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Impact of Personality Traits and Entrepreneurship Education on Entrepreneurial Intentions of Business and Engineering Students

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Abstract: Entrepreneurs bring an enormous contribution to a country's economic growth. Developing individual's interest into new venture creation represents an important asset, especially for less developed countries where entrepreneurial activities are fundamental in enhancing economic growth. The recent economic crisis turned the attention of European policymakers towards entrepreneurship as a driving force for the creation of new job opportunities, regional/national competitiveness and growth. The aim of this article is to verify what relations are between locus of control, need for achievement and entrepreneurial intention of youth, following a cognitive approach and how much entrepreneurial education consolidates entrepreneurial skills and informs the young that entrepreneurship is a career option. To analyse entrepreneurial intentions, locus of control, need for achievement and entrepreneurial education in the context of Romania, this research used a quantitative design based on the answers to the questionnaire conducted during March 2017 to October 2017 on a sample of 270 students from two important Romanian universities. From the methodological point of view, several hypotheses have been developed and tested using multivariate logistic regression estimates, frequency analysis, internal consistency reliability of the constructs and moderating effects. The results illustrate that locus of control, need for achievement and entrepreneurial education proved to be important determinants for venture creation among young students, both independently and under the action of control variables. Also, respondents' gender had a significant influence on one's intention of opening a business in the future, with males being more inclined to become entrepreneurs than females.

Keywords: entrepreneurial intention; sustainability and growth; locus of control; need for achievement; entrepreneurial education; gender; logistic regression; moderating effects; frequency analysis

1. Introduction

The fast pace of change and rapid development of technology, the globalization of economies, the free circulation and liberalization of labour markets has led to great complex changes and irreversible transformations at an economic, social and structural level. To cope with these changes, there comes the need to generate new models to deal with the challenges in question in the field of entrepreneurship.

Entrepreneurship is the main vector of economic development and competitive play, and gives the possibility of social climbing to various segments of population. Entrepreneurship plays an important role in the economy as driver of innovation and job creation. The recent economic crisis turned

the attention of European policymakers towards self-employment and entrepreneurial activities as catalysts for economic recovery and growth. Recent studies show that micro enterprises account for 70 to 95% of all firms and employ more than one-third of the total private labor force, placing entrepreneurship and small business ventures as the main elements in fighting against social exclusion and unemployment [1,2].

In recent years, the crisis generated high levels of unemployment, especially among youth [3,4]. Recent Global Entrepreneurship Monitor (GEM) data (2017–2018) indicate that in efficiency- and innovation-driven economies, more than 50% of entrepreneurs are expecting to generate medium to high job-creation opportunities in the next five years. For Romania, the percentage of youth not in employment, education or training is well above the European Union (EU) average. In this context, for Romania to reach its objectives related to Europe 2020 targets and Entrepreneurship Strategy for 2014–2020, a special emphasis must be directed towards supporting entrepreneurship development for population groups that are under-represented or disadvantaged such as youth. The overall Romanian policy objectives for enhancing entrepreneurship include: strengthening entrepreneurial learning, providing finance, promoting business creation and self-employment, which remain critical factors for the country's development. In Romania, besides personality traits, an important barrier to business creation especially for women is a lack of entrepreneurial skills. Approximately 50% of women consider that they do not have all or just a small amount of human resources (i.e., skills) for business creation [5].

Entrepreneurial activities have an increasingly important roles in a country's growth and economic development by enhancing innovation and technological progress, creating employment and promoting competition [6]. The emergence of entrepreneurial intentions and behavior is of the utmost importance as the process represents the first phase in actually creating a business. In general terms, intentionality represents a state of mind that can turn actions into actual behaviors. Therefore, entrepreneurial behaviors and intention determinants have received significant attention in different fields of research and practice. Starting with the pioneering works of Ajzen [7,8] regarding the theory of planned behavior (TPB) and Shapero's model of the entrepreneurial event (SEE) [9–11], an entrepreneurial intention framework was tested, refined and employed by many studies. Numerous researchers have emphasized the importance of entrepreneurial intention in predicting one's behaviour in various countries and settings [12,13]. This has led to a focus on studying the entrepreneurial intention determinants by academia and business practitioners in many countries in order to contribute to a better understanding on how such intentions emerge [14].

Many researchers have tried to identify the most important determinants of entrepreneurial intentionality by analyzing different sets of contextual variables. Personality-based research identify several traits specific for entrepreneurs. For instance, self-confidence, risk-taking behaviour [15], internal locus of control, innovativeness/creativity [16] and need for achievement are just some of the traits that were often examined [17–25]. However, although the influence of locus of control and need for achievement on the entrepreneurial intentions have long been studied in the literature, in the case of Central and Eastern Europe (CEE) countries, such as Romania, recent research offers mixed results. So far, several empirical tests have resulted in a weak or non-existing relationship between the propensity of opening a business and those personality traits. For instance, in analysing Romanian students, Popescu et al. (2017) [26] found a positive but insignificant relation between locus of control and entrepreneurial intentions. For need for achievement, the estimates were significant either at the 0.15 level or insignificant at all. On the contrary, in other Central and Eastern European countries such as Poland, authors like Wach, and Wojciechowski (2016) [27] found that attitudes towards entrepreneurship significantly influenced the intention of 719 students, alongside with subjective norms and perceived behaviour control. Nevertheless, in Romania, although some of the young students possess the necessary skills and knowledge that are mandatory in business creation, only a small percentage choose entrepreneurship as a carrier option. We consider that this situation may be due to the lack of self-confidence or to the belief that external forces control individual's action

outcomes. Therefore, we consider that the question of how these factors influence the intention of starting a business is relevant for further research. Starting from this theoretical background, several hypotheses have been developed and tested using logit models and frequency analysis in order to show the complexities inherent in personality and cognition and explain how different traits affect the way people see, interpret and react in reality.

Fostering entrepreneurship through university education and training has recently become part of the national strategic agenda in many European countries, such as Romania [28]. Several studies emphasize the positive influence of entrepreneurship education on entrepreneurial intention of students in short and long-term perspective. For instance, using data obtained from the Global University Entrepreneurial Spirit Student Survey (GUESSS), Hartsenko and Venesaar [24] focused their analysis on the sample from Estonia and Hungary. Their findings reveal that participants in entrepreneurship education through involvement in an entrepreneurship educational programme are more likely to start their business immediately after studies. At the same time, other authors, when analysing the entrepreneurial education in transition economies, such as Poland, underline that there is a generally unfavourable opinion about school attitude towards equipping individuals with the social and personal skills relevant in any profession, especially in secondary schools [29]. Other empirical tests have resulted in a weak or even negative relationship between intention and entrepreneurial education. For instance, both entrepreneurial high school profile and tertiary education level have been negatively associated with the probability of starting a business in the future [30]. In Romania, the majority of entrepreneurship courses are accessible mostly in business and economic studies. Although technical students may also generate innovative and viable business ideas, entrepreneurship courses are not included in all technical higher education curricula. Also, the existing regulations do not allow entrepreneurs' involvement in the educational process without a teaching degree. Usually, the business practitioners can only come to give short presentation to students, for instance, as invited guests. Therefore, the question on how entrepreneurial education affects the intention of starting a business in both economics and technical fields is relevant for further research as we consider that education has an essential role in creating and fostering entrepreneurial culture. Attitudes towards achievement and locus of control, among others, are personality traits learned in school. Thus, it is important that the educational system offer support in enabling students to experience entrepreneurship in practice and to create the pre-conditions favorable for fostering entrepreneurial minds.

Besides the cognitive framework that implies the integration of personal factors of influence, socio-demographic characteristics represent another important research line in analysing entrepreneurial intention determinants. From this category, gender differences in the probability of starting a business represent the most frequent research topic in the literature [22]. Even if in the literature, males are found to exhibit a more positive attitude towards entrepreneurship and a greater intention of starting a business, the empirical evidence is still limited and not entirely conclusive [22,31,32]. In Romania, in spite of the fact that in the recent years, there has been a significant increase in the number of start-ups created by women, the proportion of these in comparison with their male counterparts is still low [33]. In order to understand the low rates of women's intentionality towards opening a business, we must ask ourselves whether there are differences in the variables that explain it. Understanding the differences may help improve the ratio of the participation of women in entrepreneurial activities [34]. In line with these theoretical assumptions, our research also focuses on the potential moderating effects of gender on student's entrepreneurial intention.

Therefore, in this article, we examine the importance of the locus of control, need for achievement and entrepreneurial education in fostering entrepreneurial intentions of the young generation in both economics and technical fields, taking into consideration also the potential moderating effects of gender.

The justification for such a specific topic is twofold: first, the proposed study is of utmost importance for Romania as the country needs to make several efforts to stimulate entrepreneurial

activities and increase the level of competitiveness. Support for entrepreneurship development is a priority of the Romanian government as described in its 2014–2020 Strategy on supporting SMEs [35]. Second, our research offers valuable insights into an important country of the EU that so far has not been an object of intensive investigation. This approach may help to identify new evidence and enhance our understanding on the situation found in the Romanian post-transition setting and explore which factors nowadays affect the young generation intentions of opening a business. In particular, our aim is to provide evidence on the entrepreneurial propensity of a sample of 270 Romanian students from business and technical fields. The sample comprises two of the oldest higher education institutions in Romania: Alexandru Ioan Cuza University of Iasi (UAIC) and Gheorghe Asachi Technical University of Iasi (TUIASI). We have focused mainly on students in economics and business administration from the Faculty of Economics and Business Administration (FEAA, UAIC, Iasi) and from the Faculty of Civil Engineering (FCL, TUIASI, Iasi). Shaping the entrepreneurial mindset of young people is one of the most important roles of the contemporary education system as the university students represent an important share of the potential entrepreneur's supply [36]. These local specificities allow us to identify entrepreneurial intentions among Romanian students from various faculties and different specializations and its activation in certain conditions for entrepreneurial behaviour. Also, it is important to find the causes that postpone its activation for the new generation that overcome the transition from a centralised economy to a market economy. To ensure the internal validity of our analysis, we employed a number of control variables that provide alternative explanations for students' entrepreneurial intentions. Additionally, to account for potential moderating effects, we included interaction terms between gender and our independent variables (one at the time and all together) [37].

Our study provides a number of contributions. First, the study contributes to the overall entrepreneurship literature by increasing the understanding of how different personality traits and entrepreneurial education influence the intention towards starting a business in a post-transition country. Given that Romania has a short academic tradition in providing entrepreneurial academic courses, our results may contribute towards adjusting entrepreneurial courses according to students and market needs. Further, to the best of our knowledge, the potential moderating effects of gender on the intention of starting a business have received little attention in CEE countries, with this area being under-researched, especially in the Romanian context. To bridge this gap, our analysis also accounts for the potential moderating effects of gender within locus of control, need for achievement and entrepreneurial education in order to check the validity of these relationships.

The paper is structured as follows. Sections 1.1 and 2 provide a brief overview of the context of analysis and the main theoretical approaches on entrepreneurial intentions, locus of control, need for achievement, entrepreneurial education and gender. The assessment of those theoretical concepts allow for the formulation of our research hypotheses, in Section 3. Then, in Section 4 we describe the material and methods employed in our research. Section 5 discuss the results of our analysis. Finally, Section 6 concludes and Section 7 briefly describes the limitations of our study and the future directions for research.

