

# The Influence of Self-Efficacy and Individual Entrepreneurial Orientation on Technopreneurial Intention among Bumiputra Undergraduate Students

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**Abstract:** Malaysian government has implemented various programs to encourage entrepreneurship among Bumiputra youths. However, the number of young Bumiputra entrepreneurs is still far below the expectation. The fourth industrial revolution (IR 4.0) and 5G technology has highlighted the importance of technopreneurship. Unfortunately, technopreneurship is still considered new and many challenges remained. This study was geared towards identifying the factors influencing technopreneurial intention among Bumiputra students in Malaysia. It used self-administered questionnaire to survey 138 Bumiputra undergraduate students from a public university in Malaysia. It developed a research model which integrated self-efficacy theory and individual entrepreneurial orientation (IEO) concept. Based on the analyses performed, it found that information and communication technology (ICT) self-efficacy and two elements of IEO (i.e.: risk-taking and pro-activeness) positively and significantly influenced technopreneurial intention. However, innovation did not influence technopreneurial intention significantly. As such, this study suggested that higher learning institution should realize the importance of technopreneurial education in developing competitive technopreneurs among Bumiputra youths. Furthermore, students should be given more opportunities to pro-actively search for business opportunities, handle actual business to learn risk management and attend ICT courses to increase their ICT capabilities.

**Keywords:** Intention, Students, Technopreneurship, University

## 1. Introduction

Malaysian government has implemented various programs to encourage the Bumiputra youths to embark on entrepreneurship. For instance, Tunas Usahawan Belia Bumiputera (TUBE) Program and Industry Sponsorship Program are focusing on encouraging youth to venture into business and nurturing young entrepreneurs; while Prosper Young Entrepreneur Scheme is aimed at offering funding to young entrepreneurs for entering retail and distribution sectors. Specifically, Entrepreneurship Action Plan 2016-2020 is a program to promote entrepreneurship to the students with the concept of “learn and earn” which provides opportunity to gain personal income while studying (Bernama 2017). Indeed, training

more entrepreneurial students is important because today's students need to face the challenge of smaller number of corporates (Aiman, 2019).

Despite of the various efforts that have been exerted by the government; the number of young entrepreneurs is still far below the expectation. For examples, there were only three percent of Malaysian students became entrepreneurs during their tertiary education (Bernama, 2017). Furthermore, there were merely about 40% of registered Bumiputra companies in Malaysia, because many Bumiputra were not showing interest in becoming entrepreneurs and they still depended on government aid (Aris, 2019). In addition, the growth of Bumiputra entrepreneurs (indigenous or native entrepreneurs) was still slow because they contributed less than 10% to the country's GDP (Bernama, 2019). True, entrepreneurship development agencies in Malaysia also lamented that there was a mixed outcome on the performance of entrepreneurs despite various assistance has been offered to them (Sabiu, Abdullah, Mohamed, Ibrahim, Razak & Anwar, 2018). As such, further studies should be done to investigate Bumiputra embarkation on entrepreneurship.

Due to new challenges from the fourth industrial revolution (IR 4.0) and 5G technology, the competitive landscape in today's business world is moving towards utilization of information and communication technology (ICT). It is so for entrepreneurship in which traditional entrepreneurship has to give way to technology-based entrepreneurship or technopreneurship. Indeed, development of technopreneurship is important because it combines technology with business to transform Malaysia into a knowledge-based economy (Star2.com, 2018). However, technopreneurship is still considered a new breed of entrepreneurship; it faces various issues and challenges in creating, training, developing and growing of new technopreneurs (Jusoh & Halim, 2006; Tan, Karl & Mohamed, 2010; Paramasivan & Selladurai, 2017). Therefore, factors that affect individuals to take up technopreneurship requires further scrutiny. Based on the issues identified, this study is geared towards examining the factors that influence Bumiputra youth's technopreneurial intention.

