations are related *to knowledge and opportunity*. The former is acquired through work experience, training, technical expertise, and research. The authors of [46] show that educational level and previous experience are related to a person's motivation. The latter is recognized by its existence in the environment and if it has value to offer [7]. Additionally, there are motivations related to the *availability of resources*, focusing on the resources needed to create a company, such as relationships with suppliers and potential customers, networks, public support, and self-efficiency [7]. The authors of [47] refer to an individual's self-efficacy (effort in performance expectation), which is positively related to motivation to pursue entrepreneurship. Finally, personality traits, which can be innate or developed, are essential for successful entrepreneurs. Considering the importance of the need for achievement in economic growth, it becomes indispensable to promote this quality in individuals in order to develop an entrepreneurial attitude [45].

In this context, the factors that motivate individuals can be identified and determined by "pull" factors, "push" factors, and internal factors that emphasize the positive aspects of self-employment, which are often associated with financial independence and job satisfaction [48–50]. Self-employed workers are more satisfied than salaried workers; as such it can be identified that the factors that satisfy a person are different for those who are employed as compared to those who work independently [51]. The push factors have focused on entry into self-employment as a last resort [52]. For example, Hispanic-American entrepreneurs often seek to start new businesses as they are excluded from the labor market because of discrimination [53,54]. Taking into account both the environment and the cultural context

of this region of the world, it can be seen that, on some occasions, individuals have a strong influence on entrepreneurship due to the economic and working situation experienced. Cultural values may also be related to the motivation of Hispanic Americans. In contrast to Anglo-Saxons, Hispanic Americans are motivated by achievement needs, autonomy, or desires for wealth [46,55]. Hence, the motivation of the entrepreneur can arise from the destabilization that different situations in life generate in individuals. For example, it is common for business creation to occur among refugees, people who have been dismissed, women who suffer from empty-nest syndrome, and individuals who have been abused or frustrated in their jobs [13]. Finally, entrepreneurs act on the basis of two specific situations: (a) out of necessity, a situation that is more closely associated with those individuals who are unemployed, underemployed, whose current income is insufficient, who have little stability, and who may feel unfulfilled in their current job; and (b) out of opportunity, when individuals believe they have an innovative project for a good or service that allows them to visualize a competitive advantage, or they have their own resources to become independent [56]. Finally, the motivation of entrepreneurs can be described in four dimensions: economic, cultural, psychological, and environmental. These dimensions help explain the intermediate relationships in a particular context, such as a region in a developing country. *The Economic Dimension*: The entrepreneur, as the principal agent, has the ability to implement a new business idea. He or she contributes to economic development because it promotes innovation, productivity, and growth in job creation [8,9,57,58] (see Table 1).

Table 1. The economic dimension.

Dimension	Subdimension	Definition
Economics	Economic independence	One of the most relevant factors for potential entrepreneurs is economic independence, rather than work, because they think that becoming entrepreneurs will give them the possibility to dispense with other sources of income [59]. Additionally, entrepreneurs are business owners, proprietors, and the self-employed [9].
	Economic development	The trend regarding economic models for economic development focuses on business development through the creation of companies and the encouragement of the business culture [57]. Hence, the emergence of new entrepreneurs generates economic development through employment generation and dynamics, innovation, and productivity and growth [8].
	Increase in income	A major route for ambitious wage earners to increase their income is to set up shop and become entrepreneurs [58].
	Financial stability	Motivation for survival occurs in the modern world as we need to make money to survive. Hence, entrepreneurs can start their business project with this being one of the main reasons, but with the idea of reaching economic and financial stability. Noticeably, entrepreneurs work to earn money, power, prestige, and status [60].
	Need to accommodate work roles	The extraction motivation has a greater influence on women's intentions to become entrepreneurs, and thrust motivation factors are not very significant. Among the elements that become thrust factors is the need to accommodate work and home roles [61].

The Cultural Dimension: Culture, as the underlying system of values peculiar to a specific group or society, shapes the development of certain personality traits and motivates individuals in a community to engage in behaviors that may not be evident in other societies, which is useful in identifying key aspects of culture related to the potential for entrepreneurial behavior [10,62,63] (see Table 2).

Table 2. The cultural dimension.

Dimension	Subdimension	Definition
Cultural	Social status	In societies with pro-business cultures, it is more likely that people will want to become entrepreneurs to gain social recognition, to be independent, or to follow in the footsteps of other entrepreneurs they admire (role models) [64].
	Follow family traditions	The family can drive the entrepreneurial process, for example, by facilitating access to resources needed for entrepreneurship, problem-solving support, and information about opportunities [64].
	Contributing to society	Entrepreneurs believe that they contribute to job creation and modernization of the economy [64].
	Recognition of the need for approval	The rewards or motivations that an entrepreneur has are to obtain power, prestige, and status. In addition, the need for autonomy and independence also contributes to the approval of human beings [65].
	Influence of people	The existence of social (friends, family), institutional (business associations, institutions of higher learning, development agencies, etc.), and commercial (suppliers, customers) networks can boost the entrepreneurial process [64].

The Psychological Dimension: According to [11], the psychological dimension states that the individual who creates a company has unique personal characteristics. In addition, psychological motives such as self-satisfaction, the search for independence, and the source of funding are motivating factors for launching a business [62,63,66] (see Table 3).

Table 3. Psychological dimension.

Dimension	Subdimension	Definition
Psychological	Self-realization	Self-realization is the result of productive socialization of the individual who is motivated by a certain internal existential desire. Self-realization describes the reasons for pursuing self-directed goals [67].
	Need for achievement	The need for achievement is what motivates an individual to become an entrepreneur [55]. Individuals with a high need for achievement will tend toward independence in their careers [68].
	Dissatisfaction with current employment	Being unemployed, not having been able to study, dissatisfaction with employment, or fear of job instability are motivations for entrepreneurship based on negative factors [64].
	Need for challenge	This association with independence and the need for achievement drive individuals to assume responsibility for solving their own problems, and immediately reaping the rewards of their successful efforts; in general, contrasting with a dependent employee relationship [68].
	Self-employment	Self-employment is associated with autonomy, authority, self-realization, and economic opportunity [36].

The Environmental Dimension: Entrepreneurship is not only the generation of ideas but also the ability to detect all the opportunities that arise in the environment and to study the economic and financial viability of the type of business that is to be implemented [12] (see Table 4).

Table 4. The environmental dimension.

| Dimension	Subdimension	Definition
Environment	Availability of opportunities and resources	The execution of the venture also depends on other factors, such as the availability of opportunities and resources (time, money, skills, the cooperation of others) [45].
	Support from government programs	Entrepreneurship plays a key role in a country's economic development as it becomes a main factor in poverty eradication. As mentioned by [69], entrepreneurs facilitate and create a conducive environment for other entrepreneurs to seek to take the path of creating companies as a life project.
	Entrepreneurial society	Notably, economic development today is largely due to the implementation of the phenomenon of entrepreneurship [55].
	Lack of employment	The motivation of the entrepreneur can arise from the destabilization generated by the different situations that have occurred in life [13].
	Flexibility to balance family and work	Entrepreneurship has been assumed to offer a better experience of work–family balance, allowing individuals to better integrate family, work, and other responsibilities [70].

