THE CONTRIBUTION OF THE FACULTY OF ENGINEERING IN ISLAMIZING ENGINEERING STUDIES

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Abstract: Islamization as an idea is not a mere process of engagement rather a dynamic and ongoing school of thought; hence, Islamized engineering is a value-laden enterprise and a process reconceptualization. Islamized engineering sciences will generate diverse insights different, to certain a extent, from western conception of engineering. It will connect us to the history of Islamic literature and the salient manifestations of Islamic civilization. This paper aspires to review and evaluate the methodological and epistemological approaches adopted by the Kulliyyah of Engineering in its attempt to infuse Islamic values in the general framework of its activities; from administration to academic and from student's affairs to curriculum development.

1.0 INTRODUCTION

Those who initiated the concept of islamization including Ismail Faruqi had characterized *Islamization of Knowledge* as contextualization, remoulding, redefining, integration and rethinking. Faruqi's pioneering influential manuscript in 1982, and Hajhamed's *Manhajiyyah al-Qur'an al-Ma'rifiyyah* of 1991 incarcerated the core methodology in Islamizing sciences, human values and correction of historical fallouts. One of the areas of Islamization is engineering. As an applied science engineering deals with the practical aspect of industries and produces technologies for the betterment of man's life. Engineering curriculum therefore should address the creative application of scientific principles; it should design and develop structures, machines, apparatus, or manufacturing processes, and works utilizing them singly or in combination. A well designed engineering curriculum also has to forecast the behaviour of the aforementioned structures under specific operating conditions; economically and operationally safe and useful to life and property. With its wide range of disciplines; engineering is associated with developing a specific kind of product, or using a specific type of technology; all for the benefit of mankind.

2.0 THE INTELLECTUAL DOMAIN OF ISLAMIZATION IN RELATION TO ENGINEERING SCIENCES

The Kulliyyah sees the concept of Islamization as a clout against unislamic scientific ideals which has its origin in an unjustifiable philosophy of science.

The Kulliyyah therefore sees its attempts of Islamization as a link between the natural laws and societal behaviour, consequently creating a conformity and form of unity and universality which rejects any form of dualism.

With this percpective in mind, it should be understood that Islamization of engineering sciences is related to the study of nature, the origin, and the limits of human knowledge. Based on the avilable litereture no one has so far provided superior tenets or set of procedures of how to Islamize engineering studies.

This is inline with the two folds of Islamization methodology; the restraining methodology and the epistemological methodology. The restraining methodology aims to trace ideas and organize or redirect them within their original and elemental form. Whereas the epistemological methodology reflects the unity of cosmic phenomena and its relation to human activities.

Any attempt to develop ultimate method of Islamizing engineering studies however, should underscore the benefit of engineering studies to human life through the understanding of the universe as a whole.

In search of appropriate method, one has to avoid the trap of the antecedent scholars of the subject that restricted the domain of islamization into the conflict between faith or religious authority and the investigation of rational evaluation of natural spheres. In this, exploration of nature of values in relation to engineering questions become inevitable; in fact the idea is to initiate a comprehensive scheme on islamizing engineering sciences.

For a good reason, methodology remains an inseparable entity in the process of consolidating truth and understanding how reality manifests itself in the divine will or in other words, how one relates Islamic outlook of man and his relation to the extraterrestrial levels, values, and universal ethos to engineering studies which is the essence of islamization process.

The attempt to comprehend the engine behind the ideational and purposive principles of islamization remains intact; motivated by mental reconstruction designed to project reality of life. Islamization of engineering studies has unique precepts including understanding the fashion and track of it and to adhere to correct direction.

3.0 THE CONCEPTUAL LEVEL OF ISLAMIZED ENGINEERING PROGRAMME

Islamizing engineering sciences is unthinkable without reshaping or restructuring the curriculum of Islamic institutions; we (the Muslim scholars) have already realized that this demands serious attention. In fact, the responsibility of reorganizing the curriculum falls upon the shoulders of the same scholars who are the course designers.

