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Likelihood in Choosing Technopreneurship as Career among Undergraduate Students

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Abstract

Technopreneurship is important for businesses to stay competitive in the Fourth Industrial Revolution (IR 4.0) era. It is also a viable strategy to overcome unemployment among youths. However, the development of technopreneurship is facing various challenges and the result is considered less than satisfactory. As such, this study aimed to identify the extend of likelihood in choosing technopreneurship as career among university students and the characteristics pertaining to it. A total of 216 undergraduate students from a public university were surveyed through electronic questionnaire. Subsequently, median-split method was used to categorize the students into "low likelihood" and "high likelihood". Cross tabulation was performed to determine the characteristics pertaining to students' likelihood of becoming technopreneurs. Based on the results obtained, this study concluded that students' likelihood in becoming technopreneurs was not related to gender and family owning business background. However, their technopreneurship career choice was relevant to business- and technology-related study background, living in urban areas and e-commerce experience. This study further suggested that higher learning institutions (HLIs) and government should constantly offer well-planned technopreneurship courses or trainings, improve technology infrastructure and provide technopreneurship support to enhance the development of technopreneurship.

Keywords: Career, Employment, Technopreneurship, Undergraduate, University.

Introduction

Entrepreneurial activities are important to a country's development. As businesses are entering a new era known as Fourth Industrial Revolution (IR 4.0), entrepreneurs need to change their ways of doing business as well. As known, IR 4.0 emphasizes on use of high-level technology in businesses such as automation, Internet of things and smart technology; there is a need for traditional entrepreneurs to shift towards technopreneurship. Although technopreneurship or technology-based entrepreneurship is important in the future

competitive landscape, many people still regard it as a new breed of entrepreneurship. As such, many challenges remain, especially in training and development of entrepreneurship (Jusoh & Halim, 2006; Tan, Karl & Mohamed, 2010).

It is important to note that technopreneurship is not only important for a nation's development, but also a solution to unemployment. For instance, Indian government has started to train their youths to embark on technopreneurship as a strategy for unemployment (Paramasivan & Selladurai, 2017). As urged by Otamiri and Goodlife (2019), youths should stop waiting for government jobs, but should start up small-scale technology-based businesses by themselves. For years, Malaysian government has exerted various efforts in developing young entrepreneurs. For instance, various initiatives, plans and schemes have been carried out by the government to encourage more involvement in entrepreneurship among undergraduate students. For instance, Entrepreneurship Action Plan 2016-2020 was introduced to encourage students to gain personal income while studying and it emphasized on the concept of "earning while learning". Despite the various encouragements given by the government, the number of undergraduate students who became entrepreneurs were still small. Data showed that only 3% of the students became entrepreneurs during their university time (Bernama, 2017). The phenomenon signifies that undergraduate students are not keen in choosing entrepreneurship as their career. Therefore, there is a need to further scrutinize the issue.

Due to the cruciality of technopreneurship and low participation of students in entrepreneurial activities, there is a need to extend the study to examine the students' perception on choosing technopreneurship as their career. Furthermore, studies of technopreneurship as career choice among university students is still scarce in the literature. The lack of studies pertaining to technopreneurship has caused a lacuna in the entrepreneurship literature. Therefore, this study was performed with the following objectives:

- To identify the extend of likelihood in choosing technopreneurship as career among undergraduate students; and
- To determine the characteristics pertaining to likelihood in choosing technopreneurship as career.

Literature Review

Technopreneurship can be considered as a sub-field in entrepreneurship. Selladurai (2016) explained technopreneurship as a process of merging technological expertise and entrepreneurial skills and talents. It is important to note that technopreneurship is a process, in which organizational creativity and innovation are used to solve organizational problems for satisfying economic performance (Fowosire, Idris, & Elijah, 2017). Therefore, technopreneurs could be described as someone who thinks like an engineer and acts like an entrepreneur (Paramasivan & Selladurai, 2017). From the perspective of Malaysia, Jusoh and Halim (2006) explained technopreneurship as technical entrepreneurs or technology-based entrepreneurs who are represented by small and medium enterprises (SMEs), seed level and start-ups in information and communication technology (ICT) and multimedia sectors. Based on the above explanations, it could be said that technopreneurship is the combination of technology and entrepreneurship for the purpose of economy development and sustainability.

