

Article

Socio-economic factors of rural entrepreneurs that influence agricultural development in Antioquia

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Abstract: Entrepreneurship can help revitalize rural territories and agricultural development; consequently, it is important to know aspects that allow a better understanding of the subjects that undertake in the countryside, in this case, sociodemographic aspects, related to students and graduates of five Faculties of Agricultural Sciences in the Department of Antioquia in Colombia. For this purpose, a previously validated questionnaire was used, collecting 427 complete responses. Chi-square statistical tests were performed to determine the degree of association of entrepreneurial activity with measured sociodemographic variables such as gender, age, marital status, schooling, family environment, and dependents. Once the existence of associations between the variables was verified, a multiple correspondence analysis was performed to identify patterns and trends. A greater favorability for entrepreneurship was found in those subjects belonging to the upper strata of the population, mostly men, with postgraduate studies, from wealthy families, while the poorest and women are mainly oriented towards job search.

Keywords: Entrepreneurship, rural, millennials, Antioquia

1. Introduction

Entrepreneurship has become a career option as opposed to the traditional alternative of people looking for a job, the reasons which they consist of are varied, but there is a strong presence in the literature that mentions the existence of positive factors determined by 'pull' and 'push' that drive peoples motivations [1]; which is addressed by Reynolds, Camp, and Autio [2]; who taking these factors, introduce the concept of entrepreneurship by opportunity and by necessity.

The GEM project considers that necessity entrepreneurship is usually due to the lack of job alternatives or economic difficulties, while opportunity entrepreneurship is focused on taking advantage of market situations or personal interests [3], and which has a more positive effect on economic growth and aspirations than those who only undertake out of necessity, also reporting a direct impact on the level of satisfaction [4-6].

Other factors influence entrepreneurship such as personal, social, cultural, family, demographic, environmental, political, institutional, and macroeconomic factors [7-9], in addition to socioeconomic aspects in the individual, such as educational level, experience, gender, environment and economic condition [1,10-13].

Motivation for entrepreneurship is key to the development of a society [14]; the motivation studies developed by McClelland establish a relationship between the need

for achievement and the economic development of a group or a society and generate understanding of the motivation for entrepreneurship [15]; In this regard, motivation is understood as a psychological process that can arise from a personal or environmental need, in which social, cultural and situational factors intervene [16] and that develops in three steps [17], starting with the establishment of a goal by the individual as the option to undertake, the choice of how to achieve it, which favors the entrepreneurial intention and then put it into action, trying to establish conditions for the enterprise to last over time [18].

Shapero's entrepreneurial event theory [19], mentions the importance of the context to promote entrepreneurship, as well as the viability expressed in resources, knowledge, and experience [20], with sociodemographic aspects such as family, education, and socioeconomic structure influencing entrepreneurial intention [21]. Also, Shapero alludes to the culture that promotes values associated with the creation of enterprises, the economic independence of the subjects, and their risk-taking, present in regions such as Smoeland in Switzerland, Cork in Ireland, and Antioquia in Colombia [19,22].

The Department of Antioquia has been recognised for having an entrepreneurial culture, through highlighting its inhabitants characteristics such as personality, attitude, intention, personal orientation to business and networking, which has facilitated establishing an entrepreneurial base [20,23]; without forgetting the importance of the territory that has a rural extension of 99.8% and contributes 6% of the regional GDP, whose figures have been falling at rates of 0.1 to 0.5% each year [24,25].

This raises the need to revitalize rural territories and promote entrepreneurship to attract people and resources to the countryside, among them could be the so-called millennials [26,27], who have shown greater entrepreneurial activity in Colombia, compared to other age groups, reaching a figure of 65.7% of the country's initiatives [28].

