

## **BUILDING UP THE BASE FOR ENTREPRENEURSHIP: THE MEANING OF UNIVERSITY IN THE ENTREPRENEURIAL ECOSYSTEM**

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### **ABSTRACT**

*In our research, we aim to extend the debate about the new role of universities as an entrepreneurial ecosystem, by examining some underlying and fundamental, but very important dimensions for further and deeper examinations of this subject such as university ownership, field of study and the entrepreneurial education concentration within, as well as the university environment and learning programs. The research considers an analysis based on major implications proposed by the GUESSS Project (Global University Entrepreneurial Spirit Students' Survey) to generate in-depth insights into students' entrepreneurial intentions. A hierarchical multiple regression was run to determine the effect of different variables related to university ecosystem on entrepreneurial intention of student population. The data comes from the GUESSS survey 2018, conducted at state and private universities in North Macedonia, with undergraduate and postgraduate students. A sample of 398 respondents was collected. The study contributes to the existing literature on nascent entrepreneurship and start-up behaviour in understanding the impact of key elements of an entrepreneurial ecosystem within a university on student start-up activity.*

**Keywords:** *entrepreneurship, university ecosystem, entrepreneurial university, entrepreneurial intention, GUESSS*

**JEL classification:** *L26*

### **1. INTRODUCTION**

Entrepreneurship has been widely recognized as the engine of countries' economic growth (Davidsson et al. 2006; Acs, et al., 2005). Being an entrepreneur as well as gaining entrepreneurial skills has develop a whole new meaning. The immense need to discover the pathway towards entrepreneurship has pushed the boundaries of scholars, but also practitioners all struggling to find the answers towards becoming an entrepreneur.

Conceptualizing solid grounds for the development of entrepreneurs and nurturing entrepreneurship, great discussion has been evolving regarding ecosystems, since the term gained popularity in fields other than biology. The entrepreneurial ecosystem as a highly complex multi-level construct needs to be analysed around various levels (Mina et al., 2015; Simatupang et al.,

2015). In this context, most research on the entrepreneurial ecosystem uses a macroeconomic view by establishing comparative studies between different countries (Kantis and Federico, 2012; Voelker, 2012). However, scholars have not set for a consensus of whether and how to approach ecosystems, firstly represented as business ecosystems, then entrepreneurial and the university ecosystems. In this manner

The entrepreneurial university is emerging as a new archetype of higher education institution that fosters knowledge generation and transfer, contributes to local development, and empowers individuals in fast changing markets (Minola, et al., 2016). The university context might impact whether something gets initiated, hence It has been disputed that the university environment could be potentially considered as entrepreneurial ecosystem (Fetters et al., 2010). In this context, universities are considered as a much wider context than providing entrepreneurial education. In such a setting key components can include entrepreneurship course and degree offerings, engagement of alumni entrepreneurs, student incubators, prototype development services, seed funding to university start-ups, technology transfer services, and scholarly research, among others (Rideout, Gray, 2013).

In our research, we aim to extend this debate by examining some dimensions related to the entrepreneurial universities that are important to understand their specific characteristics as a very important determinant of future entrepreneurial activities of university students and their overall impact on the entrepreneurship processes. In this context we have examined the following underlying and fundamental, but very important dimensions for further and deeper examinations of this subject: university ownership, field of study and the entrepreneurial education concentration within, as well as the university environment and learning programs. The research considers an analysis based on major implications proposed by the GUESSS Project (Global University Entrepreneurial Spirit Students' Survey) to generate in-depth insights into students' entrepreneurial intentions. Our study adopts a two-level approach, including micro and meso-level contingencies. This approach allows a comprehensive understanding of the effects on entrepreneurial intentions. The study contributes to the existing literature on nascent entrepreneurship and start-up behaviour in understanding the impact of key elements of an entrepreneurial ecosystem within a university on student start-up activity. In this sense, the relationships between the university context and entrepreneurial intentions has been set as crucial within our analysis seeing university as one of the main drivers of entrepreneurial ecosystems.