Since technopreneurs are well equipped with technical and business skills, they are important in improving and redefining the dynamic digital economy constantly and continuously (Fowosire et al., 2017). Technopreneurship is closely related to ICT and multimedia; thus, it plays a crucial role in expanding and accelerating business and people. It is also important in growing and developing entrepreneurs in the knowledge-based economy, competing in the borderless world and achieving sustainability (Jusoh & Halim, 2006). From the corporate perspective, technopreneurship is important in creating competitive advantages in enterprises and organizations (Dolatabadi & Meigounpoory, 2013). Specifically, it helps universities to commercialize innovations in universities through patenting, licensing and other types of intellectual properties because technopreneurship emphasizes on innovation. Moreover, it also allows transfer of technology to happen between universities and business communities (Lakitan, 2013). True, technoprenuers help to dominate challengers in the technology world and therefore developing greater number of young technoprenuers is important (Paramasivan & Selladurai, 2017).

Despite its significant contributions to technological and economic development, technopreneurship could also be a viable career choice for youths. Otamiri and Goodlife (2019) pointed out that technopreneurship could help to resolve unemployment among youths through jobs creation and sustainable income generation. Young individuals especially those who have graduated from university should consider embarking on technopreneurship for job security and regular income generation. As supported by Ikhtiagung and Aji (2019), tertiary education graduates should not be oriented as job seekers only, but they should become job creators or entrepreneurs. For years, Malaysian government has promoted youth entrepreneurship as a mean to reduce unemployment and demonstrate youth's capabilities (Khan, Noor & Anuar, 2016). Therefore, developing competitive technopreneurs should start from as early as tertiary education. However, the decision to take up technopreneurship as career depends very much on the youth's mindset. They should be taught to like and show favor for technopreneurship.

Changing people's mindset to allow them to think innovatively and developing a technopreneurial culture is important in developing a greater number of technopreneurs (Amante & Ronquillo, 2016). Dolatabadi and Meigounpoory (2013) pointed out that individual factor, such as personal experiences, psychological features and motives would affect corporate technological entrepreneurship. Specifically, higher learning institutions (HLIs) such as universities, polytechnics and colleges are playing a significant role in educating and motivating the young students to be enthusiastic towards technopreneurship (Ikhtiagung & Aji, 2019). However, technopreneurship is still considered an emerging concept particularly in developing countries (Selladurai, 2016). As Fowosire et al. (2017) mentioned, technopreneurship faces various challenges. Indeed, the creation and development of technopreneurship is subject to various issues such as motivation, risks, obstacles, growth and infrastructure (Jusoh & Halim, 2006). It is believed that understanding people's mindset on technopreneurship is the first step in developing technopreneurs.

Research Method

The population of this study comprised of full-time final-year bachelor's degree students from a local public university. They were deemed appropriate because they have completed entrepreneurship course. Moreover, they would graduate soon and start to search

for their own career after graduation. This study randomly selected 250 sample from the seven faculties in the university. The sample size was deemed appropriate because it was larger than 30 and less than 500 (Sekaran & Bougie, 2010).

This study was exploratory in nature and it adopted descriptive analysis. It used questionnaire for data collection purposes. Electronic questionnaires were sent to the respondents through various social media. The questionnaire collected respondent's background information by using multiple choice questions. To identify the extend of likelihood in choosing technopreneurship as career, respondents were asked to indicate their choice based on a seven-point rating scale, ranging from 1=very unlikely to 7=very likely. Upon the collection of data, this study performed median-split analysis to turn an ordinal variable into a categorical one. Specifically, the median for likelihood in choosing technopreneurship as career was identified, then any value below the median was put in the category "low likelihood" and every value above it was known as "high likelihood" (Field, 2018, Martin, n.d.). Subsequently, cross-tabulation was performed to determine the characteristics pertaining to likelihood in choosing technopreneurship as career.