Because of the above, the purpose of this study is to determine which sociodemographic aspects influence rural entrepreneurship promoted by university students belonging to faculties of agricultural sciences in Antioquia (Colombia)

2. Literature review.

Entrepreneurship has had a conceptual evolution starting from Richard Cantillon, who argued that the entrepreneur was a risk-taker in an environment of uncertainty [29,30], while Schumpeter places it as a promoter of economic growth through innovation and generation of changes in the markets [31]; McClelland as an achievement-oriented person, while Kizner associates it as an individual who can recognize opportunities [32], Shapero considers it as a person who introduces changes [31], while Druker sees it as a person who can innovate and generate wealth with existing resources [32].

When talking about the term entrepreneurship, it can be noted in the literature that there is no consensus on a single definition (see Table 1), with approaches from perspectives such as economic, psychological, organizational, and institutional [33], and although efforts have been made to generate approaches between the concepts, it can be noted that each organization has its definitions, theoretical positions and even variations on how to measure it [34].

Table 1. Definitions of entrepreneurship

Institution	Definition and measurement	Authors
GERA – GEM Project	Any business initiative (including self-employment), which is in the market for a period of up to 42 months, among the population aged 18 to 64 years old.	Reynolds [34,35], Singer et al [36], Autio y Wong [37]c
EIM Business & Policy Research	Total number of unincorporated and incorporated self-employed (business owners) outside agriculture, hunting, forestry, and fishing industries, who take up self-employment as their primary activity.	Van Stel, et al [38]
World Bank	The activities of an individual or a group intended to initiate economic activities in the formal sector under a legal form of the company.	Klapper, et al [39]
GEDI	The dynamic, institutionally integrated interaction between entrepreneurial attitudes, entrepreneurial capabilities, and entrepreneurial aspirations on the part of individuals, which drives the allocation of resources through the creation and operation of new enterprises.	Acs, Szerb, Autio [40]
OECD- Euroestat	The appearance of a new production unit. This may be due to an authentic birth of the unit, or creations by mergers, breakups, spin-offs, or through the reactivation of inactive companies.	OECD [41]
Source [34]		

The field of entrepreneurship research has become dynamic. In this regard, Chandra [43] identified 46 relevant research topics, in addition to other topics that are being addressed by the literature, such as networking, decision making, social and informal entrepreneurship [44]; international entrepreneurship [45], as well as sustainable [46,47] and rural entrepreneurship [48,49].

Rural entrepreneurship, whose work began to be published in the 1980s [50], has been the subject of study by academics who have attempted to conceptualize it, such as Wortman, who tries to define it in terms of creating and innovating in a rural environment, which has led to works that attempt to define typologies of entrepreneurs [51], types of entrepreneurship [48] and conceptual evolution [49], to make room for ventures that no longer focus only on the agricultural function, giving space to other products and services that use resources and capabilities to create, develop, establish or transform entrepreneurial initiatives in a rural environment [52].

Countries with a broad rural vocation are interested in promoting entrepreneurial activity to revitalize rural areas and promote economic development. In this regard, projects such as GEM have sought to analyze entrepreneurial activity in urban and rural areas at the international level [53], highlighting the relevance of socioeconomic factors in entrepreneurial activity, which has also been described by several authors in the literature.

Among the aspects that relate entrepreneurial activity with socioeconomic factors are variables such as gender, age, educational level, income [54-59], marital status, and socioeconomic stratum [60,61]; as well as parental education and family environment [62,63]. Taking into account the above, it is important to describe the findings related in the literature, around the mentioned sociodemographic variables that affect entrepreneurial activity [55].

2.1 Gender

There is a range of literature that analyzes the gender perspective in entrepreneurship, in which it has been found that men have a greater presence in entrepreneurship than women [54], who have to overcome social, cultural, family, cognitive, and access to financing barriers [64]; This is in addition to a lower self-confidence in entrepreneurial skills compared to men [65]; gender differences have even been studied down to the level of language, finding that the linguistic structures in several countries reinforce stereotypes against women, which affects entrepreneurial activity [66].

Recent studies suggest that gender gaps have been closing in some developed countries [67], and where gender equity motivates women to become entrepreneurs [68]; although differences persist [69]; a relationship has been found between self-efficacy and the environment, formal institutions, sociodemographic aspects, and culture, which create configurations that favor the entrepreneurial activity of women and men [70].