It must be made clear that to the opponents of the project the idea of Islamization of engineering science would mean religiousizing engineering traditions; an approach that is common among non-spiritual scientific community, which is the same reason for rejecting the merger between the ontological spheres and the orb of epistemology.[1]

Any engineering curriculum which investigates the values of engineering sciences through the teachings of Islam and draws the attention of the students to the Islamic values; that directs man to observe the structure of the universe is deemed Islamic.

Islamized engineering syllabus therefore, is one which invites students to examine whether the cosmic order (matter, plants, and nature phenomena) is an outcome of chance or chaos or there exist other beings who design the set up.[2]

Put differently, the process of disseminating scholarship in engineering and the mode of teaching should focus values and normative principles as these values influence action.[3] If fully Islamized current heavy emphasis on the technical aspects of engineering courses could be lifted to pave the way for more comprehensive approach. After all the emphasis of professionalism and ethical standards will not affect the scientific curiosity it will rather immerse students with professional growth[4].

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[1]Shuriye A. O. et al. (eds), *Islamic Engineering Ethics: Foundation, Integration and Practice*, Kuala Lumpur: Future Text Publications, 2006, PP. 67-73

[2] Ibid,

[3] Ibid,

[4]Ibid,

4.0 INCORPORATING PROFESSIONAL ETHNICAL VALUES INTO THE CURRICULUM

Part of the islamization process, undertaken by the Kulliyyah of Engineering, is in its effort of internalizing professional ethnical values. This is done through a course offered to all engineering students namely; *Professional Ethics from Islamic Perspective.*

It focuses on how to relate engineering professionalism to Islamic ethical foundations and to enhance the religious consciousness of Muslim engineers in the making. The course also evaluates the ethical core values that govern engineering activities such as honesty, confidentiality, and loyalty.

It introduces students with ethical mechanism such as engineering preventive ethics, responsibility and accountability of engineers; accountability to society (public health, safety and welfare), and responsibility to the ecological system.

The entire discussions are from Islamic perspective. The methodology of teaching varies from the UNGS approach as this course emphasizes on internalization and incorporating.

In a way the course gives the subject matter discussed a subjective character within the Islamic values and patterns of culture and so, consciously the Islamic principles are used as the guiding principles throughout the learning process.

For further intensification the course incorporates its themes with Islamic teachings by way of configuration to form an indistinguishable whole. It further employs the process of blending, uniting and combining thoroughly.

In this course the emphasis is not merely learning or knowing a particular Qur'anic verse or *hidith* or an ethical principle; rather it is how to make it part of the students. For instance, we are no longer talking of the advantage of punctuality or one should manage time appropriately, or abstain bad-mouthing or refrain from slander, rather we coach the students on how to incorporate ethical values in life?

So how one does makes sure punctuality is observed, time managed appropriately, bad-mouthing is abstained from and slander is refrained from? Knowing that these felonies are appalling it self is not an adequate measure and to prevent it or bring it to an end therefore one is compelled to use other instruments such as authority, boycott, stringent rules and regulations, carry out awareness programmes, provide consultation sessions reward those who observe, create a conducive environment, make it condition for leadership, take it as collective responsibility, and develop sense of sensitivity.