## **2. LITERATURE REVIEW**

### **2.1. Theoretical background**

#### *2.1.1 The entrepreneurial ecosystem*

Entrepreneurship has been considered on many different streams of research, however there is still a certain gap of understanding the specific nature of entrepreneurship. One of the streams has indicated that the systemic nature of entrepreneurial activity is still underdeveloped (Acs et al. 2014; Qian et al. 2012), which has initiated the emergence of a new systemic view of entrepreneurship known as the Entrepreneurial Ecosystem (EE) (Audretsch, Belitski, 2016). Meanwhile, entrepreneurial ecosystem research has been emerging recently but still is considered a “underdeveloped and undertheorized research field” asking for further exploration, aimed to avoid the existing uncertainty about its nature and boundaries (Adner et al., 2013; Spigel, 2017). The entrepreneurial ecosystem as a highly complex multi-level construct needs to be studied using various levels of analysis (Minaet al., 2015; Simatupang et al., 2015). Entrepreneurial ecosystems

are combinations of a social, political, economic, and cultural elements within a certain area that support the development and growth of innovative startups and encourage nascent entrepreneurs and other actors to take the risks of starting, funding, and otherwise assisting high-risk ventures (Spigel, 2017). There have been discussions from relevant authors, but also entities like the World Economic Forum (2013) arguing that accessible local and international markets, available human capital and financing, mentorship and support systems, robust regulatory frameworks, and major universities are the most important pillars of an ecosystem.

## ***2.2. University-based ecosystems and entrepreneurial education***

Genuinely the concept related to ecosystems offers a base for a vast number of ecosystem types (Theodoraki, Messeghem 2017), among which are university-based ecosystems (Rice et al. 2014). These include the presence of entrepreneurs, workers, investors, and mentors; favourable government policies; research universities and other sources of innovative knowledge; availability of local customers; and an entrepreneurial culture that encourages risk taking. These attributes provide resources that new local ventures could not otherwise access such as managerial experience or a skilled workforce.

Entrepreneurship education is a complex process and imparting entrepreneurship into education has prompted much enthusiasm in recent times, with associated outcomes such as economic growth, innovation commercialization and job creation (Lackeus, 2015). Universities have extensively included entrepreneurial education in their curricula (Fayolle 2013). Entrepreneurship education has been discussed for a few decades in the aim to find the path towards generating entrepreneurship, and interest even bloomed since it has been acknowledged that entrepreneurial knowledge is not simple genetically endowed but suggested that people develop it as an outcome of the entrepreneurial learning process (Cope 2005). Hence the context in which individuals develop entrepreneurial knowledge has been proven to be somewhat replicable in an educational setting (Pittaway, Cope 2007b).

Universities play a central role as they generate and transfer new knowledge, develop qualified human capital, and foster the development of an entrepreneurial society (Audretsch 2014). Entrepreneurial learning can be experienced by individuals in different setting for instance through education (Unger et al. 2011) proposed that could be formal or informal setting (Debarliev et al, 2020). Entrepreneurship education consists of “any pedagogical program or process of education for entrepreneurial attitudes and skills” (Fayolle, Gailly, & Lassas-Clerc, 2006b, p. 702). In this context the outcome of the entrepreneurial learning process at universities is supposed to increase student’s stock of entrepreneurial knowledge (Haase and Lautenschldger 2011).

## ***2.3. Conceptual development and hypothesis***

Until recently, most of the research has examined entrepreneurial education and entrepreneurial universities as interchangeable terms, analysing the universities only or mostly through the entrepreneurial education perspectives. Recently, this debate has been upgraded to the level where universities are considered as a much wider context than providing entrepreneurial education, such as entrepreneurship course, networking with alumni entrepreneurs, student incubators, seed funding technology transfer services, and many other supporting and facilitating activates (Rideout, Gray, 2013). Hence, we aim to extend this debate by examining some dimensions related to the entrepreneurial universities such as university ownership, field of study and the entrepreneurial education concentration within, as well as the university environment and learning programs