2.2 Age

Age is another explanatory variable related to entrepreneurial activity, although young people are more drawn to entrepreneurship given their ability to keep up to date with knowledge, the search for opportunities, and the implementation of innovations; experience plays a fundamental role in the consolidation of entrepreneurship [54,71].

Studies have shown that graduates under 30 years of age increase the probability of entrepreneurship [21], and it has been found that older entrepreneurs have a higher rate of self-employment than their younger counterparts [61]; studies have found an inverted u-shaped relationship between age and entrepreneurial activity [71,72].

The GEM report for Colombia also agrees that age is a factor that influences entrepreneurial activity; it was found that the age range between 18 and 44 years, brings together 64.2% of nascent and new ventures, while established entrepreneurs are aged between 45 and 54 years [28,73].

2.3 Education

It has been found that the level of education is relevant for entrepreneurial activity [65], although this is not necessarily always the case, since better preparation also affects the possibility of being hired by a company, which would suggest a negative relationship between the level of education of a subject and the preference for self-employment in certain contexts [74]; however, being in a better educational position also affects the potential individuals have given their ability to explore opportunities [71].

Some studies mention the positive links between entrepreneurship education and entrepreneurship in university contexts [75-77], however, there are doubts about the impact [78], since there are mixed and sometimes contradictory results [79,80]; requiring a connection between pedagogical objectives and program design [81]; however, its potential to motivate students to create businesses in the face of economic, social and political challenges imposed by the markets is recognized [59]. It is also mentioned that "educational level is a more important predictor of a person's occupation than background characteristics, such as occupation or education of the father or mother" [82],

The GEM report for Colombia suggests the existence of a direct relationship between educational level and entrepreneurship by opportunity, where 90.6% of individuals presented university education [28]; while the GUESSS report for Colombia, mentions

that students have a higher propensity to work as employees upon graduation (73%), but five years later they expect to create their own business [83].

2.4 Marital status

Marital status, having small children, and culture also have an impact on entrepreneurship [54,84], marriage can become a limiting factor in the case of women [85], but some findings suggest a weak interaction between entrepreneurship and marital status in the case of men [86]. Despite this, women have been gaining participation in entrepreneurial activity, motivated by the search for opportunities and the compensation of labor market imbalances [87,88].

The participation of single people in entrepreneurship is also advancing, especially those who have had work experience and academic preparation, who are motivated in part by existing working conditions, unemployment, or even the search for entrepreneurial opportunities in sectors they know or have worked in [50].

Recent studies speak of the contrast between single people who are more prone to risk because they do not have commitments as married people at the time of entrepreneurship; which would generate a constraint on people with family and economic obligations [55,89]; however, there is no consensus; because some scholars have also found that married people, compared to single people, have a greater chance of entrepreneurship in certain countries [90-92].

2.5 Family environment and economic status.

The incidence of the family environment and the economic condition of the individual has also been of interest for analyzing entrepreneurial activity [21], some studies document the intergenerational transmission of the occupation from parents to children, which is more significant among entrepreneurs than among workers [62], and where the children of self-employed workers have a higher entrepreneurial activity than other parents [93], which could be explained by the early learning of business skills [71].

The existence of role models favors the entrepreneurial activity of young people, although they do not necessarily have to be from their family environment [94]; the interaction of the subjects with successful people is a source of inspiration for the creation of new business initiatives [95,96]; which are influenced by personal conditions, family support, as well as access to financing and the favoring of institutional conditions [97].

Regarding the individual's income level and its impact on entrepreneurial activity, there is still no consensus, some studies suggest a positive relationship [98], while others suggest an inverse relationship [55]; this is partly because the objective of creating a business through necessity is affected by the economic conditions of the environment, but as resources grow, it is possible that the subjects intrinsically seek opportunities to increase their independence and income, which would also favor entrepreneurial activity [99].