1.1. Context Specific of the Analysis

Understanding when, how and why entrepreneurship occurs is particularly important, especially in former communist countries who have undergone fundamental political and economic changes. The context lens allows us to frame entrepreneurship based on the circumstances, conditions, situations or environments that may enable or constrain it [38].

Romania is one of Europe's former Soviet bloc countries that was under communist rule from 1948 until 1989. In Central and Eastern European (CEE) countries, the transition from a centralised economy to the market economy was very different in speed and procedure, each country experiencing their own specific itinerary. At the start of the transition, some countries approached the finish line, others languishing at various points along the track, and a few barely off the starting blocks. Transition reforms consisted in adopting monetary policies to reduce existing imbalances, liberalize prices, restore

private property, eliminate state control, and reform the legislative system among others. However, while some countries adapted effectively to new changes, for others, the negative legacy had created complications for the transitions [39].

We consider that in transition countries from Central and Eastern Europe, like Romania, one important dimension in shaping entrepreneurial attitudes, intentions and activities is represented by the *institutional context*. The institutional environment comprising of formal and regulative frameworks and cultural determinants (norms, attitudes of a society, opportunity recognition) offer us a valuable paradigm through which entrepreneurial determinants and activities can be understood. Several studies have incorporated the institutional component as a factor that either enables or hinders entrepreneurial activity [40,41]. For instance, factors like tax policies, regulations of entry and corruption [40], property rights and the presence of effective market frameworks [35] are important institutions that can shape entrepreneurship by influencing the structure of economic incentives. Without property rights, individuals lack the necessary incentive to invest in physical or human capital or adopt more efficient technologies [35]. For example, the initial reforms in some Central and Eastern European countries that allowed private enterprises to legally exist were just an illusion. The absence of proper institutions (the emergence of opportunistic and corrupt behaviors, insignificant property rights, cultural heritage of communism, etc.) have negatively influenced the entrepreneurial behaviors and private business. In Romania, the socialist period mutilated the entrepreneurial phenomenon and caused mindset and behavioural changes driven by communist ideology; the latter gave citizens the idea that the state is the only creator/supplier of jobs and is responsible of welfare. The increase in state attributions and the degree of legislative regulations have a strong negative impact on productivity and progress [42]. During the socialist period, the entrepreneurial intentions/behaviors were selectively formed only by the managers of socialist units through centralised training programmes, mobilities and skill formation mainly with countries from the communist block and rarely with capitalist countries. Unlike Poland or Hungary or other transition countries, in Romania, the private property became insignificant under the communist regime, accounting for less than 10% of total property [43]. Romania had one of the highest state-dominated economies within CEE countries, with more than 95% of businesses nationalized [7]. Owning a business was forbidden by law until January 1990; after that the first law that allowed individual private initiative was Decree Law No 54 of 1990, which permitted four types of organizations: small enterprises, business partnership, family associations and sole ownership [24]. However, the lack of experience in managing the market economy, fragile institutions, residual pressure of communist power structures and informal constraints impeded systemic change in Romania. Consequently, during more than forty years under communism, the Romanian social and economic environment was strongly affected, hence the lack of genuine entrepreneurial role models for almost thirty years since Romania gave up the centralised economy and passed to a market economy. Entrepreneurial activity cannot flourish or even exist in the absence of private property, market laws and consumer choice. Most policymakers consider that the most important task in creating favorable conditions for the bottom-up development of the private sector is the setup of new enterprises [35].

Other studies focus on the impact of informal institutions on entrepreneurship. Norms and values that are embedded in society represent important determinants that shape attitudes versus business and economic behaviors, and therefore, the propensity to start a new business [25,44,45]. However, the values and norms created by the communist regime do not encourage entrepreneurial values such as self-accomplishment and control [46]. The transition from a planned economy to a market one led to the forced clash of values, which were officially deemed as basic ones; this generated chaos at a cultural level, contributing in time to the structuring of a duplicity morality in the work ethic sphere, family values, ways of relating to the community and religious norms. The continuous expectation of a hierarchical order found perfect shape in traditional hierarchical culture, generating a vicious circle of expectations, postponements and the lack of initiative and responsibility [42,47]. Institutional fragility, which is mentioned by a series of specialists in transition may be “asserted to a high level of path dependence and behavioural inertia that damages the process of learning, imitation

and experience. Therefore, after two decades of transition, Romania is still low ranked among the EU countries, with lower results than other post-socialist countries in terms of institutional quality and economic competition" [48]. As a result, the norms and values governing Romania for more than 40 years under the communist regime resulted in misfits between newly introduced regulations and entrepreneurial actions. The communist regime reduced Romanian entrepreneurial capacities to almost zero, which in turn, negatively impacted the ability to be successful role models for the new generations [49]. Therefore, entrepreneurial behaviors almost were nonexistent as the communist period emphasised that public enterprises goal was the achievement of social and political requirements and not organizational profit. Statistics shows that in comparison to other CEE countries, "Romania had one of the lowest business density rates among the CEE countries during the transition stage" [39] and the lower levels of entrepreneurship and share of opportunity-motivated entrepreneurship (relative to necessity entrepreneurship) [33].

For former communist countries, such as Romania, business context matters just as much for entrepreneurship. For former communist countries, Smallbone and Welter (2001) [44] distinguish three main characteristics of entrepreneurs in transition economics and the circumstances in which new businesses are created: a) shifts in ownership through direct privatisation or the creation of a new business; b) liberalization of the market, aimed at generating higher levels of competition, profit growth and increased product diversification; and c) creation of mature market institutions such as banks, financial intermediaries, support and consulting services. The transition from a centralised economy to a market economy implied improving firm performance, reducing government intervention and increase its revenue, and introducing competition in monopolized sectors. Nevertheless, all these reforms should be tailor made according to local and national circumstances, context in which governments should first provide improved regulatory and institutional framework [50]. Nowadays, after almost 30 years, Romanian progress in terms of entrepreneurship shows some signs of positive change, although the volume of new firm creation and survival rates (beyond the five-year period) register low values in comparison with other CEE countries [51]. Further evidence suggests that the effects of entrepreneurial perceptions and traits on entrepreneurial activities may offer us an explanation on why the activation in certain conditions for entrepreneurial behaviour is postponed [20,21].

We consider that besides insufficient funding opportunities, both entrepreneurial culture and human capital might dictate the success or failure behind a story. We consider that also education has an essential role in creating and fostering entrepreneurial culture. Attitudes towards achievement and locus of control, among others, are personality traits learned in school. Thus, it is important that the educational system offers support towards enabling individuals to experience entrepreneurship in practice. In other words, the educational system creates the pre-conditions favorable for fostering entrepreneurial minds by providing the knowledge and necessary skills required for creating and managing a business. In Romania, the entrepreneurial education seems to be largely absent from the curricula of non-economic faculties [52]. Moreover, the involvement of entrepreneurs within the university system is hampered by Romanian regulation, which demands a degree to teach at universities for short-term or part-time teachers [53]. We believe that for Romania, a significant step forward needs to be made in stimulating entrepreneurial activity leading to an increase in both performance and wealth.

2. Literature Review

2.1. A Theoretical Approach towards Understanding Entrepreneurial Intention

Before entrepreneurship, entrepreneurial potential is required, whether it is about a large organization that attempts innovation or a community that wants to grow. Entrepreneurial activity is not carried out in a void but is rooted in a cultural and social context made up of a sum of social and economic human networks [54,55].

Since entrepreneurship is a contemporary form of involvement and social recognition for individuals in the life of the community, the decision to become an entrepreneur is voluntary and conscious. Entrepreneurial activity is an intended form of behaviour, planned expressly in a way that affords individuals the opportunity to catch up with permanent changes of market conditions. However, on the other hand, forming entrepreneurial intentions depends on personal attitudes on the set up of a business. As a result, attitude precedes intention; the latter, in its turn, being the predisposition of conscience to a certain action. The passage from the formation of intention (the symbolic cognitive sphere) to the manifestation of entrepreneurial behaviour (the sphere of action) implies that individuals have hands-on knowledge, attitudes and complementary skills along the entire entrepreneurial process [56]. The pile of data stored, derived from personal events or results as a reaction to various external stimuli are turned by “the holistic intuitive or rational analytic thought to attitudes, perceptions and to a form of personal efficiency oriented towards action” [57]. Interference of both individual factors (previous entrepreneurial experiences, personality traits and competencies) and contextual ones (socio-economic and political factors) occur as antecedents of entrepreneurial intention structured by cognitive processes [57,58]. Accepting without question such a construction, we believe that the understanding of the entrepreneurial act cannot be dissociated from the analysis of behavioural intentions. Intention is the best predictor or the driving force towards entrepreneurial behaviour [59,60].

Entrepreneurship is a contemporary form of involvement, valorification of knowledge and social recognition of individuals in the life of the community. Entrepreneurial activity is a planned, intentional behavior, and the formation of entrepreneurial intentions depends on personal attitudes. The decision to become an entrepreneur is voluntary and conscious. In turn, attitudes reflect personal faiths and perceptions determined by the individual’s personality, formal and informal education, personal values and experiences [61,62]. The positive attitude towards entrepreneurship means the desire to make the best of opportunities, the attitude towards change in society and of one’s own vision with respect to the role that one has in society. We consider it appropriate to give attention to the two main lines of analysis that objectively account for how intentions are formed and precede any type of human behaviour. Therefore, we consider the theory of planned behavior (TPB) from Ajzen [7,8] and Shapero’s model of the entrepreneurial event (SEE) [9–11].

Ajzen’s theory of planned behaviour (TPB) highlights the relations between beliefs and behaviour, stating that the attitude towards behaviour, subjective norms and perceived behavioural control together make up for an individual’s behaviours and intentions [7]. Intention is a function of behavioural faiths and a significant predictor of future behaviour. In turn, intention also has significant predictors that Ajzen calls “antecedents: attitude, subjective norms and the control perceived on behaviour” [7]. Intention is influenced by these three global concepts:

1. attitude (how attractive the target behaviour is for the individual);
2. perceived social norms (social pressure in favor or against target behaviour); and
3. perceived control over behaviour (individual perception and the ability to adopt the respective behaviour) (Figure 1).

According to TPB, intentions predict behaviour and certain specific attitudes predict intentions. Therefore, intentions are a variable that mediates the link between potential external influences and the action to set up a business [63]. The concept was proposed by Icek Ajzen to improve the predictive power of the theory of motivated action by including the behavioural control perceived. The beliefs that arise regarding perceived behavioural control is a mixture of the two dimensions: self-efficacy and controllability:

- *Self-efficacy* pertains to the level of difficulty necessary to act on a behaviour or when convinced by a person in one’s capacity to succeed in performing according to a type of behaviour.
- *Controllability* refers to external factors and the personal conviction that they can be controlled, with influences on behavioural performance despite the fact that sometimes they cannot be

totally controlled. If one is in high control of their behaviour, one is very confident that one can successfully perform based on a specific behaviour. The development of positive attitudes towards entrepreneurship is a necessary, yet insufficient, element to form entrepreneurial intentions and further to manifest entrepreneurial behaviour. Attitudes are not a genetic but a social trait, and consequently, they are acquired in the family, at school or the workplace. Any person holds patterns/mindsets, feelings and potential action, and the source of these mental programs is the social environment in which the individual lived and had the personal life experience.

