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Does Universities Foster Creativity and Innovation: A Study of Universiti Teknologi MARA, Malaysia

Azlin Shafinaz Arshad[1], Yasmin Kamall Khan[2], Afiza Azura Arshad[3] and Nurul Hafez Abdul Halil[4]
1 Malaysian Academy of SME & Entrepreneurship Development (MASMED), Faculty of Business & Management ,Universiti Teknologi MARA Selangor, azlinshafinaz@uitm.edu.my
2 Malaysian Academy of SME & Entrepreneurship Development (MASMED), Faculty of Business & Management , Universiti Teknologi MARA Selangor, yasmin@uitm.edu.my
3 Faculty of Business & Management, Universiti Teknologi MARA Selangor, afiza400@uitm.edu.my
4 Malaysian Academy of SME & Entrepreneurship Development (MASMED), Faculty of Business & Management , Universiti Teknologi MARA Selangor, hafez@uitm.edu.my

Abstract
Creativity and innovation have been the heart of many universities around the world and many activities are being organized in nurturing creativity and innovation especially to students. The aim of this study is to explore students' perception towards the role of university in fostering creativity and innovation. Data was collected using survey questionnaire which was distributed at an innovation competition organized by Malaysian Academy of Entrepreneurship Development (MASMED), Universiti Teknologi MARA (UiTM) using convenience sampling. The respondents were undergraduate students from 13 campuses of UiTM. A total of 104 survey questionnaire were distributed but only 81 was collected and deemed to be useful. The study found that the students perceived personal attitude, curriculum as well as university support play a part in fostering creativity and innovation. This is evident where the majority of the items were rated high by the students with the mean values were above 4. Moreover, the students also believed that the curriculum offered in the university has the highest influence towards creativity and innovation compared to the university support and personal attitude. The results of the study provided some insights on how students perceived creativity and innovation.

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INTRODUCTION

The success and growth of many nations are owed to the result of quality education that embed creativity and innovation which has been the priority in the workforce (Touahmia, Ait-Messaoudene, Aichouni, Al-Ghamdi, Elbadawi, Al-Hamali & Al-Ghonamy, 2017). Creativity and innovation have been acknowledged to be essential for development in the 21st century as its contribution towards the economic growth is undeniable (Tan, Lee, Ponnusamy, Koh, & Tan, 2016). According to Aichouni, Touahmia, Al-Ghamdi, Ait-Messaoudene, Al-Hamali, Al-Ghonamy, & Al-Badawi,(2015), one of the strategies which are important in the modern economies are creativity and innovation. Higher learning institutions (HLIs) are important to the nation as they provide education that encompasses various skills and knowledge (Calignano & Jøsendal, 2018). Jackson (2006) highlighted that it is HLIs' responsibilities to prepare graduates to face the uncertainties and complexity of the working world where creativity and innovative practices are essential. Blessinger (2017) asserted that HLIs are not only an avenue for students to gain knowledge but they are where creativity and innovative strategies are included within the education system at all levels. Nordin & Malik (2015) explained that the challenges of HLIs today includes identifying ways on how to increase the quality of graduates that are creative and innovative. Hence, HLIs today are being pressured to offer various programmes related to creativity and innovative strategies as these are outcomes expected by future employers (Windeløv-Lidzélius, 2018). Alencar, Fleith, & Pereira (2017) elucidated that it is significantly important to foster creativity especially at HLIs as they are

required to use their creativity and innovative abilities upon entering the working world.

With the rapid changes and advancement in information and communication technology (ICT), the education system is required to be updated where it has to involve creativity and innovation as key elements of the system (Whattananarong, 2011). According to Nordin & Malik (2015), one of the important aspects of education is creativity where the new generation need to equip themselves with necessary skills to use when they are working. Kiroglu (2017) further explained the curriculum in the university must have elements of creativity and innovation as firms are looking for employees that are creative and innovative. The world today requires individuals who are creative and innovative hence there is a need to ensure students from all disciplines are exposed to creativity and innovative ideas either within the curriculum or through university activities (Klawe, 2017). Many countries had acknowledged creativity and innovation to be among the important and necessary skills to be added in the curriculum (Lin, 2011). Ferrari, Cachia, & Punie (2009) described education is significant in encouraging creativity and innovation.

