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Creativity and Innovation: Practices Amongst Students of a Product Development Competition

Anita Ismail

Corresponding Author

Centre for Core Studies, Universiti Sains Islam Malaysia
71800 Bandar Baru Nilai, Negeri Sembilan, Malaysia
anitaismail@usim.edu.my

Farah Laili Muda @ Ismail

Centre for Core Studies, Universiti Sains Islam Malaysia
71800 Bandar Baru Nilai, Negeri Sembilan, Malaysia
farahlaili@usim.edu.my

Latifah Abdul Latiff

Centre for Core Studies, Universiti Sains Islam Malaysia
71800 Bandar Baru Nilai, Negeri Sembilan, Malaysia
latifah@usim.edu.my

Siti Nor Baya Mat Yacob

Centre for Core Studies, Universiti Sains Islam Malaysia
71800 Bandar Baru Nilai, Negeri Sembilan, Malaysia
snorbaya@usim.edu.my

Hisham Muhammad Taky Eldin Kandil

Centre for Core Studies, Universiti Sains Islam Malaysia
71800 Bandar Baru Nilai, Negeri Sembilan, Malaysia
hisham@usim.edu.my

Mohd Aizuddin Abd Aziz

Centre for Core Studies, Universiti Sains Islam Malaysia
71800 Bandar Baru Nilai, Negeri Sembilan, Malaysia
aizuddin@usim.edu.my

Abstract

The purpose of this paper is to investigate the state of creativity and innovation on product development among students who participated in the Islamic Innovation Student Competition (i-REKA) 2017 at Universiti Sains Islam Malaysia (USIM). The study employed the quantitative approach through a survey instrument design. Data were collected using questionnaires, and the constructs used were developed from prior research and previously tested for reliability. A total of 147 questionnaires were analyzed from the respondents in this study. Descriptive statistics were used to analyze the characteristics of the respondents including frequency, percentage, mean, and standard deviation, while the multivariate technique that was employed was regression. The findings revealed that significant relationships exist between the state of creativity and innovation among students of

products development competition. These findings may provide a distinctive perspective on the concept of creativity and innovation and its necessity in the Islamic educational system for the contemporary modern era.

Keywords: *creativity, innovation, product development*

Introduction

In the history of a modern world, the dimension of thinking is not limited to producing and sharing knowledge. In line with current developments and demands, creative and innovative culture in thinking activities began to be applied widely throughout the world (Mohd Yusof Othman, 1994).

The culture of creativity and innovation is equivalent to the capitalist economic model in the modern economic orientation. Reflecting from this, countries like the United States, European nations, Japan and South Korea have become a precursor to this change. This has resulted in the rapid and vigorous development of creativity and innovation, especially in the fields of economics, business and the development of science and technology.

The design concept in Islam, which is very broad, involves God and all His creation. The Quran gives man knowledge, warnings and guidelines. Therefore, based on the Quranic verse quoted, the conclusions about the laws or the principles of invention, which God has stipulated, are as follows (Khalijah, 1995):

1. The Greatest innovator is God Almighty.
2. God's invention is the truth, not in vain or for games.
3. Allah produces everything perfectly.
4. Allah created everything in the world in the form of pairs

Creativity is the nature of God, as exemplified in two of Allah's names which are *Al-Khaliq* and *Al-Musawwir*:

That is Allah, your Lord; there is no deity except Him, the Creator of all things, so worship Him. And He is Disposer of all things. (6:102).

Is not He who created the heavens and the earth Able to create the likes of them? Yes, [it is so]; and He is the Knowing Creator. (36: 81).

Vision perceives Him not, but He

perceives [all] vision; and He is the Subtle, the Acquainted. (6: 103).

It is He who forms you in the wombs however He wills. There is no deity except Him, the Exalted in Might, the Wise. (3: 6)

Malaysia generally is moving forward to become a creative and innovative country, therefore, since the 1990s, Malaysia has started to plan the reformation strategies in the education field with the objective to achieve and implement change. Malaysia has embarked on a large scale movement in changing the structure of the curriculum with emphasis on thinking skills. In addition, there has been many seminars, conferences, colloquia and conventions which were organized to expand the dimensions of creativity in the education field. From another perspective, the support of various parties such as the Ministry of Science and Environment, Ministry of Education, Ministry of Human Resources also contributed to the literacy of the creative movement. For example, there is a design competition organized by the Ministry of Science, Technology and the Environment, Malaysia Architects Association, and the Malaysian Invention and Design Society (MINDS).