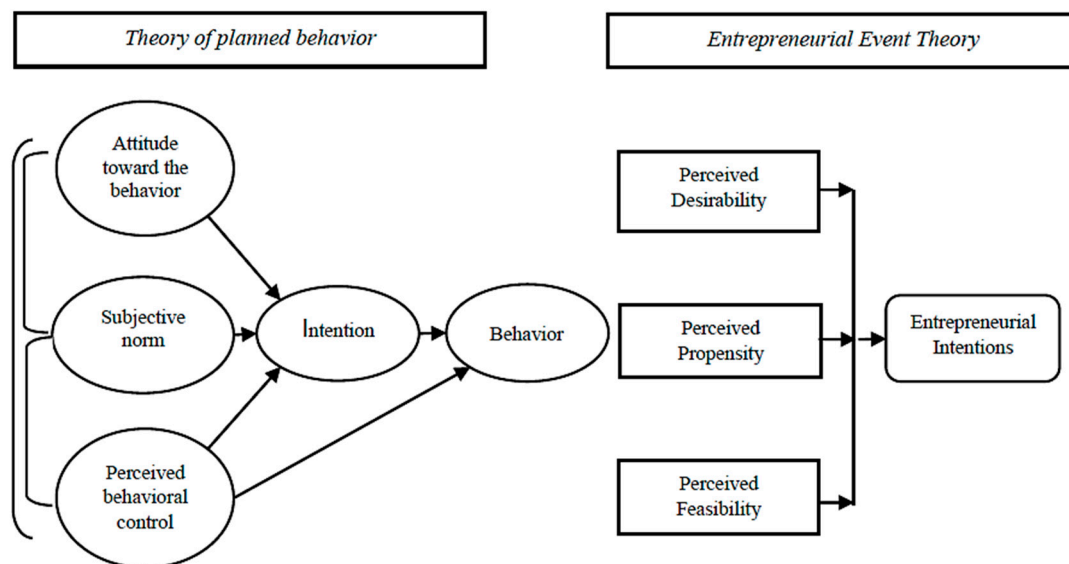


Figure 1. Theory of planned behaviour (TPB) and entrepreneurial event theory (SEE). Source: [9] (p. 182) and [64] (p. 20).

Due to the fact that intentions are an important predictor of entrepreneurial behaviour, the intervention at the level of factors that drive intention should ideally lead to the materialisation of intentions in behaviours. Attitude is one of the driving factors of intentions, being defined as the representation of a draft perception on a psychological object; the latter is experienced as harmful, pleasant or unpleasant [65,66]. Attitudes are the means by which individuals react to facts, circumstances and problems [67,68]. The attitude towards a certain behaviour is driven by the individual evaluation of results associated with the respective behaviour and the strength of these associations [69].

The model of Shapero's entrepreneurial process (Shapero's model of the entrepreneurial event (SEE)) [11] is based on the fact that inertia guides human behaviour until something interrupts it or changes it. This change can be positive (an inheritance) or negative (the loss of a workplace) and leads to a change in the subject's behaviour that seeks the best available opportunity [55]. Therefore, an important predictor of an individual's behaviour is his/her intention of adopting it [70]. Behavioural intentions are instructions that individuals give to themselves to behave in a certain way [70]. The process of identifying opportunities is an intentional one, hence the paramount importance of the study of intentions. As a predictor of planned behaviour, especially when it comes to rare behavior, which is difficult to grasp and is being displayed for an indefinite period of time [63,71], the choice of behaviour depends on the credibility given to it and the drive for action. Therefore, a credible behaviour should be both desirable and feasible. Perceived desirability refers to how attractive the action is for the subject. Drive for action is actually the personal disposition to act in accordance with one's own decisions, thus reflecting the volitional will of intentions.

According to SEE, it is necessary for the potential to start a business (credibility and drive towards action) to exist before a change of inertia occurs, along with the disposition to act after inertia is

changed [55]. Significant events (migration, losing one's job) can determine the increase of interest for entrepreneurial activities, witnessing not a change of individuals, but of their perception on the new circumstances. Therefore, entrepreneurial potential existed but needed a context change to come out and be activated.

Both TPB and SEE have been the most extensively used models to explain entrepreneurial intention [58]. This theory is tested in empirical studies in similar/close surroundings to Romania. For instance, Wach and Wojciechowski (2016) [27] analyse the entrepreneurial intention of 719 Polish students in the view of Ajzen's TPB and found that attitude towards entrepreneurship, subjective norms and perceived behaviour control influence the sample's propensity towards opening a business. Additionally, Schlaegel and Koenig (2013) [72] and Popescu et al. (2017) [26] found that different determinates included in TPB and SEE have a significant and positive effect on the intention of starting a business in the future.

2.2. *Personality Traits*

Although entrepreneurial research has expanded widely, two main sub-areas in the field emerge as the main determinates in core entrepreneurial intentions models: personality level variables and entrepreneurship education [22]. According to Liñán and Fayolle, the first category includes the effects of personality traits, psychological variables and socio-demographic characteristics, while the other evaluates education programs or connects them with intention [22]. Although the specific body of research offers a long list of variables that influences entrepreneurial intentions, there is no complete agreement as whether need for achievement and locus of control constructs can significantly explain individuals' intention of starting a business [73]. Therefore, following a cognitive approach, our research study is designed to examine both variables impact on youth entrepreneurial intention. Besides that, we examine how entrepreneurial education impact entrepreneurial intentions of university students, at the same time scrutinizing the moderating effects of gender.

2.2.1. Locus of Control

The extent to how individuals perceived control have long been studied and debated in the literature. An important contribution in developing locus of control construct was made by Rotter [74] which stated that behavior potential (BP) is a function of expectancy (E) and reinforcement values (RV), which may take the following form: $BP = f(E, RV)$. Behavior potential measures the degree to which a person may exhibit a particular behavior in a given situation. Expectancy is subjective to an individual's former experience and measures the likelihood that a certain behavior will be reinforced. The reinforcement values help explain the extent of the desirability of these outcomes. In other words, locus of control reflects one's belief or perception concerning who controls their life and the environment [75]. This construct reflects the extent to which individuals believe that what is happening to them is under their control or beyond it.

Locus of control can be either internal or external [76]. Internal locus of control represents the degree to which individuals believe that achievements are contingent upon their own ability and action rather than on external forces [74]. Individuals with an internal control locus believe that events are a result of their own behavior and resources. They are endowed with the ability to discover existing opportunities, which will lead to spontaneous learning [77]. This psychological characteristic has been used often as a predictor of entrepreneurship as individuals believe that the future is shaped by their own efforts and they are more inclined to exert more effort and perseverance in achieving the intended outcomes, which in turn may help to start a firm and keep it successful [78–80]. Rotter [81] argued that individuals with an internal control locus can influence the results through their own abilities and efforts rather than by external forces. On the other hand, external locus of control represents a personality trait through which the belief that uncontrollable factors (such as luck, change and fate) are responsible for the events in one's life. People with an external locus of control are more likely to adopt a passive behavior since they believe that external forces control their action outcomes. There does

not exist any active involvement in environment changing, nor the intention of starting up a new venture creation.

Evidence shows that the locus of control can be culturally dependent [82,83]. In cultures characterized by a high degree of individualism, where labour relationships are supposed to be mutually beneficial for all the parties involved and where hiring and the advancement of an employee within a company position are based on skills and interpersonal rules, internal locus of control registers higher values. Other authors associate locus of control with business creation and success [78,84]. Box et al.'s [84] analysis of 93 entrepreneurs using moderated regression analysis revealed that internal locus of control is positively correlated with business success measured through average annual employment growth. Similarly, using a meta-analysis, Rauch and Frese's [80] findings show that personality factors must be taken into account when predicting business success as higher internal locus of control is connected with venture growth.

In the case of European countries, previous empirical research studying the effect of locus of control on entrepreneurial intentions offer us contradictory results. In this sense, several empirical tests indicate a weak or non-existing connection between control perception and intention. For instance, Rajh et al. (2017) [12], in analysing the entrepreneurial intention of 1200 respondents from several European countries, found a positive but insignificant relationship between locus of control and entrepreneurial intent. Similarly, in other European countries like Romania, Popescu et al. (2017) [26] further detailed the role of perceived control on youth intention towards starting a business. The authors demonstrate that in the case of undergraduate (Bachelor) and master students, the relationship between locus of control and a student's intention of opening a business was positive but statistically insignificant. On the other hand, in other Central and Eastern European countries, such as Poland, authors like Wach and Wojciechowski (2016) [27] found that attitudes towards entrepreneurship significantly influenced the intention of 719 students, alongside with subjective norms and perceived behaviour control. Likewise, Kristiansen and Indarti [19], using empirical data from specific groups of university students of two higher education institutions, compared Indonesian and Norwegian students. The authors' analysis revealed two different scenarios: a) a negative and insignificant relationship between locus of control and intent of opening a business for Norwegian students, and b) a positive but also insignificant connection for those two variables in the case of Indonesian students. Therefore, starting from this theoretical background, our analysis wants to validate the positive and significant relationship between locus of control and entrepreneurial intentions by using several multivariate logistic models on a sample of 270 economics and engineering students from two major universities in Romania.

2.2.2. Need for Achievement

The need for achievement trait encases individual's inclination towards important accomplishments, achieving moderate goals and searching for self-development [85]. The need for achievement should lead individuals to seek challenges that matches their personality and enhances their confidence in the likelihood of their success, which may lead to an increase of the overall society growth [86]. Achievement motivation is one important trait that affects individual actions in a workplace context and entry into entrepreneurship [86,87]. Higher levels of need for achievement are registered in countries with higher entrepreneurial activity and economic growth [86]. Individuals with high achievement motivation are more likely to engage in innovative activities that involves subsequent planning and where they ought to be held *responsible for the outcome* [86]. Also, entrepreneurs with a high level of achievement possess a powerful desire to find solutions for different problems by themselves, are enthusiastic, enjoy receiving feedback on their accomplishments, are constantly trying to improve their performance and are more likely to be successful in their business [88]. Their achievements are not accidental or based on external forces, but on own developed skills, abilities and self-development [88–90].

Several authors suggest that need for achievement is culturally dependent and it might vary across different cultures and countries according to particular conditions [83,88]. Culture might prove to act as a catalyst in enhancing the entrepreneurial potential of a country or as a barrier discouraging creative thinking, independent action, risk-taking or other motivating factors correlated with entrepreneurial intentions. Other scholars associate need for achievement with firm performance. For instance, Zhang and Bruning's [89] analysis on owners and senior managers of small and medium size companies reveals that need for achievement is positively correlated with business performance.

In the literature, there is no complete agreement as to whether the need for achievement construct can significantly explain individuals' intention towards starting a business. For example, an analysis conducted by Kristiansen and Indarti [19] using a sample of 251 students revealed that need for achievement does not make a significant contribution to determine entrepreneurial intention among students, neither in Norway nor in Indonesia. Similarly, Hmieleski and Corbett found no significant correlation between these variables [73]. On the contrary, when analyzing 600 Romanian students, Popescu et al (2017) [26] found that need for achievement represents an important personality trait that positively and significantly influences the probability of opening a business in the future. In order to offer a more comprehensive overview, this empirical study extends the literature on the effects of need for achievement on youth entrepreneurial intentions. We aim at verifying whether a young individual's need for achievement has an important role for start-up development.

