



The Perception of *al-‘Adl* in Critical Thinking: A Comparative Study of Muslim Engineering Undergraduates in Malaysian Universities

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ABSTRACT

The element of justice or *al-‘adl* in the context of Islamic critical thinking deals with the concept of justice as informing the thought process that critically rationalises the truth in a fair and objective manner with no irrelevant interference that can jeopardise a sound judgment. This Islamic axiological element is vital in technological decision-making as it addresses the issues of religious values and ethics that are primarily set to fulfill the purpose of human life on earth. The main objective of this study is to reveal the distinguished element of *al-‘adl* in Islamic critical thinking and determine the significance of the perception to Muslim engineering students from different Malaysian universities. This comparative study looks into the factors that lead to a better comprehension among the undergraduates of the concept of *al-‘adl* in critical thinking. The study employed the survey method and Analysis of Variance (ANOVA) technique involving 549 Muslim engineering undergraduates from six Malaysian universities. The results generally indicate that undergraduates who have been exposed to the Islamic perspective of critical thinking possess a significantly clearer idea of the concept of *al-‘adl*. The study also suggests that faculties of engineering in Malaysian universities should reconsider the current concept of critical thinking and embed in it elements of Islamic critical thinking.

ARTICLE INFO

Article history:

Received: 20 November 2012

Accepted: 11 October 2013

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Keywords: *Al-‘adl*, Islamic critical thinking, rational justice, Malaysian engineering education

INTRODUCTION

The concept of *al-‘adl* (justice or fairness) varies in essence and scope of knowledge among different disciplines and from one

school of thought to another, but within the context of Islamic critical thinking, it is manifested in religious values and ethics. *Al-'adl* is derived from the verb *'adala* which literally means first, to make something straight or to sit straight, to amend or to alter; second, to draw away, depart or deflect from one path to another; third, to be equal or equivalent, or to equalise; and fourth, to balance or counter balance (Ibn Manzur, 1990; al-Fayyumi, 1987).

These expressions correspond to the terminological definition of *al-'adl* as “the thing that is established in the mind and soul as being righteous or upright”, also known as “*mustaqim*” (Ibn Manzur, 1990, v. 11, p. 430), as opposed to “injustice” or “unfairness”. However, it is important to note that the notion of justice in Islam is also widely perceived as placing things in their rightful place, for instance, as a response against tyranny or *zulm* (al-Ghazzali, 2002). *Zulm* is also etymologically related to the notion of darkness and gloom that denies one’s basic right to. As such, *zulm* is often interpreted as oppression although in reality it encompasses a broader and deeper meaning (Mahmoud Ayoub, 1996).

These definitions rouse a broader perception of the concept that ranges beyond the Western value of absolute equality. Islamic justice does not emphasise only the notion of equality, but rather the idea of fair equilibrium as equality is sometimes relative, and in Islam there are cases where justice is achieved through inequality such as the distribution of Islamic inheritance according to al-Quran in chapter 4, verse

176. Nevertheless, this perception of justice is still, in general, embedded in the concept of righteous or *mustaqim* just as tyranny or *zulm* is also an element of unfairness and injustice.

Al-Quran repeatedly warns people to be just in making judgments and not to be influenced by personal interests, prejudices and other biases. Allah says in al-Quran in chapter 5, verse 8:

“O You who believe! Stand out firmly for Allah and be just witnesses and let not the enmity and Hatred of others make you avoid justice. Be just: that is nearer to piety, and fear Allah. Verily, Allah is Well Acquainted with what you do.”

In another verse, chapter 4 verse 135, Allah says:

“... so follow not the lusts (of your hearts), lest you may avoid justice, and if you distort your witness (justice) or refuse to give it, Verily, Allah is ever Well Acquainted with what you do.”

These Quranic injunctions clearly indicate the importance of just and objective reasoning in making sound judgments and decisions that are free from evil desires, which are largely represented through irrelevant emotional interference and personal preferences or antagonism. Thus, to be critical in making a sound and just decision is obviously a religious obligation which can only occur if a person is willing

to adhere to piety and abandon his desire that could distract him from looking at reality and truth (*al-haqq*).