The university plays a major role in achieving the objective of developing a state of creativity, innovation and progressiveness. The university is considered a catalyst in the development of economic, political, and social development. In recent years, universities have been encouraged to be more active in creativity and innovation by not just contributing to academic fields such as teaching, doing research, and presenting papers at conferences, but also to produce critical and creative thinking graduates. Since 2000, the role of universities in Malaysia has increasingly been important in realizing various discoveries, inventions and innovations.

Innovation is a continuous process of extracting benefits from products, services or even from procedures. The continuous evolution of

extracting benefits from an original idea or invention is termed as innovation. From a business point of view, effective management of innovation needs close calibration between various internal business units of an organization.

In an organization, more people will be involved in implementing a new idea than in formulating it. More of them own the solution rather than the problem. A company has a number of forces operating on it in different directions and the balance of these forces makes the organization stable. It may also set off a whole new dimension of creative explorations and directions. It is for this reason that the human systems resist change. Pushing in a given direction will create equal and opposite pressure while pushing harder will only increase resistance. The industry will only move in a desired behavior if the forces resisting change are decreased or removed. Therefore, an idea will only be successfully implemented when people change their behavior.

Realizing its importance in providing a competitive edge and contributing towards

better product competition performance, this research was undertaken to focus on the effect of creativity and innovation on product development among students who participate in creativity competitions at USIM. Thus, the following research questions have been formulated:

1. What is the state of creativity and innovation on product development among students who participate in creativity competitions?
2. What is the relationship between creativity and innovation among students of product development competitions?

Based on these discussions, the following hypotheses were formulated:

H1: There is a significant relationship between creativity and innovation among students of product development competitions.

Figure 1 below illustrates the proposed model that hypothesized the relationships between creativity and innovation on product development.

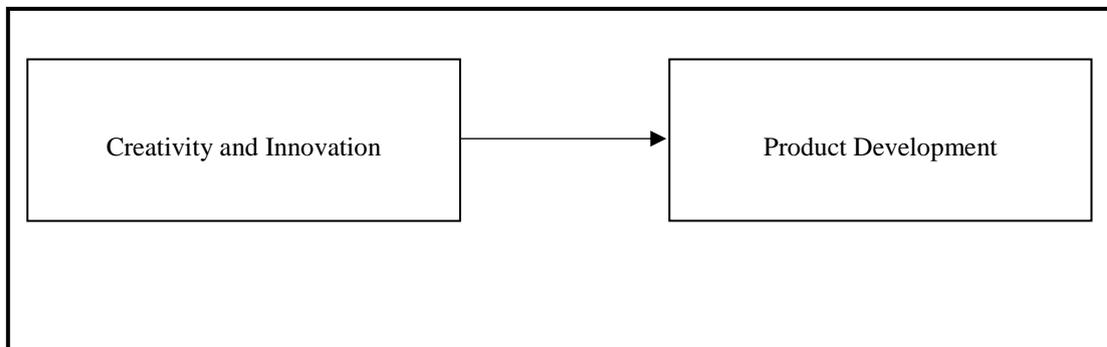


Figure 1: Creativity and innovation on product development relationship framework.

Methodology

Descriptive statistics were used to analyze the characteristics of the respondents including frequency, percentage, mean, and standard deviation, while the multivariate technique which was employed was multiple regression analysis. Using SPSS (2012) version 20, the mean and standard deviation of each indicator and construct were calculated. All the indicators were measured by a range of 1 to 7 on the Likert scale. In the effort to gain an initial general

overview of the respondents, descriptive analysis was performed on all constructs of the study.

This research was conducted among Universiti Sains Islam Malaysia (USIM) students who were involved in the Islamic Innovation Student Competition (i-REKA) 2017 that was held in the university. The study employed the quantitative approach through a survey instrument design.

Data were collected using questionnaires, and the constructs used were developed from prior research and previously tested for reliability. A

total of 147 questionnaires were analyzed from the respondents in this study.

Results

The respondents’ characteristics are summarized in Table 1. The response of the respondents on all constructs of the study in

terms of the mean and standard deviation values are summarized in Table 2 and 3.