2.3. Entrepreneurial Education

Entrepreneurial intentions are conscious mental states that affect and divert personal attention, events and behaviours to a planned entrepreneurial behaviour [91]. Entrepreneurial intentions are the first step from a long chain of actions directed towards starting a business. Entrepreneurial intentions and behaviour may be influenced by education [92–94].

Entrepreneurial education is the educators' intended intervention in the life of students/pupils to influence their entrepreneurial skills and qualities, which allow them to survive in the business world [95]. It may be described as an education form that aims at attracting people able to set up a new business [96,97]. Lüthje and Frank [98] agree on the fact that there is a positive relation between education and business set-up. Entrepreneurial education provides students with knowledge, skills and additional capacities necessary to apply to the context of setting up a new company or business [98].

The ideal period to acquire basic knowledge on entrepreneurship so as to develop a positive attitude towards it is childhood and adolescence [99–101]. According to the document made available by the European Commission, *Entrepreneurship Education at School in Europe; National Strategies, Curricula and Learning Outcomes*, subjects that benefited from entrepreneurial education distinguished themselves from those that did not through the following elements: they showed entrepreneurial attitudes (self-knowledge and self-trust, drive towards risk-taking, spirit of initiative, critical thinking, creativity and skillfulness in problem solving); hands-on entrepreneurship (knowledge on career opportunities and the labour market, specialty terms from economic and financial literature, business organization and economic processes); and entrepreneurial abilities (communication, presentation, planning, team work, practical use of business opportunities) [101].

Entrepreneurial education is especially important for transition economies, such as Romania, as during the communist regime and at the beginning of the transition process, this form of education was limited only to specialised schools and higher education institutions at courses in economics. A European Commission report shows that European education and training systems are still failing to provide adequate skills for employability and do not work properly with business or employers to bring the learning process closer to the reality of the working environment [102]. Another study of 31 European states conducted in almost 2900 higher education institutions shows more than half of European students do not have access to entrepreneurial education, nor have the opportunity to participate in an extracurricular activity related to it [103]. In other words, one important barrier in

opening a business and become an entrepreneur is a lack of entrepreneurial competences. According to the Global Entrepreneurship Monitor, Romania's Country Report states that "governmental policies and programs that support new growing businesses, along with a solid entrepreneurial education in schools and universities contribute to the development of entrepreneurship which plays an important role in the growth of economic competitiveness worldwide" [104]. Romania and other CEE countries need to focus more on entrepreneurship and innovation in order to grow and spur competitiveness.

Apart from social attitudes and skills, inappropriate entrepreneurial education represents an important barrier that prevents young people from turning ideas into real business ventures. In Central and Eastern European countries, during the communist regime and at the beginning of the transition process, there was a low exposure to entrepreneurship combined with a lack of experienced role models. In former centrally planned economies, the role of entrepreneurial education was even more important as in these countries the entrepreneurial behaviors and private businesses were annihilated during the communist regime. We have witnessed the transition of the formerly centrally planned economies of Europe to market economies, where the new generation of trainers appeared and the education system curricula were modernized and adapted to the latest requirements. These major changes imply building or adapting the local infrastructure to market-driven programmes. More recently, European universities have gone through significant changes once the Bologna reform process had been implemented. Nevertheless, although educational systems have been considerably improved, there was still a shortage of entrepreneurial education courses particularly in the technology and science departments. Studies show that after several educational reforms implemented in Central and Eastern European countries, there is a generally unfavourable opinion about school attitude in equipping individuals with the social and personal skills relevant in any profession [29]. Therefore, the question on how entrepreneurial education affects youth intentions towards venture creation regarding both economics and technical fields is still relevant for further research. We consider that universities and other educational systems can enhance entrepreneurship education by teaching introductory and advanced entrepreneurship courses that provide future entrepreneurs the basis of constructing and developing their business. Our analysis offers an insight on the impact of current entrepreneurial education Romanian business and engineering students.

2.4. Gender

In addition to personality traits and entrepreneurial education, gender differences represent another important research line for analyzing entrepreneurial intention determinants. Although some scholars argue that there are no gender differences in entrepreneurship, others underline that men have a stronger propensity for engaging in venture creation, demonstrate more powerful internal feeling of control and higher levels of need for achievement in comparison to their female counterparts [22]. Evidence further shows that the number of start-ups created by women are much lower than the number created by men, underlining their low participation in entrepreneurship [32]. In order to explain the gender differences in the ratio of entrepreneurship participation, scholars have focused on the role that perceptual factors play (e.g., perceived control) in explaining the differences in the entrepreneurial behaviour of men and women. In line with these theoretical findings, our analysis focused on the potential moderating effects of gender with locus of control, need for achievement and entrepreneurial education on the youth intention in engaging in entrepreneurial activities.

3. Research Framework and Hypotheses Development

Entrepreneurship is an intentional process, where predictors of planned behaviour influence the decision of starting a business. Our main objective of the paper is to find if certain traits predict an individual likelihood of becoming an entrepreneur and to evaluate the influence of entrepreneurial education on these intentions. In order to identify the relationship between entrepreneurial intentions, locus of control, need for achievement, entrepreneurial education and other demographic and economic variables, we propose the following hypothesis:

Hypothesis 1. *Locus of control and need for achievement positively influence youth intention to engage in entrepreneurship.*

The literature reports that both need for achievement and locus of control represent important determinants for entrepreneurial intentions, although these findings are contingent upon the context of analysis. For instance, Korunka found that need of achievement and locus of control, alongside with other personality factors, have been proven to be important for venture creation in Austrian entrepreneurs [88]. On the other hand, Muller and Thomas [82] found that in the high-tech industry, the Swedish entrepreneurs have a higher desire for significant personal accomplishments and a lower locus of control than British students. Similar, Karabulut [105] explore the effects locus of control, need of achievement and two other personality traits on the entrepreneurial intention of Turkish students. Using multiple regression analysis, the author found that these personality traits have a positive effect on entrepreneurial intention. On the other hand, Hmieleski and Corbett [73] found no significant correlation between the need for achievement and locus of control and the intention to open a business in the future.

Different researchers highlighted contradictory results on locus of control and need for achievement effects on entrepreneurial intention. Our work, therefore analyses the direct influence of locus of control and need for achievement on students' intention of starting a business, focusing also on these items influence under the action of several control variables. Therefore, this research aims to contribute to the current debate by examining personality traits effects on Romanian youth intention in engaging in entrepreneurial activities.

Hypothesis 2. *In terms of entrepreneurial intention, males have a stronger propensity to engage in entrepreneurship than women.*

Hypothesis 2a. *The gender effect on entrepreneurial intentions is fully mediated by locus of control, need for achievement and entrepreneurial education.*

In the literature, there are studies that point out the number of women, which is significantly different from that of their male counterparts, especially as far as the intention to start their own business is concerned. According to Minniti et al. [106], women are less susceptible to independence, especially in middle income countries. Langowitz and Minniti [107], and Noguera, Alvarez and Urbano [108] analysed women's inclination towards entrepreneurship. Authors reached the conclusion that the vigilance of valuing existing opportunities, self-evaluation of the chance of success through knowledge and the necessary abilities possessed are the predominant elements of success in business among female respondents [107,108]. Moreover, since women and men entrepreneurs usually work in distinct sectors and follow various opportunities to develop their business, an increased number of female entrepreneurs will also contribute to the increase of entrepreneurship in the economy. At the level of a piece of research that studied a sample of EU and U.S. countries, Grilo and Irigoyen [109] found out that to work on one's own is rather preferred by men than women. Following the same line of analysis, Wilson et al. [110] emphasize the fact that among adolescents, men are more likely than women to engage in entrepreneurial activities. Similarly, among gender differences, Veciana et al. [111] show that in Catalonia, male students rank higher in entrepreneurial intention than those in Puerto Rico. Another piece of research elaborated by El Harbi [112] has concluded that among the young in Tunisia, entrepreneurial intention varies according to gender and is deeply rooted in traditional social norms. In Romania and other CEE countries, there have been a significant increase in the number of women start-ups; however, the overall proportion of ventures created by females is still low in comparison with males [33]. Evidence further shows that gender differences also exist in terms of personality traits, where women demonstrate weaker internal feeling of control and higher need for achievement in comparison to men [113].

Since the literature refers to the presence of gender differences in entrepreneurial intention, while reporting sometimes mixed results, in this research, we investigated the potential moderating differences between women and men. In line with this theoretical background, we start from the premise that in terms of entrepreneurial intention, locus of control and need for achievement, there are significant differences between women and men. Also, we consider that the relationship between entrepreneurial intentions, locus of control, need for achievement and entrepreneurial education will be significantly moderated by the gender differences.

Hypothesis 3. *Entrepreneurial courses attendance positively and significantly influences young people's intention of becoming entrepreneurs.*

With respect to the level of education, Liñán, Rodríguez-Cohard and Rueda-Cantuche [114] analysed the entrepreneurial intentions of students from two business universities from Spain. The conclusion they reached emphasized the fact that among the factors that lead to the formation of intention, there is academic entrepreneurial education that focuses on the principles of starting a company; the decision to start a company depends on the perception of desire and the possibility of achievement, not to mention the individuals' entrepreneurial orientation [57]. Other studies conducted by Gasse [99], Johansen and Schanke [115] and Do Paço, et al. [116] underlined that among the factors that may greatly influence entrepreneurial intention, there is entrepreneurial education during primary and secondary education [99,115,116]. Similarly, Wilson concluded that the organisation of effective programmes of entrepreneurial education or the implementation of adequate activities/projects in schools could lead to the success of students in an entrepreneurial career [110]. According to Krueger and Brazeal [55], entrepreneurial formation should give self-confidence through emotional and psychological support, as well as the knowledge required by potential entrepreneurs to start and manage a business. Therefore, entrepreneurial education provides individuals with these skills, as well as the necessary motivation to start their own business. The study conducted by Mueller et al. [43] underlines that there are significant differences between undergraduate and master's students with respect to entrepreneurial intention, and the results show that the latter are more likely to start their own business. Furthermore, authors reach the conclusion that entrepreneurial education significantly influences the development of personality traits of the future entrepreneurs. Last but not least, there are studies that did not find any significant link between the type of education and entrepreneurial intentions [117–119]. In this context, the aim of our research study is to establish the effect that the contribution of entrepreneurial education has on the youth intention towards creating a new business. We believe that the question regarding how entrepreneurial education affects the intention of starting a business in both economics and technical fields is relevant for further research. This empirical study extends the literature on the importance of producing future leaders equipped with the necessary skills and attitudes to be entrepreneurial in their professional lives.

4. Methodology and Data

4.1. Method and Instrument

Statistical analysis was carried out using Statistical Package for Social Science (SPSS) software, SPSS 21.0 (IBM Corporation, Armonk, NY, USA). Testing and modelling were performed using logit models, frequency analysis and internal consistency of the variables. Data were collected during the 2017 academic year through survey questionnaires administered to university students from two major public universities from Romania: Alexandru Ioan Cuza University, Faculty of Economics and Business Administration, and Gheorghe Asachi Technical University, Faculty of Civil Engineering. These faculties were selected as current business students are future business leaders, while those from technical fields are believed to have a strong entrepreneurial intention and activity [120,121].

The students were accessed while they were in class and were informed that their responses would be recorded and used for research at the beginning of the survey and asked to confirm their

consent. The study took into account the interactions between the components and several proposed categorical variables.