3. Materials and Methods

3.1 Study design

A quantitative, cross-sectional methodology was used for the development of the research (single measurement through an online questionnaire between March and May 2020), and with correlational scope (possible relationships between variables); an in-

strument constructed and validated by Arias, Ribes, and Arango [100] was used, which was developed using expert consultation, expert competence assessment and verification of internal consistency, using Cronbach's alpha, whose results exceeded the value of 0.9 for all cases (see Annex 1); considering the instrument adequate to develop the fieldwork.

3.2 Population and sample

Given the interest in promoting rural entrepreneurship and the positive associations between age and educational level found in the literature review, we sought to identify the association of the level of entrepreneurship with other types of sociodemographic variables such as the level of studies attained by the parents, marital status, number of dependents and socioeconomic stratum; associated with students in their last semester of studies and graduate students of the five faculties of agricultural sciences existing in the city of Medellin.

Taking into account the above, the participation of subjects belonging to the millennial population (the focus of the study) is guaranteed and an important range of ages, different educational levels, possible interest in rural entrepreneurship due to the relevance of their fields of study, different marital statuses, and socioeconomic strata are obtained.

When inquiring via telephone to the five deans of the different faculties about the number of students enrolled for the first semester of 2020, a total count of 1254 people enrolled was obtained. Taking this number as a reference, a sample size of 295 people was gathered, considering a confidence level of 95% and a margin of error of 5%. Due to the above and subject to the difficulty caused by the Covid-19 pandemic, the questionnaire was distributed electronically from each of the faculties, obtaining a response rate of approximately 34%, the description of the sample is presented in Table 2.

Table 2. Sample description.

Variable	%	Variables	%
Gender		Marital status	
1. Male	46	1. Single	58
2. Female	54	2. Not single	42
Last degree of studies		Number of dependents	
1. Technician	23	1. No one	23
2. Professional	52	2. only one	29
3. Postgraduate	26	3. two or more people	48
Last grade of education (Mother)		Last grade of education (Father)	data
1. Elementary school	27	1. Elementary school	36
2. High School	36	2. High School	32
3. University or postgraduate	37	3. University or postgraduate	32
Socioeconomic level			
1. Low level - low	4		
2. Low level	19		
3. Medium - low level	36		
4. Medium level	21		
5. Medium - high level	12		
6. High level	8		

3.3 Response variable

The level of entrepreneurship was measured based on the response to the question: What stage of entrepreneurship are you at?. Therefore, the level is 0 if the person prefers to work and is not interested in entrepreneurship, 1 if the person barely has the business idea, but has not started to develop it, and 2 if the person is starting or already has their business.

3.4 Data analysis

Once the level of entrepreneurship of the participants was identified, chi-square statistical tests were performed [101,102]; to determine whether this level has some degree of association with the different sociodemographic characteristics that were measured, such as age, marital status, gender, level of studies, among others.

Subsequently, once the existence of associations between the variables had been verified, a multiple correspondence analysis was performed [103]; to identify some patterns and trends between the variables. This technique was used to handle multivariate categorical data, such as those collected in the survey. The main idea of multiple correspondence analysis is the reduction of the dimensionality of the original data set into different components; generally, as a result of such analysis, perceptual maps with the first two components are obtained, thus facilitating interpretation [104].

4. Results and discussion.

The first step to establish the differences concerning the sociodemographic factors is detailed in Table 3, in which variables such as gender, marital status, age, educational level, and socioeconomic stratum are presented with the different levels of entrepreneurship; taking into account whether the respondent prefers to work and is not interested in entrepreneurship, whether he/she has a business idea but has not started to develop it, or whether he/she is starting or already has a business in operation.

The rejection of the null hypothesis of no association with the level of entrepreneurship is taken into account; the chi-square test statistics, with their degrees of freedom and p-values (bilateral significance), are presented at the bottom (see Table 3).