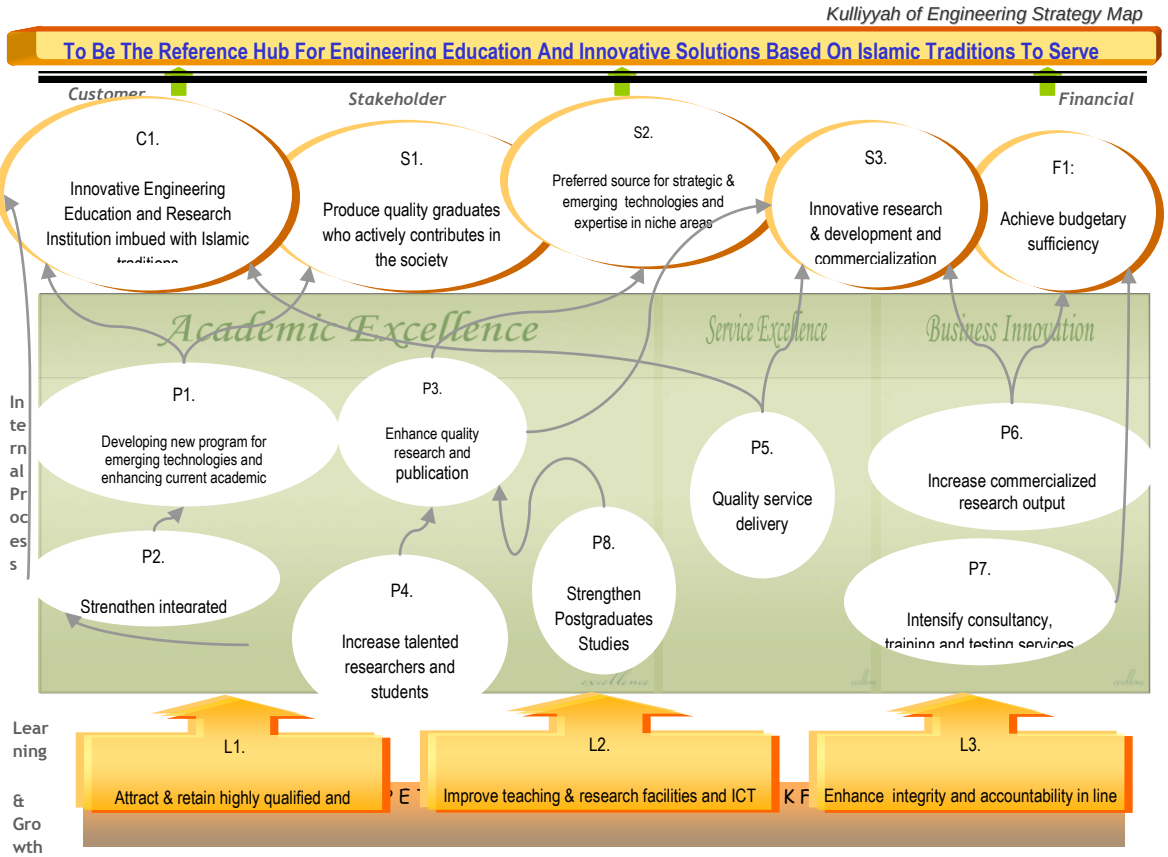
5.0 KULLIYYAH VISION AND LEARNING OUTCOMES ON ISLAMIZATION

Based on the Kulliyyah Vision Statement one finds that has strategically adopted Islamic values in its educational objectives. The educational outcomes of the programmes conducted by the Kulliyyah are also serious about islamization.

Related educational outcomes of the programmes are, for instance, the ability to understand the social, cultural, global and environmental responsibilities of a professional engineer, and the need for sustainable development. It has also emphasized the ability to understand and commit to professional and ethical responsibilities.

These are only some indicatives that the Kulliyyah of Engineering has continuously, throughout its history, taken genuine steps to enhance and safe guide the idea of islamization.

In fact the Kulliyyah in its BSC has concentrated on Islamic values, as it aims to be the reference hub for engineering education and innovative solutions based on Islamic traditions to serve. This is stipulated under the Kulliyyah Strategy, as clearly articulated in bobble C1 and LS of the Strategy diagram bellow.



6.0 PURPOSEFUL ISLAMIZATION ACTIVITIES IN THE KULLIYYAH

6.1 THE ISLAMIC VALUES AND ETHICS IN ENGINEERING (IVEE)

One of the permanent features of islamization in the Kulliyyah of Engineering is the *Islamic Values and Ethics in Engineering* (IVEE). The IVEE is an Arm of islamization and works on engineering values through academic activities, it is a research group with special functions and tasks, it organizes national and international conferences and produces academic works on related subjects.

Over the last few years the IVEE has organized several academic and spiritual activities on engineering values and published diverse academic works; these efforts however, are from time to time reorganized and redirected for greater achievements with clear agenda and emphasis.

Conventional research groups in engineering for instance, emphasize research in engineering studies and amplify grants. The IVEE focuses on a wider-range of activities in order to assist the university in its realization of its mission and vision.