4.1.1. Dependent Variable: Entrepreneurial Intentions (EI)

Respondent's entrepreneurial intentions were assessed by asking several questions adapted from Liñán and Chen [121] and Yurtkoru et al. [122]. A multi-item scale with possible answers ranging from one (strongly disagree) to five (strongly agree) were used to indicate student's venture creation where a high score indicated the participants' willingness to become an entrepreneur. Five items were used to measure students' intentions as such: "My professional goal is to become an entrepreneur" (EI1), "I will make every effort to start and run my own firm" (EI2), "I am determined to create a firm in the future" (EI3), "I have very seriously thought of starting a firm" (EI4) and "I have the firm intention to start a firm someday." (EI5) (Appendix A).

4.1.2. Independent Variables

Locus of control (LC): To measure locus of control, we used an adapted Rotter's I-E (Internal-External) Scale version as utilized by Mueller and Thomas [81,82] consisting of ten items used to construct the locus of control dimension. The respondents had to answer questions like: "Whether or not I am successful in life depends mostly on my ability", "I feel in control of my life", "When I get what I want, it is usually because I worked hard for it" or "My life is determined by my own actions", "My success depends on whether I am lucky enough to be in the right place at the right time", "Success in business is mostly a matter of luck", "I feel that what happens in my life is mostly determined by people in powerful positions", and so on (Appendix A).

Locus of control was measured using a five-point Likert scale ranging between one (strongly disagree) to five (strongly agree).

Need for Achievement (AD): Ten items from Jackson personality inventory pool were used to assess the respondents need for achievement [123]. "I have a slow pace to my life", "I excel in what I do" or "I work too much" were some of the questions used to score this construct dimension (Appendix A). Need for achievement was measured using a five-point Likert scale ranging between one (strongly disagree) to five (strongly agree).

Entrepreneurial education (EE) was measured by looking at the entrepreneurial courses that respondents have taken during their study. Entrepreneurship courses attendance values were based on a scaled question that was set to 2 for students with entrepreneurship education, to 1 for students who plan to acquire such education, and to 0 for students with no such education and no plans to acquire it [21].

Other additional variables used in the analysis were gender, which was measured as a dichotomous variable (1 = male, 0 = female); faculty type (Alexandru Ioan Cuza University, Faculty of Economics and Business Administration = 0; Gheorghe Asachi University, Faculty of Civil Engineering = 1) where students indicated their university/faculty; and age, which included three groups categories: 18–20 years old, 21–24 years and 25 and above.

Appendix A presents the used items for entrepreneurial intention, locus of control and need for achievement constructs. In order to avoid a halo effect and to minimize response-set bias, some questions were reverse-scored and blended into the survey.

In order to verify the reliability of the multi-item scales of the questionnaire a Cronbach alpha-based internal consistency analysis was performed. For exploratory studies, values between 0.60 and 0.70 are considered acceptable [124–126]. The reliability of entrepreneurial intention construct was 0.909 (Cronbach's alpha). The values were above 0.7 for locus of control and need for achievement, which remained satisfactory for the analysis.

For locus of control and need for achievement, the score of the components have been estimated based on the related equations:

$$\text{Need for Achievement} = a_1 \cdot \text{AD1} + a_2 \cdot \text{AD2} + a_3 \cdot \text{AD3} + a_4 \cdot \text{AD4} + a_5 \cdot \text{AD5} + a_6 \cdot \text{AD6} + a_7 \cdot \text{AD7} + a_8 \cdot \text{AD8} + a_9 \cdot \text{AD9} + a_{10} \cdot \text{AD10} \quad (1)$$

$$\text{Locus of Control} = b_1 \cdot \text{LC1} + b_2 \cdot \text{LC2} + b_3 \cdot \text{LC3} + b_4 \cdot \text{LC4} + b_5 \cdot \text{LC5} + b_6 \cdot \text{LC6} + b_7 \cdot \text{LC7} + b_8 \cdot \text{LC8} + b_9 \cdot \text{LC9} + b_{10} \cdot \text{LC10} \quad (2)$$

Each personality trait was calculated as the mean of each subcomponent, where a_i and b_j represent the estimation parameters for need for achievement and locus of control, respectively; $i = 1, \dots, 10$; $j = 1, \dots, 10$; AD1, ..., AD10 and LC1, ..., LC10 represent the items used in the survey.

The proposed hypothesis were tested using several logistic regression models, where the dependent variable (Prob_EI) explained the probability of starting a business in the future and was constructed as a binary variable that took on one of two values, 0 or 1, based on the respondents' answers as follows:

$$\text{Prob_EI} = \begin{cases} 0 & \text{if } \text{Entrepreneurial Intention} < 3 \\ 1 & \text{if } \text{Entrepreneurial Intention} \geq 3 \end{cases} \quad (3)$$

where, those who were attributed a 0 value represent the ones with a 0% probability of opening a business in the future. The respondents who were attributed a 1 value were considered to have a 100% probability of becoming entrepreneurs in the next few years.

The binary logistic regression modelling was used to link the dependent variable (entrepreneurial intention) to the set of explanatory variables. We estimated the probability that a respondent becoming an entrepreneur, $\text{Prob}(y_k = 1 | x_k)$, depended on a set of explanatory variables (x_k) where $\text{Prob}(Y = y | X) \in [0; 1]$. The measurement of the variables on probability proceeded based on the following equation:

$$\text{Prob}(y = 1 | x) = \frac{\exp^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k}}{1 + \exp^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k}} \quad (4)$$

where y was the dependent variable (probability of a respondent to become an entrepreneur); X_1, \dots, X_k were independent variables (personality traits, entrepreneurial education exposure and control variables) and β_0 and β_k were regression coefficients. The significance of the expression $\text{Prob}(y = 1 | x)$ is the following: it was probability to achieve the value $y = 1$ conditioned by the value x . In other words, it was the probability of ordering the observation x in class $y = 1$, or the probability for value x to be associated with the occurrence of the event $y = 1$. Further on, we will mention $\text{Prob}(y = 1 | x)$ as prob, according to the notation from the binomial probability model (the probability of "success").

Hypothesis $\beta = 0$ was tested via the Wald test corresponding to the t-test in linear regression with the following test statistics:

$$\chi^2 = \frac{b^2}{\text{Var}(b)} \quad (5)$$

which is given χ^2 with a single degree of freedom. If the calculated value of the test, considered as an absolute value, was higher than the theoretical value obtained according to the parameters of χ^2 , the regression coefficient corresponding to the independent variable considered was not statistically significant; as a result, the variation of the respective independent variable did not significantly explain the variation of the dependent variable.

The equations estimated in the logit models are:

$$\text{Prob_EI} = \beta_0 + \beta_1 \cdot \text{Locus of Control} + \beta_2 \cdot \text{Need for Achievement} + \beta_3 \cdot \text{Entrepreneurial Education} + \xi \quad (6)$$

$$\text{Prob_EI} = \beta_0 + \beta_1 \cdot \text{Locus of Control} + \beta_2 \cdot \text{Need for Achievement} + \beta_3 \cdot \text{Entrepreneurial Education} + \beta_4 \cdot \text{Gender} + \xi \quad (7)$$

$$\text{Prob_EI} = \beta_0 + \beta_1 \cdot \text{Locus of Control} + \beta_2 \cdot \text{Need for Achievement} + \beta_3 \cdot \text{Entrepreneurial Education} + \beta_4 \cdot \text{Gender} + \beta_5 \cdot \text{Age} + \beta_6 \cdot \text{Faculty_type} + \xi \quad (8)$$

$$\text{Prob_EI} = \beta_0 + \beta_1 \cdot \text{Locus of Control} + \beta_2 \cdot \text{Need for Achievement} + \beta_3 \cdot \text{Entrepreneurial Education} + \beta_4 \cdot \text{Gender} + \beta_5 \cdot \text{Age} + \beta_6 \cdot \text{Faculty_type} + \beta_7 \cdot \text{Gender} \cdot \text{Locus of Control} + \xi \quad (9)$$

$$\text{Prob_EI} = \beta_0 + \beta_1 \cdot \text{Locus of Control} + \beta_2 \cdot \text{Need for Achievement} + \beta_3 \cdot \text{Entrepreneurial Education} + \beta_4 \cdot \text{Gender} + \beta_5 \cdot \text{Age} + \beta_6 \cdot \text{Faculty_type} + \beta_7 \cdot \text{Gender} \cdot \text{Need for Achievement} + \xi \quad (10)$$

$$\text{Prob_EI} = \beta_0 + \beta_1 \cdot \text{Locus of Control} + \beta_2 \cdot \text{Need for Achievement} + \beta_3 \cdot \text{Entrepreneurial Education} + \beta_4 \cdot \text{Gender} + \beta_5 \cdot \text{Age} + \beta_6 \cdot \text{Faculty_type} + \beta_7 \cdot \text{Gender} \cdot \text{Entrepreneurial Education} + \xi \quad (11)$$

$$\text{Prob_EI} = \beta_0 + \beta_1 \cdot \text{Locus of Control} + \beta_2 \cdot \text{Need for Achievement} + \beta_3 \cdot \text{Entrepreneurial Education} + \beta_4 \cdot \text{Gender} + \beta_5 \cdot \text{Age} + \beta_6 \cdot \text{Faculty_type} + \beta_7 \cdot \text{Gender} \cdot \text{Locus of Control} + \beta_8 \cdot \text{Gender} \cdot \text{Need for Achievement} + \beta_9 \cdot \text{Gender} \cdot \text{Entrepreneurial Education} + \xi \quad (12)$$

where β_i represents the regression parameters estimations and ξ the error term.

4.2. Sampling and Data Collection

A survey instrument was developed and data were collected using written questionnaires that were distributed to students in the classroom during March 2017 to October 2017. In order to facilitate the description and explanation of the entrepreneurial intention of the students' population from FEAA and FCI, we extracted a random sample by using the universities' databases. The random selection included only full-time students, with an allocation of state-funded positions within Bachelor and PhD programs for Romanians. We have randomly selected 1500 students, out of which only 400 BSc students and PhD students were willing to participate in the survey. In the final analysis, we included only BSc students as they constituted the vast majority of the observations. The total number of observations reached 270 valid responses. The percentage of complete responses was 67.5%. In order to assure the anonymity of the respondents, any personal identification data have not been collected.

Table 1 shows that the sample frame was composed by Bachelor program students from the Faculty of Economics and Business Administration (FEAA), Alexandru Ioan Cuza University (64.8% of the total respondents), and Faculty of Civil Engineering (FCI), Gheorghe Asachi Technical University (35.2% of the surveyed participants). The respondents were studying in one of the following fields: civil engineering (37.1%), finance (24.5%), statistics (18.4%), economic informatics (12.9%) or economy of commerce, tourism and services (7.1%).

From the total number of respondents, 53% were males and 47% were females. The respondents' age distribution was grouped into three age categories: 18–20 years old, 21–24 years and 25 and above. While 63.70 % were in the 18–20 year age group, 33.70% were in the 21–24 and the remaining students being 25 or older.

The results and interpretation of the empirical analysis are presented in the following section.

Table 1. Frequency distribution for our sample (n = 270).

