



## Research Article

# The effects of an entrepreneurial ecosystem on entrepreneurial intention

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## ABSTRACT

This research aims to examine the effects of an entrepreneurial ecosystem on entrepreneurial intention among engineering students. The researcher hypothesized the relationship between these three independent variables, such as entrepreneurial education, social and cultural, and financial growth with entrepreneurial intention. The data was collected using a questionnaire survey from 313 respondents selected from engineering faculties. The data were analysed using SPSS software. Multiple regression was calculated to predict the engineering students based on entrepreneurial education, social and cultural as well as financial growth. Results indicated that entrepreneurial education, social and cultural, and financial growth have a positive effect on entrepreneurial intention. Thus, it is required to enhance entrepreneurial education at the university level to enhance the entrepreneurship intention among the engineering students. Also, social and cultural elements have an impact on entrepreneurship intention of university students.

**Keywords:** *Cultural, Entrepreneurial Ecosystem, Entrepreneurial Intention, Financial Growth*

**JEL Classification:** L20, L26, G00

## 1. INTRODUCTION

In 1996, James Moore proposed the term “business ecosystem”, transforming it into an “entrepreneurial ecosystem (EE)” (Kozhakhmetov et al., 2016). EE plays an important role in building a favorable environment for entrepreneurs, especially students, in preparing to start their own work-life business. It describes the social and economic environment affecting entrepreneurship at the local or regional level. EE is the main metaphor for promoting entrepreneurship as a strategy for economic development (Isenberg, 2014). Zsigmond (2017) stated that Malaysia is well accomplished by the 18th consecutive Global Entrepreneurship Monitor (GEM) 2016, which is the rate of entrepreneurship tracking across multiple phases of entrepreneurship, such as examining evaluated characteristics, encouraging entrepreneurs and exploring the attitudes of representatives of society towards entrepreneurship. Xavier (2016) mentioned that risk-taking, creativity, innovation and locus control are some of the key actions of an entrepreneurial culture. For their experts' entrepreneurial culture, Malaysia ranked 8th over Israel was ranked by its experts as the highest for entrepreneurial culture.



According to Rideout and Gray (2013), the GEM cites three barriers to entrepreneurship, such as lack of education, social and cultural barriers, as well as lack of financial resources. The strong culture and business capital without proper education do not lead to entrepreneurship (Eisenberg, 2011). The lack of entrepreneurial education such as knowledge, skills and experiences is one of the main problems of the entrepreneurial ecosystem among engineering students. The university provides students with both knowledge related to entrepreneurship and associated skill development because typically nascent entrepreneurs lack skills. In addition, the impact of starting the activity may be counterproductive for those students who lack professional experience, although the activity may help to increase visibility and enhance the entrepreneurship program's reputation (Morris et al., 2017).

Social and cultural barriers, on the other hand, also give the students the negative impacts. Student perceived lack of social support was negatively associated with the emergence of ventures, and this relationship was fully mediated by entrepreneurial self-efficacy (Dinh, 2016). In this case, when starting their own business, most students lack financial resources. Morris et al., (2017) reported that students lack personal savings, insurance, and credit history, although the usual financing sources such as family members, friends, and individual credit cards regularly prove inadequate for them. This causes students who don't have enough money to invest in their own business, feel abandoned and use the money for other activities. Therefore, this lack of investment spirit discourages entrepreneurship, so money intended for economic activities is usually diverted to entertaining others (Lubem et al., 2017). The research purpose is to examine the effects of an entrepreneurial ecosystem on Entrepreneurial intention among engineering students.

## **2. LITERATURE REVIEW**

### **2.1. ECOSYSTEM**

According to Spigel and Harrison (2018), an ecosystem is a conceptual structure for the benefits and resources provided by the cohesive, usually regional entrepreneurial communities including their supporters that contribute to create, survive and expand new high growth enterprises. GIZ (2018) stated that it is generally defined as the system or the interconnected elements group, formed by the interaction of the community of organisms with their environment. Other than that, it's mean the union has located cultural insights, universities, venture capital, social networks and aggressive economic policies to encourage the creation of innovative business environments (Spigel, 2017).

