ABSTRACT
The purpose of this study is to explore the moderating role of work experience on the relationships between entrepreneurial education, self-efficacy and students’ entrepreneurial intentions. Quantitative data were collected via a questionnaire based by investigating whether engineering students have sufficient entrepreneurial skills to evaluate opportunity, developing new products, and recognizing potential market applications. Engineering students need to be able to exploit opportunities that rely on scientific and technical knowledge to create and capture value by launch new venture. Our important findings have a series of important practical implications for managers, engineering students, engineers, and academic staff interested in encouraging economic growth. The results show that entrepreneurial education and self-efficacy have a positive impact on students’ entrepreneurial intentions. Work experience only has a partial influence on students’ entrepreneurial intentions, it exerts a significant indirect effect does not have a significant moderating effect. The findings of the study also provide practical implications suggest that increasing engineering students understanding and awareness of entrepreneurship lead to greater levels of interest in entrepreneurship careers. To the knowledge of the authors, this study is the first to investigate the mediating effect of work experience on students’ entrepreneurial intentions.

Keywords: Business education, entrepreneurial intentions, work experience, entrepreneurship

INTRODUCTION
Entrepreneurship is based on strategic thinking and risk-taking behaviour that results in the creation of new opportunities and economic growth (Schermerhorn, J.R., 2013). Practically, it allows engineering students to combine their personal characteristics and competencies, discovering new ways of combining resources and capabilities in order to turn opportunities into new ventures and create value (Scuotto and Morellato, 2013). Entrepreneurship is one of the major engines of economic growth through the creation of new venture. Entrepreneurial ventures also play a key role in developing the business environment through creation of new venture and encouraging entrepreneurship and the acquisition of business skills (Rasmussen and Roger, 2006). Prior studies indicate that entrepreneurial education may encourage students to start their own venture by providing them business skills and knowledge (Kirby, 2004). Thus, universities can be seen as potential sources of future entrepreneurs. Shapero (1975) proposed an entrepreneurial intentions model based on perceptions of feasibility, desirability and propensity to capitalize on
opportunities. Entrepreneurial attitudes such as creativity, commitment, risk-taking and planning will help students to convert opportunity in new business in order to create value in the market and enhance welfare.

Despite the numerous empirical evidences on the entrepreneurial intentions, few studies have examined the contribution of business education and personal context to the formation of entrepreneurial intentions in economies in transition such as Romania economy. Hence, this study investigates students’ entrepreneurial intentions and examines the factors that influence their intentions to start a new venture with the particularities of economies in transition. Entrepreneurial intentions are very important to promote entrepreneurship in Romania by different ways such as “Romania Start-Up Nation” program.

This study highlighted several significant influences associated with various factors in shaping attitudes that lead to entrepreneurial intentions. Several studies have investigated the extent to which entrepreneurial education influences the students’ entrepreneurial intention because it can influence the career selection of students to perform entrepreneurial behaviors (Turker and Selcuk, 2008). For example, entrepreneurial studies included on university curricula are to augment business education and enhance entrepreneurial behavior. We have no knowledge of any entrepreneurial study that take into consideration the moderating effect of work experience on students’ entrepreneurial intentions. So far less attention has been given to examining the possible influence of work experience on relationships between entrepreneurial education, personal networks, self-efficacy and students’ entrepreneurial intentions.

Next follows a literature review and hypotheses development. Then a section is dedicated to test our model and hypotheses on data collected from respondents. Next section provides details about the empirical results. Finally, a concluding section presents implications, limitations, and directions for future research.

