



Research Article

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Factors Influencing Intention towards Technopreneurship among University Students

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Abstract

The number of youths embarking on entrepreneurship in Malaysia is still low despite various efforts have been exerted by the government. Specifically, technopreneurship which is an important new breed of entrepreneurship in the post COVID-19 era is facing various challenges, especially in the development of competitive technopreneurs. To date, there is a lack in the literature pertaining to intentional-based studies, specifically on technopreneurship. As such, this study was motivated to identify the individual factors that influence university students' intention towards technopreneurship. It developed a research model based on the concepts of self-efficacy and individual entrepreneurial orientation. A total of 196 university students from a public university were surveyed through self-administered questionnaires. The results indicated that self-efficacy, namely computer capability and Internet ability, as well as individual entrepreneurial orientation positively and significantly affected intention towards technopreneurship. Several suggestions were given to strategize technopreneurship development in the country. For instance, higher learning institutions should offer non-traditional technopreneurship curriculum and upgrade technological infrastructure. In the meantime, government was also urged to provide conducive business environment and technopreneurship funding.

Keywords: Information technology; Intention; Students; Technopreneurship; University

1. Introduction

Over the years, Malaysian government has implemented various strategies to encourage greater involvement from youths in entrepreneurial activities. For instance, Ministry of Entrepreneur Development (MED) has launched the National Entrepreneurship Framework (NEF) in 2018 as a strategy to elevate entrepreneurship development by 2023. Two important thrusts in this effort are to produce 50 000 entrepreneurs and train 50 000 graduates annually. As the country is in the middle of

this effort, it is not too late to evaluate the achievement of the strategy.

It is worth mentioning that university graduate's embarkation on entrepreneurial activities is important in reducing government's burden in creating public sector job opportunities (Singhry, 2015). Furthermore, getting employed could also be a great challenge for graduates due to the unpromising economic situation after the COVID-19 outbreak. Despite the efforts exerted by Malaysian government, not many Malaysian youths have considered to take up entrepreneurship as their career choice. Statistics showed that there were approximately 3% of Malaysian students have become entrepreneurs when pursuing their degree (Bernama, 2017). Meanwhile in United Kingdom (UK), merely 4.7% of recent graduates were self-employed or freelance, with only 0.6% have actually started their own business (Philips, 2018).

There are many sub-areas under the umbrella of entrepreneurship. One of them is technology-based entrepreneurship or also known as technopreneurship. As the physical world is moving towards a virtual world with greater use of artificial intelligence, technopreneurs are playing an important role in transforming the world through improvement of current technology (Abbas, 2018). In addition, as an effect of COVID-19 pandemic, many businesses are required to adopt technology and innovation in their operations to support the future scenarios in post COVID-19 era (Sallomi, 2020). However, technopreneurship is still considered as a new breed of entrepreneurship. Therefore, it faces various challenges in training and development of competitive technopreneurs (Jusoh & Halim, 2006; Tan, Karl & Mohamed, 2010). It is true that technopreneurship is not a commodity which can be easily made and traded. Failure to develop superior technopreneurs will widen the gap between countries, cultures and civilizations (Abbas, 2018). As such, studies pertaining to technopreneurship development should be emphasized.

It is worth mentioning that embarkation on entrepreneurship does not happen in vacuum. Prior to becoming an entrepreneur, a person would exhibit certain level of intention. It is believed that the higher the intention a person shows, the higher the chance that the person would become an entrepreneur (Hisrich, Peters & Shepherd, 2017). The same concept applies to intention towards technopreneurship. However, studies pertaining to intention towards technopreneurship are low in number because majority of the entrepreneurial intentional studies are focusing on traditional entrepreneurship. Specifically, clarification of factors such as competencies and orientation on technopreneurial intention is lacking (Hoque, Awang & Siddiqui, 2017). The lack of literature has caused a lacuna in understanding the factors influencing technopreneurial intention. Therefore, this study was conducted with the objective to identify the individual factors that influence university students' intention towards technopreneurship.

2. Literature Review

2.1 *Intention towards technopreneurship*

Technopreneurship or technical entrepreneurship or technology-based entrepreneurship is a term under the umbrella of entrepreneurship. Technopreneurs refers to entrepreneurs who are technology-savvy and use technology in the process of entrepreneurship (Byers, 1983). As we are moving towards a virtual world, superior technopreneurship is crucial in developing more advanced technology, bridging the gaps between countries, culture and civilizations, and transforming the world (Abbas, 2018). Indeed, technopreneurs helps a nation to emerge into a developed nation. Therefore, transforming students into future leaders who cherish the importance of technopreneurship is crucial in the current changing global business world (Okorie, Kwa, Olusunle, Akinyanmi, Momoh, 2014).