## **2. Literature Review**

### **2.1 Technopreneurship**

The term technopreneurship is self-explanatory. It can be considered as a new breed of entrepreneurship (Balachandran, 2018) which encompasses technology, innovation and business (Ghazali, 2011). Technopreneurs are important not only to a nation but the world. They continuously learn, improve and innovate to create disruptions for better performance and push the frontiers of innovations worldwide (Balachandran, 2018). In Malaysia, technopreneurship is related to ICT or multimedia and it is considered as a prospective career choice for the youths who just left their schools or universities (Ghazali, 2011).

True, technopreneurs could bring enormous benefits to the world. For instance, they help to develop competitive cluster of entrepreneurs, introduce innovative products and processes, increase market growth rate etc. (Jusoh & Halim, 2006). Specifically, technopreneurs in the information technology (IT) and IT software industry could contribute to a nation's GDP significantly (Paramasivan & Selladurai, 2017a). Thus, it needs to be developed in all nations. Unfortunately, many countries are facing various challenges in the development of technopreneurship. For example, India is lacking in the process of providing strong technical education to the youths to develop technical oriented entrepreneurs (Paramasivan & Selladurai, 2017b). Indonesia is suffering from slow growth rate of technopreneurs (Adhikara, Lasmy, Sasmoko, & Indrianti, 2019). Meanwhile in Malaysia, entrepreneurial motivation is one of the issues which requires proper attention from researchers. This is because creation of technopreneurs is subject to entrepreneurial motivation, which is an output of environmental factors and individual characteristics (Jusoh & Halim, 2006).

### **2.2 Factors Influencing Technopreneurial Intention**

Ajzen (1991) explained intention as "predictor of actual behavior, the degree of how hard people are willing to try, of how much of an effort people are willing to exert in a behavior (p.181)." Hisrich, Peters and Shepherd (2017) mentioned that entrepreneurial actions are mostly intentional, and

intentions capture the motivational factors that influence entrepreneurial behavior. Similarly, one would not embark on technopreneurship without exhibiting intention. This study regards technopreneurial intention as the motivational factor that influences an individual to embark on technopreneurship.

Self-efficacy, a construct in Bandura's social cognitive theory, can be explained as "people judgements of their capabilities to organize and execute courses of action required in attaining designated types of performance" (Bandura, 1986, p.391). It could be deemed as a factor that increases a person's entrepreneurial intention. As discovered by Saw, Santhenamery and Nor (2021), low self-efficacy towards entrepreneurial intention among university students would hinder them from exploring entrepreneurship after graduating. Furthermore, Saraih, Aris, Mutalib, Ahmad, Abdullah and Amlus (2018) found, self-efficacy had a positive influence on entrepreneurial intention among Malaysian engineering students. University students in Indonesia agreed that self-efficacy significantly affected their intention towards entrepreneurship (Utami, 2017). Malaysian students are exposed to ICT knowledge starting from primary school until university. It can be said that most Malaysian youths have good knowledge of ICT. Since technopreneurship is related to ICT, it is believed that youth's ICT self-efficacy motivates them to become technopreneurs. As Sitaridis and Kitsios (2019) found, there was a positive relationship between ability to use computer and entrepreneurial intention.

Individual entrepreneurial orientation (IEO) is an individual-level concept extended from firm-level EO. It consists of three elements, namely innovativeness, risk-taking and proactiveness (Bolton, 2012). Much extant literature has also pointed out that elements in IEO were capable in building one's entrepreneurial intention. For instance, elements of IEO such as risk taking, innovativeness and proactiveness significantly associated to students' entrepreneurial intention (Bolton, 2012; Kaarthiyainy & Nalini, 2012). Yurtkoru, Acar and Teraman (2014) showed that entrepreneurship was an intentional process in which entrepreneurial intention was affected by individual's love towards risk and willingness to take. In addition, students' risk-taking propensity significantly associated with their intention to initiate entrepreneurial activities in Malaysia (Embi, Jaiyeoba & Yussof, 2019).

Previous studies have successfully identified self-efficacy and IEO as separate factors that influenced entrepreneurship. The application of both self-efficacy and IEO in determining intention towards technopreneurship is still scarce. As such, this study attempted to develop a new model which consisted of ICT self-efficacy, IEO and technopreneurial intention.