### ***2.3.1 State vs private universities and entrepreneurial intention***

There have been considerations related to the nature of the suggested university setting, as the environment of public and private university is quite different, it is expected that the entrepreneurial intention of students also differs. Public universities usually include a larger number of professors dedicated to research (Hilu, Gisi, 2011, Speller et al., 2012) compared to the private university. Even more most of the public staffs holds the PhD degrees, are involved in scientific research and in teaching in post-graduation programs (Pontes, 2015), so these institutions are the largest and best qualified base for scientific investigation in the country (Diniz-Filho et al., 2016). Professors engaged in scientific research have access to scholarships and public funding for research, in which undergraduate and graduate students are also engaged. In this sense it could be expected that in this university environment there is low stimuli to motivate entrepreneurial intention in the students at the account on the scientific research projects.

There are also some studies that sought to compare the level of entrepreneurial intention of the public and private universities (Perim, 2012, Silva and Teixeira, 2013) reported that students from the private universities perceive their institutions as more dedicated to the entrepreneurial education than their counterparts perceives the public universities. Perim (2012) draws attention to the fact that public institution students perceived greater need for practical entrepreneurship classes, since their education is more focused on theory. All these factors suggest that private institutions are better able to impact positively students' entrepreneurial intention than public institutions. Therefore, the basic proposition of this study is that the private university environment is more favorable to entrepreneurship than the public university environment. Also, in private universities the majority of the staff (teachers and professors) are part-time workers, as many are not exclusively employed by the university. We expect that these multiple occupations bring motivating experiences to the classroom and help to create a more entrepreneurial environment than that in a more market isolated environment observed in the public university.

**Hypothesis 1:** Private universities are better able to impact positively students' entrepreneurial intention than public universities.

#### ***2.4. Field of study and the entrepreneurial education concentration within***

Research has been proposing various streams in respect to entrepreneurial education. In this respect it has been discussed in various studies that the strength of the impact of entrepreneurial education may differ between business students and science and engineering students (Maresch et al., 2016). Authors like Souitaris et al. (2007) tested the effect of entrepreneurial education programs on entrepreneurial attitudes and entrepreneurial intentions, suggesting that science and engineering programs increase overall entrepreneurial intention. It could be also argued that graduates from science and engineering are providing recently the gross flow of new, high-quality firms—over and above those of other academic entrepreneurs (Åstebro et al., 2012). Business students place more emphasis on learning about entrepreneurship (Shinnar, et al., 2009) but immensely is increasing the significance of entrepreneurial education in university departments focused on Social Sciences and Science/Engineering (Walter, et al., 2013). Although there is a long history of academic research evolving around intentions, still studies predominantly consider samples mainly based on business students (Bae et al., 2014, Nabi et al. 2017). Since business schools teach more “about” entrepreneurship it is often suggested that business education supports students to work at established companies instead of creating their own businesses (Grey, 2002).

There have been raised a lot of discussions about the effects of entrepreneurship education often questioning even their purpose. However, it is obvious that there are some implications that the process of going through education, and in this sense entrepreneurial education itself, offers the possibility to initiate interest at a student level for business in general and even more for increasing

their curiosity about starting a business. (Moberg et al. 2014). Various studies have been indicating, through an empirical approach, that there is certain causality between the level or type of education of the entrepreneur and his ability to properly evaluate business opportunities, taking into account that education provides, at a very early age, access to different information. Entrepreneurship can be fostered among students in many ways; one of them may be through compulsory, core or elective courses in a more formal or informal format (Mohamad et al., 2015). Some studies (Rauch and Hulsink 2015) have proposed that future research should consider distinguishing among the various options and the choices made among mandatory and elective entrepreneurship courses. It has been even suggested that mandatory entrepreneurship courses cannot motivate students to start a business, but their aim is rather to increase awareness about entrepreneurship (von Graevenitz, Harhoff, & Weber, 2010). However, it should be noted that mandatory programs usually have different goals than voluntary programs, whereas mandatory programs are usually not trying to create entrepreneurs per se but rather to teach participants what entrepreneurship is about. In their review, focusing dominantly on the current entrepreneurial education and training (EET) literature, Martin et al. (2013) found that most of the research supports positive relations between different level of EET (such as students' attendance of core, compulsory or elective courses as well as extra-curricular activities) and entrepreneurship-related human capital assets (such as building up entrepreneurial knowledge and skills, positive perceptions of entrepreneurship and intentions to start a business among students).