However, development of technopreneurs is not as easy as making a commodity because it requires high level of intelligence, expertise and sophisticated programs to produce "strategic thinkers" to survive in competitive dynamic environment. Moreover, development of technopreneurship faces various challenges because people in some cultures or communities believe that technopreneurship contradicts with their belief, religion, values and tradition (Abbas, 2018). Previous research also found

that technopreneurship is still lacking in most part of Asia due to the absence of strategic management perspectives, attitudes and skills (Dana, 2004). As such, some efforts are needed to further examine the technopreneurship development.

Understanding of entrepreneurial intention could be the first step in entrepreneurship development because a person would demonstrate certain level of intention before he or she embarked on entrepreneurship. Theory of planned behavior (TPB) explains 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” (Ajzen, 1991, p.181). An individual’s level of intention is affected by the attitude, subjective norms and perceived behavioral control (PBC). The higher the level of entrepreneurial intention that a person showed, the higher the possibility that he or she in becoming an entrepreneur (Hisrich *et al.*, 2017). Based on the discussion in TPB, it is therefore believed that technopreneurial intention is a good predictor of technopreneurial behavior.

2.2 Factors influencing intention towards technopreneurship

TPB stresses that PBC is one of the factors influencing behavioral intention. Some researchers stated that PBC was equivalent to self-efficacy (Fishbein & Cappella, 2006). Self-efficacy can be referred to “people’s judgments of their capabilities to organize and execute courses of action required attaining designated types of performances” (Bandura, 1986, p.391). Individual’s self-efficacy recorded a significant and positive impact on people’s intention in becoming technopreneurs. Specifically, technopreneurial self-efficacy and technopreneurial learning have significant direct and positive effects on technopreneurial intention (Hoque *et al.*, 2017).

This study employed self-efficacy concept and focused on computer capability and Internet ability. Information and communication technology (ICT) is important in achieving technopreneurship because it helps to disseminate important information for strategic plan development (Watson, 2016). Furthermore, individuals who are productivity driven, technologically capable and globally competitive are important in technopreneurship development (Okorie *et al.*, 2014). Students who possessed sufficient information technology (IT) skills and exposed to real experience in setting up IT ventures during their studies would be more successful in IT-related entrepreneurship (Wiradinata, 2014). In addition, entrepreneurial and business skills such as technical management skills and technical education were considered a contributing factor for technopreneurship (Abdulgani, Mamangkiang & Islam, 2016).

Entrepreneurial orientation (EO) is commonly recognized as a firm-level construct which affects performance of an organization (Miller, 1983). It is worth mentioning that firm-level EO which consists of risk-taking, innovativeness and pro-activeness can be extended to individual-level (Bolton, 2012). Moreover, the three elements of individual EO were also associated to students’ entrepreneurial intention. Indeed, individual’s love towards risk and willingness to take risk affected individual’s entrepreneurial intention (Yurtkoru, Acar & Teraman, 2014). As for Malaysian students, their risk-taking propensity were found to be associated with intention to initiate entrepreneurial activities (Embi, Jaiyeoba & Yussof, 2019). Individual characteristics factor, motivation factor and entrepreneurial and business skills factor which were related to an individual’s needs, attitudes, interest, ability to recognize and exploit opportunity were found to affect technopreneurship development (Abdulgani *et al.*, 2016).

Based on the above discussion, this study proposed the following research framework (Figure 1) and hypotheses.

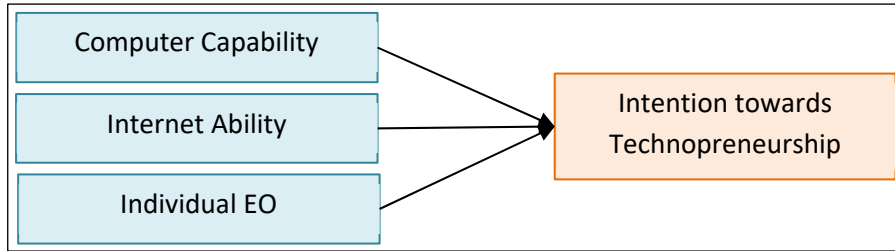


Figure 1: Research Framework

H1: Computer capability significantly affects intention towards technopreneurship.

H2: Internet ability significantly affects intention towards technopreneurship.

H3: Individual EO significantly affects intention towards technopreneurship.

