

Barriers to Creativity among Students of Selected Universities in Malaysia

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Abstract

This study aims to identify the most crucial barrier to creativity as experienced by the Malaysian undergraduate students. Second, it assesses the relationship between the Malaysian public universities and the level of severity of creativity barriers. Third, it assesses the difference among students from different faculty of study in relation to the severity of creativity barriers. The Martin's (1990) self-report 'inventory of barriers to creative thought and innovative action' was administered to 459 respondents from several universities. The findings revealed that barriers related to task achievement are the most critical barrier to creativity. Meanwhile, the results also showed that there is no significant difference among students from different universities in relation to the level of severity of creativity barriers. Similarly, it revealed that there is no significant difference among students from different faculties in relation to the severity of creativity barriers. The discussion addresses future research direction.

Keywords: barrier, creativity, Malaysian, undergraduate, students

Introduction

1.1 Background of the Study

Promoting creativity across the curriculum is a result of continuous effort into global educational transformation movement of 21st Century. Creativity is necessary in many core academic subjects such as Math, Engineering, Science, Technology, and Arts, as it is linked to concepts such as critical thinking, problem solving, and innovation. Moreover, the term "creativity" has been a popular topic for the last two decades in the field of education, such as engineering, teaching, learning, designing, production, management, and leadership. This is because it's a way to a solution, resolution, development, enhancement, and productivity (Adams, Kaczmarczyk, Picton, & Demian, 2007, 2009; AlJughaiman & Mowrer-Reynolds, 2005).

Creativity is considered as a mean not an end, thus in the field of education, teaching and learning, it is introduced and observed to instill higher-order thinking skills in students (Smith & Smith, 2010). Fostering creativity in education through curriculum was initiated in the 1970s. It is discussed in school curriculum, evaluation, assessment, and benchmarking in higher educational institutions (Burnard, 2006). It is a significant notion, not only is it an economic and political issue of developing countries but also an issue of importance in countries such as the UK, Japan, and the USA. Many of these countries emphasize this issue in the area of education, teaching and learning (Burnard, 2006). From another context, creativity is an essential element to address organizational innovative outcomes like product innovations, continuous improvement of employees' productivity, efficiency in dealing with problem solving as well as being seen as a catalyst for superior job performance (Wong & Pang, 2003). Therefore, it can be said that creativity is not an issue which is only occupied by artists, musicians, and writers (Wong & Pang, 2003). It has broad implications and covers a lot of fields (Ambrose, 1996).

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Creativity is regarded as the concern of education, in higher education; intellectuality, intelligence and innovation are considered as the product and outcome of creativity. Where there are outcomes, there are impediments that hinder these outcomes. Impediments of creativity should be examined empirically otherwise students will lag behind in this age of competition.

Hence identifying the barriers of creativity that stand in students' way is as important as fostering creativity among these students in higher education institutions. This study, therefore, investigates the barriers of creativity among Malaysian undergraduate students in five different universities.

1.2 Statement of the Problem

The call for creativity in education by policy-makers in many parts of the world started to increase since the 1990s (Craft, 2006). Issues associated to creativity such as 'problem solving' (Adams et al., 2007, 2009), 'intelligence' (Anastasi & Schaefer, 1971), 'critical thinking' (Anderson, 2011) have an important place in European, American, Australian and East Asian countries. These have been trendy topics in curriculum and educational policies of higher education institutions (Jackson, Oliver, Shaw, & Wisdom, 2006). In the UK, creativity agenda became the centre of great public deliberation and publicity. A great deal of energy (and funding) is devoted to conceptualizing and developing both learning and pedagogy (Burnard, 2006). In the United States many initiatives are taken in order to provide and enhance the creative experiences of learners. Indeed, these efforts and "massive investments" have brought creativity to the forefront (Feldman & Benjamin, 2006). Thus, it appears that recently most educational policies take into account the inclusion of creativity. Some institutions go beyond that by initiating creative partnership projects with external organizations and individuals to provide creative experiences to their learners (Hilal, 2012).