### **2.2. ENTREPRENEURIAL ECOSYSTEM (EE)**

According to Mason and Brown (2014), EE means the collection of related entrepreneurial agents, business associations, agencies and enterprise processes that bind, mediate and regulate the performance within the local enterprise setting/environment both formally and informally. Kozhakhmetov et al., (2016) reported that it is the set of interlinked business organizations, institutions and business mechanisms, formally and informally united for mediation as well as management within the local business environment.

Besides, Stam and Spigel (2016) mentioned that entrepreneurial ecosystem is the collection of interdependent players and factors organised to enable efficient entrepreneurship in a specific territory. It is also defined as the interactive community in the geographical region, diverse composition, interdependent agents and factors, which evolves over time as well as both of interdependent coexist and communicate to facilitate the formation of new enterprise (Vogel, 2013).

Spigel (2017) stated that entrepreneurial ecosystem is an environment that facilitates development, creative start-up growth, encourage emerging entrepreneurs and other stakeholders to take risk of start-up, finance and other high-risk enterprises together in social, political, economic and cultural components. Moreover, EE also defined as the strategic alignment of the variety of public and private efforts to provide necessary financial, social and human capital to foster entrepreneurship in innovative as well as creative ways (Miller, 2018).

## **2.3. THE EFFECTS OF AN ENTREPRENEURIAL ECOSYSTEM (EE)**

### **2.3.1. Entrepreneurial Education**

According to Akhter and Sumi (2014), education is one of the most critical aspects that make entrepreneurs confident regarding their financial independence, prosperity and significance. The highest level of knowledge, skills and abilities can facilitate by the start-up process and contribute to the accomplishment of a larger scope of venture-related activities by students (Morris et al., 2017). Krastina (2017) stated that the youth who benefit from entrepreneurial education, improve business skill, abilities, knowledge and critical behaviours including initiative, innovation, tenacity, coordination, risk and sense of responsibility. It will transmit the knowledge and skills acquired in higher education into the technical and economic role students subsequently perform in the marketplace.

Zhang (2014) stated that entrepreneurial education means the philosophy and model of teaching should be tailored according to social, economic, and national growth plans. It develops entrepreneurship as a feasible career option and introduces students to overt, implicit information and networks that could increase their opportunities for success if they find a company (Shah and Pahnke, 2014).

There are two segments of entrepreneurial education such as entrepreneurial education in primary and secondary schools as well as entrepreneurial education in the universities or higher institutions, but the researcher is more interested in the research towards the entrepreneurial universities in this case. The entrepreneurial universities are the most significant actors of entrepreneurial education that serve as the springboard for preparing the students to work in the new environment and centralizing innovation economy of the state (Kozhakhmetov et al., 2016). Shah and Phanke (2014) mentioned that the knowledge regarding entrepreneurial activity is an important resource for new/inexperience entrepreneurs as it offers an overview of the entrepreneurship mechanism and networks from which skills can be obtained. The knowledge acquired from entrepreneurship education can improve a student's performance to acquire resources (Morris et al., 2017).

According to Baggen et al., (2017), the students who are learning entrepreneurial skills may contribute to prepare them for an unpredictable and complex working life. EE has been significant in a further career and business development, so the student will recognize that the skills learnt (Krastina, 2017). Mason and Brown (2014) mentioned that these are important for the creation of an entrepreneurial education, since potential entrepreneurs gain technical expertise, product and knowledge of the market. As a result, the researcher proposes the following set of hypotheses:

H1: Entrepreneurial education has a significant relationship with the Entrepreneurial intention of engineering students.