### 2.3 Research Model and Hypotheses

As discussed in the previous section, this study proposed that individual's perceived capability, namely ICT self-efficacy; and the elements of IEO concept, known as risk taking, innovativeness and pro-activeness were factors influencing technopreneurial intention. The research model (Fig. 1) delineates the relationship.

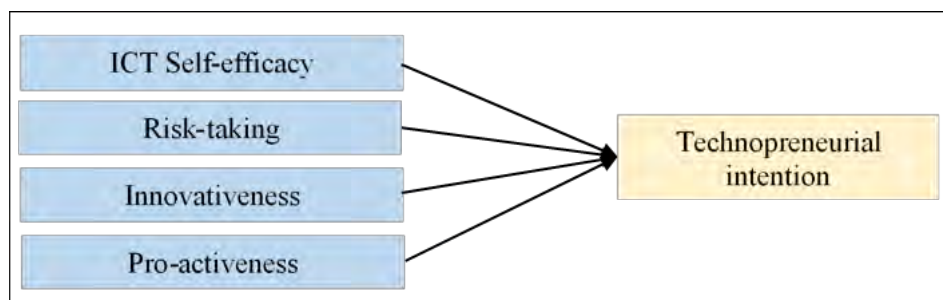


Fig. 1 Research Model

This study also suggested the following hypotheses:

- H1: There is a significant positive influence of ICT self-efficacy on technopreneurial intention.
- H2: There is a significant positive influence of risk-taking on technopreneurial intention.
- H3: There is a significant positive influence of innovativeness on technopreneurial intention.
- H4: There is a significant positive influence of pro-activeness on technopreneurial intention.

### **3. Methodology**

#### **3.1 Research Design**

The purpose of this study was to examine the relationship between ICT self-efficacy, IEO and technopreneurial intention. Since all the variables were measurable and quantifiable, quantitative research method was deemed appropriate. Specifically, it employed a questionnaire survey method. Individual undergraduate students were selected as the unit of analysis. This study collected the data for once throughout the study time frame and thus it adopted single cross-sectional time frame.

Full-time final year Bumiputra students who registered in a Malaysian public university was identified as the population of this study. The university was considered suitable because it is recognized as an entrepreneurial university; it is the only Malaysian university which accepts only Bumiputra students and it has the largest number of students and branch campuses in Malaysia. The term Bumiputra means “son of earth” which refers to indigenous peoples and natives of Malaysia. Specifically, Bumiputra students were chosen because this paper investigated student’s intention to embark on technopreneurship and they were considered potential technopreneurs. This study employed proportionate stratified sampling for sample selection. First, the population was stratified into three clusters according to three campuses in Klang Valley, Malaysia. Subsequently, the sample was selected from each campus proportionately. Since the three campuses housed all the faculties of university, it was considered sufficient to represent the university. A total of 138 students were selected as the sample. The sample size was the responses collected from the first phase of data collection. The data collection process was still on going at the point of time this paper was written.

#### **3.2 Research Instrument**

As mentioned in the previous section, this study used questionnaire survey method. Therefore, a self-administered questionnaire was developed. It consisted of three sections and 32 items. All items were adapted from previous studies (Aesaert, Voogt, Kuiper, & van Braak, 2017; Wu & Tsai, 2006; Bolton, 2012; Liñán & Chen, 2009) in order to ensure their reliability and validity. All items employed seven-point rating scales, ranging from 1-strongly disagree to 7-strongly agree.

This study also performed a pilot test before the mass distribution of questionnaires. This was to ensure that the questionnaire was free from errors and reliable. Based on the test performed, several spelling and grammatical errors were corrected. As for the reliability, the Cronbach’s alpha values for all constructs were well above the threshold of 0.70 (Pallant, 1996).

### **4. Results and Discussion**

#### **4.1 Descriptive Statistics**

A total of 138 usable responses were collected from 200 sets of questionnaires distributed. This showed the response rate was 69.00%. The undergraduate students who responded to the questionnaire were mostly female (68.84%; n=95). It was found that 26.81% (n=37) of them studied in Faculty of Business and Management. Majority of them lived in urban areas (68.12%; n=94). In addition, more than half of them reported that their family members did not own any business (52.17%; n=72) and so for their friends (62.32%; n=86). About 54.35% (n=75) of them received financial aides from government and non-governmental bodies to support their studies. In terms of e-commerce experience, 87.68% (n=121) stated that they involved as either sellers or buyers, while 12.32% (n=17) were both sellers and buyers.