3. Methodology

This research allows us to analyze the forgotten factors that influence the motivation of entrepreneurs belonging to the Boyacá Region Brand Program (BRBP) using subjective information. This section comprehensively presents the model for identifying the second-generation relationships, the description of the case study, the organization of the subjective data, and the methods to be used (expert method, adequacy ratio, and theory of forgotten effects).

3.1. Model for Finding Second-Generation Relationships

For the construction of the model, the theoretical review presented in the theoretical framework, and the methods studied for the design (data collection, which is called criteria), the dimensions, methods, and results of the relationships are taken into account (see Figure 1). In the methods, the proposals made by Kaufmann and Gil-Aluja [18–20,71] have been taken into account, from which a logical sequence has been established that allows aggregation for the treatment process. The process is carried out in three steps, for which a more detailed description is provided below.

Figure 1 describes three elements for understanding how second-generation relationships (also known as forgotten effects or hidden effects) can be found and established. The first element is the process, which shows in a simple way how second-generation relationships can be established. The second element is a detailed description, which shows the processing of the information and the creation of the model work in detail. It first takes into account the defined dimensions and the type of information that is collected, then shows how the internal processing considers the different methods proposed, and finally the new relationships found are shown, with a visual example for their understanding. The third element describes the stages that must be developed to obtain the findings. This element allows this model to be applied in a generalized way to any problem in which this type of relationship is desired.
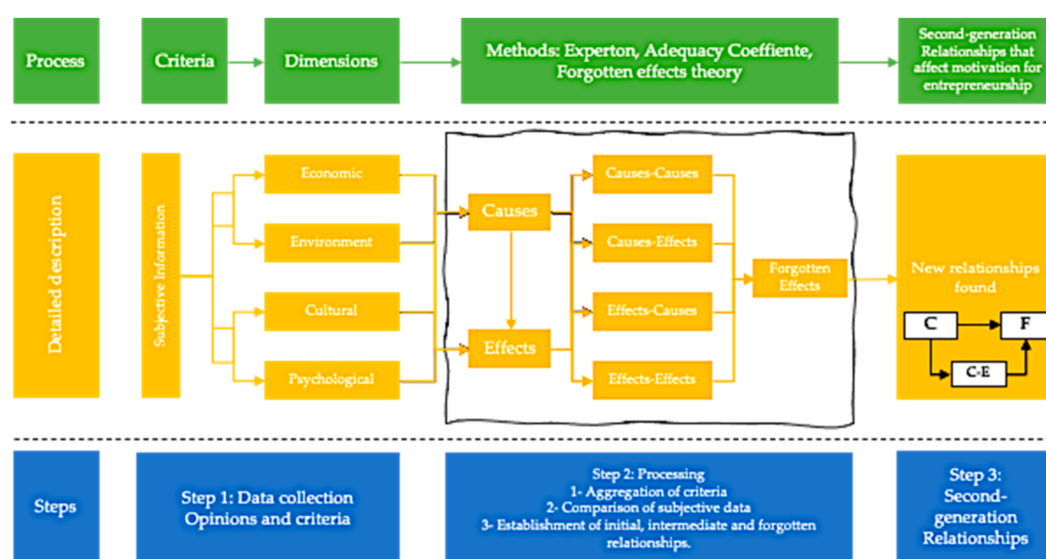
Figure 1. A second-generation relationship model for entrepreneurship motivation. Source: Authors' elaboration based on the studies of Kaufmann and Gil-Aluja [18–20,71].

Here, it is important to make several points regarding the model and the methods used. The methods allow us to deal with approximate ratios, i.e., the calculations and procedures performed are intended to understand these variations within semantic scales (or language) that have the possibility of being transformed into numerical values representative of them. Likewise, these explanations are relative, not provided in absolute terms, giving a wide spectrum of arguments where possibility plays a prominent role. In this sense, the numerical values in the model represent the incidence of the relationship in degrees ranging from 0 to 1, i.e., this value represents the meaning given to the relationship rather than a measure of relationship in absolute terms. Thus, the incidence of relationships is given by their intensity and linkage. According to Gil-Aluja [72] and Blanco-Mesa et al. [73], intensity considers that a connector agent is in the relationship, which allows an analysis of the convergence of the limit, periodicity, and nonstandardized situations that are reflected in aspects such as time, space, and possible connections. Linkage considers representations of the relationships in which the direct or indirect connections are shown. In this sense, variations can be analyzed in the relations' intensities, levels, or strengths to observe the behavior and the links that strengthen or weaken the relationships in a period of time or in a sequence of stages [72,73]. Hence, the proposed model allows for subjective uncertainty to be treated as quasi-uncertainty using the notions of experts, distance, and incidence.

3.2. Case Study

The target population of the study encompassed entrepreneurs belonging to the BRBP, which was developed by the Secretariat of Productivity of the Department of Boyacá, Colombia [74]. The BRBP aims to improve the competitive positioning and recognition of the department, its products, and indicators. It is a strategy that relates Boyacá as a tourist destination, highlighting its vocation, attractions, history, and culture. This promotes tourism in the department and in turn seeks to position the territory nationally and internationally. The BRBP and its commercial slogan "Soy Boyacá" are the essence of the territorial marketing strategy, which is oriented towards transmitting a positive image of the department that is modern and inspiring. It also seeks to promote the origin of products and companies, endorse their quality, encourage the consumption of local products, generate synergy between brands, and foster the opening of markets. Another of the strategies implemented for the regional brand is the consolidation of alliances with the productive sector through the process of linking local companies for the use of the commercial slogan "Soy Boyacá" on their products, thus seeking to strengthen the processes

of formalization, market consolidation, and quality regulation according to the type of product and/or service. The BRBP includes several companies that are representative of the department and have been on the market for a long time and others that have emerged from entrepreneurial initiatives more recently. In this sense, the BRBP showcases several companies that are in the nascent or established stage, which will be studied by their entrepreneurs. The BRBP seeks to ensure that the firms that belong are new or established entrepreneurs and that they identify with the values, culture, and traditions of the territory, serving as representatives and exhibitors of the territorial brand. Currently, the BRBP is made up of 95 associated firms, three of which stand out for their designation as original Boyacá brands (Queso Paipa, Bocadillo Veleño, and Cerámica de Ráquira) [74]. In addition, the ventures represent and bring together several geographical regions within the department.