Creativity has been among the major focus in all fields in the education system today (Ghernaout, Touahmia, Aichouni, Alghamdi & Messaoudene, 2018). Creativity and innovation among students have continuously been an important aspect of many universities (Ghernaout, Touahmia, Aichouni, Alghamdi, & Messaoudene, 2018). Universiti Teknologi Malaysia (UTM) has taken the initiative to nurture creativity and innovation by instilling the passion among students in science, technology, engineering and mathematics (STEM) education by motivating and encouraging students to take part in Invention, Innovation and Design (IID) convention annually (Mahdi, Sukarman & Yok, 2015). De Alencar & De Oliveira (2016) affirmed the need to discover creativity and innovative abilities at different education levels particularly in HLIs. Buckley (2009) proposed the need to improve the education of undergraduates by adding creative and innovative activities. Hence, the aim of this study is to explore students' perception towards the role of university in fostering creativity and innovation. This study generally seeks to determine the importance of personal attitude, the curriculum and the university support towards creativity and innovation.

2.0 LITERATURE REVIEW

Creativity is the ability to develop new and unique thoughts (Ghernaout et al., 2018). McShane & Glinow (2010) described creativity as derived from ideas which are novel with the introduction of new products and services. Creativity is the result of the knowledge and imagination of individuals which lead to the creation of new ideas (Ali, 2015). Creativity allows an individual to take advantage of the opportunities by being more effective and efficient towards challenges encountered in life **(**Alencar, Fleith, & Pereira, 2017).

Innovation on the other hand refers to the creativity process where there is a creation of new products and services (Al-Salaymeh, 2013). Innovation involves identification of new market and service with the technology-based invention (Garcia & Calantone, 2002). Hennesay and Amabile (2010) described the successful implementation of individual's creative ideas is regarded as innovation. Innovation is looking beyond the norms that we normally do by developing new ideas to perform a job (Serdyukov, 2017). Brewer and Tierney (2012) elucidated innovation as referring to the successful introduction of products, services, method or process. Ali (2015) explained innovation as a process that combines many new and novel ideas that have great influence in the economy and society.

Ajzen (2005) described attitude as how individuals give a positive or negative assessment towards something. Attitude is the action of an individual towards something which is driven by inner factor of an individual's characteristics (Anggadwita & Dhewanto, 2016). Intelligence, knowledge and personality are among the factors that relate to creativity (Sternberg & Lubart, 1995). Da Costa, Páez, Sánchez, Garaigordobil & Gondim (2015) stated motivation and risk-taking are some of the factors which are essential when it comes to creativity and innovation.

Bocconi, Kampylis & Punie (2012) opined that the education system has a role to play to foster creativity and innovation among students. The significance of embedding creativity and innovation in the curriculum has beenemphasized by many countries all over the world (Kiroglu, 2017). As mentioned by Ibrahim, Tuan Ismail & Awis (2018), knowledge is a very important component where it comprises of creativity and innovation. The HLIs are known as the centre of knowledge creation where the

support from the university is essential to foster creativity and innovation (Ali, 2015).

3.0 METHODOLOGY

A quantitative approach using a survey questionnaire was employed for this study. The survey questionnaire was adopted and adapted from earlier studies (Touahmia et al., 2017; Aichouni, et al., 2015). The survey was distributed during an event "Program Latihan Keusahawanan Malaysia (PLKM)" organized by the Malaysian Academy of SME & Entrepreneurship Development (MASMED), Universiti Teknologi MARA. A total of 104 questionnaires were distributed during the event using convenience sampling. These students were approached during their registration for the event. From the total of 104 respondents, only 81 responses were collected with the response rate of 77.88% and deemed to be useful for further analysis.

The respondents asked to provide their perceptions on matters related to creativity and innovation. The survey questionnaire comprised of 36 items divided into two sections. Section One is general questions about the profile of the respondent (5 items) while Section Two was divided into three sub-sections; personal attitude (10 items), the curriculum offered by the faculty/university (12 items) and the university support in encouraging creativity and innovation (9 items). The survey uses five-point Likert's rating scale in measuring the perception of students on creativity and innovation (1 =Strongly Disagree, 2 =Disagree, 3 = Unsure, 4 = Agree and 5 = Strongly Agree). The data was then analyzed descriptively analysed using SPSS Version 25. In order to measure the internal consistency of the survey questionnaire, reliability test using Cronbach Alpha was conducted. Cronbach's alpha value greater than 0.7 indicate internal consistency of the survey element (Hair, Babin, Money & Samouel, 2003).

