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Abdul-Rasheed Ottun

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University of Tartu

Faculty of Social Sciences
School of Economics and Business Administration

Abdul-Rasheed Ottun

The influence of self-efficacy on the relationship between
entrepreneurial education and entrepreneurial intentions

Master's Thesis

Supervisor: Isaac Akuffo

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1. Abstract

This research investigated the influence of entrepreneurial self-efficacy as a mediator and/or moderator of the relationship that exists between entrepreneurial education and entrepreneurial intentions. The research adopted the social cognitive theory of Bandura and the Azjen's theory of planned behaviour to lay the theoretical foundation for the construct of entrepreneurial self-efficacy and entrepreneurial intentions and hypothesized mediation influence of entrepreneurial self-efficacy. Data was collected from 169 students from nine (9) universities in Estonia using survey method, and multiple linear regression technique was utilized for mediation and moderation analyses. The research result supported the mediation influence hypothesis of entrepreneurial self-efficacy. The result has implication on how to approach entrepreneurial teaching the purpose of making student develop entrepreneurial intentions. From the result, entrepreneurial education does not directly influence students' entrepreneurial intention in the presence of entrepreneurial self-efficacy, hence, improvement of students' entrepreneurial education do not directly influence their entrepreneurial intentions. Rather, the improvement directly improves students' entrepreneurial self-efficacy, which makes entrepreneurship more desirable to them.

2. Introduction:

The role of entrepreneurship as a significant driver for economic growth and development necessitate the understanding of entrepreneurship and factors that influences entrepreneurial activities. Hence, the policy intervention and programmes by different governments to stimulate entrepreneurship interest and decision amongst their citizenry, most importantly amongst university students and the working population. Consequently, understanding entrepreneurship intention development and factors that influences entrepreneurship have been of interest to researchers, educators and policy makers. Entrepreneurship is “the mindset and process to create and develop economic activity by blending risk-taking, creativity and/or innovation with sound management, within a new or existing organisation.” (Commission of the European Communities, 2003, 2003, p.6). It has become a major panacea to socio-economic problems for countries all over the world and entrepreneurship development has been of increasing interest to governments, academics and corporate bodies. For instance, a statement attributed to former Italian prime minister Romano Prodi “Our lacuna in the field of entrepreneurship need to be taken seriously because there is mounting evidence that the key to economic growth and productivity improvements lies in the entrepreneurial capacity of an economy” (Prodi, 2002, p. 1). In attempts to address these interests, several policy effort and investment have been made by governments to promote entrepreneurial activities. However, to drive entrepreneurial desire and activities at macro level, there is the need for a critical understanding of factors that influences entrepreneurial desires, that is, entrepreneurial intentions, and the relationship that subsists between them. This understanding can offer direction for appropriate policy intervention, programs and investment for the promotion of entrepreneurial intentions and entrepreneurial skills (entrepreneurial self-efficacy).

Many researchers have examined entrepreneurial intentions, and entrepreneurial education alongside other related behavioural phenomena. But much still needs to be done for proper understanding of the how entrepreneurship phenomena influence one another. Hence, the purpose of this study is to investigate the influence of self-efficacy on the relationship between entrepreneurial education and entrepreneurial intentions at the university level.

It is acknowledged that several literatures exist on the relationship between students' entrepreneurial education and students' entrepreneurial intention (Bae, Qian, Miao, & Fiet, 2014; Kolbre ,Piliste & Venesaar, 2006; Fayolle, Gailly, & Lassas-Clerc, 2006; Karimi et al 2014; Martin, McNally, & Kay, 2013) . However, there is dearth of literatures that have studied the influence of student's entrepreneurial self-efficacy on the relationship between entrepreneurial education and entrepreneurial intention of Estonian students. Similarly, studies that have demonstrated the mediation or moderation effect of student's entrepreneurial self-efficacy on the relationship between entrepreneurship education and entrepreneurship intention are very few (Oyugi, 2005; Nowiński, Haddoud, Lančarič, Egerová, & Czeglédi, 2019).

The objectives of this study are:

- To investigate the relationship between entrepreneurial education and entrepreneurial intention of university students in Estonia.
- To investigate the relationship between entrepreneurial education and entrepreneurial self-efficacy of university students in Estonia.
- To investigate the mediation influence of students' entrepreneurial self-efficacy on the relationship between students' entrepreneurial education and entrepreneurial intentions of students in Estonia.
- To investigate the moderating influence of students' entrepreneurial self-efficacy on the relationship between students' entrepreneurial education and entrepreneurial intentions of students in Estonia.

Given the social and economic importance of entrepreneurship to any country, investigating the influence of entrepreneurial self-efficacy on the relationship between entrepreneurial education and entrepreneurial intention amongst student should enable Estonian policy makers and academics gain insights into how to nurture students' entrepreneurial thinking by using curriculums that suites the objective (Esfandiar et al 2016).

3. Literature Review and Hypothesis development

Entrepreneurship is “the creation of new organisations” (Gartner, 1989, p.62). Entrepreneurship has been part of human society since the inception of commerce among humans. The transition of human society to market economy has accentuated entrepreneurial activities and as such, entrepreneurship has become a phenomenon that determines the level of economic activities in human societies. Because entrepreneurial activities are embodiment of innovation and creativity processes that bring about economic productivity, job and product creation, through the tenacious marshalling of available resource by entrepreneurs for economic gains. Thus, understanding how entrepreneurial intentions is nurtured through entrepreneurial education and individuals’ self-efficacy have become vital. To this end, this study employed the social cognitive theory of Bandura and the theory of planned behaviour of Azjen as the theoretical framework for the explanation of the variables of this study.