Initially, the study considered the participation of all companies, which was not possible due to various limitations. One limitation was related to the negative response of some participants who did not want to answer the survey. Another limitation was related to the difficulty in accessing some of the participants, as their contact details were out of date or they did not respond to messages or phone calls. Consequently, contact was made and the instrument applied in 49 cases, equivalent to 51.5% of the total number of firms. Thus, the sample was composed of 49 entrepreneurs from the BRBP. These entrepreneurs were characterized by greater female participation (59% women vs. 41% men) with age groups between 34 and 49 years (59%), 26 and 33 years (16%), 18 and 25 years (12%), and over 50 years (12%). The economic sectors in which they operated were agro-industrial, industrial, and commercial, in which weaving textiles, processing dairy products, coffee processing, and beekeeping should be highlighted as they preserve the traditions and the identity of the region.

Given that the enterprises are distributed throughout the department, the application of the instrument was carried out in two stages. In the first stage, the first contact was made with the entrepreneurs of the firms to confirm their participation and to arrange for the link to the instrument to be sent by e-mail. In the second stage, the link was sent, and support was provided in case there were difficulties in responding. In the case of companies located in the capital city or nearby, the survey was applied in person. Although the population was small, this did not affect the main objective, which was to analyze the forgotten factors motivating Boyacenses to become entrepreneurs. This objective sought to give meaning to the information rather than to measure it [75]. For this reason, applied fuzzy models and techniques were used to obtain the expected results.

3.3. Data Collection: Data Organization

A panel of experts related to the area of study was chosen to evaluate the list of selected elements taken into consideration [18]. This evaluation was carried out considering that $[0 \leq a_i \leq 1]$, $[0 \leq b_i \leq 1]$, with $i = 1, \ldots, m; j = 1, \ldots, n$. Hence, in both elements (c_i), and (e_j), their relationship represents the estimated behaviors according to the relationship that one element has with another. For the case study, it is justified that the economic, cultural, environmental, and psychological dimensions have approximately the same proportion of elements in this application. Based on the above, in the validation of the expert group it is considered that the set of elements C is supposed to be external to the entrepreneur, acting as causes that can influence the motivation for the development of ventures. Based on the validation of the group of experts, various elements (E) are considered to represent the subdimensions that act as effects and can influence the motivation for the development of entrepreneurial projects (see Table 5). The instrument proposed to collect the dataset was composed of 20 questions for the entrepreneurs of Boyaca who were part of the BRBP. The questions have a response with an endecadarian scale between 0 and 1 (that is, 11 values that are 0.0, 0.1, 0.2, . . . , 1.0). The answers did not have a binomial bias (between 0 and 1), allowing the perception of the entrepreneurs to be obtained (see Table 6). The following elements are considered for the study.

Table 5. Causes and effects in the study.

Causes	Concept	Effects	Concept
C_1	Economic independence	E_1	Social status
C_2	Economic development	E_2	Recognition of the need for approval
C_3	Increase income	E_3	Self-realization
C_4	Financial stability	E_4	Need for achievement
C_5	Need to accommodate work roles	E_5	Dissatisfaction with current employment
C_6	Follow family traditions	E_6	Need for challenge
C_7	Contributing to society	E_7	Desire to be one´s own boss
C_8	People's influence		
C_9	Availability of opportunities and resources		
C_{10}	Government program support		
C_{11}	Enterprising company		
C_{12}	Lack of employment		
C_{13}	Flexibility to balance family and work		

Table 6. Semantic scale.

SS	SD	QD	DS	NAD	AG	QA	SA
SC	0	0.17	0.33	0.5	0.67	0.83	1

For the evaluation of the elements considered as cause and effect $(C_i - E_j)$ in the motivation, the experts considered the semantic correspondence expressed in the scale below, where *SS*: semantic scale; *SC*: standardization criterion; SD: very strongly disagree; QD: quite strongly disagree; DS: disagree; NAD: neither agree nor disagree; AG: agree; QA: quite strongly agree; and SA: very strongly agree (see Table 6).

3.4. Methods

The previous theoretical review supports the building of the instrument. A theoretical review was carried out to propose the dimensions of entrepreneur motivation, which is presented in the theoretical framework. These allowed for the identification of transversal sections upon which the statements to be applied to the target population were defined. Each dimension was systematized with 6 inquiries, with a similar context but with a different theme. With the defined dimensions the scale was determined. In this case, it was decided to use a semantic type of scale to capture the subjective perceptions of entrepreneurs (see Table 6 in results).

The objective was to analyze the forgotten motivational factors of Boyacá's entrepreneurs based on subjective information gathered from the instrument, and the use of fuzzy methods was proposed for its treatment. The reasons behind the use of these tools is that they allow us to focus on the meaning of the results rather than on their measurement or counting [75]. For this reason, the methods explained below allow for the obtained subjective data to be captured and analyzed. Then, the expert method allowed us to learn the distribution and trend of the subjective opinions of the experts and to aggregate them to obtain an overall opinion. The adequacy coefficient allowed the differences between two elements to be calculated by neutralizing the actual value when it exceeded the ideal value. The forgotten effects theory allowed the cause–effect relationships to be established by identifying forgotten elements that were apparently unrelated. These are called second-generation incidences. Thus, the subjective criteria of the entrepreneurs were aggregated, correcting the overestimation of the data to obtain the true estimates and determine the second-generation incidences that allowed us to analyze the factors that motivate Boyacense entrepreneurs.

3.4.1. Experton Method

The expert method allows for the aggregation of close or distant opinions as subjective uncertainty information [18]. The experton method is a tool that uses fuzzy set theory

and possibility analysis to unify information from different experts through the use of a cumulative distribution function, which is obtained through linguistic expressions of a group of experts on an endecadary scale [0, 1] [18]. Thus, [18] define the expert as an extension of the probabilistic set, where the probability of each α-cut is replaced by an interval of probabilities according to the experts. The configuration of the formula is as follows:

$$\forall a \in E : [a^{j*}(a)], [a_{j*}(a)] \subset [0, 1], \tag{1}$$

where $\subset$ means the set of inclusions and j the expert.

Coming from the fact that the experton is an extension of the probabilistic sets, it presents the same characteristics: the property of growing horizontal monotony not restricted; and nonstringent vertical increasing monotony property, except at level 0, which always takes the value 1. Therefore:

$$\forall \alpha \in [0,1] : \alpha_1(a) \le \alpha_2(a) en\alpha_1[\alpha_1(a), \alpha_2(a)], \tag{2}$$

$$\forall \alpha\alpha' \in [0,1] : (a' < a) \Rightarrow (a_1(a)) \le \alpha_1(a'), \alpha_2(a) < \alpha_2(a'), \tag{3}$$

$$(a = 0) \Rightarrow (a_1(a) = 1, a_2(a) = 1), \tag{4}$$

If you consider that each expert's valuation expresses the level of truth in a number of *α-cuts* between 0 and 1. The importance of the expert is that one can learn the distribution and trend of subjective opinions and in the end aggregate them to generate a general opinion of the expert group.