#### **4.2 Reliability, Mean and Pearson Correlation Analysis**

This study used Cronbach’s alpha coefficient ( $\alpha$ ) in determining the internal consistency of items for each variable. As presented in Table 1, items for all variables were deemed reliable because the  $\alpha$  values were above the threshold of 0.70 ( $0.81 < \alpha < 0.93$ ). Table 1 also shows that ICT self-efficacy

obtained the highest mean value (m=5.74) while technopreneurial intention recorded the lowest (m=4.58).

Table 1 also depicts the results of Pearson product moment correlation analysis. Pearson correlation was performed to determine the degree of association between pairs of variables and multicollinearity. The results showed that all pairs of variables were significantly and positively associated to each other. Specifically, innovativeness and risk-taking recorded the highest correlation coefficient (r=0.67), while the lowest r-value was between pro-activeness and risk-taking recorded (r=0.27). As the highest r-value was below 0.90; therefore, multicollinearity was not an issue in this study (Pallant, 1996). The non-existence of multicollinearity confirmed that regressions analysis could be used in this study.

**Table 1.** Descriptive and correlation analysis

	$\alpha$	m	sd	ICT	RT	IV	PA	INT
ICT	0.92	5.74	0.69	1				
RT	0.83	5.01	0.98	0.32**	1			
IV	0.81	5.20	0.83	0.37**	0.67**	1		
PA	0.83	5.42	0.81	0.49**	0.27**	0.57**	1	
INT	0.93	4.58	1.15	0.31**	0.48**	0.32**	0.34**	1

ICT: ICT self-efficacy; RT: Risk taking; IV: Innovativeness; PA: Pro-activeness; INT: Technopreneurial intention

\*\* Significant at <0.01

### 4.3 Multiple Regressions Analysis

Based on the research model (Fig. 1), four hypotheses were developed. The hypotheses were tested by using multiple regressions analysis because it was appropriate in determining the relationship between independent variables and dependent variable. The non-existence of multicollinearity evidenced from Pearson correlation was proven again by large tolerance values (>0.10) and small VIF values (<10) in Table 2 (Pallant, 1996). Therefore, multiple regressions analysis was deemed suitable.

Table 2 shows that the research model was statistically significant because F-statistics (F=11.87) was significant (sig.<0.01). Based on the R-squared obtained (R<sup>2</sup>=0.41), it showed that 41% of the variations in technopreneurial intention was explained by ICT self-efficacy, risk-taking, innovativeness and pro-activeness. Specifically, ICT self-efficacy ( $\beta$ =0.25; sig.=0.03), risk-taking ( $\beta$ =0.53; sig.<0.01) and pro-activeness ( $\beta$ =0.27; sig.=0.01) were found to have positive and significant relationship with technopreneurial intention. Meanwhile, there was no significant relationship found between innovativeness and technopreneurial intention ( $\beta$ =0.22; sig.=0.09). The most important factor was risk-taking, followed by pro-activeness and ICT self-efficacy. Therefore, the results supported H1, H2 and H4 but not H3.

**Table 2.** Multiple regressions analysis

Variable	Std. $\beta$	T-value	Sig.	VIF	Tolerance
ICT	0.25	2.35	0.03	0.72	1.40
RT	0.53	4.71	<0.01	0.51	1.96
IV	0.22	1.71	0.09	0.39	2.58
PA	0.27	2.55	0.01	0.55	1.81
F-statistics			11.87 (sig. <0.01)		
R-squared			0.41		