3.1. Entrepreneurial self-efficacy

Self-efficacy is the main construct of the social cognitive theory which postulates that human behaviour is the outcome of the continuous interaction among cognitive, behavioural and environmental influences (Bandura,1977). Self-efficacy is the self-judgment of one’s ability to perform a task in a specific domain (Bandura,1977). In other words, it is the judgement of how well one can execute courses of action required to deal with prospective situation. According to Bandura (1977), people produce the environmental conditions that affect their behaviour in a reciprocal manner. As such, the experiences generated by behaviour also partly determine what a person becomes and can do, which in turn, affects subsequent behaviour. The belief in self-efficacy provides a great influence on human beings since they act on their thoughts, feelings and behaviours (Bandura, 1995). Efficacy belief is the basis of action, as the execution of an action by an individual is based on the individual’s perception of his/her ability. Hence, people have incentive to perform an action when they believe they can produce desired effect by their actions (Bandura, 1997). Based on the social cognitive theory, self-efficacy is a motivational factor that influences individual choice of activities, goals and performance in different situation (Bayrón, 2016). The construct of self-efficacy has been applied in different domains. Majority of expert agree that self- efficacy is domain specific (Newman, Obschonka , Schwarz, Cohen, & Nielsen, 2019) and from the application of self-efficacy in the domain of entrepreneurship, emerges the concept of entrepreneurial self-efficacy (ESE). Chen, Green and Crick (1998) applied the construct

of self-efficacy, where they coined a related construct called entrepreneurial self-efficacy and defined it as self-belief in personal capability to perform tasks and roles aimed at entrepreneurial outcomes. They reported that self-efficacy is positively related to one's intention in setting up a business. Similarly, Bandura (1997;2000) and Stajkovic and Luthan (1998) found self-efficacy to have strong positive relationship with performance outcome. Similarly, Luthan and Ibrayeva (2006) found self-efficacy to have a direct and mediating impact on the performance of entrepreneur in their study of transition economies of Central Asia. In addition, self-efficacy has been associated with opportunity recognition and risk-taking (Krueger and Dickson 1994) and has been found to be positively related to global perceptions of feasibility (Kreuger et al. 2000).

Many research works in the field of entrepreneurship have emphasized the role of self-efficacy in the study of entrepreneurship and have recommended its further application to areas of entrepreneurial career preference, intentions, and performance (Boyd and Vozikis 1994; Chandler and Jansen 1992; Gartner 1989; Krueger and Brazeal 1994; Schere et al 1989). Bayrón (2016) concluded that the social cognitive theory and entrepreneurial self-efficacy can be found useful as applied tools for developing entrepreneurship learning, competencies and intentions.

3.2. Azjen's Theory of Planned Behaviour (TPB)

The TPB was postulated by Azjen in 1991 and it is the most widely applied model for the explanation and prediction of behavioural intentions in many domains (Schlaegel & Koenig, 2014). It posits that the intention to perform a behaviour is explained by **attitude towards performing the behaviour, subjective (Social) norm, and perceived behaviour control**. Intention captures the motivational factors that influence a given behaviour and is an indication of the effort one plans to exert in order to perform the behaviour. In general, the stronger the intention, the more likely should be the performance of the behaviour (Ajzen, 1991). Attitude toward the behaviour refers to the extent to which an individual evaluates the behaviour in question has a favourable or unfavourable. Therefore, attitude towards the behaviour indicates the awareness of the individual about the outcome of the behaviour. Attitude towards a behaviour is formed through the association of the attitude to the expected outcome. (Ajzen, 1991). The subjective (social) norms reflect the extent to which important (revered) individuals such as family, relatives, friends and important figure or group of societal dignitaries approve or disapprove of performing a given behaviour and the strength of an individual's motivation to comply with the revered individuals'

wishes (Ajzen, 1991). That is, the perception of one's behaviour in the context of the thought of others. Perceived behavioural control refers to the perceived ease or difficulty in performing the behaviour and is assumed to encompass the individual's anticipated impediments and obstacles (Ajzen 1991). According to Ajzen (1991), perceived behavioural control is most compatible with Bandura's (1977, 1982) concept of self-efficacy.

3.3. Entrepreneurial education and entrepreneurial intention

Education is critical in shaping attitude, skills and culture (Wilson, 2008). The start of university entrepreneurial education can be traced back to about seventy-five (75) years ago in United State of America (Wilson K., 2008) when the university of Harvard's business school launched her entrepreneurial program. Since the successful graduation of the class of 1945 of the Harvard Business School, scholars in entrepreneurship study have been interested in the increasing growth of entrepreneurial education (Mwasalwiba,2010). Consequently, this influenced the role of higher institutions as a prominent learning centre of entrepreneurship (Timmons, 1989). From inception till now, entrepreneurial education has evolved through three phases, namely; genesis phase, apprentice phase and academic phase (Babson College, 2015) with each phase building on the entrepreneurial pedagogy to teach entrepreneurial skills and competencies. The success achieved by the United States in using entrepreneurship to drive economic growth and national prosperity rapidly spread to other regions. In Europe, entrepreneurial education began to gain traction in the 1990s, the same period when entrepreneurship training started in Estonia. The adoption of the free market economy paved way for the commencement of formal entrepreneurship education in Estonian university. This commencement was inevitable because it was part of the requirements for the adoption of the free market economy (Kolbre, Piliste, & Venesaar, 2006). Since then, the number of institutions offering entrepreneurship education has continually increased, as at 2006, the figure was around 20 institutions (Kolbre, Piliste, & Venesaar, 2006). Educational institutions generally attempt to the promote entrepreneurial values through entrepreneurship education based on traditional educational system and vocational system approaches, how well these teachings create entrepreneurship interest in university students have interested many researchers. According to Mwasalwiba (2010), there is a shift in attention in entrepreneurial education research from "establishing enterprises" to "entrepreneurial attitudes", this shift is due to findings of researchers on the time lag between student's entrepreneurial education and students becoming an

entrepreneurs i.e. establishing an enterprise (Li & Wu, 2019) , hence, researchers now consider intentions towards entrepreneurial endeavours instead of actual entrepreneurial behaviours to examine the effectiveness of entrepreneurial education (Li & Wu, 2019). The works of researchers like Bird (1988), Bayrón (2016), Bae et al (2014), Pihie and Bagheri (2013) and so many more align with this shift. Hence, this study investigates the influence of self-efficacy on the relationship between entrepreneurial education and entrepreneurial intention without further investigation into when intention turned to actual action.