Sadi (2006) identifies that in "the past literature intense efforts are made toward embracing and inculcating creativity in education while little attention is given to remove the obstacles impeding creativity, particularly in academic fields. Despite the significance of nurturing creativity particularly in higher educational institutions, barriers of creativity have not been subjected to systematic analysis" (p: xx). Barriers of creativity are not easy to define as it depends on different context and approaches. However, a lot of research examined the barriers affecting creativity in a business and organizational context (Carkett, 2004; Fischer; Huber, Leigh, & Tremblay, 2012; Sadi, 2006; Wong & Pang, 2003) while very few studies assessed the application obstacles of creativity as experienced by university students. In fact, only a few available studies focused on the factors that impede a creative environment in the field of engineering (Kazerounian & Foley, 2007; Lumsdaine & Lumsdaine, 1995; Tornkvist, 1998)

1.3 Research Objectives

Little attention has been given to the barriers that impede creativity skills among university students. A previous research (Hilal, 2012) examined the barrier of creativity in the undergraduate students at the International Islamic University Malaysia. This study seeks to fill-in the gap in literature by investigating the barriers to creativity particularly the creative thought and innovative action as experienced by the Malaysian undergraduates. The study will ultimately answer the following research questions:

1. What is the most critical type of creativity barrier² as perceived by the Malaysian undergraduates?
2. Is there any significant difference among the Malaysian public universities (UIAM, UKM, UM, USM and UTM) in relation to the level of creativity barriers?
3. Is there any significant difference among students from different faculty of study (Human Sciences & Islamic Studies, Engineering, Natural science/Medicine, Social Sciences and Business Faculty) in relation to the level of creativity barriers?

1.5 Significance of the Study

The findings from this study are anticipated to be significant for many reasons. Firstly, there has been little research concerning the barriers to creativity in Malaysia as well as in neighboring South East Asian countries.

² According to Martin (1990), there are several barriers to creativity: (1) barriers related to self-concept; (2) barriers related to compliance need; (3) barriers related to abstract ability; (4) barriers related to systematic analysis; (5) barriers related to task achievement; and (6) barriers related to task environmental circumstances.

In this study the researcher tries to examine the severity of these creativity barriers that inhibited undergraduates performance on creativity. Secondly, it focuses on creativity barriers of not only engineering students but students from different faculties (Hilal, 2012). Also, from a Malaysian context, no previous research has compared five public universities. Moreover, removing the obstacles to creativity is as equally important as fostering creativity; it may be seen as a process to maximize the potential of enhancing creativity.

Literature Review

2.1 Definition and Essence of Creativity

In the past, creativity was viewed by psychologists as a single undifferentiated capacity (Keinanen, Sheridan, & Gardner, 2006). Today, however, creativity has a multitude of definitions and approach across many disciplines such as psychology, cognitive science, education, technology, sociology, linguistics, business studies, and economics. Different fields study relationships of different variables; for example creativity and general intelligence, mental and neurological processes, personality type and creative ability, creativity and mental health, and so on. Creativity covers fields of organization, academia, education, and engineering (Adams et al, 2007, 2009; Klein, 1990; Mostafa & El-Masry, 2008; Sadi, 2006; Sadi & Al-Dubaisi, 2008; Wong & Pang, 2003).

According to Goldenberg & Mazursky (2002), creative thinking is defined as "a process one may channel, diagnose and reconstruct by use of analytical tools" (p. 30). Similarly, Sternberg and Lubart (1999, p. 3) define creativity as "a production of novel i.e. original, and unexpected; appropriate i.e. useful things." Therefore, creativity is all about 'creation' (TenHouten, 2006). For this reason, people talk about creativity and creative people, sometimes people say - "Alice is brilliant, but she doesn't have a drop of creative talent." and "Barbara is wonderfully creative, but she does poorly on standardized tests." or "Carlos always has interesting approaches to problems, but he just doesn't fit into the traditional school environment." These types of statements which people use in their daily life lead to better understanding of creativity (Sternberg & Williams, 1996, p. 1).