3.4.2. Adequacy Coefficient

The notion of distance in the use of fuzzy subsets is based on the premise that every metric is always a distance but not every distance is a metric [18]. Under this premise, the adequacy coefficient is a measure of distance called infradistance, which allows us to determine appreciable differences by correcting the overestimation of information without being a given metric.

The adequacy coefficient [19,71] is an index used to calculate the differences between 2 elements, 2 sets, etc. that neutralizes the result when the comparison shows that the real element has a greater value than the ideal element. For the 2 sets A and B, the weight of the coefficient of adequacy is defined as follows.

A weighted adequacy coefficient of dimension n has a mapping of $K : [0, 1]^n x [0, 1]^n \rightarrow [0, 1]$ that has an associated weighting vector W of dimension n with the sum of the weights 1 and $w_j \in [0, 1]$, such that:

$$K(\langle x_1, y_1 \rangle, \dots, \langle x_n, y_n, \rangle) = \sum_{i=1}^{n} w_i[1 \wedge (1 - x_i + y_i)], \tag{5}$$

where x_i and y_i are the *i*th arguments of the sets X and Y.

3.4.3. Forgotten Effects Theory

The forgotten effects theory [20] focuses on the concept of incidence, which is a subjective notion linked to reasoned action [20]. In this theory, incidence is studied based on a network of linkages that omit various stages and forget conclusions [20,76]. In this sense, its operation is focused on the search for second-generation effects that make it possible to find the effects forgotten in the first instance. Thus, the incidence is an eminently subjective concept, and its analysis improves reasoned action and decision-making.

There is an incidence of a_i over b_j. The values of the torque characteristic function (a_i, b_j) will be valued between [0, 1]:

$$\forall (ai, bj) \Rightarrow \mathcal{M}(ai,, bj) \in [0, 1]. \tag{6}$$

The direct incidence matrix will be defined by the set of pairs of valued items, which shows the cause-and-effect relationship that occurs to different degrees between the elements of set *a* (causes) and the elements of set *b* (effects) (see Figure 2):

$$
\tilde{M} = \begin{array}{c c c c c}
 & b_1 & b_2 & \cdots & b_j \\
a_1 & \mu_{a_1 b_1} & \mu_{a_1 b_2} & \cdots & \mu_{a_1 b_j} \\
a_2 & \mu_{a_2 b_1} & \mu_{a_2 b_2} & \cdots & \mu_{a_2 b_j} \\
\vdots & \vdots & \vdots & \vdots & \vdots \\
a_i & \mu_{a_i b_1} & \mu_{a_i b_2} & \cdots & \mu_{a_i b_j}
\end{array}
$$

Figure 2. Direct Incident Matrix.

All the incidences show 3 ways of representing the cause-and-effect relationships, which are denoted within the matrix of direct or first-order incidents. These relationships are taken into account when establishing the impact of some elements of a set on those of the other.

3.4.4. Direct and Indirect Causal Relationships

It is possible to obtain hidden cause–effect relationships. The causal relationships are given by:

$$[\widetilde{M}] = \{\mathcal{M} \ ai \ aj \ \epsilon \ [\ 0, \ 1]/i = 1, 2, .., \ n \ ; j = 1, 2, \ldots, \ m\}. \tag{7}$$

According to $\mathcal{M}_{a_i b_j}$, the characteristic function of permanence for elements of the matrix $[\widetilde{M}]$ consists of the rows corresponding to the elements of set A (causes) and the columns corresponding to the elements of set B (effects). In fact, the matrix [M] is formed by the effects that the elements of set A have on set B. If $[\widetilde{M}]$ The first-generation cause-effect relationships are shown, and the next step will be to obtain a new incident matrix reflecting indirect relationships. To do this, it must be taken into account that the different causes can have effects on themselves and that the effects can have incidences on themselves. Therefore, 2 additional relationships are created. For this reason, 2 auxiliary matrices are formulated that will be square and defined as:

$$[\widetilde{A}] = \{\mathcal{M} a_i b_j \ \in \ [0, \ 1] \ i, j = 1, 2, \ldots, n\}, \tag{8}$$

$$[\widetilde{B}] = \{\mathcal{M} b_i b_j \ \in \ [0, \ 1] \ i, j = 1, 2, \ldots, m\}, \tag{9}$$

where $[\widetilde{A}]$ collects the incidence relationships between the causes and $[\widetilde{B}]$ does so on the effects. Both matrices are reflective, and it is fulfilled that $\mathcal{M}_{a_i b_j} = 1 \ \forall \ i = 1, 2 \ldots n$ and that $\mathcal{M}_{b_i b_j} 1 \ \forall \ i = 1, 2 \ldots, m$. This implies that any element, be it cause or effect, will have an impact with the maximum presumption on itself, so that neither $[\widetilde{A}]$ nor $[\widetilde{B}]$ will be symmetrical matrices. With the 3 matrices defined, the causal relationships between them must be established. Therefore, the maximum–minimum composition of the three matrices will be given by $[\widetilde{A}] \circ [\widetilde{M}] \circ [\widetilde{B}] = [\widetilde{M}^*]$ (see Figure 3).

$$
[\tilde{A}] \quad
\begin{array}{c|cccc}
\rightarrow & a_1 & a_2 & \cdots & a_n \\
\hline
a_1 & 1 & \mu_{a_1 a_2} & \cdots & \mu_{a_1 a_n} \\
a_2 & \mu_{a_2 a_1} & 1 & \cdots & \mu_{a_2 a_n} \\
\vdots & \vdots & \vdots & \vdots & \vdots \\
a_n & \mu_{a_n a_1} & \mu_{a_n a_2} & \cdots & 1
\end{array}
\;\circ\;
\begin{array}{c|cccc}
\rightarrow & b_1 & b_2 & \cdots & b_m \\
\hline
a_1 & 1 & \mu_{a_1 b_2} & \cdots & \mu_{a_1 b_m} \\
a_2 & \mu_{a_2 b_1} & 1 & \cdots & \mu_{a_2 b_m} \\
\vdots & \vdots & \vdots & \vdots & \vdots \\
a_n & \mu_{a_n b_1} & \mu_{a_n b_2} & \cdots & 1
\end{array}
\;\circ\;
\begin{array}{c|cccc}
\rightarrow & b_1 & b_2 & \cdots & b_n \\
\hline
b_1 & 1 & \mu_{b_1 b_2} & \cdots & \mu_{b_1 b_m} \\
b_2 & \mu_{b_2 b_1} & 1 & \cdots & \mu_{b_2 b_m} \\
\vdots & \vdots & \vdots & \vdots & \vdots \\
b_m & \mu_{b_m b_1} & \mu_{b_m b_2} & \cdots & 1
\end{array}
$$

$$
[\tilde{A}] \qquad\qquad\qquad [\tilde{M}] \qquad\qquad\qquad [\tilde{B}]
$$

$$
= \quad
\begin{array}{c|cccc}
\rightarrow & b_1 & b_2 & \cdots & b_m \\
\hline
a_1 & \mu_{a_1 b_1} & \mu_{a_1 b_2} & \cdots & \mu_{a_1 b_m} \\
a_2 & \mu_{a_2 b_1} & \mu_{a_2 b_2} & \cdots & \mu_{a_2 b_m} \\
\vdots & \vdots & \vdots & \vdots & \vdots \\
a_n & \mu_{a_n b_1} & \mu_{a_n b_2} & \cdots & \mu_{a_n b_m}
\end{array}
$$

$$
[\tilde{M}^*]
$$

Figure 3. Incident matrix: second-generation causes and effects.