Entrepreneurial intention is defined as “the conscious state of mind that precedes action and directs attention toward entrepreneurial behaviours such as starting a new business and becoming an entrepreneur” (Morian, Gorgievski, Laguna, Stephan, & Zarafshani, 2012). Also, Bird (1988) defines entrepreneurial intention as the state of the mind that directs and guides the actions of the entrepreneur towards the development and the implementation of new business concepts. This study defines entrepreneurial intention as individual’s self-determination to engage in task and activities that leads to new business formation. The fact that the creation of a venture requires planning and critical thinking of actions makes entrepreneurship a planned and intentional behaviour Bird (1988) and Katz and Gartner (1988). Consequently, this makes the intention models useful in the examination of (Krueger, Reilly, & Carsrud, Competing Models of Entrepreneurial Intentions, 2000)insinuated another approach [OBJ:OBJ:OBJ:OBJ](Krueger, Reilly, & Carsrud, Competing Models of Entrepreneurial Intentions, 2000)[OBJ:OBJ]. Hence, researchers have used the intention-based model to explain planned behaviour because intentions have been found to be a significant predictor of behaviour.

Kim and Hunter (1993) showed that intention successfully predict behaviour and attitudes successfully predict intentions. Similarly, Kautonen, Gelderen & Tornikoski (2013) found that attitude, perceived behavioural control and subjective norms are significant predictors of entrepreneurial intention; and intention and perceived behavioural control are significant predictors of subsequent behaviour. Other researchers such as Krueger, Reilly & Carsrud (2000), Esfandiara. et al (2017), Tran & Korflesh (2016) amongst others, have used the intention model to explain intention of entrepreneurial activities.

In entrepreneurship studies of intentions, the two most applied theory-driven intention models with proven predictive validity are Shapero's model of the entrepreneurial event (SEE) and Azjen’s

Theory of Planned Behaviour (TPB). The work of Schlaegel & Koenig (2014) envinced the claim. They identified 98 studies conducted in over 30 countries during the past 25 years. All of the studies examined the development of entrepreneurial intention by applying one of these two models in an as-is manner, or by way of extending one or combining the two models (Schlaegel & Koenig, 2014).

Relationship between entrepreneurial education and entrepreneurial Intention

Entrepreneurial education (EE) “consists of any pedagogical program or process of education for entrepreneurial attitudes and skill” (Fayolle, Gailly, & Lassas-Clerc, 2006). Empirical research into the relationship between EE and student’s EI has shown mixed results, most suggesting that EE promotes EI and others suggesting otherwise. For example, Oyugi (2005) reported that entrepreneurship education of students has significant effect, that is positive but moderate, on students’ intention to start a new venture in his study of university students from three universities in Uganda. Similarly, Bae et al. (2014) reported mix result in their study. They found a significant but small correlation between EE and EI. Zhang, Duyster and Cloodt (2013) studied entrepreneurial intention of student from ten universities and reported a significant positive impact from EE on EI. Martin et al. (2013) also report the similar result amongst other researchers that have studied this relationship. Based on above, this study suggests as follows:

Hypothesis 1: Entrepreneurship education of student will be positively related to entrepreneurial Intentions of student.

Relationship between entrepreneurship education and entrepreneurship self-efficacy

Self-efficacy develops from four sources namely: mastery experience, vicarious learning, social persuasion and physiological states (Bandura 1997). Zhao, Seibert, & Hills (2005) and others researchers found that entrepreneurial education provides opportunities for all development of entrepreneurial self-efficacy through all the four sources mentioned by Bandura (1997). Newman et al. (2019) mentioned in their work that researchers have studied the impact of entrepreneurship education and training program on entrepreneurial self-efficacy at the tertiary level, and there is growing evidence that participation in entrepreneurial education and training programs enhanced the ESE of university student (Kubberød & Pettersen, 2017; Wilson, Kickul, & Marlino, 2007; Zhao et al., 2005, Byabashaija & Katano, 2011; Gielnik, Uy, Funken, & Bischoff, 2017; Karlsson

& Moberg, 2013; Nowiński, Haddoud, Lančarič, Egerová, & Czeglédi, 2017). Therefore, this study suggests that:

Hypothesis 2: Entrepreneurial education of student will be positively related to student entrepreneurial self-efficacy of student.

Relationship between entrepreneurship self-efficacy and entrepreneurship intention

Newman et.al. (2019) from their work found EI to be the most widely studied outcome of entrepreneurial self-efficacy. Researchers like Krueger, Reilly, and Carsrud (2000), Byabashaija and Katano (2011), Douglas, E. (2013) amongst others applied the Ajzen's (1991) theory of planned behaviour to explain the influence of entrepreneurial self-efficacy on entrepreneurial intentions of university student. Since the construct of perceived behavioural control derives its origin from banduras' self-efficacy, they found a significant positive link between ESE and the entrepreneurial intentions of students. Therefore, this study proposes that:

Hypothesis 3: Student entrepreneurial self-efficacy will be positively related to student's entrepreneurial intention.

Influence of entrepreneurial self-efficacy on the relationship between entrepreneurial education and entrepreneurial intentions.

Gielnik et al. (2017) in their study of the entrepreneurship passion and effect of entrepreneurship training, found that entrepreneurial self-efficacy is important to maintain high passion after training. Maintaining high passion after training eventually leads to business creation. Zhao, Seibert and Hills (2005) also surveyed 265 master of business administration students across 5 universities to understand the mediating role of self-efficacy in EI development. Their results showed that the effects of perceived learning from entrepreneurship-related courses, previous entrepreneurial experience, and risk propensity on entrepreneurial intentions were fully mediated by entrepreneurial self-efficacy. Nowinski et al. (2019) found that entrepreneurship education contributes to entrepreneurial intentions indirectly through improving entrepreneurial self-efficacy of student in the Visegrad countries. To check this in the context of Estonia, this study would investigate the probable mediating or interaction effect of entrepreneurial self-efficacy on the relationship by stating that:

Hypothesis 4a: student entrepreneurial self-efficacy will mediate the relationship between students' entrepreneurial education and entrepreneurial intentions.