	Frequency	Percent	Valid Percent	Cumulative Percent
<i>Faculty Type</i>				
FCI	95	35.2	35.2	35.2
FEAA	175	64.8	64.8	100.0
Total	270	100.0	100.0	
<i>Gender Distribution</i>				
Male	143	53.0	53.0	53.0
Female	127	47.0	47.0	100.0
Total	270	100.0	100.0	
<i>Age Category</i>				
	18–20	21–24	25 and above	
FCI	34	55	6	
FEAA	138	36	1	
Total	172	91	7	

Note: All values have been estimated from the observed sample weighted to take account of probability of selection, non-response and sample stratification. Source: data processed using the output from SPSS version 21.0.

5. Results and Interpretation

We started this section by presenting the descriptive statistics for the variables constructs considered for this study. The scale used to measure the variables described were Likert Scales (minimum 1, maximum 5), where 3 was the indifference value. Table 2 shows the number of items used for each of the construct, minimum, maximum, means and standard deviations for entrepreneurial intention, need for achievement and locus of control.

Table 2. Descriptive statistics of summated scales for the three dimensions.

Variable	n	No. of Items	Min.	Max.	Mean	Std. Deviation
Entrepreneurial Intention	270	5	1.00	5.00	3.6785	1.03718
Need for Achievement	270	10	2.10	4.60	3.5122	0.51581
Locus of Control	270	10	1.20	4.30	2.3878	0.49484
Valid n	270					

Source: data processed using the output from SPSS version 21.0.

From Table 2 can be observed that the means for entrepreneurial intention and need for achievement ranged between 3.5122 and 3.6785. The highest mean of entrepreneurial intention construct indicated that overall, the respondents' rate strongly agreed in terms of opening their own business in the future.

The results point out the fact that male respondents were more likely to start a business ($M = 3.911$) as compared to female ones ($M = 3.471$) (Figure 2). With respect to the need for achievement (AD), the average values were 3.445 for males and 3.571 for females. The average value of locus of control (LC) for female respondents ($M = 2.416$) was significantly higher than that of male respondents ($M = 2.355$), thus showing that women were more likely to be influenced from an emotional viewpoint by internal and external factors.

In the case of the need for achievement (AD) and entrepreneurial intention (EI), the scores were higher for undergraduate respondents from the Faculty of Civil Engineering (FCI, $M = 3.552$, $SD = 0.046$ for need for achievement; $M = 4.006$, $SD = 0.090$ for entrepreneurial intention) than for the undergraduate respondents from the Faculty of Economics and Business Administration (FEAA, $M = 3.496$, $SD = 0.535$ for need for achievement; $M = 3.500$, $SD = 0.081$ for entrepreneurial intention). Regarding locus of control (LC), the respondents of the Faculty of Economics and Business

Administration (FEAA, $M = 2.436$, $SD = 0.037$) obtained a higher average score than those from the Faculty of Civil Engineering (FCI, $M = 2.298$, $SD = 0.049$). The scores for the age group 21–24 indicated an average mean for entrepreneurial intention higher than for those 18–20 years old. The mean for locus of control was higher for those aged 18–20 years old than for those 25 years old and above. The higher score for need for achievement was for the group age 25 and above (Table 3).

Table 3. Descriptive statistics ($n = 270$).

	N		Mean		Std. Deviation				
<i>Faculty Type</i>	FCI	FEAA	FCI	FEAA	FCI	FEAA			
Locus of Control	95	175	2.298	2.436	0.049	0.037			
Need for Achievement	95	175	3.552	3.490	0.046	0.041			
Entrepreneurial Intention	95	175	4.006	3.500	0.090	0.081			
<i>Gender</i>	Male	Female	Male	Female	Male	Female			
Locus of Control	127	143	2.355	2.416	0.045	0.040			
Need for Achievement	127	143	3.445	3.571	0.042	0.045			
Entrepreneurial Intention	127	143	3.911	3.471	0.085	0.088			
<i>Age Category</i>	18–20	21–24	25+	18–20	21–24	25+	18–20	21–24	25+
Locus of Control	172	91	7	2.397	2.369	2.385	0.038	0.050	0.213
Need for Achievement	172	91	7	3.543	3.436	3.728	0.039	0.054	0.144
Entrepreneurial Intention	172	91	7	3.610	3.795	3.828	0.077	0.110	0.468

Source: data processed using the output from SPSS version 21.0.

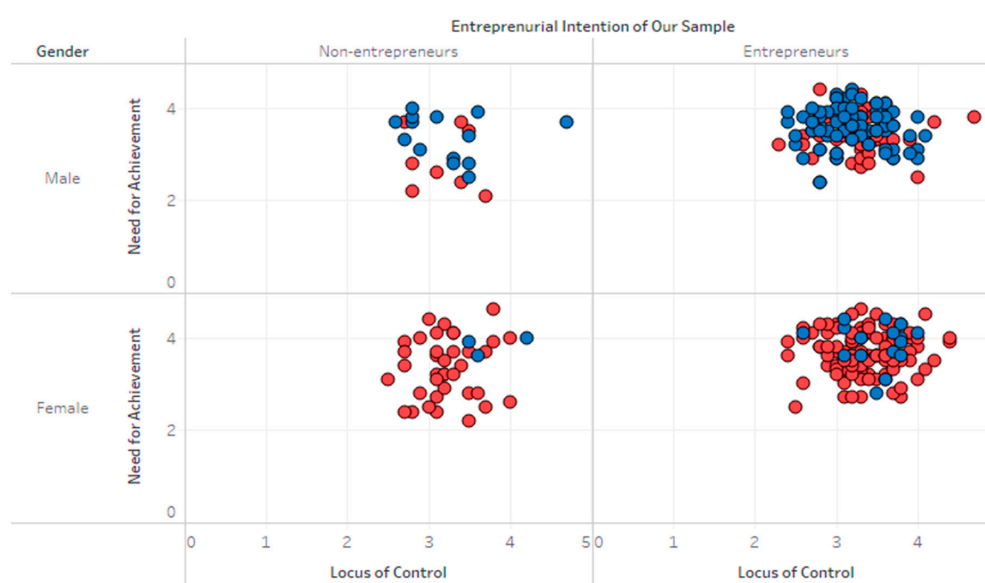


Figure 2. Entrepreneurial intention, locus of control and need for achievement distribution of students.

Source: Authors' elaboration.

In order to investigate the effect of personality traits and entrepreneurial education on the intention of starting a business, we performed a least square logistic regression analysis on 310 students from business and economics and engineering. The results of the analysis are summarized in Table 4. Entrepreneurial intention was the outcome; locus of control, need for achievement and entrepreneurial education were the predictors; while gender, age and faculty type were included as control variables.

The Estimates of the Influence of Personality Traits and Entrepreneurial Education on Student's Intention of Starting a Business

To test our hypotheses, we conducted several logistic model estimations to assess the impact of locus of control, need for achievement and entrepreneurial education on student's intention of starting a business.

Table 4 shows the regression coefficients, Ward statistics, significance levels and exponential ratio for each independent and control variable used in the study, including the interaction between gender and independent variables in subsequent logit models.

Supporting hypotheses H1 and partially H3, results in Model (1) revealed that locus of control, need for achievement and entrepreneurial education had a significant influence on student's entrepreneurial intentions (Table 5). In Model 1, entrepreneurial intention was significantly influenced by the variation of the scores regarding locus of control, need for achievement and entrepreneurial education. The probability of opening a business increased when the score for locus of control increased with one unit and the scores for both need of achievement and entrepreneurial education remained constant. The odds ratio was 1.763 for an additional unit to the score of locus of control when the need for achievement and entrepreneurial education showed constant variation.

Also, the same effect on the entrepreneurial intention was given by the increasing of scores for the need of achievement, taking into consideration the constant variation of the other variables in the model. In other words, the odds ratio was 3.070 for an additional unit to the score needed for achievement when the locus of control and entrepreneurial education showed constant variation. Considering a risk of 15%, we can claim that simultaneous variation of the two personality traits and entrepreneurial education significantly explained the intention of starting a business.

As we anticipated student's desire to achieve significant achievements, self-development and enhance their confidence in their own abilities led to an increase in their intention to become entrepreneurs.

Regarding the entrepreneurial education, we measured it by taking into consideration students' entrepreneurial courses attendance. Entrepreneurial education had a negative but significant influence on the probability of opening a business, partially supporting H3. Previous research has also found that educational programs might have a negative role on the intention of engaging in entrepreneurship [30].

In Models (2) and (3), to ensure internal validity of our analysis, we employed a number of control variables that provided alternative explanations for students' entrepreneurial intentions. In Model (2), entrepreneurial intention was significantly influenced by the variation of the scores regarding locus of control, need for achievement, entrepreneurial education and gender. The probability of opening a business increased when the score for locus of control increased with one unit and the scores for both need for achievement, entrepreneurial education and gender remained constant. The odds ratio was 2.045 for an additional unit to the score of locus of control when the need for achievement, entrepreneurial education and gender showed constant variation. Also, the same effect on the entrepreneurial intention was given by the increasing of the score for the need for achievement, taking into consideration the constant variation of the other variables in the model. In other words, the odds ratio was 3.417 for an additional unit to the score of need for achievement when the locus of control, entrepreneurial education and gender showed constant variation. Entrepreneurial education had a negative but insignificant influence on the probability of opening a business once the control variable was added in the model. Considering a 90% level of confidence, we can claim that simultaneous variation of locus of control, need for achievement, entrepreneurial education and gender significantly explained the level of entrepreneurial intention among our sample. The Wald Test highlighted the fact that, for a risk of 10%, the independent variables included in the model, i.e., locus of control and entrepreneurial education, significantly explained the variation of the dependent variable entrepreneurial intention. For a risk of 5%, we can see that need for achievement and gender positively and significantly influenced students' intent of opening a business. Therefore, Hypothesis 2: there is a significant gender difference in students' intentions towards entrepreneurship, was supported (Table 5).

Table 4. Logistic Model Estimation Results.

Variables	Model											
	(1)			(2)			(3)			(4)		
Dependent variable	Entrepreneurial Intention			Entrepreneurial Intention			Entrepreneurial Intention			Entrepreneurial Intention		
Independent variables	Coefficient B (S.E.)	Exp(B)	Wald	Coefficient B (S.E.)	Exp(B)	Wald	Coefficient B (S.E.)	Exp(B)	Wald	Coefficient B (S.E.)	Exp(B)	Wald
Intercept	−2.750 *** (1.066)	0.064	6.654	−3.695 *** (1.139)	0.025	10.531	−3.426 *** (1.306)	0.033	6.881	−3.294 *** (1.364)	0.037	5.833
Locus of Control	0.567 * (0.362)	1.763	2.446	0.715 ** (0.374)	2.045	3.659	0.703 ** (0.385)	2.019	3.324	0.585 (0.525)	1.795	1.244
Need for Achievement	1.122 *** (0.304)	3.070	13.581	1.229 *** (0.309)	3.417	15.787	1.241 *** (0.3121)	3.459	14.905	1.232 *** (0.322)	3.428	14.618
Entrepreneurial Education	−0.630 *** (0.316)	0.533	3.967	−0.508 ** (0.323)	0.602	2.474	−0.595 ** (0.331)	0.552	3.225	−0.600 ** (0.332)	0.549	3.269
Control												
Gender	-	-	-	0.935 *** (0.335)	2.547	7.780	0.964 *** (0.434)	2.623	4.943	0.761 (0.746)	2.141	1.041
Age	-	-	-	-	-	-	−0.218 (0.372)	0.804	0.343	−0.221 (0.373)	0.802	0.351
Faculty type	-	-	-	-	-	-	0.200 (0.481)	1.221	0.173	0.221 (0.774)	1.248	0.207
Interaction Effects												
Gender × Locus of Control	-	-	-	-	-	-	-	-	-	0.258 (0.774)	1.295	0.111
Gender × Need for Achievement	-	-	-	-	-	-	-	-	-	-	-	-
Gender × Entrepreneurial Education	-	-	-	-	-	-	-	-	-	-	-	-
No. obs.	270			270			270			263		
R Square	0.092			0.135			0.135			0.165		
Variables	Model											
Dependent variable	(5)			(6)			(7)					
	Entrepreneurial Intention			Entrepreneurial Intention			Entrepreneurial Intention					
Independent variables	Coefficient B (S.E.)	Exp(B)	Wald	Coefficient B (S.E.)	Exp(B)	Wald	Coefficient B (S.E.)	Exp(B)	Wald			
Intercept	−3.302 *** (0.670)	0.037	4.757	−3.999 *** (1.330)	0.018	9.049	−3.214 *** (1.535)	0.040	4.385			
Locus of Control	0.699 ** (0.386)	2.011	3.272	0.809 *** (0.398)	2.247	4.138	0.528 (0.518)	1.696	1.040			
Need for Achievement	1.206 *** (0.387)	3.340	9.733	1.283 *** (0.324)	3.606	15.698	1.123 *** (0.378)	3.074	8.847			
Entrepreneurial Education	−0.594 ** (0.331)	0.552	3.216	0.046 (0.403)	1.047	0.013	0.066 (0.398)	1.068	0.027			

Table 4. Cont.