Sadi (2006) defines creativity as 'a confluence of personality traits, ways of thinking and knowing, and social and environmental influence. It is a universal ability that does not decline with age but changes qualitatively with cognitive development and the accumulation of life experience and expert knowledge' (p. 78). Sometimes creativity is defined as the process of justifying "difficulties, problems, gaps in information, missing elements, something askew; making guesses and formulating hypotheses about these deficiencies; evaluating and testing these guesses and hypotheses; possibly revising and retesting them; and finally communicating the results" (Bringsjord & Ferrucci, 2000, p. 21).

Goldenberg and Mazursky (2002) distinguish the human and animal kingdoms apart based on the fundamental human quality which is creativity. According to these researchers "a creative idea is an idea about which field experts agree that it is creative" (Goldenberg & Mazursky, 2002, p. 29). While Pizarro, Detweiler-Bedell, and Bloom (2006,81) think creativity is not rule based, but rather rule breaking. On the other hand, those who think creativity is from the word 'creation' define creativity as more than an idea and an aspiration. It is something actually being created, a creation that must take on an external representation as a text, sculpture, painting, or other material production (TenHouten, 2006).

The above definitions do not suffice to a better understanding of the notion of creativity. The main elements, indicators, and components are useful to conceptualize the term creativity perfectly. The essence of creativity is 'problem solving' (Adams et al., 2009). Creativity itself is a process used to reach positive outcomes (Sadi, 2006). AlJughaiman and Mowrer-Reynolds (2005) mention the concepts associated to creativity like: "original ideas, aesthetic product, intelligence, linguistic product, imagination, self-expression, problem solving, enjoyment, divergent thinking, inventiveness, creative writing, and other aspects" (p. 25). Based on these ideas, it can be perceived that as creativity involves the manifestations of new ideas, concepts, process, artifacts and understanding, it is important to individuals, communities and the society as a whole and therefore to learners in education.

2.2 Role and Scope of Creativity

Creativity has a wide scope at both individual and social levels. Creativity has a wide range of task domains. At an individual level, creativity includes solving problems on the job and in ones daily life, while at a social level creativity is important because it leads to new scientific findings, new movements in art, new inventions, and new social programs. The economic importance of creativity is clear because new products or services create job opportunities. (Sternberg & Lubart, 1999)

2.3 Creativity in Higher Education

To improve the quality of undergraduate education, students need to be involved in research and creative activities (Buckley, 2009). Though the imaginative ability and inventive power are greatest assets and valuable human achievements, yet the significance of creativity in learning and achievement according to Jackson et al. (2006) are acknowledged in a higher education world. Students' creativity is not less important than traditional academic achievement. However, according to Silva and Davis (2011) numerous studies are available in the area of institutional characteristics pertaining to faculty productivity which according to Jackson et al. (2006); Lidgren, Rodhe, & Huisinsh (2006); McWilliam, Hearn, & Haseman (2008); Pawson et al. (2006); Smith (2011); Steiner & Posch (2006) is 'creativity'. In higher education, creativity is promoted by teaching and learning and practical activities like co-curricular activities (AlJughaiman & Mowrer-Reynolds, 2005; Badi, 2008; Chien & Hui, 2010; Copeland, Kendeigh, Saelens, Kalkwarf, & Sherman, 2012; Drew & Mackie, 2011; Evans, 1993; Gok & Erdogan, 2011; Jeffrey & Craft, 2004; Jurcova & Zelina, 1993; Magee, 2004; Maley, Worley, & Dent, 2009; McInerney, 2005; Smith, 2011).

2.4 Barriers to Creativity

Barriers are like blocks, which impede the performance of creativity skills. Creativity skills may be affected and reduced by various attributes which include the person's individual personality, environment, situation, motivation, cognitive development (Wong & Pang, 2003). These blocks differ based on the circumstances and content such as, business, academy, economy, art, science, and organization (Adam, 1999; Wong & Pang, 2003). For example, limited time and funds, inadequate upward communication, inadequate downward communication, physical environment, inadequate contact with technical, activities, organizational structure, lack of technical critique, low risk-taking, lack of creative processes and training, these are all identified as organizational barriers of creativity (Puccio & Cabra, 2010). Similarly Davis (1999) finds other barriers such as, emotional barriers, perceptual barriers.