THEORY DEVELOPMENT AND HYPOTHESES

Entrepreneurship is a disruptive process that allows engineering students to combine their personal characteristics and competencies in order to turn opportunities into new business. It sustains innovation efforts, redistribute the resources and bring greater efficiency for businesses (Chiles et al. 2007). Entrepreneurship is one way that is able to reduce the rate of unemployment by creating more new jobs and enhance employability. Prior studies indicate that business education may encourage students to start their own venture by providing them business skills, knowledge and improve their abilities to transform their intentions to real new venture because intentions are a good predictor of action and commitment (Kirby, 2004). Entrepreneurial skills can be represented as the ability to identify and capitalize an opportunity. Entrepreneurial intentions can be influenced by various factors such as skills, education, and social support because it is a measure of the students’ perception of their capability to become entrepreneurs and determining opportunities and mobilizing necessary resources (Fitzsimmons and Douglas, 2011). Entrepreneurship is a multidimensional variable and it refers to the knowledge, skills, and capability of a person to identify an opportunity and convert it in new business in order to create value in the market and enhance welfare. A start up is a temporary organization based on scalable and profitable business model.

Universities can be agents of entrepreneurship because encourage and enable their researchers to transform their research into new ventures or new products and process. Entrepreneurship courses have a significant impact on engineering students’ perception about their ability to identify opportunities, business planning, develop business model and improved entrepreneurial skills to creating a new venture. The integration of entrepreneurship into engineering studies programs gives students skills to create risk-taking, find new resources, create a business plan, and sustain new venture. Thereby, engineering students become independent and bring more vitality and energy in faculty. Creative ideas need quality as well as originality and students need to possess problem-finding abilities.

Entrepreneurial education consists of various courses which it can develop positive students’ attitudes towards entrepreneurship correlated with intentions to create new venture. This kind of
education is offered in business schools but it is important for all technical universities to adapt study programs by including entrepreneurship courses in the technology and engineering programs, because many innovative ideas need to be identified and convert in new ventures. Thus, universities should create an entrepreneurial environment for supporting students’ decision toward entrepreneurial career embedding entrepreneurship in education as well as the development of business’s skills to apply scientific knowledge and new technologies (Keat et al. 2011).

Entrepreneurial education contributes to increasing entrepreneurial self-efficacy and support to business start-up at the university. Students are exposed to business courses that provide knowledge about marketing, management, how they prepare budgets and business plan, identify opportunities, organize business activities, initiative-taking, risk taking, creativity, financing or marketing research. Students as entrepreneurs have little capital or resources to capture the opportunity by the new venture. They experienced a statistically significant increase in creativity and level of entrepreneurship skills. Furthermore, including entrepreneurship education in the curricula of the faculties enhances the capability of students to exploit opportunities, acquiring more knowledge and exploiting them to develop innovative products. Entrepreneurial education focuses on building knowledge and skills for starting and managing a new venture. This leads to formulation of the following hypothesis:

**H1: Entrepreneurial education has a positive influence on students’ entrepreneurial intentions**

One predictor refers to the degree to which friends, family, peers and society influence the students’ entrepreneurial intentions and increases their employability. Family is the first place where students may learn about entrepreneurship and how they can start a new venture through enhancing their entrepreneurial self-efficacy and skills to explore business opportunities and select an entrepreneurial behavior (Mustapha and Selvaraju, 2015). Self-efficacy indicates students’ level of confidence in their abilities to successfully perform their tasks (Bandura, 2012). For example, I can is a statement of efficacy and I will is a statement of intention. In fact, engineering students differ in their efficacy, especially in the case of entrepreneurial intentions because emotional stability is related to self-efficacy.

This concept is a key personal trait and is based on cognitive process of evaluating and selection of an action, the efforts required for accomplishing it, and the persistence needed for overcoming challenges such as entrepreneurship tasks. However, family, colleagues, relatives, friends and peers, work experience, social networks play a key role to influence students’ entrepreneurial self-efficacy. Basically, they support and guidance the students’ decision to start new ventures because their high level of exposure to entrepreneurship education (Bagheri et al. 2010). Self-efficacy can improve the likelihood of students acting entrepreneurially in the future from valuable idea to enterprise and new value or influences the students’ entrepreneurial intentions. In this context, an interesting hypothesis arises:

**H2: Self-efficacy has a positive influence on students’ entrepreneurship intentions**

In many situations, it was observed as engineering students have not the entrepreneurship culture. Students often indicated that work experience would increase their entrepreneurial intentions because the willingness of students in entrepreneurship rose significantly because they have access to a range of new ideas and resources which enables them to assess, integrate, utilize and recombine knowledge and information to develop new services or products. Work experience of students could help to improve the ability to explore new opportunities, risk attitude, inventiveness and how they will assess the likelihood of success of the new venture. It offers new knowledge in particularly tacit that students may not have thought of before.