In the case of the gender variables, it is possible to observe differences in terms of the level of entrepreneurship corresponding with being a man or a woman. The probability of being in level 0 of entrepreneurship (not wanting to start a business) is higher for women (15.10% for women and 8.90% for men). Likewise, it is observed that the probability of being in level 2 (starting the business or already having it in operation) is higher for men (42.90% compared to 32.30% for women), which is in line with what is reported in the literature, which shows greater participation of the male gender in terms of entrepreneurship [54].

Table 3. Chi-square tests for sociodemographic factors.

Variable	Level of entrepreneurship (%)			Chi square	gl	bilateral significance
	0	1	2			
Gender				6.783	2	0.034
1	15.10	52.60	32.30			
2	8.90	48.20	42.90			
Marital status				8.671	2	0.013
1	13.80	54.10	32.1			

2	9.50	44.40	46.20			
Age				29.411	6	0.000
[18,24]	17.10	66.70	16.20			
[25,31]	9.60	47.10	43.40			
[32,38]	8.60	41.90	49.50			
> = 39	12.50	45.50	42.00			
Education				18.205	4	0.001
1	16.00	12.30	7.30			
2	62.80	48.90	43.10			
3	31.30	38.80	49.50			
Socioeconomic level				38.737	10	0
1	10.50	68.40	21.10			
2	6.10	69.50	24.40			
3	15.40	53.00	31.50			
4	13.50	36.00	50.60			
5	7.80	49.00	43.10			
6	12.50	21.90	65.60			

Regarding marital status, the probability of being in level 2 of entrepreneurship is lower if single (32.10% compared to 46.20% for a situation other than single), which would favor those who live with a partner, given the possibility of having better conditions and support from a spouse for entrepreneurship [55].

Regarding the differences in the level of entrepreneurship according to the age categories among the respondents, not wanting to participate (level of entrepreneurship 0) is higher for people under 24 years of age compared to those between 25 and 38 years of age (age categories 2 and 3).

Regarding the educational level of the respondent, differences were also found in the levels of entrepreneurship, since, for example, the probability of not wanting to undertake is lower if the person has reached a postgraduate level of studies, a situation that would occur in this segment due to a better possibility of access to a formal job [74].

Similarly, those who are less likely to be in level 2 of entrepreneurship are those who did not exceed the technological level (21.30% compared to 38.80% of those who did not exceed professional studies and 49.50% of those who have postgraduate studies), which would suggest a favorable relationship between the educational level achieved by the person and his or her possibility of entrepreneurship.

Finally, regarding the socioeconomic stratum of the respondents, the probabilities of being in level 2 of entrepreneurship are higher if the person belongs to strata 4, 5, and 6 (see Table 2); the latter stratum having the highest percentage with 65.60%, compared to 21.10% of stratum 1; these results suggest the favorability of people with higher income to promote their businesses, compared to those who have a lower economic status.

For the variables of the educational level of the father/mother and number of dependents, chi-square statistical tests were also performed; but no association was found, and therefore, it was not possible to reject independence concerning the level of entrepreneurship. The values for the father's level of education were: Chi-square = 6.996, gl = 4, and Bilateral sig. = 0.136. The values for educational level of the mother were: Chi-square = 7.096, gl = 4 and bilateral significance = 0.131 and for the number of dependents: Chi-square = 7.321, gl = 4 and bilateral significance = 0.120.

Since there are interesting associations between the level of entrepreneurship and the sociodemographic variables measured, a multiple correspondence analysis was carried out to identify certain patterns and behavioral trends. Table 4 presents a summary with Cronbach's alpha and the variance explained by the two dimensions extracted and the corresponding reduction of the selected variables. It can be seen that the two dimensions have approximately the same weight (inertia values of .282 and .255, respectively for 1 and 2).