Adam (1999) discusses, in his book, the barriers of creativity and provides a solution to them. He discusses perceptual blocks, emotional blocks, cultural and environmental blocks, intellectual and expressive blocks, alternate thinking languages. Then he mentions the kinds of blockbusters for the aforementioned blocks. Generally blocks are closely related with other. To him everybody has conceptual blocks, though they are not aware of them, but the level of magnitude and intensity may vary from case to case. Many literatures measure the magnitude of creativity and barrier with small-c and capital-C (Davis, 1999). The following five categories of barriers are identified by Davis (1999): learning and habit, rules and traditions, perceptual barriers, cultural barriers, and emotional barriers-will help distinguish blocks to creativity in different but overlapping categories. Like Adam, (1999) some scholars argue that everyone is creative by birth, but the external agents destroy it.

2.4.1 Learning and Habit

Habits are the most obvious barrier to creative thinking and innovation. We learn "the way things have always been done" and "the way things are supposed to be done." Thus over the years, it becomes difficult to see and create new possibilities. Old habits and expectations interfere with new ideas, activities, and possibilities. The ability to form habits and expectations is, of course, a necessary capability for humankind, one that directs our daily behavior. However, learning and habit are both a blessing and a curse (Davis, 1999).

2.4.2 Rules and Traditions

Naturally, no social group can function without rules, regulations, policies, and traditions. As 'rules' may be regarded as a form of restriction, or prohibition, they may tend to suppress creativity, innovation and risk taking activities. In addition, bureaucratic policies can reduce the possibility of getting an official acceptance for any new project, but on the positive side, when an innovation is accepted an efficient formal structure will expedite its implementation. So, Procedural barriers include policies, procedures, and regulations (including unwritten ones) that slow or prevent creative innovation (Davis, 1999).

2.4.3 Perceptual Barriers

People are accustomed to perceiving things in their own ways, often making it difficult to see new meanings, relationships, and ideas. Such predisposition to perceive things in certain ways is a perceptual set, a mental set, or functional fixedness which is opposite to flexible and innovative thinking.

Problem of perceptual sets is that decisions and conclusions can be made hastily, rather than flexibly and seeing all the available alternatives. Perceptual blocks also prevent us from getting a complete and accurate picture of the “real problem” or “truth” may be missed (Davis, 1999). This is why it can be labeled as a form of stereotyping (Adam, 1999).

2.4.4 Cultural Barriers

Cultural barriers are formed as a result of social influence, expectations, conformity and pressures which are based on social and institutional norms. Cultural blocks include habits and learning, rules, traditions, stereotypes, and the environment (Adam, 1999; Davis, 1999). These barriers include compliance to the ways people think others expect them to behave and a fear of being different. So it can result in a loss of individuality and creativity. In addition to that Adam (1999) finds that cultural barriers are equivalent to the so called ‘taboos’.

2.4.5 Emotional Barriers

Some familiar emotional blocks are excessive anger, fear, anxiety, hate, and even love. These are rooted within the external environment such as peers, parents, partners, or children, or by pressures and worries at school or work, financial stress, or poor health. More permanent emotional blocks include chronic sources of insecurity and anxiety such as fear of failure, fear of being different, fear of criticism or ridicule, fear of rejection, fear of supervisors, timidity, or a shaky self-esteem (Davis, 1999).

2.4.6 Resource Barriers

The resource barriers are overlooked by researchers even though these are not trivial types of barriers that hinder creative thinking. These can and do stop creative productivity because they include shortage of people, money, time, supplies, and/or information that is needed for creative thinking or for the implementation of creative ideas (Davis, 1999).

Method

3.1 Participants

In total, 459 undergraduate students (n= 459) from five public universities in Malaysia participated in this study. These five universities comprise of University of Malaya (UM), University of Science Malaysia (USM), International Islamic University Malaysia (IIUM), University of Technology Malaysia (UTM), and University Kebangsaan Malaysia (UKM). The respondents consisted of 45.53% male students (n = 209) and 54.47% females (n = 250). In addition, the sample comprised students from various faculties; Human sciences and Islamic studies (18.5%), Business (21.6%), Engineering (19.6%), Natural science and medicine (18.1%) and Social sciences (22.2%).