As noted above, business and technical skills are required for developing and sustaining an enterprise. Work experience provides some insight about how students can realize their innovative ideas and shape the start-up to be exactly as they imaged it. However, the impact of past work experience on new venture is not very clear. Work experience help students to identify and
appreciate the value of business opportunities but it will profitable cannot be known with certainty before. A moderating relationship might exist between entrepreneurial education, self-efficacy and entrepreneurial intentions. Work experience will moderate the relationships between business education and students’ entrepreneurial intentions. Students will not perform some activities if they perceive that requirements are beyond their capabilities. Work experience of students will moderate the relationship between entrepreneurial education and students’ entrepreneurial intentions. Therefore, the following hypothesis is suggested:

**H3**: Work experience will moderate the effects of entrepreneurial education (a) and perceived self-efficacy (b) on students’ entrepreneurial intentions

To reduce the variance caused by other factors, we controlled for the gender of respondents and their age. Some studies show that there are difference between male and female in terms of managerial skills and self-efficacy (Wilson et al. 2007). Students who like to work independently are better able to identify opportunities to start a new venture, raise funds through debts and problem-solving in real situation (Kirby, 2004). Based on previous studies, we proposed a conceptual model presented in Figure 1. Relationships among the constructs were empirically tested as follows.

![Figure 1: Proposed conceptual model](image)

**METHOD**

**Research Design**

In order to meet the research objectives and to test the proposed hypotheses, we developed a quantitative empirical study of the moderating effect of work experience on the relationship between self-efficacy and students’ entrepreneurial intentions. This study used cross-sectional survey data. The relationships proposed in the conceptual model were estimated through structural equations models.

A detailed structured questionnaire was designed to collect data. The questionnaire was administered to the students face-to-face. Data were collected from a sample of master students (67 students) were recruited from University Politehnica of Bucharest (UPB), during November 2016. This university is the largest and the oldest technical university in Romania. Socio-demographic characteristics of the students are the following. About 40 percent of the respondents were males and 60 percent of the respondents were females. The age of the respondents ranged from 23 to 26 (SD=1.03 years). The average age was 24.3 years. The response rate was 77.62 percent and resulted in 52 valid questionnaires (N=74). The data were assessed for the extent of missing values. The missing values were completely at random and the means substitution method was used the replace
them. All of the items were also measured on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). The dependent variable was students’ entrepreneurial intentions (SEI). The independent variable in this research is entrepreneurial education and work experience of students. A moderator effect is supported if the interaction of a predictor variable and the moderator is significant (Baron and Kenny, 1986). Moderator variable might enhance, reduce or change the influence of the predictor variable.

**Variables Measurement**

Established multiple-item scales were used, and scale items were randomly ordered to minimize the bias effects. Scales for the constructs were created based on previously validated survey instrument. In addition, individual measures were averaged to obtain a simple value for each construct. Each respondent was asked to indicate its level of agreement with some statements. **Students’ entrepreneurial intentions** (dependent variable) was measured using 3 items adapted from Linan (2009) and Krueger (2000): “I am determined to create a firm in the future (SEI1)”, “I am ready to do anything to be an entrepreneur (SEI2)” and “I have got the intention to start a firm in the next three years (SEL3)”. **Entrepreneurial education** offers students the abilities to recognize business opportunities and convert them in new venture. This construct was measured using 2 items: “Faculty members encourage students to engage in entrepreneurial activities (EE1)” and “I think that entrepreneurial education help me to be more creative for starting and managing a new venture (EE2). The items used to measure the self-efficacy were adapted from Bandura (2012). Respondents were asked to indicate its level of agreement with two statements “I perform effectively on different tasks (SE1)” and “I will achieve most of my goals and important outcomes (SE2)”. **Work experience** was measured using two items “I believe that work experience should build entrepreneurial 'skills (WE1)” and “Have you worked in a job during your study program in the faculty (WE2)”. Control variables describe exogenous influences on the dependent variable.