Findings and Discussions

Results of Analysis

This study distributed 250 questionnaires to the students. However, only 216 questionnaires were deemed usable. Thus, the response rate was 86.40%. Table 1 depicts the respondent's background information. There were more female students (F=140; 64.81%) than male students. About one third (F=73; 33.80%) of the students were from Faculty of Business and management. More than half of the them lived in urban areas (F=132, 61.11%). About half of their family members were not owning any business (F=118; 54.63%). It was rather motivating to find that more than 90% of the students had experience in using e-commerce as buyer only (F=27; 12.50%), seller only (F=70, 32.41%) or both buyer and seller (F=104; 48.15%).

Table 1
Respondent's Profile

Characteristics	F	%
Gender		
Male	76	35.19
Female	140	64.81
Faculty		
Business and Management	73	33.80
Accountancy	38	17.59
Hotel and Tourism Management	16	7.41
Communication and Media Studies	13	6.02
Art and Design	19	8.80
Computer and Mathematics Sciences	32	14.81
Plantation and Agrotechnology	25	11.57
Place of Living		
Urban	132	61.11
Sub-urban	84	38.89
Family Member Owning Business		
Yes	98	45.37
No	118	54.63
E-commerce Experience		
No experience	15	6.94
As buyer only	27	12.50

As seller only	70	32.41
As buyer and seller	104	48.15

Figure 1 summarizes the student's likelihood in choosing technopreneurship as career. Most students rated 4-Neutral for likelihood in choosing technopreneurship as career (F=78; 36.11%) followed by 5-somewhat likely (F=51; 23.61%), 6-likely (F=48; 22.22%) and 7-very likely (F=19; 8.80%). It could be said that students were rather positive in becoming technopreneurs in future. It is also worth mentioning that the mean value obtained was 4.81 and the median was 5.00.

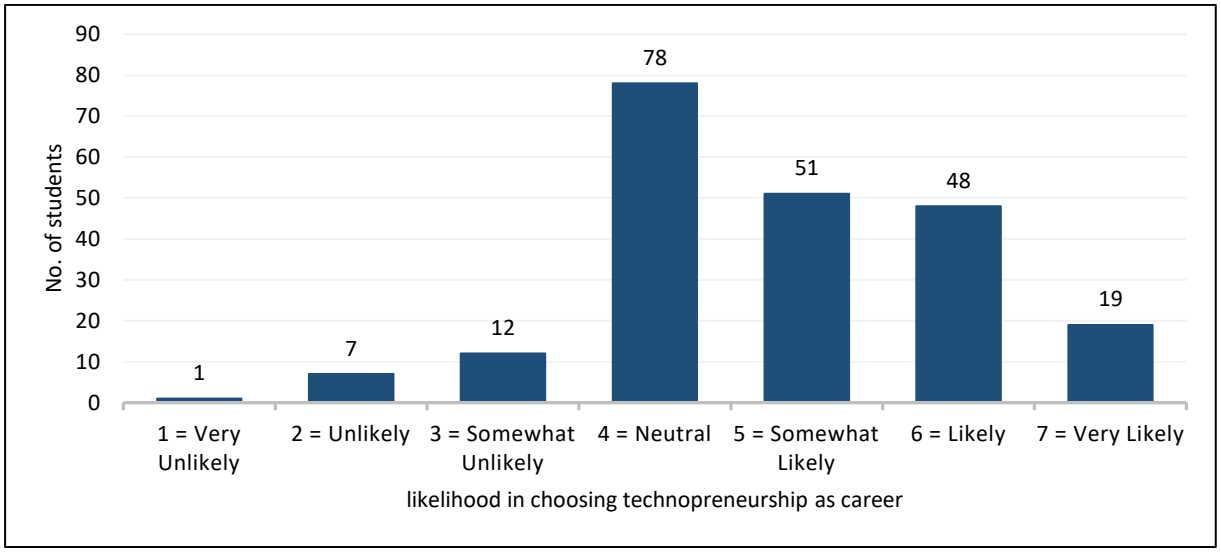

Figure 1: Frequency of Likelihood in Choosing Technopreneurship as Career

As mentioned in the previous section, this study used median-split method to categorize the students into low likelihood and high likelihood in choosing technopreneurship as career. The results are demonstrated in Table 2. Following the suggestion by DeCoster, Gallucci and Iselin (2011), cases below the median will be put in "low" group, cases above the median will be put in "high" group and cases exactly at the median can be put in either group. In this study, in order to make the groups more equivalent in size, respondents who scored exactly at median (5.00) and above in likelihood in choosing technopreneurship as career were grouped as "high likelihood" (F=118; 54.63%). Meanwhile, those who rated below 5.00 were categorized as "low likelihood" (F=98; 45.37%).