3.2 Measure

The instrument used in this study was the ‘inventory of barriers to creative thought and innovative action’ adapted from (Martin, 1990). This inventory consists of 36 items, and the participants are required to respond on a 5-point Likert-type scale (ranging from strongly agree to strongly disagree). The questionnaire assesses five aspects of barriers to creative thought and innovative action; (1) self-concept; (2) compliance need; (3) abstract ability; (4) systematic analysis; (5) task achievement; and (7) environmental circumstances. According to (Martin, 1990), the barrier to creativity inventory has demonstrated good test-retest reliability with alpha .89. Meanwhile, in this study, the reliability, particularly the internal consistency of the items (Cronbach alpha) was .89. Thus, indicating that this inventory has good internal consistency.

3.3 Procedure

The participants are tested in groups. The completion time of the questionnaire took approximately 12 minutes. All participants are fully de-briefed upon completion and provided with individual feedback if they personally requested for it. Data were collected from the UM, USM, IIUM, UTM, and UKM.

Findings of The Study

4.1 What is the most difficult type of creativity barrier to deal with as experienced by the Malaysian undergraduates?

The mean score for the perceived barriers in creativity has been obtained in order to examine the most difficult creativity barrier to deal with by the respondents. Referring to Table 1, the finding revealed that barriers related to task achievement ($M= 2.76$, $SD= .55$) received the highest score as rated by the respondents. The second most difficult barrier is barriers related to self-concept ($M= 2.73$, $SD= .54$), followed by barriers related to environmental circumstances ($M= 2.66$, $SD= .56$). Meanwhile, the barriers related to systematic analysis received the lowest score ($M= 2.57$, $SD= .61$).

Thus, based on the obtained finding, it can be inferred that most of the Malaysian undergraduates have difficulty in dealing with the creativity barriers related to task achievement, followed by creativity barriers related to self-concept and barriers related to environmental circumstances. Nonetheless, it is worthy to note that the Malaysian undergraduates perceived that they are more capable to encounter the barriers of creativity related to systematic analysis as compared to other creativity barriers.

4.1.1 Do the barriers related to task achievement significantly severe as compared to the baseline?

Basically, the one-sample t test will be the most appropriate test to examine the severity of barriers related to task achievement. This is because the one-sample t test analysis compares an expected value with the mean derived from the test variable (Griffith, 2007). The expected value is also known as the test value. In other words, a one sample t test investigates whether the mean on a test variable is significantly different from a constant, called a test value (Green & Salkind, 2003).

To run the test, the researcher should choose the variable to be averaged and the value he/she expects. Further, the report will show up the accuracy of the researcher's expectation (Griffith, 2007). In this case, the researcher chooses 3 as the test value as it reflects the acceptable degree of barriers to creativity (the baseline). Thus, the researcher reasonably expects that the sample mean will be higher than 3 if the severity of barriers related to task achievement is significantly critical. Therefore, 3 will be the test value for this test variable; barriers related to task achievement.

A one sample t -test was conducted on the mean scores of barriers related to task achievement in order to evaluate whether their mean was significantly different from 3 (the test value), the accepted mean for the level of severity of creativity barriers. The finding showed that the sample mean of 2.76 ($SD = .55$) was significantly different from the test value. With alpha set at .05, the one sample t -test result was significantly lower than 3, with $t(458) = -9.22$, $p= .00$.

Therefore, the researcher perceives that the severity of barriers related to task achievement is significantly less severe and less critical as its mean score was statistically lower than the baseline (the acceptable degree of barriers to creativity).

4.2 Is there any significant difference among the Malaysian public universities (UIAM, UKM, UM, USM and UTM) in relation to the level of creativity barriers?

A one-way analysis of variance (ANOVA) was conducted to evaluate the differences on the level of creativity barriers among the Malaysian public universities. The factor; Malaysian universities have five categories: 1= UIAM, 2= UKM, 3= UM, 4= USM and 5= UTM. The dependent variable was the level of creativity barriers. The result indicated that the ANOVA was not significant, $F(4, 454) = 1.62$, $p= .17$ at .05 alpha level. Since the ANOVA test was not significant, hence it revealed that there is no significant difference among UIAM, UKM, UM, USM and UTM students in relation to the level of creativity barriers. The means and standard deviations for barriers to creativity for each university are reported in the Table 2. Meanwhile, Figure 1 shows the distribution of creativity barriers scores across Malaysian universities (Green & Salkind, 2003).