**ANALYSIS AND RESULTS**

We have tested all of the hypotheses together within a single model. All measurements of the constructs are based upon the respondent’s perceptions. Because measures for the dependent and independent variables were taken from the same questionnaire, we performed Harman’s one-factor test to see whether one factor accounted for the majority of variance in the data. Therefore, we entered all items used in the questionnaire into an unrotated exploratory factor analysis. The first factor accounted for 38.59% of the variance. Since a single factor did not emerge and one-factor did not account for most of the variance, this suggested that common method bias was not a serious concern in our data set.

Data were analysed using descriptive statistics and hierarchical regression. Table 1 presents the descriptive statistics and correlations for all variables used in this research. We can see that correlation coefficients are within acceptable levels. That is, no bivariate correlation is greater than 0.65, and there is little threat of common methods in our data. The highest correlation coefficient is equal to 0.649. Therefore, no constructs were found to correlate so highly (at .90 or more). The correlation analysis shows that most coefficients are low (well under 0.7), which minimizes concern with multicollinearity issues in our analysis. Many indicators showed a significant positive correlation. Correlation greater than or equal to 0.454 are significant at p<0.05. Correlation greater than or equal to 0.641 are significantly at p<0.01. The value of Cronbach’s α for all constructs is greater than the threshold value of 0.7, which indicates a good internal consistency of the scales.
Table 1: Descriptive statistics and correlations

| Variable   | Mean  | SD    | 1    | 2    | 3    | 4    | 5    | 6    |
|------------|-------|-------|------|------|------|------|------|------|
| SEI (1)    | 6.42  | 0.74  |      |      | 0.854|      |      |      |
| SEF (2)    | 5.9   | 0.92  | 0.048|      |      | 0.851|      |      |
| ED (3)     | 5.45  | 0.80  | 0.641**| -0.361| 0.836|      |      |      |
| WE (4)     | 4.34  | 0.93  | 0.022| -0.454*| -0.138| 0.963|      |      |
| Gender (5) | 1.24  | 0.19  | -0.233| 0.066| -0.1 | 0.084| 1    |      |
| Age (6)    | 0.74  | 0.42  | -0.174| 0.207| -0.14| 0.114| -0.119| 1    |

*p<0.05; **p<0.01
Diagonal elements (in bold) represent the Cronbach’s α

Table 2: Hierarchical multiple regression (dependent variable – SEI)

| Explanatory variables                  | Model 1 | | Model 2 | | Model 3 | |
|----------------------------------------|---------|---|---------|---|---------|---|
|                                        | β       | t | β       | t | β       | t |
| Age                                    | -0.204  | -0.93 | -0.17 | -0.99 | -0.12 | -0.58 |
| Gender                                 | -0.258  | -1.17 | -0.2   | -1.2 | -0.54 | -2.6 |
| Entrepreneurial education              | 0.726   | 4.045 | -0.74 | -0.92 |
| Self-efficacy                          | 0.36    | 1.805 | -1.67 | -1.94 |
| Work experience                        | -0.004  | -0.02 | -2.75 | -1.5 |
| Entrepreneurial Education x Work experience | 1.3 | 0.9 | |
| Self-efficacy x Work experience        | 2.3    | 1.33 | |
| R² / Adjusted R²                       | 0.096 / 0.00 | | 0.559 / 0.421 | | 0.512 / 0.269 | |

The model was analysed using hierarchical linear regression with self-efficacy, entrepreneurial education and work experience as the independent variables and students’ entrepreneurial intentions as the dependent variable. We have included in the model as control variables age in years and gender as male and female. The results are shown in Table 2. In Model 1 was included only control
variables against students’ entrepreneurial intentions, and no significance is shown. Model 2 examines entrepreneurial education, self-efficacy and work experience as the independent variables. The adjusted $R^2$ is 0.421, that is, this model explaining 42.1% of the variance of dependent variable. The variables self-efficacy and entrepreneurial education have a key role in the explanation of students’ entrepreneurial intentions. The most appropriate model that was found significant is 2. As predicted, we found that entrepreneurial education had a significant positive interaction with students’ entrepreneurial intentions ($\beta=0.726$, $p<0.01$) and that self-efficacy had a significant effect on the students’ entrepreneurial intentions ($\beta=0.36$, $p<0.01$). These results support Hypotheses 1 and 2. However, Hypothesis 3 was not supported because the coefficient for the interaction term was not significant and work experience does not have a significant moderating effect. Engineering students who had some work experience show lower intention to start up new business. They are more interested to find a job because they feel comfortable.