The degree of forgetting of some causal relationships is given by the difference between the matrix of second-generation effects and the matrix of direct incidences: $[\tilde{O}] = [\tilde{M}^*] - [\tilde{M}]$. Hence, if the value of the characteristic function of the matrix elements $[\tilde{O}]$ is high, the degree of forgetfulness in the initial incidence ratio is the highest (see Figure 4).

$$
[\tilde{O}] = \quad
\begin{array}{c|cccc}
\rightarrow & b_1 & b_2 & \cdots & b_m \\
\hline
a_1 & \mu^*_{a_1 b_1} - \mu_{a_1 b_1} & \mu^*_{a_1 b_2} - \mu_{a_1 b_2} & \cdots & \mu^*_{a_1 b_m} - \mu_{a_1 b_m} \\
a_2 & \mu^*_{a_2 b_1} - \mu_{a_2 b_1} & \mu^*_{a_2 b_2} - \mu_{a_2 b_2} & \cdots & \mu^*_{a_2 b_m} - \mu_{a_2 b_m} \\
\vdots & \vdots & \vdots & \vdots & \vdots \\
a_n & \mu^*_{a_n b_1} - \mu_{a_n b_1} & \mu^*_{a_n b_2} - \mu_{a_n b_2} & \cdots & \mu^*_{a_n b_m} - \mu_{a_n b_m}
\end{array}
$$

Figure 4. Forgotten effects matrix.

4. Results

The case analysis is an application regarding the entrepreneurs of the BRBP. For this purpose, a set of elements from the environment and a set of elements from the entrepreneur's field and context allow the forgotten factors that influence the motivation of Boyacenses to be entrepreneurs to be analyzed.

In the incidence matrix, $[\tilde{M}]$, the cause–effect relationships are shown in the different degrees that occur between the elements of the set (C) (causes) and the elements of the set (E) (effects) (see Table 7). Obtaining the matrix, $[\tilde{A}]$ and $[\tilde{B}]$ are given with the help of the reference panel of experts. The effects that exist between the effects are shown as follows (see Tables 8 and 9):

Table 7. Cause–effect incident estimation matrix $[\widetilde{M}]$.

↱	E_1	E_2	E_3	E_4	E_5	E_6	E_7
C_1	1	1	1	1	1	1	1
C_2	1	1	1	1	1	1	1
C_3	1	1	1	1	1	0.99	1
C_4	1	1	1	1	1	1	1
C_5	1	0.99	0.96	0.97	1	0.93	0.99
C_6	1	0.95	0.92	0.93	1	0.89	0.95
C_7	1	1	1	1	1	0.99	1
C_8	1	0.99	0.97	0.98	1	0.93	0.99
C_9	0.98	0.88	0.86	0.87	0.98	0.83	0.88
C_{10}	1	0.96	0.93	0.95	1	0.90	0.96
C_{11}	0.99	0.89	0.87	0.88	0.99	0.84	0.89
C_{12}	1	0.94	0.91	0.92	1	0.88	0.94
C_{13}	1	1	0.98	0.99	1	0.95	1

Source: Authors' elaboration based on fuzzy log.

Table 8. Cause–cause estimation matrix $[\widetilde{A}]$

↱.	C_1	C_2	C_3	C_4	C_5	C_6	C_7	C_8	C_9	C_{10}	C_{11}	C_{12}	C_{13}
C_1	1	1	1	1	1	1	1	1	1	1	1	1	1
C_2	1	1	0.93	0.92	0.99	1	0.93	0.99	1	1	1	1	0.98
C_3	0.97	1	1	0.99	1	1	1	1	1	1	1	1	1
C_4	0.98	1	1	1	1	1	1	1	1	1	1	1	1
C_5	0.9	1	0.94	0.93	1	1	0.94	1	1	1	1	1	0.98
C_6	0.87	0.97	0.9	0.89	0.96	1	0.9	0.96	1	0.99	1	1	0.94
C_7	0.97	1	1	0.99	1	1	1	1	1	1	1	1	1
C_8	0.91	1	0.94	0.93	1	1	0.94	1	1	1	1	1	0.99
C_9	0.8	0.9	0.83	0.82	0.9	0.94	0.83	0.89	1	0.92	0.99	0.95	0.88
C_{10}	0.88	0.98	0.91	0.9	0.97	1	0.91	0.97	1	1	1	1	0.96
C_{11}	0.81	0.91	0.91	0.83	0.91	0.95	0.84	0.9	1	0.93	1	0.96	0.89
C_{12}	0.86	0.96	0.89	0.88	0.95	0.99	0.89	0.95	1	0.98	1	1	0.93
C_{13}	0.92	1	0.96	0.94	1	1	0.96	1	1	1	1	1	1

Source: Authors' elaboration based on fuzzy log.

Table 9. Effects–effects estimation matrix $[\widetilde{B}]$.

↱.	E_1	E_2	E_3	E_4	E_5	E_6	E_7
E_1	1	0.9	0.88	0.89	0.99	0.84	0.9
E_2	1	1	0.98	0.99	1	0.94	1
E_3	1	1	1	1	1	0.97	1
E_4	1	1	0.99	1	1	0.96	1
E_5	1	0.91	0.88	0.89	1	0.85	0.91
E_6	1	1	1	1	1	1	1
E_7	1	1	0.98	0.99	1	0.94	1

Source: Authors' elaboration based on fuzzy log.

After building the matrices $[\widetilde{M}]$, $[\widetilde{A}]$, and $[\widetilde{B}]$, direct and indirect incidents are established in the accumulated effects matrix $[M^*]$ (see Table 10).