In fact al-Quran indicates a very strong relationship between *al-‘adl* and *al-haqq* to the extent that it often uses the term *al-haqq* to describe the meaning of *al-‘adl* as in verse 26 of chapter 38:

“O Dawud! Verily! We have placed you as a successor on earth, so judge you between men in truth (and justice) and follow not your desire for it will mislead you from the path of Allah”

Although the meaning of *al-haqq* has been conveyed in the larger perspective of the Qur’anic worldview as compared to *al-‘adl*, the connection between them is apparent especially in matters of justice (Jamal al-Banna, 1995). The Quranic term of *al-haqq* is comprehended as the ideal and absolute truth of Islam, while *al-‘adl*, on the other hand, is perceived to be more relevant to the practical aspect of justice. Hence *al-‘adl*, in a way, can be considered as a form of *al-haqq*, which specifically relies on its application aspect to support the firm and generic concept of Islamic truth or *al-haqq* (Jamal al-Banna, 1995).

This two-layered notion of *al-‘adl* is discussed in an abstract way by renowned Muslim philosopher, al-Kindi, in his search for the truth (*al-haqq*) both as theory and practice. In his attempt at providing a solution for the harmony of revelation and reason, al-Kindi distinguishes *al-haqq*

at two levels: the ultimate truth and the practical truth. While acknowledging the agreement between revelation and reason in the grounding of the final ultimate truth, he insisted on the necessity of knowing truth in practice, which is the primary concern of the philosopher. In taking this position, al-Kindi deals with the concept of justice on two levels: divine justice, in which reason and revelation are in agreement, and rational justice, which is the product of reason (al-Kindi, 1978).

Al-Kindi’s theory of rational justice expresses justice as a quality inherent in man that stimulates him to do the right thing, guided and determined by reason. Rational injustice, on the other hand, according to al-Kindi, is accidental and an evil act produced by desire through wrath or other intemperate impulses that restrain the mind to operate in reason. Justice, however, is not merely a counterpart of evil, but also a virtue that is to be nurtured and improved by man in the light of his comprehension of the truth (Majid Khadduri, 1984). Hence, man, according to al-Kindi’s philosophical theory of justice, must not only know and comprehend justice but also act in accordance with justice, which can only be reached through sound and critical reasoning. Al-Kindi’s discussion on rational justice is observed to be vastly relevant to Islamic critical thinking as it elevates the religious virtue of justice as an important element in the thinking process.

The Islamic element of *al-‘adl* in critical thinking is perceived to have a great impact on Muslim engineering education. This Islamic axiological element is vital

in technological decision-making as it addresses the issues, values and ethics that primarily fulfil the purpose of human life on earth. The very nature of engineering deals with ways to exploit human and material resources for the well-being of mankind, exposing engineers to dilemmas and arguments that acquire critical evaluation in making right decisions. It is common for today's engineer to be confronted with several conflicting demands particularly with regards to social and environmental issues. Being trained in Islamic thinking would, therefore, help an engineer in his work.

Engineering education must not purely be observed from the rational and secular context which often fails to provide enlightened answers to human problems. Islam views that all curriculum components of engineering education, whether purely technical or inter-disciplinary, must not be molded on an anti-religious perspective but rather, be integrated with Islamic cosmological doctrines, ethics and values (Syed Naquib al-Attas, 1993). At the same time, the humanities component of the curriculum, in which some of them are taught from the Islamic perspective, must also not be dealt with in isolation from the realm of science and technology, particularly so for philosophy and critical thinking.

Similarly, with regard to the teaching of critical thinking among Muslim engineering undergraduates, the context of the thinking should never stray far beyond the Islamic concept of. It is naive to believe the possibility of a framework

of critical thinking that is not rooted within a worldview (Muhammad Mumtaz Ali, 2008). Thinking is, in fact, closely related to the notion of belief and faith, and the embedding of a Western-orientated thinking theory in the mind of Muslim students requires a decisive investigation of its impact particularly when in the case of Muslim engineering students, most have never been exposed to the concept of Islamic thought. Thus, it is worthwhile to explore and apprehend the students' perception on thinking in order to observe the impact of current features of critical thinking skills and concepts being taught or which are embedded in the Malaysian engineering curriculum.