Hypothesis 4b: student entrepreneurial self-efficacy will moderate the relationship between students' entrepreneurial education and entrepreneurial intentions.

4. Data and Methods

4.1. Population and sample

The target group of interest for this study were university students currently enrolled for different programs in nine (9) universities in Estonia. The universities were randomly selected by the researcher for the purpose of the research. An anonymous online survey method was adopted for the purpose of data collection for the study. The survey was conducted using an electronics questionnaire as the instrument of the survey. The sample selection was based on convenience sampling technique. The questionnaire was electronically administered to respondents and returned through e-mails and personal messaging applications. Table 1 shows further details of the respondents. In total, 180 responses were received. During the data preparation phase, a response was observed to be void because the respondent was no more a student. 10 respondents, who were student-entrepreneurs, were also eliminated. In total, 11 participants were eliminated during the data preparation phase, leaving the total number of valid respondents at 169 after elimination. The Multiple linear regression assumptions were tested before performing multiple linear regression analysis. The sufficiency of sample size was checked using the formula proposed by Tabachnick and Fidell (1996) which suggest that sample size (n) should be larger than the sum of 50 and $8m$ where m is the number of independent variables i.e. $n > 50 + 8m$. Hence, the sample size of 169 is sufficiently large enough for predicting relationship between the variables of interest and for multiple regression analysis. In addition, to further support the sufficiency of the sample size, following Hairs et al (2010) recommendation on minimum sample size requirement for research adopting .01 and .05 levels of significance, and .80 power level, the minimum sample size threshold is put at 20 and 39 respectively for the levels of significance.

Table 1: Summary of Participants information

Participants	Frequency	Percentage
<u>Gender:</u>		
Male	118	69.8
Female	51	30.2
Total	169	100
<u>Age:</u>		
18 - 25	93	55.0
26 - 35	73	43.2
36 - 45	3	1.8
Total	169	100

<u>University of Tartu</u>		
Estonian Business School	1	.6
Estonian Entrepreneurship University of Applied Sciences	1	2.2
Estonian University of Life Science	10	5.9
Tallinn University	3	1.8
Tallinn University of Technology	41	24.3
Tartu Health Care College	15	8.9
University of Tartu	98	58.0
Total	169	100
<u>Program</u>		
BSc.	36	21.3
PhD.	17	10.1
MSc.	116	68.6
Total	169	100
<u>Employment Status</u>		
Employed	88	52.1
Unemployed	81	47.9
Total	169	100

Source: prepared by the author

4.2. Measures

The study adapted questionnaires for the measurement of entrepreneurial self-efficacy, entrepreneurial education and entrepreneurial intention. The questionnaire combined items from the studies of Küttim et al. (2014), Liñán and Chen (2009), and Shooks and Bratianu (2010). The questionnaire had a total of 15 items, equally divided amongst the constructs. A 5-point Likert scale was adopted for scoring the items. The scores range from 1 - “strongly disagree” through 5 – “strongly agree” with 3 being the “neutral”. While 2 and 4 represent “agree” and “disagree” respectively.

4.2.1. Entrepreneurial Self efficacy:

The construct of entrepreneurial self-efficacy was measured using five (5) items adapted from Shooks and Bratianu (2010). The questionnaire measured self-efficacy of participants using items relating to different entrepreneurial conception and activities such as business opportunity identification, business idea origination, product creation, business change management and business capabilities. For example, participants responded to items like ‘I can react quickly to take advantage of business opportunities.’. The scale for entrepreneurial self-efficacy was derived by summing corresponding Likert scale value of the response given by respondent to the items

(indicators variables) under entrepreneurial self-efficacy. The sum was subsequently averaged amongst the number of items under entrepreneurial self-efficacy. Hence, the entrepreneurial self-efficacy value for an observation represents the mean of the response value relating to the response respondent provided for the items under entrepreneurial self-efficacy.

4.2.2. Entrepreneurial Education:

Items adapted from Küttim et al. (2014) was used to measure the construct of entrepreneurship education (EE). The instrument used items relating to how entrepreneurship education improved participants' understanding of entrepreneurship attitudes and values, action required to start a business, business opportunity and network, and management skill enhancement amongst others. Participant responded to statement like: 'I am ready to do anything to be an entrepreneur.' amongst others. Just like entrepreneurial self-efficacy, the summated scale was also computed to derive the scale for entrepreneurship education.

4.2.3. Entrepreneurial Intentions:

The construct was measured with 5-item scale adapted from (Liñán & Chen, 2009). The instrument required participant to indicate their likelihood to start a business using statements relating their professional goal, interest in starting a business, determination to start a business, efforts and readiness to start a business. Participants were required to rate their agreement or disagreement to the statements using a 5-point response ranging from 'strongly disagree' to 'strongly agree'. EE improved my understanding of the concept, attitudes, values and motivations of entrepreneurship. The scale for entrepreneurial intention was also derived through summated scale like it was computed for other variables.

Exploratory factor analysis (EFA) was performed using Principal Axis Factoring (PAF) extraction method and Promax with Kaiser normalization as rotation method. Three factors were extracted with 15 items using loading of .50 and above as the threshold (Hair et al, 2010). No item was removed because each item had factor loading of $> .50$. KMO measure of sampling accuracy (MSA) was .87, which is meritorious based on the benchmark of $> .80$ suggested by Hair et al (2010). In addition, the Bartlett test of sphericity was significant ($p = .000$), which suggests that the factor correlation matrix is not an identity matrix, hence, correlation exist among the factors for factor analysis to be conducted.