4.0 FINDINGS & ANALYSIS

Table 1 presents the demographic of the respondents' profile. From a total of 104 participants who attended the innovation competition, the responses collected were high with 81 useful responses at 77.88% response rate. The responses from female respondents were at 59.3% while male respondents were at 40.7%. Majority of the respondents were between the age of 20-24 years with 58% were undergraduate students and 42% were Diploma students. The campus with the highest number of representatives was the Selangor campus (18.5%), Johore campus (16%) and Penang campus (13.6%) while the lowest number of representatives was from Sabah and Sarawak with 2.5% respectively. Respondents are mostly concentrated from Science & Technology cluster (51.9%) followed by Business & Management cluster (45.7%) and Social Science & Humanities cluster (2.5%).

Table 1: Profile of respondent

		Frequency	Percentage
Gender	Male	33	40.7
	Female	48	59.3
Age	Below 20	1	1.2
	20-24	72	88.9
	25-29	8	9.9
Education	Diploma	34	42
	Bachelor Degree	47	58
Campus	Perlis	5	6.2
	Kedah	5	6.2
	Penang	11	13.6
	Perak	4	4.9
	Selangor	15	18.5
	Malacca	5	6.2
	Johore	13	16
	Pahang	7	8.6
	Terengganu	5	6.2
	Kelantan	7	8.6
	Sabah	2	2.5
	Sarawak	2	2.5
Cluster	Science & Technology	42	51.9
	Social Science & Humanities	2	2.5
	Business & Management	37	45.7

Before proceeding to further analysis, a reliability test was conducted to measure the internal consistency of the survey questionnaire by calculating Cronbach's alpha. Generally, Cronbach's alpha generated a value greater than 0.7 which indicates the reliability of the scales. The results of the reliability test is presented in Table 2.

Table 2: Cronbach Alpha's Results

Survey Elements	Number of	Cronbach Alpha

	items	Value
Personal Attitude	10	0.868
Environment & Curriculum	12	0.867
University Supports	9	0.916

For Part B, the questions were related to perceptions on creativity and innovation. The first sub-section consisted of questions related to personal attitude towards creativity and innovation. Table 3 presents the mean values generated for items on personal attitude. The students made a high assessment on personal creativity where 90% of the items has a mean values of more than 4. Only one item has a mean value below 4 (M=3.88) which is "I consider myself as a creative and talented student". The highest mean values (M=4.33) are found for two items which are "information technology (IT) plays an essential role in stimulating creativity and innovation" and "creativity and innovation are important for driving social and economic growth" respectively. This is followed by items on "creative students are highly self-motivated and confident" and "creativity and innovation require hard work" which both have the mean values of (M=4.30). The lowest mean was identified for item "I consider myself as a creative and talented student" with the value of M= 3.88. The overall mean calculated for personal attitude was at M=4.21 which indicates that the students agreed that personal attitude foster creativity and innovative.

Table 3: Mean for Personal Attitude Foster Creativity & Innovation

	Mean	Std. Deviation
Creative students are highly self-motivated and confident	4.30	.697
Creative students prefer team work interaction	4.19	.726
Creativity and innovation require hard work	4.30	.732
I am regularly engaged in creative and innovative type of work	4.07	.848
I consider myself as a creative and talented student	3.88	.812
Creativity can be conceptualized as skills that can be developed	4.26	.703
Creativity requires experience and knowledge rather than intelligence	4.19	.776
Creativity and innovation require risk-taking and freedom for experimentation	4.28	.575
IT plays an essential role in stimulating creativity and innovation	4.33	.548
Creativity and innovation are important for driving social and economic growth	4.33	.548
Personal Attitude Foster Creativity & Innovation	4.21	.476

In the following section, students were asked whether the curriculum in the university encourage creativity and innovation. A total of twelve items were used to determine creativity and innovation in curriculum offered by the university as depicted in Table 4. All items were found to have mean values greater than 4. The highest mean value is for item "creative and innovative training programs can develop students creative thinking and innovation" (M=4.37) followed by "creativity and innovation skills can be learned at faculty" (M=4.35) and "innovative teaching methods can develop students creative thinking" and "problem and project-based learning can develop students' creative capabilities" where both have the mean value of M=4.27. Items "the curriculum helps me to develop my creativity and innovation skills" and "Interdisciplinary learning can promote students' creativity and innovation capacities" both have the lowest mean value of M=4.16. Moreover, the overall mean for creativity and innovation in curriculum is at M=4.24.