Table 10. Maximum–minimum convolution between matrices (cumulative effects) $[\widetilde{M}^*]$

↱.	E_1	E_2	E_3	E_4	E_5	E_6	E_7
C_1	1	1	1	1	1	1	1
C_2	1	1	1	1	1	1	1
C_3	1	1	1	1	1	1	1
C_4	1	1	1	1	1	1	1
C_5	1	1	1	1	1	1	1
C_6	1	0.97	0.97	0.97	1	0.97	0.97
C_7	1	1	1	1	1	1	1
C_8	1	1	1	1	1	1	1
C_9	0.99	0.94	0.94	0.94	0.99	0.94	0.94
C_{10}	1	0.98	0.98	0.98	1	0.98	0.98
C_{11}	0.99	0.95	0.95	0.95	0.99	0.94	0.95
C_{12}	1	0.96	0.96	0.96	1	0.96	0.96
C_{13}	1	1	1	1	1	1	1

Source: Authors' elaboration based on fuzzy log.

The difference between the matrix of cumulative effects and the matrix of direct events shows the degree to which some causal relationships have been forgotten. The forgotten effects matrix is then obtained as follows: $[\widetilde{O}] = [M^*](-)[\widetilde{M}]$. The results presented in Table 11 indicate that the cause–effect relationships that were initially valued at (0) are those that have an incidence in the direct incidence matrix. Finally, in the forgotten effects matrix, it is observed that the incidence relationship that does not exist is (1), with which it had been forgotten to consider an important incident.

Table 11. Forgotten effects matrix $[\widetilde{O}]$.

↱	E_1	E_2	E_3	E_4	E_5	E_6	E_7
C_1	0	0	0	0	0	0	0
C_2	0	0	0	0	0	0	0
C_3	0	0	0	0	0	1	0
C_4	0	0	0	0	0	0	0
C_5	0	1	1	1	0	1	1
C_6	0	0	0	0	0	0	0
C_7	0	0	0	0	0	1	0
C_8	0	1	1	1	0	1	1
C_9	0	0	0	0	0	0	0
C_{10}	0	0	0	0	0	0	0
C_{11}	0	0	0	0	0	0	0
C_{12}	0	0	0	0	0	0	0
C_{13}	0	0	1	1	0	1	0

Source: Authors' elaboration based on fuzzy log.

Table 12 shows the forgotten effects incidence that presented weak relationships (1) and that were recovered with the model application.

Table 12. Forgotten effects incidence relationship.

| Causes	Effects	Causes	Effects
C_3	E_6		E_3
	E_2		E_4
	E_3	C_8	E_6
C_5	E_4		E_7
	E_6		E_3
	E_7		E_4
C_7	E_6	C_{13}	E_6
C_8	E_2		

Source: Own elaboration based on fuzzy log.

The most relevant causal relationships are then explained in the context of the aim of this study. To show the elements that have most contributed to the indirect effects, the incidences in the matrix of forgotten effects are analyzed. It is straightforward to identify relationships that do not exist between actions that can generate or promote some kind of motivation. Likewise, motivations that are not encouraged or relevant among the entrepreneurs of Boyacá can be observed. Thus, the results obtained show the relationship between particular aspects of a group of entrepreneurs and the causes that motivate them to start their own business. Not all of them seemed to have an evident relationship. On the one hand, C_5 and C_8 are actions that do not seem to have an incidence relationship with various effects (incidence on the same 5 effects). On the other hand, E_6 is the motivation that presents the highest degree of vagueness, as it is involved in all the causes shown in Table 12. Finally, since a large number of results were obtained (15 relationships in total) and because of the limitations of the extension of the work, some of these were selected to be graphed and explained to understand them in greater depth. In this sense, the relationships to be explained will be the following $C_3 \rightarrow E_6$, $C_5 \rightarrow E_2$, $C_8 \rightarrow E_7$ and $C_{13} \rightarrow E_4$:
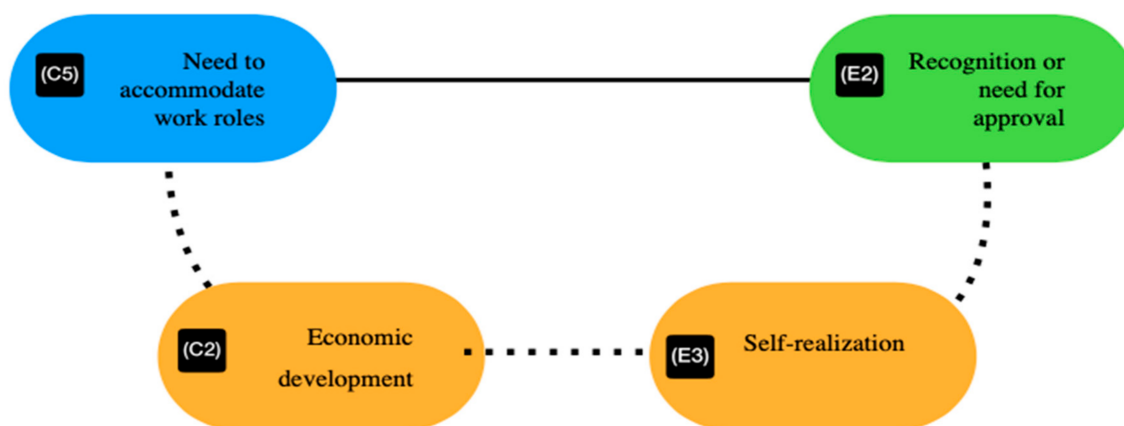
In Figure 5, the incidence $C_3 \rightarrow E_6$ is described, which has a forgotten effect close to one (0.99), indicating no direct relationship between cause and effect (increased income and need for challenge). There is an intermediate incidence, which is identified by the relevant key relationship with economic development. In this sense, a factor within the economic dimension is highlighted as relevant. Thus, economic development is a factor that affects the motivation of entrepreneurs and also contributes to recognition. The entrepreneur must be able to increase his or her income and achieve sustainable economic development to satisfy the need for challenges. If income is increased through entrepreneurship, the need for a personal challenge is seen to be met by the development of the business idea. In this sense, economic motivations are the starting point for Boyacense entrepreneurs, and these are linked to psychological motivations, which in turn reinforce their behavior.