A study on Islamic critical thinking among Muslim engineering students was conducted at Universiti Teknologi PETRONAS. The study by a group of researchers led by Abdur-Rahman (2012) used questionnaires as an instrument to analyse the students' perception of Islamic critical thinking. It involved 100 undergraduate Muslim engineering students and discovered that the engineering students had a positive perception towards Islamic critical thinking even though they had never learnt about Islamic critical thinking as a stand-alone subject. In another study on Islamic critical thinking, the perception of Muslim engineering students in six Malaysian institutions of higher education of the concept of *al-'adl* was analysed (Mohd Nuri Al-Amin Endut *et.al*, 2012). The study engaged mixed methods consisting of both quantitative and qualitative

approaches involving undergraduate Muslim engineering students. The study generally indicated that Muslim engineering undergraduates in the higher institutions had rather a good comprehension and awareness of *al-‘adl* with a lesser awareness of the importance of objective thinking. However, the study did indicate that there were several areas of the subject, particularly rational justice in Islam, of which the students were relatively poorly informed.

However, the result of the previous studies did not reveal the significant difference between the perceptions of the undergraduates towards the element of *al-‘adl*. In addition, it did not indicate in which university the undergraduates had a better perception of the concept. Such a comparison is important as it reveals the basis, such as curriculum and teaching model, that might have led the undergraduates to having a better comprehension of Islamic critical thinking. It also raises valid concerns that might need to be addressed in order to improve the understanding and awareness of Muslim undergraduates with regard to the concept of *al-‘adl* in Islamic critical thinking. Therefore, the main objective of this study is to compare and analyse the significance of the perception among Muslim engineering students from different Malaysian universities of the element of *al-‘adl* in Islamic critical thinking.

METHODOLOGY

The study involved 549 respondents, of whom 27.3% were from Universiti Teknologi Malaysia (UTM), 19.6% from the

International Islamic University Malaysia (IIUM), 16.7% from Universiti Sains Malaysia (USM), 9.1% from University of Malaya (UM), 16.2% from Universiti Teknologi PETRONAS (UTP) and 11.1% from Universiti Tenaga Nasional (UNITEN). These universities were selected because they are among the top-ranking universities in Malaysia for a degree in engineering. Two private universities, namely UTP and UNITEN, were included to compare the results between public and private higher learning institution.

The respondents' profile exhibits a gender representation of 54.6% male and 45.4% female, which is fairly proportionate for this study. In terms of the year of study, the largest number came from the final or fourth year of study, representing 46.2% of the sampling, followed by the second year (27.7%), third year (22.3%) and finally, the first year of study (3.8%). On the whole, the largest portion (68.5%) of the respondents was from the third and fourth year of study; these students portray a better representation of the results as they would have gained more exposure to the engineering concepts and profession.

To administer the survey, a self-developed research questionnaire comprising two sections was constructed; the first section (Section A) covered demographic data of the respondents and the second section (Section B) consisted of 19 items designed to gauge the undergraduates' perception of *al-‘adl* through its five constitutional components of Religious Values (4 items), Relevance Factor (4 items), Objective

Reasoning (4 items), Truth Orientated (4 items) and Religious Stimulation (3 items). Section B of the questionnaire employed the selected-response items format that dictated the responses on a five-point Likert scale ranging from 1 for “Strongly disagree” to 5 for “Strongly agree”.

An expert panel of 10 individuals from the areas of Islamic Thought and Engineering were engaged to seek their viewpoints and to validate the instruments used in the study; seven of the experts looked into the area of Islamic Thought and Education while the other three dealt with content from the engineering perspective. After discussions with the expert panel and amendment of the survey items, the survey questionnaire was administered for a pilot study involving 59 Muslim undergraduate engineering students to test its reliability. The reliability test of the survey instrument revealed a Cronbach’s alpha of 0.8, which showed its high reliability.

The data were analysed using the Statistical Package for Social Sciences (SPSS) software version 11.5 to determine the perception of Muslim engineering undergraduates in Malaysia. This study mainly employed Analysis of Variance (ANOVA) to explain and determine the significance of the study findings. ANOVA is one of the statistical techniques to compare the mean scores of more than two groups. It involves one independent variable that has a number of different levels which correspond to the different groups or conditions. It actually compares the variance or variability in scores between the different groups with

the variability within each of the groups (Pallan, 2007). It was necessary to use ANOVA, which is the standard technique employed to compare mean scores of more than two groups of respondents, as this study sought to compare the level of perception of engineering students from different universities of a given subject in order to relate them to the teaching models of critical thinking employed in the respective universities.