To examine the internal consistency of the instrument (questionnaire), reliability test was conducted. Table 2 shows the means, SD for the items and Cronbach's alpha value. All scales had Cronbach's alpha values that is above benchmark of .70 (Hair et al. 2010).

Table 2: Mean, standard deviation, factor loading and Cronbach's alpha

Scales	Mean	SD	Factor Loading	Cronbach's alpha
Entrepreneurial Self-efficacy				.82
ESE item 1: I can react quickly to take advantage of business opportunities.	3.32	.94	.61	
ESE item 2: I can originate new business ideas and products.	3.32	1.04	.72	
ESE item 3: I can create products that fulfill customers' unmet needs.	3.37	1.01	.82	
ESE item 4: I can tolerate unexpected changes in business conditions.	3.61	.86	.50	
ESE item 5: I do have the skills and capabilities required to succeed as an entrepreneur.	3.38	1.09	.61	
Entrepreneurial Education				.90
EE item 1: Entrepreneurial Education improved my understanding of the concept, attitudes, values and motivations of entrepreneurship	3.62	.92	.73	
EE item 2: Entrepreneurial Education increased my understanding of the actions to be taken in order to start a business.	3.46	.99	.79	
EE item 3: Entrepreneurial Education enhanced my ability to identify business opportunities and network	3.32	1.14	.93	
EE item 4: Entrepreneurial Education in higher education leads to more start-up ventures	3.52	1.04	.77	
EE item 5: Entrepreneurial Education enhanced my practical management skills in order to start a business	3.46	.99	.85	
Entrepreneurial Intentions				.87
EI item 1: I am ready to do anything to be an entrepreneur.	3.22	1.07	.58	
EI item 2: My professional goal is to become an entrepreneur.	3.14	1.17	.82	
EI item 3: I will make every effort to start and run my own firm	3.41	1.14	.88	
EI item 4: I am determined to create a firm in the future	3.61	1.17	.95	

EI item 5: I have the intention to start a firm someday	3.66	1.32	.54
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source: prepared by the author

Confirmatory factor analysis (CFA) was conducted to measure how well the model fits. Items with loading $< .50$ threshold were eliminated (Hair et al. 2010). Item 5 of EI (I have the intention to start a firm someday) was eliminated due to its low loading. The results of the CFA indicates that CMIN = 120.831, degree of freedom = 69, CMIN/DF = 1.751, comparative fit index (CFI) = .962, SRMR = .060, RMSEA = .067, goodness of fit index (GFI) = .067, adjusted goodness of fit index (AGFI) = .856, normed fit index (NFI) = .918, Turker-Lewis index (TLI) = .950. Thresholds are $\chi^2/df \leq 3$ (Schreiber et al., 2006), $RMSEA \leq 0.06$; $TLI \geq 0.95$; $NFI \geq 0.95$; $CFI \geq 0.95$ (Hu and Bentler, 1999).

Herman's single factor test was conducted to examine measurement errors that stems from participants' responses, the result shows that one single factor explains 40.88 percent of the variation in the model which is within the acceptable threshold of less than 50 percent.

5. Results.

The multiple linear regression MLR techniques were adopted to analyse the research data for the purpose of examining the influence of entrepreneurial self-efficacy (ESE) on the relationship between entrepreneurial education (EE) and entrepreneurial intention (EI) of Estonian student. To ascertain the influence of ESE either as a mediating effect or moderating effect in the relationship of EE and EI, and to test hypothesis of this study, simple mediation and moderation analyses were performed.

Table 3 shows the mean, standard deviation and correlation coefficient. The Pearson correlation coefficient indicates the strength of the relationship that exists among the variables. The correlation coefficient was computed for all the three constructs based on 169 observations. The result indicated that all correlations among the variables are moderate and statistically significant ($p < .001$), implying that a positive linear relationship exists in the relationships tested. Hence, a change in one variable directly affects (influences) the other variable in the same direction.

The highest of the correlations exist between students' entrepreneurial education and students' entrepreneurial self-efficacy ($r = .60$), suggesting that students' entrepreneurial education can predict students' entrepreneurial self-efficacy. Students' entrepreneurial self-efficacy has the highest relationship with the dependent variable, students' entrepreneurial intention, ($r = .47$). The correlation result suggests that there is no multicollinearity problem among the variables.

Table 3: Pearson correlation, Mean and Standard Deviation

Table Correlations Result			M	SD	1	2	3
1	Entrepreneurial self-efficacy (ESE)		3.3893	0.76			
2	Entrepreneurial education (EE)		3.4580	0.87	.60**		
3	Entrepreneurial intention (EI)		3.3521	0.97	.47**	.35**	

** . Correlation is significant at the 0.01 level (2-tailed); M = Mean; SD = Standard Deviation

Source: prepared by the author

Table 4 shows the result of mediation analysis. To determine the mediation effect of ESE on the relationship between relationship between students' EE and students' EI, and to test all hypothesized relationship, simple mediation analysis was conducted. The mediation analysis is a means through which the exogenous variable/independent variable, students' EE, affects the dependent variable, EI, through an endogenous variable referred to as intervening variable (mediator), students' ESE (Preacher & Hayes, 2008).

The analysis separated the total effect of students' EE on students' EI into direct and indirect effects with three distinct paths. The direct effect shows how EE directly affects EI without the impact of students' ESE, and it is described as path c'. The indirect effect shows how EE indirectly affect EI through the mediator, students' ESE, involving two paths namely paths a and b respectively. Both paths show the partial effect involved in the mediation process. The entire indirect effect of the analysis is then computed through the product of path a and b, representing the entire indirect effect of students' EE on students' EI through the mediator.