3. Research Methodology

This study adopted a quantitative method because it aimed at testing relationships between variables and all variables were measurable (Clark & Creswell, 2010). Specifically, it used a questionnaire survey to collect the desired input from respondents. The population of this study was the full-time final year students registered in a public university. Since the university has multiple campuses across 13 states in Malaysia, this study focused on three main campuses in Klang Valley. As for sample selection, it adopted proportionate stratified sampling. More than 300 questionnaires were distributed. A total of 196 usable responses were collected after one reminder.

The respondents were asked to indicate their responses on self-administered questionnaires which were sent to them electronically or by hand. The questionnaire consists of three sections and 32 questions. In order to ensure the reliability and validity of the items, all questions were adapted from previous studies (Aesaert, Voogt, Kuiper & van Braak, 2017; Bolton & Lane, 2012; Wu & Tsai, 2006; Liñán & Chen, 2009). The researchers slightly modified the questions to suit the cultural background of respondents. As closed-questions were used, respondents had to indicate their level of agreeableness or disagreeableness based on a seven-point Likert scale (1=strongly disagree to 7=strongly agree).

The researchers conducted a pilot test to identify the errors in questionnaire and reliability of items. Then, feedback from respondents were recognized and improvement on questionnaire was done accordingly. The initial reliability analysis revealed that all items achieved internal consistency with Cronbach's alphas above 0.70 (Pallant, 1996).

4. Findings and Discussion

4.1 Background of respondents

This study successfully collected 196 usable responses. It found that most students were female (72.45%; n=142). There were 50 (25.51%) students studied in Faculty of Business and Management. More than half of them lived in urban areas (63.27%; n=124) and received financial aides to support their studies (55.61%; n=109). In addition, about 52.55% (n=103) of the students responded that none of their family member owned a business. It is rather encouraging that vast majority of the students had e-commerce experience (87.24%; n=171).

4.2 Descriptive and Pearson correlation analysis

Table 1 depicts the results of descriptive and Pearson product moment correlation analyses. The

Cronbach's alpha values were well above the threshold of 0.70 (Pallant, 1996), ranged from 0.78 to 0.93. This showed that internal consistency was achieved whereby the items were considered reliable. The descriptive analysis revealed that the mean values ranged from the lowest (m=5.21) for individual EO to the highest (m=5.89) for Internet ability.

Table 1: Descriptive, Reliability and Pearson Correlation Analysis

	α	m	sd	CCP	IAB	IEO	INT
CCP	0.78	5.65	0.74	1			
IAB	0.82	5.89	0.71	0.63**	1		
IEO	0.83	5.21	0.72	0.49**	0.48**	1	
INT	0.93	5.79	0.74	0.32**	0.35**	0.46**	1

α : Cronbach's alpha; m: mean; sd: standard deviation; CCP: computer capability;

IAB: Internet ability; IEO: individual entrepreneurial orientation;

INT: intention towards technopreneurship;

** : correlation is significant at 0.01 level

As for the Pearson correlation analysis, all pairs of independent variables recorded positive and significant correlations. The correlation coefficient (r) ranged from the lowest (IAB-IEO; r=0.48; sig.<0.01) to the highest (CCP-IAB; r=0.63; sig.<0.01). Furthermore, all independent variables (CCP, IAB, IEO) were also positively and significantly associated to dependent variable (INT). The strongest association was found between IEO and EO (r=0.46; sig.<0.01), meanwhile CCP and INT obtained the weakest association (r=0.32; sig.<0.01). Since none of the r-value was overly high (r>0.90), the results further indicated that the variables were free from multicollinearity (Pallant, 1996).

4.3 Hypotheses testing

Multiple regressions analysis was performed to test the three hypotheses (H1-H3) and the results were summarized in Table 2. It was important to ensure that data achieved normality and linearity prior to conduct the multiple regressions analysis. In addition, the data also did not have any multicollinearity issues because of the large tolerance values (>0.10) and small VIF values (<10) (Pallant, 1996).

Table 2: Multiple Regressions Analysis

	Std. β	t-value	Sig.	Tolerance	VIF
Computer capability	0.57	2.49	0.01	0.42	3.24
Internet ability	0.44	2.27	0.03	0.57	2.95
Individual EO	0.38	4.02	<0.01	0.72	1.40
F-statistics	28.09 (sig.<0.001)				
R-squared	0.37				

Dependent variable: Intention towards technopreneurship

Table 2 indicated that the research model was statistically fit (f-statistics=28.09; sig.<0.001). The R²=0.37 exhibited that 37% of the variation in intention towards technopreneurship was explained by computer capability, Internet ability and individual EO. The results also showed that computer capability (β =0.57; sig.=0.01), Internet ability (β =0.44; sig.=0.03) and individual EO (β =0.38; sig.<0.01) positively and significantly affected intention towards technopreneurship. The most influential factor was computer capability, followed by Internet ability and individual EO. As a result, H1, H2 and H3 were supported.