RESULTS AND FINDINGS

The ANOVA test results for the difference in mean scores are presented in Table 1. The perception of *al-‘adl* shows the Sig. (significant value) of .000, which implies highly significant differences somewhere among the mean scores of the six sampling groups, where each group represents a different university. In employing ANOVA, the differences in population means can be considered as statistically significant only if the Sig. value is less than or equal to .05 (e.g. .03, .01 or 0.001) (Pallan, 2007). Thus, the test has confirmed the presence of significant differences among the mean scores of the respondent groups, which opens more doors to further research on comparative studies.

Table 2 shows the distribution of mean of perception of *al-‘adl* according to the different sampling groups. The result shows a uniform level of mean scores that range from 3.45 to 3.72, based on a five-point Likert scale ranging from 1 for “Strongly disagree” to 5 for “Strongly agree”. This implies a constantly moderate high perception of the concept of *al-‘adl*

among all sampling groups.

The highest mean score of 3.72 (SD = .332) was recorded for the engineering undergraduates of IIUM for the overall perception of *al-‘adl*. The second highest mean was recorded for the group of USM engineering students who scored the mean of 3.69 (SD = .343) followed by UTM and UNITEN with the respective mean score of 3.68 (SD = .390) and 3.60 (SD = .430). The second lowest mean score came from UM respondents, followed by UTP respondents with the mean score of 3.59 (SD = .404) and 3.45 (SD = .355) respectively.

DISCUSSION

On the whole, the ANOVA test results confirmed the existence of a significant difference in the mean scores of the perception of students in the sampling

groups of the concept of *al-‘adl*. The results indicated that IIUM and USM Muslim engineering undergraduates scored the highest mean value for perception of the element of *al-‘adl* in Islamic critical thinking. These findings imply that Muslim engineering students in these two universities have a better comprehension and awareness of Islamic critical thinking than those Muslim students at the other four universities.

The findings on the comparison of perception of the sampling groups suggest that undergraduates who had been exposed to the Islamic perspective of critical thinking possessed a significantly higher perception of the concept. These are undergraduates of the only two universities from the cluster sampling, IIUM and USM, that have embedded the Islamic perspective of critical thinking in their curriculum. IIUM,

TABLE 1
Results of ANOVA – A Comparison of Mean Values of the Perception of *al-‘adl* Derived from Each University’s Respondent Group

Perception	Respondent Group	df	F	Sig.
<i>Al-‘Adl</i>	Between Groups	5	6.774	.000
	Within Groups	543		
	Total	548		

TABLE 2
Distribution of Mean and Standard Deviation According to the University’s Respondent Group

Perception	University	N	Mean	Std. Deviation
<i>‘Adil</i>	IIUM	107	3.72	.332
	USM	93	3.69	.343
	UTM	147	3.68	.390
	UNITEN	62	3.60	.430
	UM	51	3.59	.404
	UTP	89	3.45	.355
	Total	549	3.63	.382

for example, upholds the worldview of *tawhid* and the Islamic philosophy of the unity of knowledge; as an Islamic university, IIUM is naturally obliged to constructively integrate Islamic values and perspective in this particular course. According to Nur Anisah Abdullah, IIUM has included discussions on Islamic values and decision-making in its critical thinking courses (Nur Anisah Abdullah, interview, 22 November 2010).

As for USM, despite its differences compared to IIUM in terms of vision and philosophy, it has made the related thinking course meaningful by embedding in it the dimension of religious sanctity known as '*luhur*' thinking. *Luhur* thinking is thinking associated with a sacred vision that includes the supernatural, divine belief and faith in a Creator according to Islamic teaching. This thinking distinguishes itself from Western thinking in its reliance not only on logical and scientific methods but also on inspiration and guidance by from God's revealed principles (Shuhairimi Abdullah, & Huzili Hussin, 2006). Therefore, *luhur* thinking links all human behaviour to the principle of *tawhid* that serves as the ultimate bridge between worldly endeavours and final judgement in the hereafter.

UTM's Muslim engineering undergraduates, despite the minimum exposure to Islamic critical thinking, also showed a good perception of the concept of *al-'adl*. This result may have been influenced by an embedded model approach employed by UTM to inculcate the concept and skill of critical thinking instead of teaching

it as a standalone subject as practised in the engineering faculties of University of Malaya (UM), Universiti Sains Malaysia (USM), the International Islamic University Malaysia (IIUM) and Universiti Teknologi PETRONAS (UTP).