Dependent variable: INT: Technopreneurial intention

ICT: ICT self-efficacy; RT: Risk taking; IV: Innovativeness; PA: Pro-activeness

## **5. Discussion**

Based on the results obtained, the influence of risk-taking on technopreneurial intention was positive and significant. The results supported Yurtkoru et al. (2014) and Embi et al. (2019). Entrepreneurship is associated to risk-taking because entrepreneurs operate their businesses in a highly competitive and rapidly change environment. Specifically, the level of risk is even higher in high-technological sector because technology develops very fast and frequently. Thus, it was not surprising to find that risk taking positively related to technopreneurial intention. As such, students should be exposed to entrepreneurial risks in encouraging them to become actual technopreneurs in future. As discussed by Nurdiyanto (2018), technopreneurship training should adopt work-based learning approach in order to get a better outcome. Thus, universities could attempt to provide hands-on and actual entrepreneurial experience to students, such as establishing technology-based business incubator or requiring students to setup actual technology-based business as course assignment. It is believed the actual experience gained from entrepreneurship incubator could help them in recognizing and overcoming risks. This could further foster their intention towards becoming technopreneurship.

In addition, this study supported that pro-activeness positively and significantly influenced technopreneurial intention. Bolton (2012) and Yurtkoru et al. (2014) also found similar results. It is important to note that entrepreneurship is all about recognizing and acting on viable business opportunities. Thus, being pro-active could help potential technopreneurs to identify profitable business opportunities and become technopreneurs. Every entrepreneur understands that opportunity does not come to them. In fact, potential entrepreneurs should be sensitive to changes in the environment and actively looking for gaps or unmet demands in the market. As such, students should be equipped with capability to recognize business opportunities. Having knowledge in preparing business plan could be a possible way to train students to be pro-active. Previous research has suggested that organizing business plan competition at the university, national or even regional level could help to foster technopreneurs (Tan et al., 2010). Therefore, ability to develop a good business plan should be instilled into students' minds.

On top of that, ICT self-efficacy was found to positively and significantly influence technopreneurial intention. The finding supported that entrepreneurial education was significant in influencing university students' intention to adopt entrepreneurship (Saraih et al., 2018; Utami, 2017) and technopreneurship education significantly affected students' career intention to be technopreneurs (Harsono, 2013). The result further revealed that ICT education plays an important role in developing technopreneurs among young people because technopreneurs require ICT capabilities to create, manage and expand their businesses. As one's self-efficacy or perceived capability can be learned through education, higher learning institutions (HLIs) are important agents in imparting ICT knowledge to future technopreneurs. Specifically, science, technology, engineering and mathematics (STEM) education is important in imparting technology-related knowledge; thus it helps to train and develop new technopreneurs (Star2.com., 2018). ICT courses focusing on business operations should be offered to university students to enable them to be technopreneurs.

## **6. Conclusion**

This study was geared towards identifying the factors influencing technopreneurial intention among Bumiputra students in Malaysia. Based on the findings, it concluded that risk-taking, pro-activeness and ICT self-efficacy positively and significantly influenced technopreneurial intention. However, innovativeness was not a significant influencing factor of technopreneurial intention. As such, university students should be given more opportunities to pro-actively search for business opportunities, handle actual business to learn risk management and attend ICT courses to increase ICT capabilities.

Literary, this study enriched the extant literature by combining self-efficacy theory and IEO concept to determine technopreneurial intention. Practically, it sheds light on the role of ICT self-efficacy and individual entrepreneurial qualities in encouraging technopreneurship among undergraduate students. Specifically, it highlighted that hands-on and practical training are important in bolstering technopreneurial intention. Therefore, HLIs should focus on providing actual entrepreneurial experience, developing business plan and offering various education to encourage

embarkation of technopreneurship among the students. Specifically, STEM education could impart important science and technology related knowledge, especially ICT and multimedia to enable the students to engage in technopreneurship. Furthermore, the formal and informal technical and vocational education and training (TVET) courses that emphasize on providing essential knowledge and skills in employment are also playing a crucial role technopreneurship development.

## 7. Suggestion for Future Research

Future researchers are suggested to expand the sample size by including students from other races and universities. Future studies are also suggested to extend the research model by examining other external factors such as economic conditions, support from government and subjective norms.

## 8. Co-Author Contribution

The authors affirmed that there is no conflict of interest in this article. Wei-Loon Koe contributed to conceptualization, write-up of research methodology and part of interpretation of results. Ramesh Krishnan performed the field work and wrote the literature review. Nurul Ezaili Alias carried out the statistical analysis and wrote part of the interpretation of results.

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