The IVEE as an Arm of islamization, coordinates Islamization activities from the Dean's office to the student's echelon to the *Surau* in the Kulliyyah. In this sense the IVEE operates in the following areas:

1. Organize workshops, seminars, International conferences and public lectures on Islamization

2. Initiate policies and methods of Islamization of engineering and produce instruction manuals and Guidebooks

3. Write academic papers, textbooks and reading materials for students and lecturers

4. Infuse Islamic values into engineering curriculum

5. Link and coordinate Islamization activates in department's level.

6. Organize specialized Islamization activities for students and administrative staff

7. Generate ideas related to islamization from other pertinent non-academic institutions, professional bodies and Coordinate with other universities nationally and internationally on related issues

8. Work with other research units and centres on related matters

9. Provide consultancy and expert advice to professional institutions.

10. Support, encourage and advocate islamization activities in the Kulliyyah.

In short the IVEE, ventures to take the center stage of islamization activities and consolidate its operations. It is an arm that synchronizes and coordinates staff contributions and involvement in islamization activities.

6.2 SPIRITUAL ENHANCEMENT COMMITTEE

The Spiritual Enhancement Committee is a platform in which the spiritual activities of the students, academic staff and administrative staff are synchronized. The objectives of this committee among others, is to unify the islamization efforts and to strengthen it within the community of Kulliyyah of Engineering. The committee consists of two students, two administrative staff and three academic staff; its meetings are chaired by the Dean of the Kulliyyah himself.

7. 0 AN EXAMPLE OF INFUSING ISLAMIC VALUES INTO ENGINEERING COURSE

7.1 ADVANCED TOPICS IN SOFTWARE ENGINEERING (ECE 6430)

The objective in this section is to demonstrate various methods of how to pervade Islamic values into an engineering course. We select two subjects from the programme and study its subject matter from the Qur'anic point of view. Some of the main themes of this course are quality software products, project management, and design

Ultimately software engineering describes the profession related to designing, developing and maintaining software applications.

The main objective of this course is to introduce students to advance aspects of software engineering.

Obviously the first think to highlight to students is the religious and professional obligation of software engineers, an area of study which could be easily injected into the course.

7.2 PROFESSIONAL OBLIGATION OF SOFTWARE ENGINEERS

Software engineers are engaged in development, planning, designing and maintaining of software products. They adhere to developed formal education, licensing, practical skills, code of ethics and certification infrastructure; with organized professional societies formed by the members to promote the welfare of the profession. Software engineering however, comes with moral obligations particularly for Muslim engineers.

In its right conception, a Muslim should consider his or her professional responsibilities as part of faith and it is a moral duty and religious obligation for software engineers to take responsibility for their own action. The Qur'an emphasizes on this:

لَهَا مَا كَسَبَتْ وَعَلَيْهَا مَا اكْتَسَبَتْ.[5]

"On no soul doth Allah Place a burden greater than it can bear. It gets every good that it earns, and it suffers every ill that it earns."

Protection of the environment should be considered a religious obligation. Allah s.w.t. entrusted man to manage, develop and protect the universe from the voracious among humans. Ultimately our *Rizq* depends on the well being of the environment. Therefore, software engineers should disclose to the authorities of any potential danger resulting from computer related activities to the environment. The Qur'an reads:

اللهُ الَّذِي خَلَقَ السَّمَوَاتِ وَالأَرْضَ وَأَنزَلَ مِنَ السَّمَاء مَاء فَأَخْرَجَ بِهِ مِنَ الثَّمَرَاتِ رِزْقًا لَّكُمْ وَسَخَّرَ لَكُمُ الْفُلْكَ لِتَجْرِيَ فِي الْبَحْرِ بِأَمْرِهِ وَسَخَّرَ لَكُمُ الأَنْهَارَ وَسَخَّرَ لَكُمُ الشَّمْسَ وَالْقَمَرَ دَآئِبَيْنِ وَسَخَّرَ لَكُمُ اللَّيْلَ وَالنَّهَارَ، وَءاتَاكُم مِّن كُلِّ مَا سَأَلْتُمُوهُ وَإِن تَعُدُّواْ نِعْمَتَ اللهِ لاَ تُحْصُوهَا إِنَّ الإِنسَانَ لَظَلُومٌ كَفَّارٌ.[6]

"It is Allah Who hath created the heavens and the earth and sendeth down rain from the skies, and with it bringeth out fruits wherewith to feed you; it is He Who hath made the ships subject to you, that they may sail through the sea by His command; and the rivers (also) hath He made subject to you. And He hath made subject to you the sun and the moon, both diligently pursuing their courses; and the night and the day hath he (also) made subject to you. And He giveth you of all that ye ask for. But if ye count the favours of Allah, never will ye be able to number them. Verily, man is given up to injustice and ingratitude."