### **2.3.2. Social and Cultural**

According to Akhter and Sumi (2014) and Lubem et al., (2017), the social-cultural environment consists of all components of the social structure and human culture that affects entrepreneurial emergence, attitude, efficiency and growth positively or negatively. Besides, they also reported that it comprises of all factors, situations and forces that form the individual's personality and ultimately influence his decision, behaviour, temperament, action and activities. According to Xavier (2016), the degree to which social and cultural practises facilitate or authorise behaviours that can possibly improve personal income (profits) and wealth contributing to new enterprise approach or activities. So, we propose the following hypothesis.

H2: The social and cultural have a significant relationship with the entrepreneurial intention of engineering students.

### **2.3.3. Financial Growth**

According to Barba-Sánchez and Atienza-Sahuquillo (2018), financial security is seen as a safety symbol and guarantee for an individual's good standard of living. Lexicon mentioned that the entrepreneurial economic explains how economic factors and rewards impact entrepreneurship and how acts of entrepreneurs in turn impact the wider economy. Entrepreneurship combined with land, labor, natural resources and capital that can make a profit in the context of economics.

In this case, the students need to decide on how to start-up their own business with personal saving. Personal saving is when a person rather than an organization saves money or capital to spend or invest later (Lexicon). From personal saving, the students can control themselves to avoid purchasing not important things and make them more discipline to achieve their ambition to become an entrepreneur. Without seed money or personal saving, maybe they should take a long time to start-up the business. We propose the hypothesis.

H3: Financial growth has a significant relationship with the entrepreneurial intention of engineering students.

## 2.4. RESEARCH FRAMEWORK

Fig. 1 shows the research framework of the Effects of the Entrepreneurial Ecosystem on engineering Students. The researcher wanted to investigate the hypotheses of each three independent variables such as entrepreneurial education, social and cultural and financial growth whereby they can affect on dependent variable which is an engineering student.

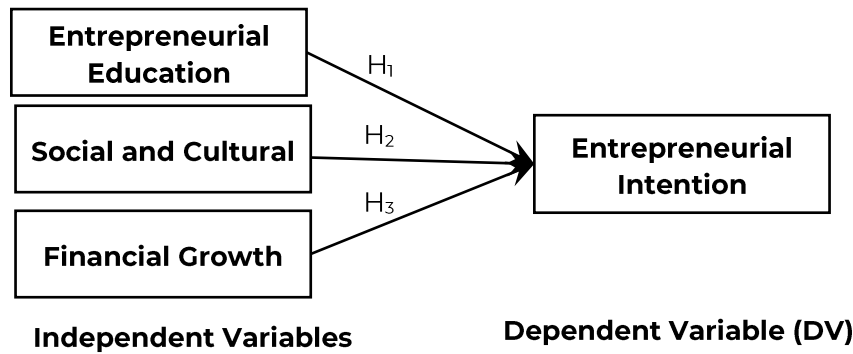


Fig. 1. The Proposed Research Framework

## 3. 3.0 RESEARCH METHODOLOGY

### 3.1 POPULATION AND SAMPLE SIZE

This research is narrow down to the fourth-year engineering students in UTeM. In 2018/2019 session, the population of fourth year engineering students in UTeM are 1672 students. The researcher collected the respondents of data from UTeM portal which is Sistem Maklumat Pasca Siswazah (SMP). Refer to Appendix C.

The researcher used Krejcie and Morgan (1970) table to determine the sample size of the population. Based on the table, the researcher assumes the sample size,  $S$  for this research would be 313 respondents because the population,  $N$  of fourth year engineering students are 1672 students. After that, the researcher distributed the questionnaire to them to collect the data.

In order to obtain the desired results, the researcher implemented a survey strategy for this research by distributing a set of questionnaires to respondents. The questionnaire consists of close-ended questions that were the set of questions that offer limited alternative answers, as well as the respondents, need to choose the one closest answer from their point of view. Answers to the closed-ended questions are easier for the respondents as the answers are classified into standardized groupings to simplify the data analysis and interpretation process.