Hence, we propose the following two hypotheses:

**Hypothesis 2.** Technical study programs are better able to impact positively students' entrepreneurial intention than economic/business and social sciences study programs.

**Hypothesis 3.** The level of entrepreneurial education concentration (students' attendance of different curricular activates) positively influences the students' entrepreneurial intention.

## ***2.5. University environment and learning programs***

It has been argued that the university environment can be conceptualized as a potential entrepreneurial ecosystem (Fetters et al., 2010). The university context would appear to be a rich potential reservoir of the knowledge and skills, networking possibilities, opportunities for deliberate practice, and even financial capital that are critical to entrepreneurial success (Guenther, Wagner, 2008; Zhao et al., 2005). Evidence also suggests the decision to pursue an entrepreneurial path can be facilitated by supportive environments (Toledano, Urbano, 2008). Considering the internal level bounded with the spirit of the educational environment, it evokes around shared values and norms, leadership, the internal infrastructure important factors in developing and nurturing student entrepreneurial potential (Rideout and Gray, 2013) However still the university environment can serve to both constrain and enable entrepreneurial behaviors (Welter, Smallbone, 2011). Morris et al., 2017 in their study provide insights regarding the role of the prior experiences in moderating the impact of the university environment on start-up behaviour The educational environment can help students develop their self-efficacy and provide them with appropriate knowledge, skills and related resources to turn ideas into entrepreneurial actions (Pittaway, Cope, 2007).

In order to examine the university environment as a very important factor that builds the foundations of a university-based ecosystem and to measure its influence on the students' entrepreneurial intention, we selected two variables: general university environment and entrepreneurial learning programs. The university environment variable is measured on the base of the research of Franke & Lüthje (2004) and Geissler (2013), in which the supportive

entrepreneurial environment is associated with inspiration for developing ideas for new businesses, encouragement for engaging in entrepreneurial activities, and ultimately as a favourable climate for becoming an entrepreneur. Concerning the second variable, we focused our attention on the universities' learning programs and their influence on building students' entrepreneurial skills. For this variable, we use the methodology of the research of Souitaris et al. (2007), where the courses provided at the universities are examined in correlation with attitudes, values and motivations for entrepreneurship; actions someone has to take to start a business; practical management skills to start a business; ability to develop networks and so forth.

Hence, we propose the following two hypotheses:

**Hypothesis 4.** Supporting university environment positively influences the students' entrepreneurial intention

**Hypothesis 5.** Entrepreneurial learning programmes positively influence the students' entrepreneurial intention

### 3. METHODOLOGY

#### 3.1. Sampling

The data comes from the GUESSS survey of 2018 ('Global University Entrepreneurial Spirit Students' Survey'). The GUESSS project is coordinated at global level by the Swiss Research Institute of Small Business and Entrepreneurship at the University of St. Gallen (KMU-HSG) in Switzerland. For each participating country a representative is responsible to engage and coordinate the research amongst the universities of that country. Students who answered the survey were reached through a non-random process in which universities were autonomous in defining the breadth of classes and schools involved in the survey. Students are invited to answer the questionnaire through different channels, such as in social networks, via email, or in the classroom. The students reached by the survey belong to different fields of study (i.e., business and economics, natural and social sciences) and different education levels (e.g., undergraduate, graduate)

The survey was conducted at state and private universities in North Macedonia, with undergraduate and postgraduate students. A sample of 398 respondents was collected. For the purpose of this study, we considered only the responses of students who have not started their own business yet.

#### 3.2. Measures

##### 3.2.1 *Dependent variable*

The entrepreneurial intention is calculated as a mean of the values appointed for each of the following 6 items measured on a 7-point scale: I am prepared to do everything in order to be entrepreneur; I will put a great effort for starting and running my one business; I doubt that I will ever start a own business; I am decided to start a new business in the future; My professional goal is to become an entrepreneur; I have small intention to start a new business in my live.