4.3 Is there any significant difference among students from different faculty of study (Human Sciences & Islamic Studies, Engineering, Natural science/Medicine, Social Sciences and Business Faculty) in relation to the level of creativity barriers?

To respond to RQ 3, a one-way analysis of variance (ANOVA) was conducted to evaluate the differences on the level of creativity barriers among faculty of study. The factor; faculty of study consists of five categories: 1= Human Sciences & Islamic Studies, 2= Engineering, 3= Natural science/Medicine, 4= Social Sciences and 5= Business. The dependent variable was the level of creativity barriers. The finding showed that the ANOVA was not significant, $F(4, 454) = .54$, $p = .71$ at .05 alpha level. Since the obtained ANOVA result was not significant, therefore it can be inferred that there is no significant difference among students from Human Sciences & Islamic Studies, Engineering, Natural science/Medicine, Social Sciences and Business faculty in relation to the severity of creativity barriers. The means and standard deviations for creativity barriers for each faculty of study are reported in the Table 3. Meanwhile, Figure 2 shows the distribution of creativity barriers scores across faculty (Green & Salkind, 2003).

Conclusion

The government of Malaysia plans to reach the 2020 vision for nationwide development especially that associated to excellent human capital, this research was done with this in mind. Therefore, understanding the barriers that slow down innovative thought and innovative action in higher educational institution in Malaysia is very important because it can help achieve the common objectives of higher educational institution. This research has identified creativity barriers in university learning environment in the Malaysian context, especially with reference to undergraduate students from various universities. The findings of this study suggest that barriers related to task achievement are the most common barriers that hinder students' creative ability. These findings are further supported by (Hilal, 2012). The second most important set of barriers to creativity was found to be related to compliance need, followed by barriers related to abstract ability, environmental circumstances, and self-concept. Then least crucial set of barriers was found to be related to systematic analysis.

In such circumstances, there must be some ways to tackle these barriers. One of these methods is the behavioral approach. It is an approach that focuses on the relationship between an individual's behavior and events, as well as properties of the individual's environment. Then techniques such as reinforcement, prompting, modeling, and environmental manipulation are also used to enhance and promote creativity. It differs from cognitive approaches in its avoidance of mentalist language and construct-based models. Behavioral psychology, the branch of psychology that focuses on behavior rather than cognition, has shed light on several aspects of the creative process, both from a practical perspective and a theoretical perspective. On the practical side, behavioral psychologists have shown that a variety of techniques can spur creativity. These include reinforcement, instructions, modeling, self-management training, environmental manipulation, component-skills training, generalization training, goal setting, and problem-solving training. On the theoretical side, behavioral psychologists have developed both informal and formal models of the creative process, most of which view creativity as the result of an interconnection or integration of previously established behaviors. (Davis, 1999).

Table 1: The mean and standard deviation for the level of difficulty in dealing with creativity barriers as perceived by the Malaysian undergraduates

Types of creativity barrier that the respondents have to deal with	M	SD
Barriers related to self-concept (n= 459)	2.73	.54
Barriers related to compliance need (n= 459)	2.61	.60
Barriers related to abstract ability (n= 459)	2.59	.60
Barriers related to systematic analysis (n= 459)	2.57	.61
Barriers related to task achievement (n= 459)	2.76	.55
Barriers related to environmental circumstances (n= 459)	2.66	.56

Table 2: The mean and standard deviation for the level of difficulty in dealing with creativity barriers as perceived by the Malaysian undergraduates from different universities

	University	M	SD
1.	UIA	2.72	.53
2.	UKM	2.64	.44
3.	UM	2.57	.44
4.	USM	2.71	.39
5.	UTM	2.65	.51

Table 3: The mean and standard deviation for the level of difficulty in dealing with creativity barriers as perceived by the Malaysian undergraduates from different faculty of study

	Faculty of study	M	SD
1.	Human Science & Islamic Studies	2.67	.42
2.	Business	2.67	.50
3.	Engineering	2.70	.51
4.	Natural science/ Medicine	2.64	.44
5.	Social Science	2.61	.46