CONCLUSIONS

The results of this study revealed that entrepreneurship courses should be develop of students’ entrepreneurial attitudes by developing their self-efficacy. Entrepreneurial education has a partial effect on entrepreneurial intentions. Our research does not find support for a significant moderating effect of work experience. However, the results provide support for the previous studies, confirming the important role played by entrepreneurial education and self-efficacy. One reasonable explanation for these findings is that work experience does not help students to identify and exploit a business opportunities. Students with some work experience have little capital or resources to capture the opportunity by the new venture. Another finding is that males had higher intentions to start their own venture than females. Since data was collected form a particular university, the generalizability of the findings may be limited. This study also is based on cross-sectional survey research design, but more research based on longitudinal study would improve the results of this research. Future research is needed to examine the role of firm size where the students worked.

ACKNOWLEDGEMENT

This work has been funded by University Politehnica of Bucharest, through the “Excellence Research Grants” Program, UPB – GEX. Identifier: UPB–EXCELENTA–2016; research project title: Improving the performance of small and medium – size enterprises in Romania by implementing the integrated risk management (Acronym: PERFORM), contract no. 55/2016.

REFERENCES

Bagheri, A. & Pihie, Z.A.L. (2010). Role of family leadership development of university students. *World Applied Science Journal* 11(4), 434-442

Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal of Management*, 38(1), 9-44

Baron, R. M. & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychology research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51 (6), 1173-1182

Chiles, T.H., Bluedorn, A.C., & Gupta, V.K. (2007). Beyond creative destruction and entrepreneurial discovery: A radical Austrian approach to entrepreneurship. *Organization Studies*, 28(4), 467-493.

Fitzsimmons, J.R. & Douglas, E.J. (2011). Interaction between feasibility and desirability in the formation of entrepreneurial intentions. *Journal of Business Venturing*, 26(4), 431-440
Keat, O.Y., Selvarajh, C. & Meyer, D. (2011). Inclination towards entrepreneurship among university students. An empirical study of Malaysian university students. *International Journal of Business and Social Science*, 2(4), 206-220

Krueger Jr. N.F. & Reilly, M.M. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15(5/6), 411-417

Kirby, D.A. (2004). Entrepreneurship education: Can business schools meet the challenge? *Education and Training* 46(8/9), 510-519

Linan, F. & Chen, Y.W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurial Theory and Practice*, 33(3), 593-617

Mustapha, M. & Selvaraju, M. (2015). Personal attributes, family influences, entrepreneurship education and entrepreneurship inclination among university students. *Kajian Malaysia*, 33(1), 155-172

Rasmussen, E.C & Sorheim, R. (2006). Action-based entrepreneurship education, Technovation, 26, 185-194.

Schermerhorn, J.R. (2013). *Management*, Twelfth Edition, Wiley.

Schapero, A. (1975). The displaced, uncomfortable entrepreneur. *Psychology Today*, 9, 83-88

Scuotto, V. & Morellato, M. (2013). Entrepreneurial knowledge and digital competence: Keys to success for student entrepreneurship. *Journal of Knowledge Economy*, 4(3), 293-303

Turker, D. & Selcuk, S.S. (2008). Which factors affect entrepreneurial intention of university students? *Journal of European Industrial Training*, 33(2), 142-159

Wilson, F., Marlino, D. & Kickul, J. (2007). Our entrepreneurial future: Examining the diverse attitudes and motivations of teens across gender and ethnic identity. *Journal of Development Entrepreneurship* 9(3), 177-198