Table 2
Category of Likelihood in Choosing Technopreneurship as Career

Technopreneurhip as Career	**F**	**%**
Low Likelihood (<5.00)	98	45.37
High Likelihood (≥5.00)	118	54.63

Cross tabulation was performed to further categorize the respondents according to their extend of likelihood in choosing technopreneurship as career and personal background. The results are showed in Table 3 to Table 7. In terms of gender (Table 3), there were 45 male students (59.21%) and 73 female students (52.14%) showed high likelihood in choosing technopreneurship as career. About 41% of the male students and less than 48% of the female were not interested in embarking on technopreneurship.

Table 3
Technopreneurhip as Career and Gender

	Technopreneurhip as Career	
	Low Likelihood	**High Likelihood**
Male	31 (40.79%)	45 (59.21%)
Female	67 (47.86%)	73(52.14%)

Table 4 reveals that students from business-related areas such as Faculty of Business and Management (F=51; 69.86%) and Faculty of Accountancy (F=20; 52.63%) exhibited high likelihood in becoming technopreneurs in future. Meanwhile, students from non-business background such as Faculty of Hotel and Tourism Management (F=9; 56.25%), Faculty of Communication and Media Studies (F=9; 69.23%) and Faculty of Art and Design (F=16; 84.21%) were not prompted to choose technopreneurship as career. As technopreneurship is closely related to the use of technology, it was not surprising to find that students from science and technology-related background such as Faculty of Computer and Mathematics Sciences (F=20; 62.50%) and Faculty of Plantation and Agrotechnology (F=13; 52.00%) were likely to choose technopreneurship as career.

Table 4
Technopreneurship as Career and Faculty

	Technopreneurhip as Career	
	Low Likelihood	**High Likelihood**
Business and Management	22 (30.14%)	51 (69.86%)
Accountancy	18 (47.39%)	20 (52.63%)
Hotel and Tourism Management	9 (56.25%)	7 (43.75%)
Communication and Media Studies	9 (69.23%)	4 (30.77%)
Art and Design	16 (84.21%)	3 (15.79%)
Computer and Mathematics Sciences	12 (37.50%)	20 (62.50%)
Plantation and Agrotechnology	12 (48.00%)	13 (52.00%)

As a comparison between students living in urban and sub-urban areas (Table 5), majority of the students who were from city areas (F=91; 68.94%) showed high likelihood in choosing technopreneurship as career. In addition, for students who stayed in sub-urban areas, they tended to show low likelihood (F=57; 67.86%) in choosing technopreneurship as career.

Table 5
Technopreneurhip as Career and Place of Living

	Technopreneurhip as Career	
	Low Likelihood	**High Likelihood**
Urban	41 (31.06%)	91 (68.94%)
Sub-urban	57 (67.86%)	27 (32.14%)

Table 6 illustrates that having family members who own a business might not be important in affecting student's career choice. This study found that for students who had family members owning a business, majority of them were prompted to choose

technopreneurship as career (F=57; 58.16%). Surprisingly, the percentage of students who would like to choose technopreneurship as career was also rather high for those who were from non-business owning family (F=61; 51.69%).

Table 6
Technopreneurhip as Career and Family Members Owning Business

	Technopreneurhip as Career	
	Low Likelihood	**High Likelihood**
Yes	41 (41.84%)	57 (58.16%)
No	57 (48.31%)	61 (51.69%)

Based on Table 7, it depicts that different e-commerce experience would cause students to have different level of likelihood in choosing technopreneurship as career. It is understandable that students who did not have any e-commerce experience would show lower likelihood in choosing technopreneurship as career (F=11; 73.33%). As for students who had experience in using e-commerce as buyer (F=16; 59.26%), seller (F=41; 58.57%) or both buyer and seller (F=57; 54.81%), they all showed great favor in becoming technopreneurs in future.