Adopting Baron and Kenny (1986) four-step regression method using SPSS – Process regression ad-on of Andrew F. Hayes, the mediation effect was tested alongside hypotheses 1,2 and 3 of the study. The four-step regression involves simple linear regression of path c' - EE and EI (hypothesis 1) - as step 1, path a -EE and mediator (hypothesis 2) - as step 2, and finally partial regression which involves path b – the mediator, EI (hypothesis 3) and EE - as step 3 and 4. Subsequently, the regression estimates derived are used to test the study's hypotheses. The results of these regressions are show in table 4

Table 4: Regression result from path analysis

Variables / Model Parameters	Hypothesis/Models/Mediation Paths					
	Model 1/ path a		Model 2/ Path c'		Model 3/ Path b	
	ESE= $\beta_0 + \beta_1 * EE$ (B) SE		EI= $\beta_0 + \beta_1 * EE$ (B) SE		EI= $\beta_0 + \beta_1 * EE + \beta_2 * ESE$ (B) SE	
Constant	1.976**	.214	1.994**	.290	.590**	.304
EE	.409**	.060	.392**	.081	.102	.078
ESE					.711**	.090
R ²	.218		.123		.364	
F-sig	.000**		.000**		.000**	

Note * $p \leq .05$ level (2tailed); ** $p \leq .001$ level (2tailed)

B – Unstandardized coefficient; β – Standardized coefficient

EE = Entrepreneurial Education; ESE= Entrepreneurial self-efficacy; EI = Entrepreneurial Intentions

Source: prepared by the author

The result of step 1 from Model 2, test hypothesis 1 and shows that the relationship between EE and EI is positive. The result indicates that the overall fit of the model is significant ($F(1,167) = 23.381, p = .000$) and the model's EE explains 12.3% of the variation in the model. The estimated coefficient is positive and significant ($p < .001$), implying positive relationship exist as hypothesized. In addition, the result represents the regression result for "Path c'" of the mediation

analysis model and it indicates the direct effect of EE on EI when the mediator is not considered. The result was significant ($B = .392$, $SE=.081$, $p <.001$) and the standardized coefficient is ($\beta =.350$).

The result of step 2 from model 1, test hypothesis 2 and shows that the relationship between EE and ESE is positive as hypothesized. The model fit is significant ($F (1,167) = 46.569$, $p = .000$) and EE explains 21.80% of the variation in the model. The estimated coefficient is positive and significant ($p <.001$). Hence, implying that EE is a significant predictor of ESE. The result represents the regression result of “Path a” of the mediation analysis model. The result indicated that the effect of EE on the mediator (ESE) was significant ($B = .409$, $SE=.060$ $p <.001$) with standardized coefficient ($\beta =.467$). Given the result, the null hypothesis in hypothesis 2 is rejected, and it is concluded that students’ entrepreneurial education positively influences students’ entrepreneurial self-efficacy.

The result of step 3 and 4 using model 3, concludes the mediation analysis. Steps 3 and 4 test hypothesis 3 and 4a of this study. The results represent outcome of the partial regression of EI on EE and mediator (ESE). The partial regression model fit is significant ($F (2,166) = 47.510$, $p = .000$) the EE and ESE explains 36.40% of the variation in the model. The regression of EI on the mediator, ESE, holding EE constant showed that ESE is positive and significant ($B= .711$, $S.E =.090$, $p <.001$). Hence, ESE is a significant predictor of EI and influences EI. On the other hand, the regression of EI on EE controlling ESE showed that EE was positive but not significant ($B=.102$, $S.E = .078$, $p = .195$). Therefore, indicating the presence of mediation effect (influence). In order to investigate the reason for the insignificant estimate of EE given that the initial estimate from model 2 was significant, model 2 was compared to model 3. The investigation showed that the presence of the mediator, ESE, in model 3 reduced the regression estimate and test static of EE relatively by 74%. Consequently, the p-value beyond the significant level of .05 leading to failure to reject the null hypothesis. Hence confirming the presence of full mediation effect, and ESE fully mediated the relationship between EE and EI.

Table5: Direct effect; Indirect effect and Total effect

Model	B	Bootstrap		
		SE	LLCI	ULCI
Direct effect (EI \leftarrow EE)	.102	.078	-.053	.257
Indirect effect (ESE \leftarrow EE) * (EI \leftarrow ESE)	.291*	.062	.174	.420
Total effect	.393	.081	.232	.553

Note * $p \leq .05$ level (2tailed)

Source: prepared by the author

Table 5 shows the result of the direct and indirect effect of the mediation analysis. The indirect effect of EE on EI was tested using bootstrap and confidence interval. The result indicated that indirect effect of EE on EI is $B = .291$ (derived from the product of estimated coefficients of path a and b, .409 and .711, respectively) with confidence interval (95%) bounds that are not inclusive of zero (0). Hence, the effect was significant at 5% level. The total effect of EE on EI is $B = .393$ with 95% confidence interval bound that is non-zero. Therefore, the effect was significant at 5% Level.

Moderation Effect:

To test whether entrepreneurial self-efficacy (ESE) of student moderates the relationship between students' entrepreneurial education (EE) and entrepreneurial intention (EI), hypothesis 4b, a moderation analysis was conducted using AMOS Process ad-on of Andrew Hayes. Firstly, the students' EI was regressed on EE and ESE of students.

Table 6: Moderation analysis result

Variables	EI = $\beta_0 + \beta_1 * EE + \beta_2 * ESE + \beta_3 * EE * ESE$				Bootstrap	
	β	se	t	p	LLCI	ULCI
constant	3.350	.065	51.477	.000	3.2215	3.479
EE	.103	.080	1.294	.198	-.0543	.261
ESE	.712	.090	7.870	.000	.533	.890
Int_1 = EE * ESE	.007	.079	.086	.932	-.150	.164
R	R-sq	MSE	F	df1	df2	p
0.6034	.364	.615	31.486	3	165	.000
	R2-chng		F	df1	df2	p
EE * ESE	.000		.007	1.000	165	.932

Int_1: Interaction of EE and ESE; β_3 is the interaction effect; ESE is moderator variable

Source: prepared by the author

The result in table 6 indicated that the model with EE and ESE without the interaction term explained 36.4% of the variation in EI and the model fit was significant ($F(3, 165) = 31.486, p < .001$). The main effect of students' EE on students' EI is positive but not statistically significant ($B = .103, SE = .080, p = .198$), conditional on students' ESE = 0. The effect of students' ESE on students' EI was positive and statistically significant ($B = .712, SE = .090, p < .001$), holding students' EE constant.