The embedded model is applied across the curriculum to engage with the process of teaching and learning of all subjects. This model does not have a specific subject. Instead, students are trained to learn and attain critical thinking skills through formal teaching and learning, which applies the critical thinking approach without amending initial content and learning outcomes. In general, lecturers of all courses implement the model by assimilating appropriate elements of critical thinking skills into their lesson plans in order to achieve learning outcomes (Kementerian Pengajian Tinggi Malaysia, 2006).

On the other hand, the stand-alone subject model implies the offering of a thinking skills subject specifically aimed at inculcating critical thinking skills in a formal and explicit mode without connecting it to others subjects. The subject is normally offered either as part of a university's requirements that oblige all students to take the subject, or as an elective subject under the humanities courses that provide the students the option of choosing another subject. Generally, this credited subject is specifically designed to fulfil the need of the faculty and is formally considered to be part of the Engineering curriculum.

For example, UM's Faculty of Engineering offers the compulsory course

'Thinking and Communication Skills', which partly aims is to explicitly introduce students to critical thinking, particularly on how to explain and analyse ideas, analyse and evaluate arguments, determine source credibility and recognising fallacies (Mohd Hamdi Abd Shukor, interview, 17 August 2010). In USM, all engineering undergraduate students are required to take the 'Thinking Technique' course that elaborates on the concept and definition of thinking techniques and styles that are closely related to critical thinking. The course also explains the thinking tools and techniques used in decision-making based on an engineering perspective. In UTP, engineering students have to take a critical-thinking-related course, namely 'Thinking Skills', in their foundation or pre-university programme. The course basically discusses the principles of thinking and the tools and approaches used for various decision making models.

UTM does not provide a specific course for critical thinking within their formal academic curriculum but rather focuses on the embedded model. UTM believes that these skills should be imbued through appropriate teaching and learning methods that are to be applied across all courses. As such, UTM has established a Centre for Teaching and Learning (CTL) that provides frequent training sessions for its teaching staff that would help them infuse and coach students with practical aptitude in applying critical thinking and other generic skills via various teaching and learning techniques. In fact, these particular

techniques could inculcate an even higher level of critical thinking compared to the theoretical approach of the stand-alone subject (Khairiyah Mohd Yusof, interview, 26 January 2011).

Nevertheless, it is quite clear that the embedment of the Islamic perspective in the existing critical thinking courses has made the difference in enhancing students' spirituality and uplifting their religious consciousness. The ANOVA results have evidently elicited the need to re-evaluate the present curriculum of critical thinking offered in Malaysian universities, particularly with concern to Muslim students, in order to instill the proper concept of Islamic critical thinking in them. The introduction of this concept would likely prepare Muslim students with the righteous Islamic mind and attitude that would enable them to comprehend engineering enterprise within the Islamic worldview.

CONCLUSION

Muslim undergraduates should be exposed to the Islamic conceptual definition of critical thinking that offers a unique and holistic perspective that distinguishes it from the existing dominant Western perspective of critical thinking. The element of *al-'adl* relates the concept of critical thinking to the Islamic vision and worldview that helps to strengthen students' religious awareness and comprehension as well as fortify them from the secular conception of critical thinking. The overall finding of the study has brought to light some improper

perceptions among Muslim engineering undergraduates of the insight and true meaning of engineering from the Islamic worldview. These Muslim undergraduates need to be well conscious of the Islamic worldview and be able to integrate the religious values into their engineering knowledge and practices. They need to realise that they are actually performing their religious task and obligation by means of engineering. They have to deliberately deem engineering as an act of worship.

As such, the faculties of engineering in Malaysian universities are suggested to reconsider the current concept of critical thinking and to embed it with the Islamic critical thinking elements. The embedment of these elements into current critical thinking modules will elucidate the thinking within the Islamic worldview, which in consequence, will allow for easier integration with engineering education with the anticipated result of opening up the undergraduates mind and strengthen their faith in Allah. For that matter, it is highly recommended for any thinking related courses to be approached in a similar way to promote a holistic Islamic perception instead of the reductionist secular insight.

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