In Figure 6, the incidence $C_5 \rightarrow E_2$ is described, which has a forgotten effect close to one (0.99), indicating that there is no direct relationship between cause and effect (need to accommodate work roles and recognition or need for approval). The key intermediate relationship is related to economic and psychological factors. The need to accommodate work and home roles is a motivational factor for starting an independent business. These initiatives help to increase the business sphere and the generation of employment, aspects that promote the economic development of the place where they are located. Linked to this, the psychological factor (the self-realization of the entrepreneur) is oriented towards being a productive agent and an economically self-sufficient business owner and manager of one´s own capital. Finally, having economic solvency and feeling good about one´s own business achievements gives individuals power, prestige, and status, satisfying the need for independence and autonomy [65]. Consequently, this ability to find a balance with work and family life contributes to social recognition, since economic and psychological

well-being serve as a link to it. In this sense, economic and psychological motivations are the starting point for the Boyacense entrepreneurs, and these are linked to cultural motivation, which in turn reinforce the entrepreneur's behavior.
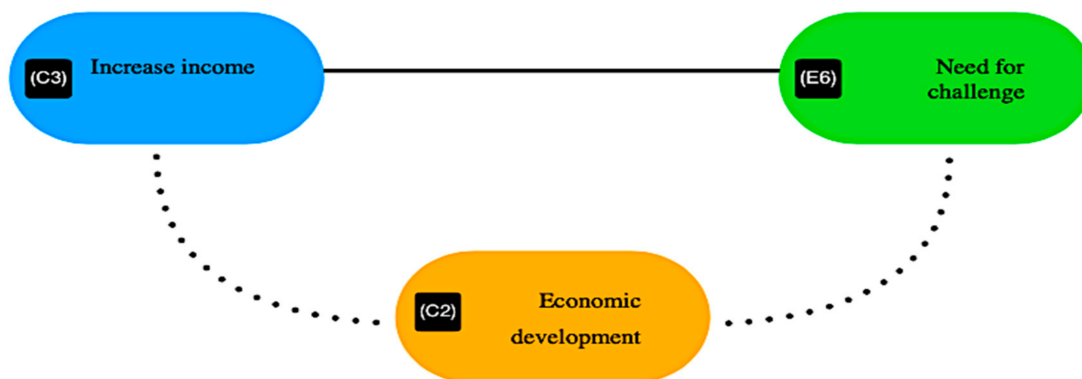

Figure 5. Increasing income and need for challenge: Incidence $C_3 \rightarrow E_6$. Source: Authors' elaboration based on fuzzy log.


Figure 6. Contributing to society and needing to be challenged. Incident $C_5 \rightarrow E_2$. Source: Authors' elaboration based on fuzzy log.

In Figure 7, the incidence $C_8 \rightarrow E_7$ is described, which has a forgotten effect close to one (0.99), indicating that there is no direct relationship between cause and effect (influence of people and desire to be one´s own boss). The key intermediate relationship is related to economic and psychological factors. The environment in which the entrepreneur grows and interacts is key because of the influence it has on him/her. Family and friends form those first circles in which the entrepreneurial spirit is encouraged, either because they are businesspersons, had started their own business, or had a family business. Linked to this, economic and cultural factors are found. On the one hand, as shown in Figures 1 and 2, it can be observed that economic development is a fundamental motivation for the entrepreneur. On the other hand, as in Figure 2, independence, autonomy, power, prestige, and status give entrepreneurs recognition in their social environment, projecting an image of success. Both factors are useful as a bridge for the entrepreneur from Boyacá to want to be self-employed. In this figure, cultural and economic motivations are the starting point for the Boyacense entrepreneurs, and these are linked to psychological motivations, which reinforce the entrepreneur's behavior.
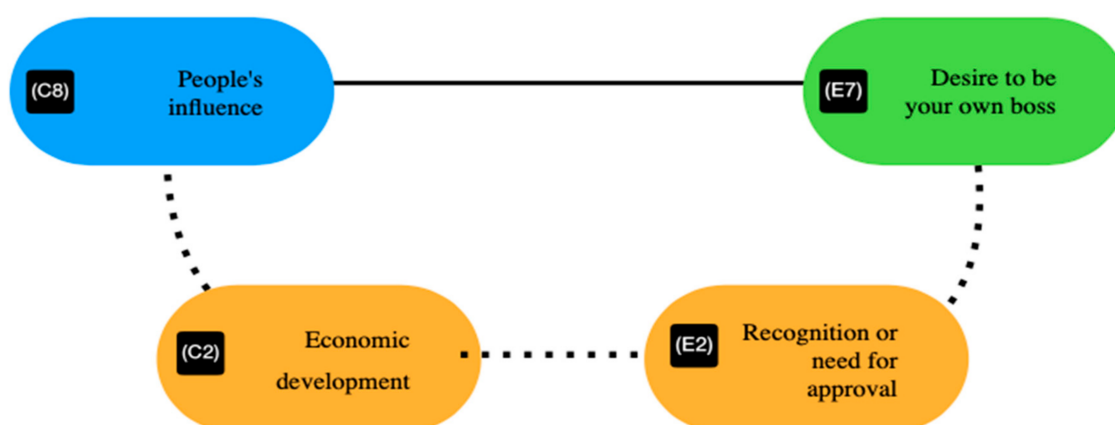
Figure 7. People's influence and desire to be one's own boss. Incident $C_8 \rightarrow E_7$. Source: Authors' elaboration based on fuzzy log.

Figure 8 describes the incidence $C_{13} \rightarrow E_4$, which has a forgotten effect close to one (0.99), indicating that there is no direct relationship between cause and effect (flexibility to balance family and work and need for achievement). The close environment of entrepreneurs is key at the time of starting a company, whether it is to detect business opportunities or to achieve a real balance between work and personal life. This balance is associated with work schedules, childcare, and career–life roles. Linked to this, economic and psychological factors are found. On the one hand, as shown in Figures 5–7, economic development is consolidated as a key element in the motivation of entrepreneurs. On the other hand, there is a need for personal challenges, such as satisfaction with challenging oneself and observing the results of the effort and hard work. Both factors link the need for labor flexibility and feeling that it fulfills the goals the entrepreneurs have set for themselves at the business level. In this figure, economic and psychological motivations are the starting point for the Boyacense entrepreneurs, and are linked to psychological motivations which reinforce the entrepreneur's behavior.
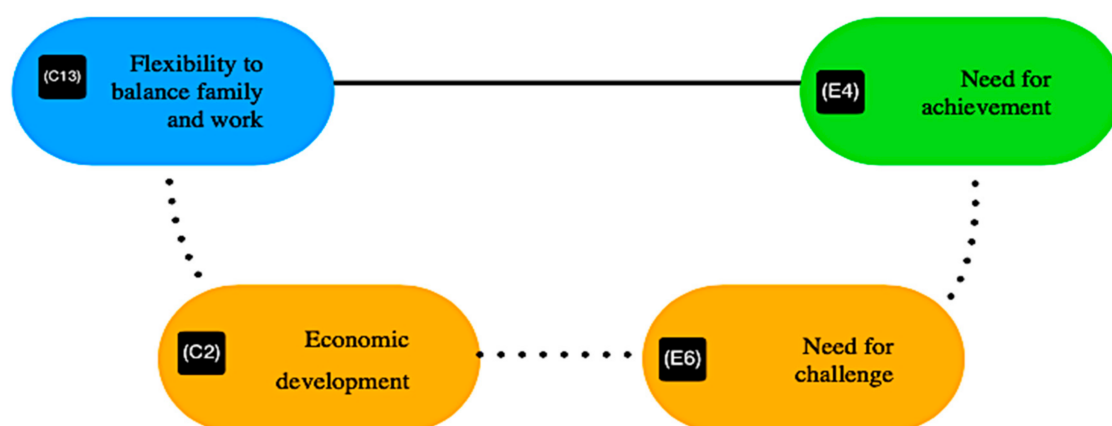
Figure 8. Flexibility to balance family and work and need for achievement. Incidence $C_{13} \rightarrow E_4$. Source: Authors' elaboration based on Fuzzy Log.