Afterward, another regression was run with model 2 by adding an interaction term, which is the product of centred EE and ESE, to model 1. The result indicated that there was no significant change between model 1 and 2. This implies the interaction term has no impact on the EI, hence, no additional variation in EI. The reason for no significant change in the variation in EI explained by the model 2 i.e. no change in coefficient of determination ($\Delta R^2 = .000$), ($\Delta F(1, 165) = .007, p = .932$). Therefore, the interaction term is not statistically significant ($B = .007, SE = .079, p = .932$). By implication, there is no interaction (moderation) effect of student's ESE. Hence, the relationship that is observed between students' EE relate with students' EI is not dependent on student's ESE. Therefore, the null hypothesis in hypothesis 4b, that student entrepreneurial self-efficacy has no moderating effect on the relation between students' entrepreneurial education and student's entrepreneurial intention is true. Consequently, it cannot be rejected. See Figure 1 for graphical details of the moderation analysis.

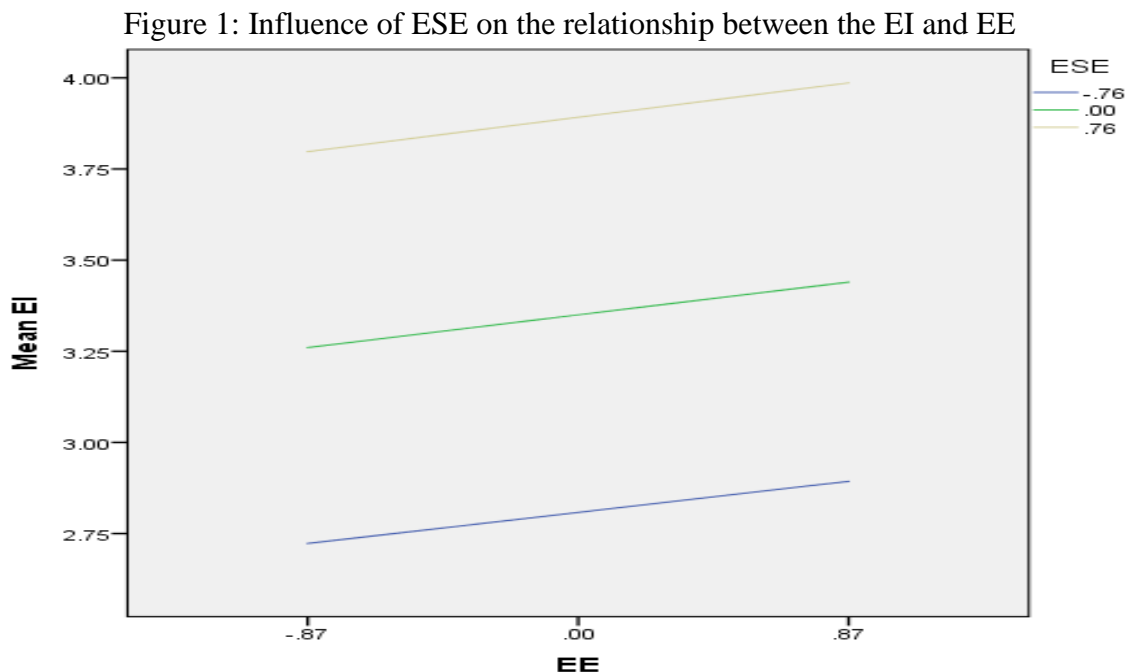


Figure 1 is the plot of the conditional mean of students' entrepreneurial intention against student entrepreneurial education at +1standard deviation, mean and -1standard deviation of student entrepreneurial self-efficacy. The plot shows that the relationship between entrepreneurship education (EE) and entrepreneurial intention (EI) were positive at all level of entrepreneurial self-efficacy (ESE), indicating that the relationship between EE and EI is independent of the moderator variable, ESE. The relationship remains positive at positive 1 standard deviation above the mean of ESE, at the mean and even at negative 1 standard deviation below the mean of ESE.

6. Discussion

This study seeks to examine the influence of entrepreneurial self-efficacy on the relationship between entrepreneurial education and entrepreneurial intentions amongst Estonian university students. The study investigated the influence of entrepreneurial self-efficacy by considering its influence as a mediator or moderator of the relationship that exists between entrepreneurial education and entrepreneurial intention. In addition, the investigation also tested all statistical relationship hypothesized about the relationship existing amongst students' entrepreneurial self-efficacy, entrepreneurial education and entrepreneurial intention.

The study's result provided empirical support for all the hypothesized relationships between entrepreneurial education, entrepreneurial self-efficacy and entrepreneurial intention for Estonian university students, except for the moderation hypothesis. The path analysis result revealed a statistically significant positive relationship between students' entrepreneurial education and students' entrepreneurial intention. Meaning that students' entrepreneurial education can predict students' entrepreneurial intention and can explain some variation in students' entrepreneurial intention. Hence, an improvement in entrepreneurial education (training) can improve student desire for entrepreneurship.

The result supports hypothesis 1 and it is consistent with findings from previous research on this relationship that have also reported that there is a small but positive relationship between entrepreneurial education and entrepreneurial intention (Bae, Qian, Miao, & Fiet, 2014; Martin, McNally, & Kay, 2013). In the context of Estonia, Hartsenko and Venessaar (2017) and Ene Kolbre et al (2006) found that entrepreneurship education has positive effect on entrepreneurial intention an initiatives of students.

Similarly, the study found a positive and significant relationship between student's entrepreneurial education and entrepreneurial self-efficacy, supporting hypothesis 2. The result corroborated the findings that students' entrepreneurial education can enhance their entrepreneurial self-efficacy (Oyugi, 2015). Implying that entrepreneurial education improves students' entrepreneurial self-efficacy. Hence, the more students' undergo more entrepreneurial education – courses, classes, trainings, seminar etc, student self efficacy will improve averagely by 41%.