##### 3.2.2 *Independent variables*

For the type of university, dummy variable was created, and the respondents are divided into two groups: 0-state universities and 1-private universities. For the field of study, two dummy variables were created. For the first dummy variable the respondents were divided into two groups: 1 for schools of economics and business and 0 for technical and social sciences, and the second dummy variable: 1 for technical sciences, and 0 for schools of economics and business and social sciences.

The entrepreneurial education concentration is calculated as a sum of the values appointed for each of the following 5-items measured: I have not attended a course on entrepreneurship so far; I have attended at least one entrepreneurship course as elective; I have attended at least one entrepreneurship course as compulsory part of my studies; I am studying in a specific program on entrepreneurship; I chose to study at this university mainly because of its strong entrepreneurial reputation.

The university environment is calculated as a mean of the values appointed for each of the following 3 items measured on a 7-point scale: The atmosphere at my university inspires me to develop ideas for new businesses; There is a favourable climate for becoming an entrepreneur at my university; At my university, students are encouraged to engage in entrepreneurial activities.

The learning skills is calculated as a mean of the values appointed for each of the following 5 items measured on a 7-point scale: The courses and offerings I attended...increased my understanding of the attitudes, values and motivations of entrepreneurs; ...increased my understanding of the actions someone has to take to start a business; ...enhanced my practical management skills to start a business; ...enhanced my ability to develop networks; ...enhanced my ability to identify an opportunity.

#### 4. RESULTS

A hierarchical multiple regression was run to determine the effect of different variables related to university ecosystem on entrepreneurial intention of student population.

In Table 1 bivariate correlations among the variables included in the study are presented

*Table 1 Summary of correlations*

	Intention	Type of university	Economics and business	Technical sciences	Entrepr. education	University environment	Learning skills
Intention	1,000						
Type of university	-0,130	1,000					
Economics and business	0,282	0,359	1,000				
Technical sciences	-0,094	0,134	0,523	1,000			
Entrepreneurial education concentration	0,160	0,1760	0,191	-0,052	1,000		
University environment	0,206	0,212	0,123	-0,136	0,092	1,000	
Learning skills	0,352	0,042	0,297	-0,187	0,179	0,694	1,000

*(Source: Authors calculations)*

There was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.801. There was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater

than  $\pm 3$  standard deviations, no leverage values greater than 0.2, and values for Cook's distance above 1. There assumption of normality was met, as assessed by Q-Q Plot.

The full model of type of university, field of study, entrepreneurial education concentration, university environment and learning skills on entrepreneurial intention (Model 2) was statistically significant,  $R^2=0.173$ ,  $F(6, 237)=8.262$ ,  $p < 0.005$ ; adjusted  $R^2=0.152$ . The addition of entrepreneurial education concentration, university environment and learning skills to the prediction of on entrepreneurial intention (Model 2) led to a statistically significant increase in  $R^2$  of 0,089  $F(3, 237) = 8.476$ ,  $p < 0.005$ .

Table 2. Results from hierarchical regression

VARIABLE	Model 1		Model 2	
	B	$\beta$	B	$\beta$
<b>STEP 1</b>				
Type of university	-0,096	-0,029	-0,232	-0,070
Field of study (economics and business)	1,220***	0,309	0,771*	0,195
Field of study (technical sciences)	0,452	0,072	0,486	0,077
<b>STEP 2</b>				
Entrepreneurial education concentration			0,059	0,060
University environment			-0,014	-0,013
Learning skills			0,377***	0,310
$R^2$	0,084		0,173	
Change in $R^2$	0,084		0,089	
Adjusted $R^2$	0,073		0,152	
ANOVA (F-statistics)	7,360		8,262	
Durbin-Watson			1.801	

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ .