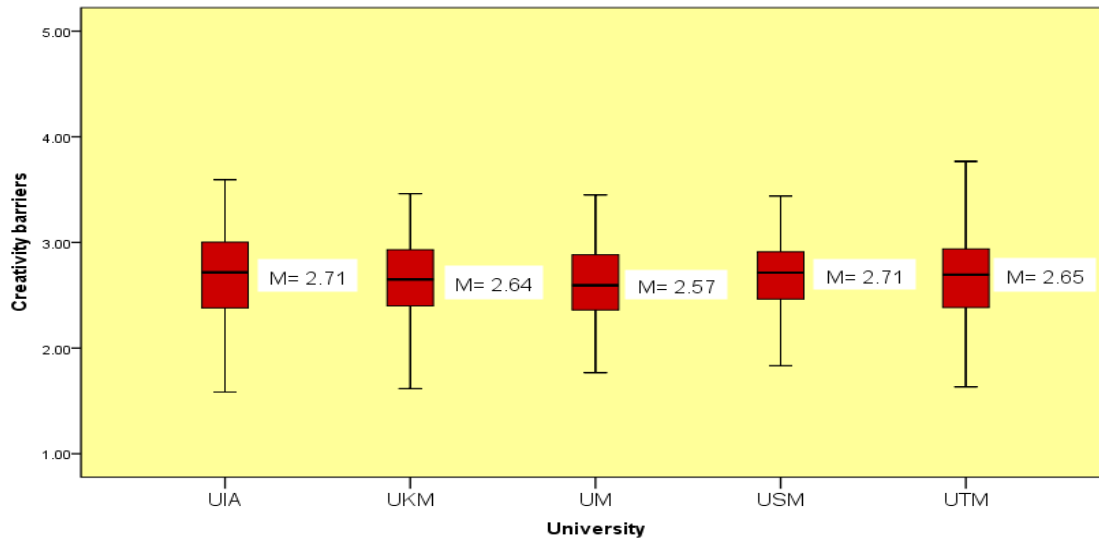


Figure 1: The distribution of creativity barriers scores among the Malaysian public universities

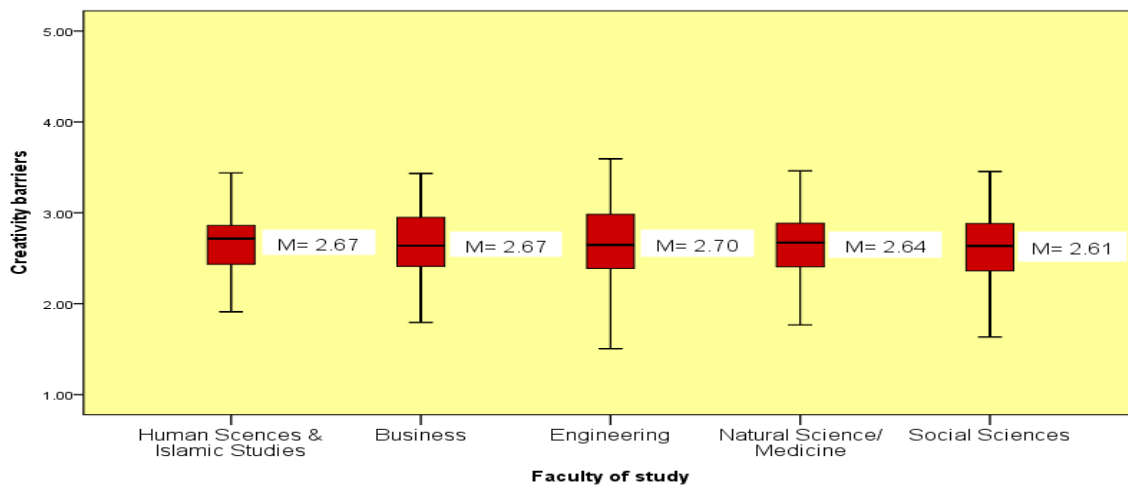


Figure 2: The distribution of creativity barriers scores among students from various faculties

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