Software engineers are expected to provide services in the areas they have competence; this requires them to be honest about their common humanly limitations related to their level of knowledge and expertise.

Software engineers should accept no outside work which could be disadvantageous or detrimental to their original duty, this is to avoid conflict of interest and occupational white collar crimes. The Prophet said:

"من غشنا فليس منا" In another hadith the Prophet reminds: " ولا تخن من ائتمنك"

[5]Al-Qur'an, Surah al-Baqarah Verse 286

[6]Al-Qur'an, Surah Ibrahim verses 32

The use of illegal products could be cited as another common unscrupulous practice. Utilizing unethically obtained product will hinder the attitude of striving to achieve quality. In fact one dishonest move could erase several virtuous deeds. The Qur'an notifies:

إِنَّ الْحَسَنَاتِ يُذْهِبْنَ السَّيِّئَات[7]

"And establish regular prayers at the two ends of the day and at the approaches of the night: For those things, that are good remove those that are evil: Be that the word of remembrance to those who remember (their Lord)."

It is a moral obligation for the software engineers to ensure their work is up to the required standards by using only accurate data with adequate formal documentations obtained through moral, religious and lawful means. This will be also possible if sensitivity is maintained and integrity advocated.

وَاتَّبِعُوا أَحْسَنَ مَا أُنزِلَ إِلَيْكُم مِّن رَّبِّكُم[8]

"Follow the Best of what God has taught you within the bounty of his knowledge."

It is also part of the software engineers' obligation to follow the code of ethics of the institution they work for; violation of these professional codes is failure of remaining committed to one's profession. The Qur'anic dictums on these aspects are:

يَا أَيُّهَا النَّبِيُّ إِذَا جَاءكَ الْمُؤْمِنَاتُ يُبَايِعْنَكَ عَلَى أَن لا يُشْرِكْنَ بِاللهِ شَيْئًا وَلا يَسْرِقْنَ وَلا يَزْنِينَ وَلا يَقْتُلْنَ أَوْلادَهُنَّ وَلا يَأْتِينَ بِبُهْتَانٍ يَفْتَرِينَهُ بَيْنَ أَيْدِيهِنَّ وَأَرْجُلِهِنَّ وَلا يَعْصِينَكَ فِي مَعْرُوفٍ فَبَايِعْهُنَّ وَاسْتَغْفِرْ لَهُنَّ اللهَ إِنَّ اللهَ غَفُورٌ رَّحِيمٌ[9]

"O Prophet! When believing women come to thee to take the oath of fealty to thee, that they will not associate in worship any other thing whatever with Allah, that they will not steal, that they will not commit adultery (or fornication), that they will not kill their children, that they will not utter slander, intentionally forging falsehood, and that they will not disobey thee in any just matter,- then do thou receive their fealty, and pray to Allah for the forgiveness (of their sins): for Allah is Oft-Forgiving, Most Merciful."

Another professional obligation is to bestow full appreciation and credit to the work of others in the same profession or professionally related to one's work. The hadith confirms that: من لا يشكر الناس لا يشكر الله

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[7]Al-Qur'an, Surah Hud, verse 114

[8]Al-Qur'an, Surah al-Zumar verse 54

[9]Al-Qur'an, Surah al-Mumtahinah, Verse12

7.3 QUALITY SOFTWARE PRODUCTS

Quality product is an issue well rooted in the shari'ah, in fact, quality is considered as a process responsible for bringing high level of performance as humans are motivated by the fact of achieving high quality or producing exceptional products. The Qur'an urges the use and production of outstanding products. Allah, the Prophet and the believers will adjudicate the quality of the work (*'amal*) that one performs: the Qur'an reads:

وَقُلِ اعْمَلُواْ فَسَيَرَى اللهُ عَمَلَكُمْ وَرَسُولُهُ وَالْمُؤْمِنُونَ[10]

"And say: "Work (righteousness): Soon will Allah observe your work, and His Messenger, and the Believers"

The Qur'an is also of the view that the bounty of God is abundant but at the same time effort is required to establish quality. In addition, human endeavours are not limited to one aspect of quality instead it involves the process of upgrading itself to reach higher levels.