Table 4: Mean for Creativity and Innovation in curriculum

	Mean	Std. Deviation
The curriculum helps me to develop my creativity and innovation skills	4.16	.535
My lecturer encourages me to perform creative and innovative activities	4.23	.618
My faculty provides support and encouragements to students for their creativity	4.22	.612
Creative and innovation activities can improve academic achievements	4.21	.564
Creativity and innovation skills can be learned at faculty	4.35	.595
Students in my faculty recognize the importance of innovation and creativity	4.12	.731
Creative learning can foster students' creativity and innovation	4.26	.608
Innovative teaching methods can develop students creative thinking	4.27	.525
Integrate creative courses into the curriculum can enhance students' creative capacities	4.23	.597
Creative and innovative training programs can develop students creative thinking and innovation abilities	4.37	.535
Interdisciplinary learning can promote students' creativity and innovation	4.16	.535

	Mean	Std. Deviation
The university contributes to spreading creativity and innovation culture among students	4.23	.554
The university provides training and support in creativity and innovation	4.31	.584
The university has the facilities for creative and innovative activities	4.16	.715
The university can help me to develop my creativity and innovation skills	4.30	.601
The university environment engages students in creative and innovative activities	4.27	.548
The university offers assistance and training for students engaged in creative and innovative works	4.25	.643
The university provides creative spaces where students can innovate	4.22	.775
The university assesses students creative and innovative works	4.19	.673
The university provides material support to students engaged in creative activities	4.19	.691
University Supports and Foster Creativity & Innovation	4.23	.500
capacities		
Problem and project-based learning can develop students' creative capabilities	4.27	.592
Curriculum Foster Creativity and Innovation	4.24	.375

The third sub-section was questions related to the university support in fostering creativity and innovation. Students are required to state their view on the support provided from the university in relation to creativity and innovation. Nine items were used to measure the support of university towards creativity and innovation as depicted in Table 5. Mean values for all items were found to be greater than 4. Highest mean value is found for item "the university provides training and support in creativity and innovation" (M=4.31) followed by "the university can help me to develop my creativity and innovation skills" (M=4.30) and "the university environment engages students in creative and innovative activities" (M=4.27). Among items that have the lowest mean are "the university has the facilities to creative and innovative activities (M=4.16) while both items "the university assesses students creative and innovative works" and "the university supports materially students engaged in creative activities" have mean value of M=4.19 respectively. Overall mean calculated for university support in fostering creativity and innovation is also high at M=4.23.

Table 5: Mean for University Supports in Fostering Creativity and Innovation

5.0 CONCLUSION

The objective of this study is to explore students' perception on creativity and innovation. The survey questionnaires were distributed at Program Latihan Keusahawanan Malaysia (PLKM) where during this event the final level innovation competition took place. The respondents of the study were students from UiTM campuses all over Malaysia. The statistical analysis conducted found that UiTM students show positive perceptions on creativity and innovation. Majority of the items (96.77%) had mean values more than 4 while only one item (3.23%) had mean value less than 4. This indicates that these students perceived personal attitude, curriculum offered and university's support foster creativity and innovation. Among the three variables under study, it has been found that UiTM students perceived curriculum at the university is more important to foster creativity and innovation (M=4.24) compared to university's support (M=4.23) and personal attitude (M=4.21). The findings of the study supported the study conducted by Touahmia et al., (2017) where the curriculum appears to be important in fostering creativity and innovation. This study however contends study by Touahmia et al., (2017) where their study at Saudi university discovered personal attitude are more important (M=4.11) followed with curriculum in the university (M=4.02) and university's support (M=3.44) in encouraging creativity and innovation.

Future studies can be conducted by collecting data from various HEIs such as private colleges and private universities. Similar studies can also be undertaken on students in the foreign universities in Malaysia to determine their perception on creativity and innovation. To add further, comparable studies can also be carried out in the whole of UiTM system as UiTM offers courses to pre-university students, undergraduates students as well as post-graduates' students.

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