5. Discussion

The results presented show the most relevant factors in the motivation of the entrepreneurs belonging to the Boyacá Region Brand program. The mathematical treatment from the fuzzy models made it possible to observe the incidences between the causes and effects defined previously. These methods allow for the establishment of second-generation relationships between factors that apparently have no obvious relationship. The findings

show that economic, psychological, and cultural motivators act as mediating variables to explain a cause–effect relationship in the motivation to start an entrepreneurial activity. In this sense, economic development (*economic factor*), recognition or the need for approval (*cultural factor*), and self-realization and the need for a challenge (*psychological factors*) are highlighted. By observing the results of these mediating variables in entrepreneurial intention, it can be reasoned that the motivational factors obtained influence the behavior toward the constancy of being an entrepreneur. From an economic point of view, the motivation of the Boyacense entrepreneur is oriented toward improving his or her income and contributing to economic development. In the medium and long term, this contributes to productivity and job creation [8,9]. From a cultural point of view, for this group of entrepreneurs from Boyacá, recognition and approval by others in their social environment could be considered a potential mediator that drives entrepreneurial behavior [10]. From the psychological point of view, self-realization and the need for a challenge are essential motivators in entrepreneurial development, which can be considered a source of motivation for launching a business [66]. These factors strengthen entrepreneurial behavior and intention and reinforce attitudes toward entrepreneurship. Hence, it can be observed that there are key motivational factors of Boyacense entrepreneurs that have a relevant incidence and can help to determine and strengthen the positive behaviors toward the development of an entrepreneurial activity [35].

These results are consistent with other motivational studies in entrepreneurship. For example, ref. [77] found that entrepreneurs in Ireland sought greater independence, excitement/satisfaction, and challenge in filling a gap in the market, or had always dreamed of being entrepreneurs; ref. [78] found that in Serbia, an important motivational factor that helped explain entrepreneurship success was one's position in society; and [14] reported that in Spain, the main motivational factors were overcoming challenges and personal growth.

This study also has limitations that should be noted. First, the results obtained cannot be extrapolated since the sample used was part of a small group of entrepreneurs who were part of an entrepreneurial initiative. However, these results may be interesting in that they allow the motivational factors of the entrepreneurs in Boyacá to be analyzed and can be a baseline study to be replicated in a larger sample to confirm the results obtained. Second, the methodologies used allowed us to establish the second-generation incidences in the factors that motivated the entrepreneur from Boyacá to persist in entrepreneurial activity. However, because the data are subjective, the results and interpretations are based on the subjective perceptions of those surveyed, which allows for logical inferences to be made about a specific reality. Hence, it should be noted that the analyses are related to the approximate reasoning and meaning of the information, which are difficult to treat and pressure to measure.

Limitations: Initially, the study considered the participation of all companies, which was not possible due to various limitations. One limitation is related to the negative response of some participants who did not want to answer the survey. Another limitation is related to the difficulty in accessing some of the participants, as their contact details were out-of-date or they did not respond to messages and phone calls. Consequently, the population that could be contacted and the instrument applied included a total of 49 entrepreneurs from the BRBP, equivalent to 51.5% of the total number of firms.

6. Conclusions

This research briefly addressed the concepts related to motivation for entrepreneurship. We proposed a model for identifying second-generation relationships, which allows subjective uncertainty to be treated as quasi-uncertainty using the notions of experts, distance, and incidence. The expert notion allows the aggregation of close or distant opinions as subjective uncertainty. The notion of distance used, infradistance, allows for the determination of appreciable differences by correcting the overestimation of information without a given metric. The notion of incidence allows us to study the basis of a network of linkages

that omit various stages and forget conclusions [20]. Hence, the methods used allow for the aggregation of the subjective criteria of the entrepreneurs, the correction of the overestimation of the data to obtain the true estimates, and the determination of the second-generation incidences that allow us to analyze the factors that motivate Boyacense entrepreneurs.

The case study was focused on the entrepreneurs participating in the BRBP, which seeks to improve competitiveness and territorial recognition through its products and market indicators. Entrepreneurs were from different geographical areas of the region, reflecting their cultural diversity through other indigenous products. Thus, the firms set up by them represent the values, culture, and traditions of the territory, serving as representatives and exhibitors of the territorial brand.

The findings allowed us to observe the incidences between the causes and effects defined previously, which show that economic, psychological, and cultural motivators act as mediating variables to explain a cause–effect relationship in the motivation to start entrepreneurial activity. These factors are related to *economic* (economic development), *cultural* (recognition or need for approval), and *psychological* (self-realization and need for a challenge) factors, which strengthen entrepreneurial behavior and reinforce attitudes toward entrepreneurship. Therefore, for Boyacense entrepreneurs, these motivational factors have a relevant incidence, which presumes a positive effect on the determination and strengthening of the positive behaviors to launch a business. Likewise, the sample size and the subjective nature of the information are highlighted as limitations.

The results obtained can help understand which motivational factors have a significant impact on being an entrepreneur and enduring without dying in the attempt. Likewise, given the characteristics and diversity of the entrepreneurs analyzed, the study offers a better picture of what motivates Boyacenses, regardless of the region where they are located. Thus, these findings can help guide the work that is done in the entrepreneurship programs that are implemented to strengthen the rate of entrepreneurial activity.

The results indicate that the main forgotten effects are generated between economic and psychological factors (see Figures 5–8), which coincides with what was raised within our initial assumption. Moreover, answering the research questions posed, the study found that the main oversights were between economic and psychological variables. In addition, it is found that the factors that mediate the forgotten effects are varied and are not related to only one type of factor, in contrast to our initial assumption that they would mainly be through cultural and environmental factors.

The benefits and advantages of using these methods lie in an efficient alternative for dealing with subjective information that is difficult to process with traditional methods. These advantages are characterized by the ease of adding subjective criteria, correcting the overestimates that can occur when comparing the given values with the established values to obtain the true estimates, and determining the second-generation cause–effect incidences that allow us to analyze the different hidden relationships. These methods bring us closer to understanding the information and the possibility of better understanding human reactions and actions. This study also highlights the versatility of the methods used that allow for dealing with the reasoning and meaning of the information.

Finally, for future research, the questionnaire will be applied in different Colombian departments to identify the similarities and differences between the entrepreneurial motivations of Colombians. The traditional and cultural aspects that can affect entrepreneurial motivation can also be explored in greater depth. Future studies will also use different aggregation operators to unify the information collected [79], such as the ordered weighted average (OWA) operator [73,80–84].

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