Variables	Model								
	(5)			(6)			(7)		
Dependent variable	Entrepreneurial Intention			Entrepreneurial Intention			Entrepreneurial Intention		
Control									
Gender	0.611 (2.234)	1.842	0.075	1.983 *** (0.614)	7.261	10.439	−0.093 (2.460)	0.911	0.001
Age	−0.218 (0.373)	0.804	0.341	−0.229 (0.374)	0.795	0.376	−0.241 (0.377)	0.786	0.410
Faculty type	0.189 (0.486)	1.209	0.152	0.172 (0.496)	1.187	0.120	0.202 (0.514)	1.223	0.154
Interaction Effects									
Gender × Locus of Control	−	−	−	−	−	−	0.697 (0.832)	2.008	0.703
Gender × Need for Achievement	0.108 (0.670)	1.114	0.026	−	−	−	0.504 (0.717)	1.655	0.493
Gender × Entrepreneurial Education	−	−	−	−1.856 *** (0.701)	0.156	7.018	−2.089 *** (0.757)	0.124	7.617
No. obs.	263			263			263		
R Square	0.164			0.202			0.208		

Note: *, ** and *** denote that coefficients were significant at the 15%, 10 % and 5% levels, respectively. For age, since the number of students in group 3 was limited, we included only the first two groups. Source: data processed using the output from SPSS version 21.0.

Table 5. Verification of assumed hypotheses.

Hypothesis	Essence	Result	Method
H1	Positive relation between locus of control, need for achievement and entrepreneurial intentions.	Confirmed	Logit model estimations
	Male students have a higher propensity of opening a business in future compared to females.	Confirmed	
H2; H2a	There are gender differences that moderate the locus of control, need for achievement and entrepreneurial education in their influence on the entrepreneurial intention	Partially confirmed	
H3	Entrepreneurial education positively and significantly influence the intention of becoming an entrepreneur.	Partially confirmed	

Model (3) extended these findings by including further control variables: age and faculty type. The odds ratio was 2.019 for an additional unit to the score of locus of control when the need for achievement, entrepreneurial education and gender showed constant variation, when other additional control variables were included. The odds ratio was 2.623 for an additional unit to the gender score when the locus of control, need for achievement and entrepreneurial education showed constant variation. Considering a 5% risk, we are able to claim that the simultaneous variation of variables need for achievement and gender significantly explained the level of intention under influences of some others categorical factors. For a risk of 10%, locus of control and entrepreneurial education influenced the intention of opening a business in the future. At the same time, the simultaneous variation of the control variables age and faculty type insignificantly influenced the variation of our dependent variable. The results of the Wald test show the fact that a part of the variables included in Model (3) significantly influenced the variation of the dependent variable.

In order to verify Hypothesis 2a, we estimated Models (4), (5), (6) and (7). In these models, we estimated the probability of opening a business, taking into consideration the influence of the personality traits, entrepreneurial education and the interactions between them and gender (Table 5). Using the control variable gender as a moderator in relation with locus of control, need for achievement and entrepreneurial education, we wanted to check whether the influence of these variables on entrepreneurial intention was different between males and females.

In Models (4) and (5), we can see that by including the interaction between gender and locus of control, respectively, need for achievement, and their influence became non-significant regarding the prediction of the entrepreneurial intention. In other words, gender was not a significant moderator for these two variables in relation with entrepreneurial intention. In Model (4), the coefficient on the interaction term between gender and locus of control was positive but not statistically significant. However, the magnitude of the interaction effect varied by observation. For many observations with a predicted value of opening a business more than 0.6, the interaction effect was negative, not positive. In Model (5), the marginal effect showed that the interaction between gender and the need for achievement was near zero and not statistically significant. However, taking into consideration each observation, we can observe that most of them showed a negative influence of the interaction between gender and need for achievement on the entrepreneurial intention.

Unlike the previous models, Model (6) emphasized the fact that gender differences had a significant and negative influence in the interaction with entrepreneurial education, where for a risk of 5%, the interaction term was significant in predicting the probability of opening a business. The odds ratio was 0.156 when the score for entrepreneurial education increased with one unit and gender was equal to 1. However, the magnitude of the interaction effect varied by observation. For many observations with a predicted value of opening a business more than 0.6, the interaction effect was negative but approached zero. Model (7) comprised all the interactions between gender and the independent variables, namely locus of control, need for achievement and entrepreneurial education.

For the first two interactions, the coefficients showed a positive and not statistically significant influence on the entrepreneurial intention, but concerning the third interaction, the coefficient showed a negative and statistically significant influence on the probability of opening a business. Regarding the behaviour of each observation when these interactions were considered, we can observe that, for most of the observations, the predicted probability of opening a business was higher than 0.6 (Figure 3). The only significant interaction was the one between gender and entrepreneurial education with an odds ratio of 0.124.

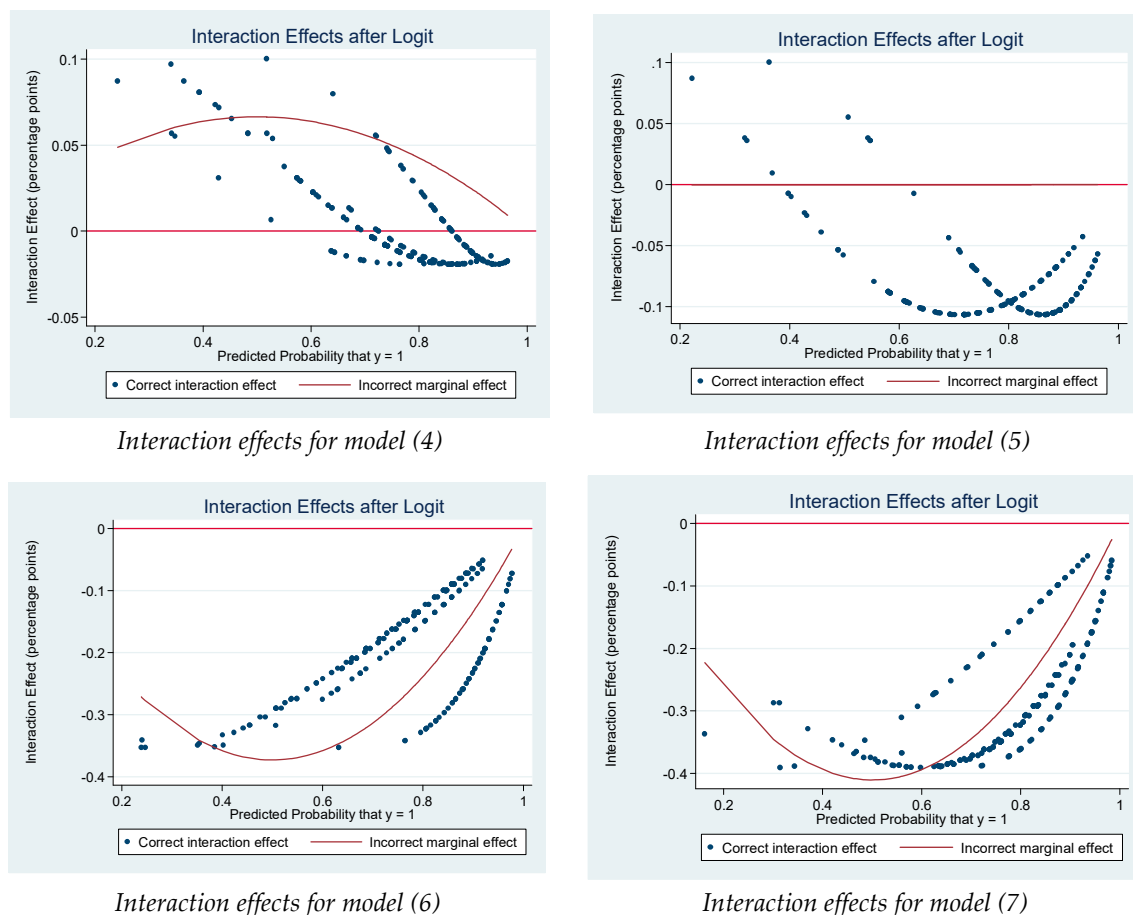


Figure 3. Interaction effects for models (4), (5), (6) and (7).

6. Conclusions and Discussion

The importance of entrepreneurship in creating wealth in society and businesses has been emphasised by many scholars. Entrepreneurship represents a driving force for the creation of new job opportunities, regional/national competitiveness and growth, having substantial economic and social benefits. Although a vast variety of factors play a significant role in the decision to become an entrepreneur, our main focus was directed towards the role of locus of control, need for achievement and entrepreneurial education on youth entrepreneurial intention. We have chosen a personality-related approach as the entrepreneurial behaviour, intention and activity does not occur in a vacuum but in a cultural and social context. Both locus of control and need for achievement are considered basic personal characteristics that may be favourable towards the intention of starting a business in the future. Entrepreneurship education is also fundamental as it helps develop abilities, skills, attitudes and knowledge that are very meaningful attributes for engaging in entrepreneurial activities.

The aim of the paper was to analyse the students' entrepreneurial intention based on need for achievement, locus of control, entrepreneurial education and several control variables, also taking into

account gender differences and potential moderating effects. In order to fulfil this aim, descriptive statistics, internal consistency tests and several logit regression models have been performed.

From the descriptive statistics, we could observe that both gender, age and faculty type had an important role on the distribution of the answers for entrepreneurial intention. In our sample, a much higher proportion of males had the intention to become entrepreneurs compared to the proportion of females. Also, from the proportion of males with high scores for entrepreneurial intention, the vast majority were studying at the Faculty of Civil Engineering. From the proportion of females with high scores on the same variable, the majority were enrolled in the Faculty of Economics and Business Administration.