Table 1: Characteristics of Faculties

Faculty	Frequency	Percentage
Faculty of Quranic and Sunnah Studies (FPQS)	33	22.4
Faculty of Leadership and Management (FKP)	2	1.4
Faculty of Syariah and Law (FSU)	5	3.4
Faculty of Economics and Muamalat (FEM)	47	32.0
Faculty of Science and Technology (FST)	35	23.8
Faculty of Medicine and Health Sciences (FPSK)	4	2.7
Faculty of Major Languages Studies (FPBU)	10	6.8
Faculty of Dentistry (FPg)	1	0.7
Others	10	6.8

The results in Table 2 show the scores of the Creativity & Innovation Construct. The highest score is 5.46 where the students admitted mastering specific knowledge is essential before

the product is created. The average scores for all constructs are moderately high between 4.84 and 5.46.

Table 2: Mean of Creativity and Innovation

Item	Creativity and Innovation	Mean	Standard Deviation
CI1	My university encourages innovation in all aspects.	5.41	1.354
CI2	The product that I created is related to my degree program.	5.06	1.825
CI3	I’m involved in this product invention/innovation because of my own interest and talent.	5.27	1.383
CI4	The expert(s)/lecturer(s) in a particular area inspired me to create the product.	5.36	1.471
CI5	The product that I created is related to the subject /course that I learned.	5.07	1.789

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CI6	Generating ideas, I referred a lot to the Internet.	4.95	1.394
CI7	Generating ideas, I referred a lot to books/journals/magazines/other hardcopy reading materials.	4.84	1.540
CI8	I should master specific knowledge before the product is created.	5.46	1.229

Table 3 shows some of the elements in product development among students. The highest score is 5.61, which indicates their products have

significant contributions to Muslims. In average the score is moderately high which is 5.4.

Table 3: Mean of Product Development

Item	Product Development	Mean	Standard Deviation
PD1	Inventor knowledge	5.20	1.214
PD2	Skill and talent	5.31	1.285
PD3	New invention	5.33	1.267
PD4	Quality of creations	5.32	1.287
PD5	Novelty	5.32	1.227
PD6	Creativity	5.46	1.289
PD7	Usefulness and Practicality	5.44	1.234
PD8	Market Potentialities	5.36	1.334
PD9	Integration of Naqli and Aqli	5.44	1.381
PD10	Problem solving	5.50	1.257
PD11	Significant contribution to Muslims	5.61	1.342
PD12	Society wellbeing	5.56	1.293

The results about the link between creativity and innovation and product development are presented in Table 4. It is shown the value of adjusted R^2 is 0.53 which means creativity & innovation explain 53 percent of the variance in

product development ($F = 165.76, p < .001$). Therefore, Hypothesis 1 is accepted as the results indicate a positive association between creativity & innovation and product development.

Table 4: Relationship between Creativity & Innovation and Product Development

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
				R Square Change	F Change	Sig. F Change

0.730a	0.533	0.53	0.77912	0.533	165.764	0
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The findings revealed that significant relationships exist between the state of creativity and innovation among students in a product development competition. These findings may

Discussion and Conclusion

The findings of the study show that in developing products, the concept of creativity and innovation are very important. Having creative ideas and being innovative can push the benefits and uniqueness of products to the highest limit. Encouragement and incentives from university is one of the best ways to support creative and innovative thinking. Besides, students' initiatives through formal and informal learning via Internet searches and doing a lot of reading and experiments may also become the leading factors.

It is undeniable that Muslim scientists and students were in one case at the pinnacle of Islamic culture. Their contribution to the sciences and knowledge benefited Muslims and humanity at large. Their works became sources of reference by Muslims and also non-Muslims. These masterpieces inspired Muslims and non-Muslims to do more research, inventions, and discoveries in respective areas. The ability to adapt to the ever-changing world has indirectly

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provide a distinctive perspective on the concept of creativity and innovation and their necessity in the Islamic educational system for the contemporary modern era.

forced mankind to use their creative and critical thinking skills and be productive in life. The environment also becomes the push factors that influence human beings on how to survive in a different climate and surroundings. It has also indirectly inspired human beings to discover new things and be innovative to fulfil their needs in life.

This paper has attempted to provide a distinctive perspective on the concept of thinking and innovation in Islam as exemplified by Muslim scholars and the necessity of its implementation in the contemporary Islamic educational system. In fact, the topics of thinking and innovation should be considered as crucial skills that need to be mastered by the youngsters of the present age to survive in the era of thinking and innovation based on science and technology. A further study is indeed necessary and is in progress to model a more comprehensive concept of thinking and innovation in Islam based on the examples of the Muslim practices.

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