The research design of this study is cross-sectional because at a particular time the research involves studying particular phenomena. The purpose of this research is to investigate, examine and understand the effects of an entrepreneurial ecosystem on engineering students of UTeM becoming entrepreneurs. The researcher has limited time to conduct this research so the researcher must start collecting data early in order to avoid some errors

in the results. The researcher used the survey technique online and manually to distribute the questionnaires.

### 3.2 PILOT TEST

The researcher conducted a pilot test prior to the actual research. It involved 30 respondents to identify the reliability of the questionnaire. Table 1 shows the reliability statistics of the pilot test for this research. The value of Cronbach's Alpha for all of the variables is 0.928. This result passed the pilot test because the coefficient range scored higher than 0.60. It indicated higher degrees of internal consistency.

**Table 1.** Reliability statistic

Construct	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Entrepreneurial Education	0.844	0.849	8
Social and Cultural	0.821	0.822	6
Financial Growth	0.823	0.824	5
Entrepreneurial Intention	0.769	0.766	6

According to Table 1, this pilot test's result is regarded as excellent because all the items in the questionnaire are valid and reliable. Therefore, all of the questions can include in the actual questionnaire and can distribute to the target respondents. Table 1 shows the value of Cronbach's Alpha for the pilot test of entrepreneurial education is 0.844. This result passed the pilot test and is considered as good. The social and cultural pilot test value of Cronbach's Alpha is 0.821. This result passed the pilot test and is considered as good. For financial growth, the pilot test value of Cronbach's Alpha is 0.823. This result passed the pilot test and is considered as good. However, a value of 0.769 for the pilot test of engineering students for Cronbach's Alpha. This result passed the pilot test and it is considered acceptable.

## 4. RESULTS

The data show that 52.4% are males out of 313 respondents, while 47.6% are females. The highest number of respondents contributing to this research is male and this research has dominated them. The data show that the highest frequency distribution of respondents age ranges between 22 and 25 with the total percentage being 83.1% of respondents. Furthermore, the range of age between 26 to 29 and 30 to 33 are 12.5% and 4.2%, respectively. The lowest frequency distribution of the respondent is in the age range of above 33 years with 0.3% of the respondents. The data show that Malay consists of 59.7% of respondents, which is the highest frequency distribution of respondent race followed by 29.1% of respondents from Chinese and 5.8% of respondents from other races. Next, Indian is the lowest frequency distribution of respondents which consists of 5.4%.

The descriptive analysis used to provide brief descriptive coefficients summarizing the survey result data set. In this analysis, the researcher concentrated on independent and dependent variables. It used mean value to explain the central tendency of variables while measuring the distribution of data using the standard deviation value.

**Table 2.** Descriptive Statistics of Independent and Dependent Variables

<i>Descriptive Statistics</i>					
	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Entrepreneurial Education	313	2.50	5.00	4.1242	.50647
Social and Cultural	313	2.50	5.00	4.1374	.52598
Financial Growth	313	2.40	5.00	4.1776	.47489
Engineering Student	313	2.67	5.00	4.1225	.50328
Valid N (listwise)	313				

Table 2 shows the descriptive statistics of independent and dependent variables. The dependent variable for this research is engineering student while independent variables are entrepreneurial education, social and cultural and financial growth. The data show the mean value of entrepreneurial education is 4.1242, meaning that most respondents responded positively to the standard deviation near scale 4 with a value of 0.50647. In addition, the mean value of social and cultural had also responded positively to scale 4, meaning 4.1374 with a standard deviation of 0.52598 compared to the mean value of financial growth, meaning 4.1776 with a standard deviation of 0.47489. Besides, the mean value of engineering student is 4.1225 and the value of standard deviation is 0.50328. The highest mean score from the analysis is financial growth, which is the result that most respondents agree that financial growth has a positive effect on Entrepreneurial intention among engineering students.