The econometric models revealed that intention of becoming an entrepreneur depended on various aspects. First, entrepreneurial intention depended on the increasing scores of need for achievement and locus of control. Unlike previous studies on Romanian students [26], our analysis results indicate that both need for achievement and locus of control influenced youth intention towards opening a business, validating Hypothesis 1 (Table 5). In other words, the significant influence of the independent variables, such as locus of control and need for achievement, had the strength of predicting entrepreneurial intention among Romanian students. Therefore, we consider that both variables explain EI development. Our results are consistent with other studies and theories on the subject. Existing literature provides support for the positive relations between need for achievement, locus of control and entrepreneurial intention [127–129]. Furthermore, various research results confirm that high achievers typically chose situations that are linked with responsibility and problem-solving behaviors, increased self-awareness of the constant need for self-improvement, anticipation of possibilities in the future and moderate risk-taking [88,90,129,130]. Similarly, many scholars' research show positive and significant associations between locus of control and the likelihood of becoming an entrepreneur [131]. Nevertheless, entrepreneurs with high levels of achievement and locus of control are more likely to grow a more competitive and proactive organizational culture [90].

In Romania, however, although the results indicate a high level of need for achievement and control, which in practice that would predict (indicate) a high potential for entrepreneurial intent, the activation of entrepreneurial behavior is delayed. A possible cause may be due to the differing perceptions of perceived needs (defined by how people think about their needs), the needs expressed (the number of people concentrating on how they are transferred to actions) and the relative needs to equity and the influence of society on the perception of the phenomenon. Although there is a high level of need for achievement and locus of control, these personality traits can be caused by the inherited remnants of the past that have arisen and have not yet been eradicated. For example, parents do not encourage childhood independence, material rewards are used predominantly as a lever for adopting predicted behavior, less importance is given to non-material recognition and reward, etc. In other words, culture, as a sum of knowledge, traditions, habits, etc., may imprint on the individuals' behaviour.

Second, besides locus of control and need for achievement, entrepreneurial education had a significant effect on the intention towards opening a business in the future, validating Hypothesis 3 (Table 5). Entrepreneurial education prepares young individuals to enter the labour market, providing them the necessary skills, knowledge and capacities to undertake different kinds of challenges. In Romania and other Central and Eastern European countries, during the communist regime and at the beginning of the transition process, entrepreneurial education was limited only to specialised schools and higher education institutions through courses in economics. Aside from that, during the planned economy period, students were neither equipped with the necessary knowledge nor prepared to be professionally active and establishing own business [29].

The transition from centrally planned economy to market economy required the adaptation and modernization of the educational system to the new and complex socio-economic reality [29]. During and after the transition period, CEE countries have adopted several reforms in order to improve the educational system. However, recent studies reveal that in certain CEE countries, there is a generally

unfavourable opinion about school attitude in equipping individuals with the social and personal skills relevant in any profession, especially in secondary schools [29]. In addition, some scholars argue that entrepreneurial education may enhance individual's entrepreneurial intentions [120–122], while others pointing out a negative [30] or insignificant relation between those items [132]. To validate the role of entrepreneurial education on the intention of engaging in entrepreneurship, several logit models have been developed. The results obtained are important as they suggest a negative but significantly relationship between entrepreneurial education and the intent of opening a business in the future, partially validating Hypothesis 3 (Table 5). It seems that the Romanian educational systems still has the remains of the former socialist period, as it focuses more on acquiring formal knowledge and less on the development of entrepreneurial skills. The negative relationship between intention and entrepreneurial education might be caused by three possible scenarios, as follows.

First, one explanation could be that there is an increasing trend of young unemployment worldwide, which means that the educational system fails in preparing graduates in terms of knowledge and skills for the labor market. A way for citizens to be protected from the risks of unemployment is to provide a system of education and training that empowers citizens to accumulate knowledge and develop the skills needed for effective labor market functioning. In addition, rapid technological development, together with economic and social changes, have made it necessary to improve knowledge and skills needed through life. Entrepreneurial education must enhance entrepreneurial attitudes and abilities that are necessary in increasingly diverse and complex entrepreneurial environment [133].

A second possible explanation could be related to the fact that in Romania, the regulations do not facilitate entrepreneurs' involvement in the educational process (a teaching degree is required even for short-term teachers) [53], which may act as a barrier in implementing the entrepreneurial culture.

Although entrepreneurial education courses provide an overview on the necessary knowledge and skills, they may be subject to participation being compulsory; the time and effort input demanded from participants is high relative to the credit points they earn; and the number of students per group is large, which may hamper active involvement and may have caused some participants to free-ride [133]. However, investments in the quality of education are rapidly leading to the nation's economic growth and development as educated individuals are more likely to be employed, have the opportunity to earn higher wages and better respond to economic shocks.

Third, our analysis suggests that, in general, women tend to exhibit a lower propensity in engaging in entrepreneurship compared to males. This result helps to validate Hypothesis 2: there is a significant gender difference in students' intentions towards entrepreneurship. Previous research has found that in the EU, an average of 9.9% of working women are self-employed, in comparison with men, which register a percentage almost double that (17.5%). Moreover, self-employed women are less likely than males to have employees and tend to work on average more hours per week than self-employed men [5]. Similarly, another scholar found that among young people, men are more willing to engage in entrepreneurial activities than females [134]. For instance, Van der Zwan et al. (2012) [135], by including a wide array of relevant variables, showed the distribution of women and men across five engagement levels: never considered, thinking, taking steps, young business and mature business. Their results indicate that in Romania, 71% of women never considered setting up a business, 16% were thinking of opening a business and only 5% have taken the necessary steps in venture creation. In comparison, only 49% of men never considered opening a business, 23% were interested in opening one, and 14% were at more advanced stages of the entrepreneurial process [135]. Basically, Romania and other European transition countries are characterized by a low propensity of women to engage in business start-ups and by a small activity entrepreneurship rate. The main reasons for women low entrepreneurial intention might be: a lack of finance opportunities and business skills [5] and an unfavorable environment [135]. Evidence further shows that, although globally the female to male ratio has increase in the recent years, the number of female entrepreneurs is generally much lower than the number of male entrepreneurs [136]. Our analysis reveals that gender also had

a positive and significant effect, indicating that women were less active in the process of launching a business start-up. In contrast with the significant effect of the previous control variable, age and faculty type did not influence significantly the entrepreneurial intention when included in the model. This means that gender had a much higher effect on entrepreneurial intention than age and faculty type.

Fourth, the Hypothesis 2a stated that there were gender differences that moderate the locus of control, need for achievement and entrepreneurial education in their influence on the entrepreneurial intention (Table 5). The results showed that, on one hand, the interaction between gender and personality traits did not have a significant influence on predicting the probability of opening a business. On the other hand, the interaction between gender and entrepreneurial education indicated that entrepreneurial intention was different between males and females.

In summary, based on our findings, we can conclude that locus of control, need for achievement and entrepreneurial education influenced students' choice in being involved in entrepreneurial activities. This research shows that entrepreneurial education at university level should be further stimulated through different mechanisms in order to increase Romanian students' interest in choosing this career path. Furthermore, we have demonstrated that women have lower intentions to engage in start-up activities than males. We consider that our research has contributed to the ongoing debate on the importance of personality traits and entrepreneurial education for venture start-up in one important country of the European Union, which so far was not the subject of intense investigation (Romania).

7. Study Limitation and Further Directions for Research

Our research has certain limits related to the structure of the sample and size. We included only a limited number of students from only two major Romanian universities, namely FEAA and FCI; thus, the results obtained cannot be extrapolated at the level of the population. Future studies embracing larger datasets by including more universities from different regions of Romania and other CEE countries could give more robust data. Moreover, a more detailed analysis at the level of Romania's regions of development could highlight the regions in which young respondents are more likely to develop their own business.

Second, our exploratory analysis captures a snapshot of the entrepreneurial intentions at a given point in time. A longitudinal study could capture a clearer image of Romanian entrepreneurship among youth. Moreover, we have used only a few determinates of the entrepreneurial intentions, namely locus of control, need for achievement and entrepreneurial education, disregarding other additional factors. We intend in following studies to use additional sets of explanatory variables, such as attitudes, subjective norms, perceived behaviour control, risk propensity, social context among others, and to track the respondents' entrepreneurial behavior after the survey.

Third, although entrepreneurial intentions are one of the main predictors of the young people engagement in new business creation, they do not capture the actual materialization of these behaviour into actions. Another limitation of our study can be considered that our research captures only entrepreneurial intention, not materializations of the real actions.

According to the TEA results supplied by the National Institute of Statistics in Romania, starting with 2007, there is an ascending trend of population percentage that plans to start its own business, thus ranking Romania as the 6th EU country. However, the same data show that the degree of sustainability is low, with Romania second in the EU with respect to liquidation of the new set-up businesses. Thus, a future direction of research would be the study of the economic and non-economic factors (cultural indicators; other demographic indicators—environment of provenance; psychological indicators—Big Five, Risk) that influence entrepreneurial intention.

How respondents answered the questions in the survey may also be considered a limitation of the study. There is the possibility for the answers not to have been exactly ticked. Knowing that they are analysed, students can change behavior at the moment of research, and hence the distorted information via an artificial behavior that gives erroneous information with an impact on the final

results of research. As a future line of research, we aim at including a greater number of control questions to avoid contrary answers.

The short period of time in which target individuals were followed may harden the observance of group evolution stages. A future line of research could show in interviews for the same respondents to see how many of them were extremely interested in developing a business and acted on it and also the opposite case, i.e., to determine the factors that prevented it.

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Appendix A

Table A1. Construct items and data source.

Items	Questions	Data Source
Entrepreneurial Intention		
EI1	“My professional goal is to become an entrepreneur”	[121,122]
EI2	“I will make every effort to start and run my own firm”	
EI3	“I am determined to create a firm in the future”	
EI4	“I have very seriously thought of starting a firm”	
EI5	“I have the firm intention to start a firm someday”	
Locus of Control		
LC1R	“Whether or not I am successful in life depends mostly on my ability”	[74,82]
LC2R	“I feel in control of my life”	
LC3R	“When I get what I want, it is usually because I worked hard for it”	
LC4R	“My life is determined by my own actions”	
LC5R	“My success depends on whether I am lucky enough to be in the right place at the right time”	
LC6	“Success in business is mostly a matter of luck”	
LC7	“I feel that what happens in my life is mostly determined by people in powerful positions”	
LC8	“It is not wise for me to plan too far ahead, because things turn out to be a matter of bad fortune”	
LC9	“To a great extent my life is controlled by accidental happenings”	
LC10	“When I get what I want, it is usually because I am lucky”	
Need for Achievement		
AD1R	“I have a slow pace to my life”	[123]
AD2	“I excel in what I do”	
AD3	“I work too much”	
AD4	“I continue until everything is perfect”	
AD5	“I work hard”	
AD6	“I do more than what’s expected of me”	
AD7	“I plunge into tasks with all my heart”	
AD8R	“I am not highly motivated to succeed”	
AD9R	“I do just enough work to get by”	
AD10R	“I do too little work”	

Note: Entrepreneurial Intention: EI1, EI2, EI3, EI4 and EI5. Locus of Control: LC1R, LC2R, LC3R, LC4R, LC5, LC6, LC7, LC8, LC9 and LC10. Need for Achievement: AD1R, AD2, AD3, AD4, AD5, AD6, AD7, AD8R, AD9R and AD10R where “R” denotes reverse-scored items.

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