Other resarchers who have reported similar results are Malebana and Swanepoel (2014). They reported that students who are exposed to entrepreneurship education perceived their own

entrepreneurial self-efficacy more than those without such education. Similarly, in the context of Europe, Nowiński et al (2019) generally reported that entrepreneurial education had high influence on the different aspect of entrepreneurial self-efficacy considered in the visegrad countries. Similar result was reported from an experiment in Netherlands that early educational programs play a major role in enhancing pupils non-cognitive entrepreneurial skills when compared to the control group (Huber, Sloof, & Praag, 2014).

On the relationship between students' entrepreneurial self-efficacy and intention, investigation from this study shows that relationship is positive, relatively the highest compared to others and statistically significant. Indicating that, students' entrepreneurial self-efficacy strongly influences students' entrepreneurial intention. In general, from the path analysis, students' entrepreneurial self-efficacy seems to be the most significant influencer of students' intention to start a business when the effects are considered because students' entrepreneurial intention increases more on the average by 71.1% for an improvement in their entrepreneurial self-efficacy. This influence is greater when compared to the influence of entrepreneurial education in the model. This is consistent with the result of researchers like Shaheen and Al-Haddad (2018) and Pihie and Bagheri (2013).

The mediation analysis was based on the mediation conditions recommended by Baron and Kenny (1986). The result of the study supported the mediation hypothesis. The result showed that entrepreneurial self-efficacy fully mediates the relationship between students' entrepreneurial education and students' entrepreneurial intention. Based on the result, students' entrepreneurial education has an indirect effect on students' entrepreneurial intention through the influence of students' entrepreneurial self-efficacy. By implication, improving students' entrepreneurial education do not directly influence entrepreneurial intentions of student. Rather, that improvement directly improves the entrepreneurial self-efficacy of students, which makes entrepreneurship more desirable to students. This finding is consistent with the findings of Zhao et.al (2005) and Oyugi (2015), all of whom reported full mediation effect of entrepreneurial self-efficacy on entrepreneurial intention.

Additionally, the path analysis result also supports the strong influence of students' entrepreneurial self-efficacy on student entrepreneurial intention as it shows higher direct effect ($B = .711, p < .001$) on student's entrepreneurial intention. Although, the result from model 3 shows that

entrepreneurship education is positively related to entrepreneurship intention but not significant when entrepreneurship self-efficacy was introduced indicating a full mediation occurred. The addition of students' entrepreneurial self-efficacy to the model for partial regression analysis returned a result that indicated that students' entrepreneurship education was not a significant predictor entrepreneurship intention in the presence of students' entrepreneurial self-efficacy. Thereby, suggesting that students' entrepreneurial self-efficacy fully mediates the relationship that exists between students' entrepreneurship education and of students' entrepreneurial intention. Hence, the result supports the mediation hypothesis as entrepreneurial education alone is not sufficiently enough to make students desire to create business venture without self-belief in their personal capability to perform task aimed at entrepreneurship.

On moderation, moderation analysis result does not support the expectation that students' entrepreneurial self-efficacy moderates the relationship between students' education and students' entrepreneurial intentions. The result of the analysis shows moderation was not significant in the model. Hence, the positive relationship between students' entrepreneurial education and students' entrepreneurial intention is not moderated by students' entrepreneurial self-efficacy.

Managerial Implication:

The findings of this investigation on the influence of entrepreneurial self-efficacy on the relationship between entrepreneurial education and entrepreneurial intention offer evidence for Estonian policy makers and entrepreneurship educators to chart a roadmap to review, redesign and develop policies and programs for entrepreneurship development. For policy makers, the evidence of strong influence of entrepreneurial self-efficacy on entrepreneurial intention could be leveraged to evaluate the direction and implementation of existing entrepreneurship policies and program. Secondly, for entrepreneurship educators, the evidence that entrepreneurial education has somewhat positive influence on entrepreneurship intention in model 2 (path c¹) points to the need to re-evaluate the objectives and approach to teaching entrepreneurship education, because the quality of the entrepreneurship education can help to develop instil the desire for entrepreneurship in students. Evidence from this study is consistent with many other studies that have found entrepreneurial education to highly influence entrepreneurship self-efficacy. Hence, the prove that entrepreneurship education could significantly impact entrepreneurial intentions through entrepreneurial self-efficacy educators could be leveraged upon to develop practical and

theoretical learning methods for improving entrepreneurial skills development to improve entrepreneurial self-efficacy with the ultimate aim of developing entrepreneurial intentions of students.

7. Limitation and Recommendation

It is important to mention that despite the contributions of this study to entrepreneurship study in Estonia, it has its limitations. The study is limited in scope by the number of explanatory variables it considered and the number of universities. The study collected data from nine (9) universities in Estonia leaving out the other existing ones. This could have possibly influenced the results and limit the generalization of the findings of the study. Another limitation is the general survey of university students enrolled in different programs and at different academic levels of their various programs. This approach accentuated the differential level of understanding of the variables of the study by the respondents, as some respondents may have exhibited better understanding of the variables of study than the others. One possible explanation could be that, those who may have exhibit better understanding are either enrolled in programs related to management and social sciences, or in the final (higher level) year of their various programs. By implication, students in business related programs or at higher level may have acquired higher skills and experience from entrepreneurial education which could have possibly influenced the responses derived from them because the more knowledgeable you are about the subject matter the more desirable one is to exhibit such knowledge. In addition, the research considered only formal entrepreneurship education, other types of entrepreneurship education or training and teaching method of entrepreneurship education were not considered. Future researcher could consider introducing time concept into entrepreneurial intention research through longitudinal research so as to show how long it takes entrepreneurial intention to turn into actual business creation or implementation. Also, future researchers could investigate the impact of different entrepreneurial educational program and trainings on self-efficacy development and how it influences entrepreneurial intentions.

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