Pearson Correlation Analysis refers to a technique used to investigate the relationship between independent and dependent variables. The correlation coefficient ( $r$ ) of Pearson is used to measure the association strength between the two variables. Pearson correlation coefficient was computed to assesses the relationship between entrepreneurial education with engineering student. There was a positive correlation between the two variables,  $r = 0.529$ ,  $n = 313$ ,  $p = 0.000$ . A Pearson correlation coefficient was computed to assesses the relationship between the social and cultural with engineering student. There was a positive correlation between the two variables,  $r = 0.518$ ,  $n = 313$ ,  $p = 0.000$ . Table 3 shows a Pearson correlation coefficient was computed to assesses the relationship between the financial growth with engineering student. There was a positive correlation between the two variables,  $r = 0.512$ ,  $n = 313$ ,  $p = 0.000$ .

**Table 3.** Model Summary, ANOVA and Coefficients

<i>Model Summary</i>					
<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>	
1	.608 <sup>a</sup>	.370	.364	.40139	

*a. Predictors: (Constant), Financial Growth, Entrepreneurial Education, Social and Cultural*

<i>ANOVA<sup>a</sup></i>						
<b>Model</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1	Regression	29.243	3	9.748	60.501	.000 <sup>b</sup>
	Residual	49.785	309	.161		
	Total	79.028	312			

*a. Dependent Variable: Engineering Student*

*b. Predictors: (Constant), Financial Growth, Entrepreneurial Education, Social and Cultural*

Table 3 shows a multiple regression analysis was calculated to predict engineering student based on entrepreneurial education, social and cultural as well as financial growth. A significant regression equation was found ( $F(3,309) = 60.501, p < 0.000$ ), with an  $R^2$  of 0.370. The researcher used multiple regression analysis to analyse independent variables and dependent variable hypotheses.

**Table 4.** Multiple Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.149	.223		5.144	.000		
	Entrepreneurial Education	.254	.062	.256	4.103	.000	.524	1.909
	Social and Cultural	.193	.061	.202	3.145	.002	.496	2.017
	Financial Growth	.269	.061	.254	4.409	.000	.613	1.631

*a. Dependent Variable: Engineering Student*

Table 4 shows the result of regression indicated the p-value for entrepreneurial education is 0.000 which is  $p < 0.05$  that means it is a significant value. There was a significant positive relationship between entrepreneurial education with engineering student. Hence,  $H_0$  rejected while  $H_1$  is accepted. The p-value for social and cultural is 0.002 which is  $p < 0.05$  that means it is a significant value. There was a significant positive relationship between social and cultural with engineering student. Hence,  $H_0$  rejected while  $H_2$  is accepted. Whereas the p-value for financial growth is 0.000 which is  $p < 0.05$  that means it is a significant value. There was a significant positive relationship between financial growth with engineering student. Hence,  $H_0$  rejected while  $H_3$  is accepted.

## 5. DISCUSSION AND CONCLUSION

The objective of this study is to examine the main effects of the entrepreneurial ecosystem on Entrepreneurial intention among engineering students. The researcher employed multiple regression analysis in order to obtain the result. Based on the result, the biggest value of beta indicates the main effect of the entrepreneurial ecosystem on Entrepreneurial intention among engineering students. The highest value of beta is 0.256 for entrepreneurial education followed by financial growth indicating the beta value of 0.254. Meanwhile, the lowest value of beta is 0.202 for social and cultural. Therefore, the researcher can conclude that entrepreneurial education mainly affects an entrepreneurial ecosystem on Entrepreneurial intention among engineering students. This finding was supported by Jarrar and Anis (2016) where they found that the majority of engineering students agree that entrepreneurial education significantly affects them in which it can help to improve the core engineering skillset.

This study has a few limitations. First of all, the researcher targeted the respondents from the fourth year or final year engineering students in UTeM. The researcher only targeted them due to limited time duration, which restricts the researcher to collect the data from all levels of engineering students in UTeM. Besides, the researcher also had constraints of financial to manage as well as handle this research such as expenses for print out the survey

questionnaire. Future research could use different methods in conducting this research such as qualitative method like interview or focus group to enable direct interaction with the respondents as face-to-face communication with respondents will benefit in terms of more robust results to avoid misunderstanding and any doubts.

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