4.4 Discussion

The findings revealed that both computer capability and Internet ability positively and significantly affected intention towards technopreneurship. The result supported the discussion of previous studies such as Okorie *et al.* (2014), Wiradinata (2014) and Abdulgani *et al.* (2016). Technology literacy or ability in using technology effectively is inseparable from entrepreneurship because it enables entrepreneurs to face the Fourth Industrial Revolution (IR 4.0) which emphasizes utilization of technology in works (Hidayat & Yunus, 2019). As such, this study found that students perceived themselves were capable and able to use computer and Internet in a beneficial manner. They were also aware of the importance of ICT if they would like to embark on technopreneurship because technopreneurship is inseparable from ICT. In addition, this study also found a positive and significant effect of individual EO on technopreneurial intention. The result also conformed to discussion in previous studies conducted by Abdulgani *et al.* (2016), Bolton (2012), Yurtkoru *et al.* (2014) and Embi *et al.* (2019). It showed that students perceived themselves to have certain level of individual entrepreneurial qualities such as risk taking, innovativeness and proactiveness. It further indicated that building individual entrepreneurial qualities were crucial in developing greater number of technopreneurs in the future.

Extra efforts are needed to encourage students in becoming technopreneurs. Technopreneurship is something that can be taught (Wiradinata, 2014; Wijaya & Saudi, 2019). Therefore, the roles of higher learning institutions (HLIs) should not be neglected. As known, entrepreneurship course could significantly help to increase graduates' entrepreneurial intention (Hamzah, Yahya, Sarip & Adnan 2016). Therefore, HLIs should consider emphasizing on delivery of entrepreneurship education to their students. Various teaching and learning methods should be used to ensure students are equipped with up-to-date entrepreneurial knowledge, skills and capabilities.

Traditional or primitive programs are no longer relevant in developing competitive technopreneurs (Abbas, 2018). A reform of curriculum design which ensures a balance between theory and practice is crucial (Hidayat & Yunus, 2019). Thus, HLIs should design non-traditional curriculum for technopreneurship program. For example, the curriculum should emphasize on encouraging innovation, creativity, critical thinking and use of technology. It could be done through collaborations between HLIs and successful high-technology firms or alumni to ensure that the curriculum is relevant, up-to-date and fulfill the industry's needs. In addition, the impartation of technopreneurial knowledge requires highly creative, innovative, flexible and inspired academic staff who do not adhere to traditional teaching and learning methods.

Apart from the formal entrepreneurship education provided by HLIs, technopreneurship incubator programs are also important in technopreneurship development. For instance, technopreneurship incubator programs conducted by Singaporean government were deemed important and effective in boosting technopreneurship in Singapore (Wong, 2013). In addition, Bandung Techno Park was also found to be a business incubator which played a big role in developing technopreneurs (Wijaya & Saudi, 2019). In order to have a better result from technopreneurship incubators, they should be managed and operated in a creative manner. For examples, they could be based in university, managed by relevant governmental agencies or collaborations with private entities. This is to ensure that fresh ideas and input from different perspectives could be gathered.

For the sake of technopreneurship development, HLIs should also consider upgrading technological infrastructure to enable the students to get used to high-end technology. As the use of technology is crucial in the era of IR 4.0 (Hidayat & Yunus, 2019), enabling the students to get familiar with high-end technology such as robotics, Internet of things, automations of works, smart technology etc. could be an effective way in preparing the students to become competitive technopreneurs.

The role of government in developing more technopreneurs should be emphasized as well. Government should be the locomotive for technopreneurship development in the country. For instance, building a conducive business environment and establishing strategic and directive policies are some of the governmental efforts in promoting technopreneurship (Okorie *et al.*, 2014). Apart from that, relevant governmental agencies could also provide technology-based start-up funding or grants

to encourage students to embark on technopreneurship.

5. Conclusion

This study concluded that self-efficacy, namely computer capability and Internet ability, as well as individual EO positively and significantly affected intention towards technopreneurship. The study further suggested that developing competitive technopreneurship in future requires extra efforts from HLLs and government. Specifically, offering non-traditional technopreneurship curriculum, upgrading technological infrastructure, providing conducive business environment and technopreneurship funding are among the strategies could be done by HLLs and government.

The contributions of this study are two-fold. Literally, it combined the concepts of self-efficacy and individual EO in testing their influence on intention towards technopreneurship. Practically, it shed lights on university students' intention towards technopreneurship and provided suggestions to HLLs and government for technopreneurship development, especially during the post COVID-19 era. As for the future researchers, they are suggested to extend the sample size, to integrate other theories and to include environmental variables into the research model.

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