Table 4. Summary of multiple correspondence analysis

Dimension	Variance explained		
	Cronbach's alpha	Total (Autovalues)	Inertia
1	0.682	2.537	0.282
2	0.634	2.292	0.255
Total		4.828	0.536
Mean	0.659	2.414	0.269

Figure 1, on the other hand, presents the joint graph of points in the different categories of the variables analyzed. The greater the proximity between the categories of the variables, the greater the degree of association between them. The colored ovals arranged in the Figure help to visualize some patterns according to the level of entrepreneurship (Empr_C, in its levels 0, 1, and 2) and the rest of the sociodemographic variables measured.

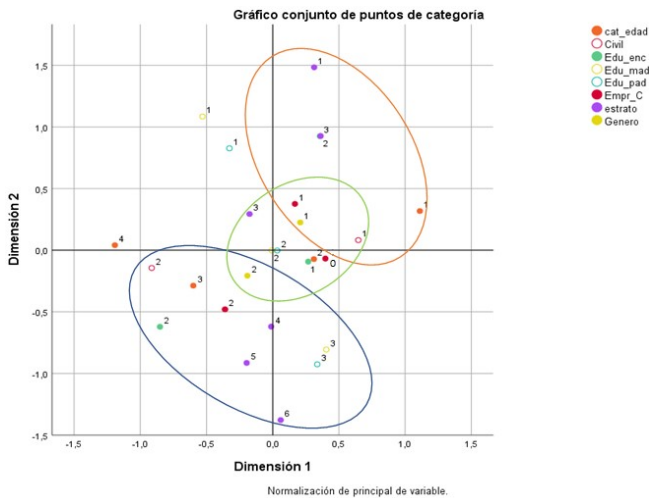


Figure 1. Multiple correspondence analysis

The blue oval corresponds to the category of those who are already entrepreneurs (level 2 of entrepreneurship) and are associated with high socioeconomic strata of the population (purple 4, 5, and 6), also with postgraduate studies (green filled 2), parents with university and/or postgraduate degrees (yellow outline 3 and green 3), ages between 32 and 38 years old (orange 3), with a marital status other than single (pink outline 2) and were predominantly men (yellow filled 2); This indicates the favorability that people belonging to the upper classes of the population have for entrepreneurship in the rural sector and whose environments and socioeconomic condition are more favorable than those belonging to a lower stratification.

The orange oval corresponds to people who barely have the idea of entrepreneurship (level 1 of entrepreneurship), who are associated with strata 1 and 2 (purple 1 and 2), i.e. those with lower income levels; predominantly women (yellow filled 1), people in this category are 24 years old or younger (orange 1), their educational status is at a technological level (green filled 3) and they are single (pink outline 1).

The green oval indicates those who do not want to be entrepreneurs but want to work (level 0 entrepreneurship), are associated with stratum 3 (purple 3), have a university education (green filled 1), are between 25 and 31 years old (orange 2), are single (pink outline 1) and have parents with education no higher than high school (yellow outline 2 and green 2).

5. Conclusions

The blue oval corresponds to the category of those who are already entrepreneurs (level 2 of entrepreneurship) and are associated with high socioeconomic strata of the population (purple 4, 5, and 6), also with postgraduate studies (green filled 2), parents with university and/or postgraduate degrees (yellow outline 3 and green 3), ages between 32 and 38 years old (orange 3), with a marital status other than single (pink outline 2) and were predominantly men (yellow filled 2); This indicates the advantage people have when belonging to the upper classes of the population with specific reference to entrepreneurship in the rural sector and whose environments and socioeconomic condition are more favorable than those belonging to a lower stratification.

The orange oval corresponds to people who barely have the idea of entrepreneurship (level 1 of entrepreneurship), who are associated with strata 1 and 2 (purple 1 and 2), i.e. those with lower income levels; predominantly women (yellow filled 1), people in this category are 24 years old or younger (orange 1), their educational status is at a technological standard (green filled 3) and they are single (pink outline 1).

The green oval indicates those who do not want to be entrepreneurs but want to work (level 0 entrepreneurship), are associated with stratum 3 (purple 3), have a university education (green filled 1), are between 25 and 31 years old (orange 2), are single (pink outline 1) and have parents with education no higher than high school (yellow outline 2 and green 2).

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