Table 7
Technopreneurhip as Career and E-commerce Experience

	Technopreneurhip as Career	
	Low Likelihood	**High Likelihood**
No Experience	11 (73.33%)	4 (26.67%)
As Buyer Only	11 (40.74%)	16 (59.26%)
As Seller Only	29 (41.43%)	41 (58.57%)
As Buyer and Seller	47 (45.19%)	57 (54.81%)

Discussions

The results from this study depicted that students were prompted to choose technoprenuership as career regardless of their gender and family owning business background. However, students who were from business-related, and science and technology-related education background, lived in urban areas and had e-commerce experience were more likely to choose technopreneurship as their career. As explained by Hidayat and Yunus (2019), technology literacy which refers to ability in using technology effectively is inseparable from entrepreneurship. It also plays an important role in enabling entrepreneurs to face the Fourth Industrial Revolution (IR 4.0) which emphasizes in utilization technology in works. Therefore, students who had sound technology knowledge and business skills would be prone to become technopreneurs in future. In addition, from the Malaysian perspective, technopreneurship is closely related to ICT and multimedia (Jusoh and Halim, 2006); as such, students might be interested to embark on technopreneurship because they have great experience in utilizing e-commerce either as buyer, seller or both.

As business, and science and technology related education background is important, potential technopreneurs should be equipped with both technical knowledge and business skills. Technopreneurship can be taught through proper education system. As found by Amante and Ronquillo (2016), students who have attended technopreneurship course

showed a change in their mindset from being employed to being own employer. Therefore, technopreneurship education system is an excellent service for the welfare of young generations through transforming the youths into technopreneurs (Paramasivan & Selladurai, 2017). True, farming programs such as incubation and communication programs are important (Jusoh & Halim, 2006). As suggested by Otamiri and Goodlife (2019), business incubation centers are crucial in training the youths for entrance into technopreneurial ventures. As such, Malaysian Ministry of Education (MOE) and Ministry of Higher Education (MOHE) should consider setting up business incubators for students from different learning levels. The business incubators should focus on building technology know-how, business and management skills, creativity an innovativeness among students. The academic staff assigned to teach technopreneurship courses should value creativity and innovation. They should also apply creative and interactive teaching methods.

People living in urban areas may expose to better technology infrastructure, such as high-speed Internet, wide coverage of Wifi and advanced wireless and mobile technology. Moreover, high technology infrastructure in the urban areas also supports e-commerce. Therefore, students who lived in urban areas and had e-commerce experience were more prone in becoming technopreneurs. Nevertheless, the technology infrastructure requires support from the government. In addition, the external factor such as the role of government in developing and supporting technopreneurship should not be neglected as well (Dolatabadi and Meigounpoory, 2013). As Lakitan (2013) mentioned, government should establish favorable regulations and policies, inject risk capital and create supportive infrastructure. True, basic facilities such as electricity, telecommunication and Internet should be upgraded and enhanced. In addition, governmental agencies are also urged to provide various support facilities such as technopreneurship training and development programs (Khan et al., 2016). Although government intervention is important, precaution must be taken to ensure that technopreneurs are not too dependent on government aids (Fowosire et al., 2017).

Conclusion

This study aimed to identify the extend of likelihood in choosing technopreneurship as career and the characteristics pertaining to it. It concluded that gender and family owning business background are not important in affecting student's likelihood in becoming a technopreneur. However, business-related and technology-related study background, living in urban areas and e-commerce experience are playing a role in affecting student's technopreneurial career choice.

This study has contributed to both literature and practice. Literally, it enriched the technopreneurship literature. In addition, it shed lights on the undergraduate student's likelihood in becoming technopreneurs in future. Practically, it suggested that HLIs and government are playing important roles in providing relevant technopreneurship education, improving technology infrastructure and rendering technopreneurship support to boost the technopreneurship development in the country.

One of the main limitations of this study was the median-split method, which was subject to several shortcomings such as problems in splitting the data, smaller effect size and difficulties in finding effects (Field, 2018, Martin, n.d.). In addition, the sample was chosen from a public university only, which caused the results were not able to be generalized.

Therefore, future studies are recommended to employ other data analysis methods, such as inferential statistical analyses. Future researchers are also suggested to extend the sample size by including students from other universities.

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