(Source: Authors calculations)

The results summarised in Table 2 indicate that school of economics and business have a significant positive effect on the entrepreneurial intention and the results are consistent across both models (Model 1:  $\beta = 0.309$ ,  $p < 0.01$ ; Model 2:  $\beta = 0.195$ ,  $p < 0.1$ ). Technical sciences have statistically non-significant effect on the entrepreneurial intention. From the second group of university variables, only learning skills have a significant positive effect on the entrepreneurial intention (Model 2:  $\beta = 0.310$ ,  $p < 0.01$ ). The other two variables related to entrepreneurial education concentration and university environment indicate statistically non-significant influence on the entrepreneurial intention.

## 5. DISCUSSION

The starting point is various at various research attempt, some starting bottom-up or other starting their discussion top-down. Though, most commonly the ecosystem approach is very much top-down oriented, still multilevel models allow a broad understanding of entrepreneurial learning in



an educational setting as the examiners can control for the features of the individual considering social context, as well as the way the individual learns (Fletcher 2007)

The results indicate some interesting insights related contingencies or often referred as situational factors that explain the specifics of certain context. Analysis has potentially considered the university contexts. Hence the initial model has indicated to be statistically significant meaning that the university context could potentially influence entrepreneurial intention and potential to pursue further our investigation. Adding entrepreneurial education concentration, university environment and learning skills to the prediction of on entrepreneurial intention has been proposing some significant relationship as well. Students vary considerably in terms of their backgrounds, levels and types of experiences, and their relative self-efficacy when it comes to an entrepreneurial career.

The type of university i.e. being part from the public or private university setting has been not indicating a viable difference in this research, even though it has been suggested so by various researchers. Commonly it is considered that private universities have greater number of partnerships with private companies (medium and small) and a higher percentage of their students are already involved in the labour market during the university period (Endeavor, 2014).

The results implicate that school of economics and business have a significant positive effect on the entrepreneurial intention and the results are consistent across both models, whereas technical sciences have statistically non-significant effect on the entrepreneurial intention. This result is basically opposite to the findings of Souitaris et al. (2007), which indicated that entrepreneurial education can impact positively on pro-entrepreneurial attitudes of science and engineering students, a finding that was later confirmed by Kuckertz and Wagner (2010).

From the second group of university variables, only learning skills have a significant positive effect on the entrepreneurial intention. The other two variables related to entrepreneurial education concentration and university environment indicate statistically non-significant influence on the entrepreneurial intention. The cognitive abilities on an individual level are of primary importance in understanding the extent to which the individual is capable to accumulate human capital assets from investments such as experience and education (Martin, et al. 2013; Unger et al. 2011).

## **6. CONCLUSION**

The aim of this study is to consider the aspect of the entrepreneurial ecosystems transcending in the university context. With the proposed research agenda, it highlights the significance of the university context in affecting student engagement in entrepreneurial activity. It helps advance the limited empirical research on the impact of university entrepreneurship engagement. In addition, we contribute to the research by following the agenda of many authors suggested, to consider various contingencies influencing entrepreneurial activities at a student level. This provides a new pathway for researchers in the field of entrepreneurial education and student entrepreneurship. The findings of this study suggest caution as universities continue to grow the mix of elements that constitute their entrepreneurial ecosystems. Results propose that business students have a stronger relationship with entrepreneurial intention, coping to the paradigm that education can make a difference in the agenda in building a entrepreneurial ecosystem. On the other hand, the learning skills which clearly cope to the ability to learn being in significant correlation to entrepreneurial intentions, also offer an individual perspective of the entrepreneurial process

To summarize our finding, with no doubt university ecosystems can have an important influence on the entrepreneurial behaviours of students but must reflect the learning needs and styles of students. For example experiential learning characterizes a critical piece of the ecosystem, but is not an exclusive element, as its potential may be enhanced when it is coupled with other learning

vehicles, in this regard setting the importance on lectures, core content and opportunities to build social capital. Still the field of entrepreneurship research is complex with many aspects to consider in understanding the entrepreneurial process and the many elements evolving. The growing body of literature related to the field of entrepreneurial education and ecosystems has been raising new and important questions which should offer also solid bases for future research.

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