Quality starts with the continuity of work, where Allah gives the surety that He bestows His bounties on those who seek and strive for it. According to the:[11] "*the bounties of thy Lord We bestow freely on all- These as well as those: The bounties of thy Lord are not closed (to anyone).*" Besides continuity and commitment, in the Qur'anic view of quality, *itqan*, i.e. perfection, *tamkin*, i.e., professionalism, *qarar*, i.e., firmly fixed, are required. Similarly, the Prophet has mandated that; "*Verily Allah has prescribed proficiency and quality in all things*",[12] this illustrates that performing a duty requires the highest of quality.

On the one hand, the Qur'an holds the imperativeness of accuracy in producing quality software products, while in many ways it rejects chance-taking or probability and any tendency of speculative work in producing software engineering products,[13] "*But most of them follow nothing but fancy: truly fancy can be of no avail against truth*".

The question is what actually constitutes quality product in Islamic value system? A quick response to this trepidation would be that all products that are approved by the shari'ah, that

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[10]Al-Qur'an, Surah, al-Taubah verse 105

[11] Al-Qur'an, Surah al-Isra'a verse 20, كُلاًّ نُّمِدُّ هَؤُلاء وَهَؤُلاء مِنْ عَطَاء رَبِّكَ وَمَا كَانَ عَطَاء رَبِّكَ مَحْظُورًا

[12] Abu Yaala Shaddad bin Aws said that the messenger of Allah said:

"Verily Allah has prescribed proficiency in all things. Thus, if you kill, kill well; and if you slaughter, slaughter well. Let each one of you sharpen his blade and let him spare suffering to the animal he slaughters." Related Muslim.

[13]Al-Qur'an, Surah Yunus, verse 35, إِنَّ الظَّنَّ لاَ يُغْنِي مِنَ الْحَقِّ شَيْئًا

brings benefit (*manfa'ah*) and prevents hardship (*madharah*) are considered and consented as a quality product in Islam.

Competition is another factor in high quality products. The Qur'an encourages a health competition to produce good products and services. "Strive together as an organization towards that is good."[14]

More to the point, without goal setting quality is unattainable; therefore the Qur'an denounces aimlessness (*abath*). Another aspect of quality production is the concept of *ta'awun* in the Qur'an. In producing quality services and products, cooperative environment becomes a necessity, the Qur'an talks of the concept of mutual collaboration and uniting efforts in the form of synergism.

وَتَعَاوَنُوا عَلَى الْبرِّ وَالتَّقْوَى وَلاَ تَعَاوَنُوا عَلَى الإِثْمِ وَالْعُدْوَان[15]

"Help ye one another in righteousness and piety, but help ye not one another in sin and rancour"

Another factor is the ability to work independently, which determines the whole idea of strong productivity. The Qur'an reads:

لِمَن شَاء مِنكُمْ أن يَتَقَدَّمَ أوْ يَتَأخَّرَ كُلُّ نَفْسٍ بِمَا كَسَبَتْ رَهِينَة.[16]

"To any of you that choose to press forward or to follow behind; every soul will be (held) in pledge for its deeds."

In the Qur'an there are several elements which determine the level of quality for work or product. These are: good management, structural setup, effective leadership and quality workers.

Good management is the art of conducting and directing. It characterises the process of leading a team or an organization through the deployment of financial, intellectual and material resourses. As a matter of fact, civilizations prosper through good management. The Qur'an makes reference to the Egyptian civilization which was saved by Prophet Yusuf after he was entrusted to manage the corrupted department of finance.

Prophet Yusuf was trustworthy and knowledgeable so he was made the Minister of Finance. The Qur'an reads:

قَالَ اجْعَلْنِي عَلَى خَزَآئِنِ الأَرْضِ إِنِّي حَفِيظٌ عَلِيمٌ.[17]

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[14]Al-Qur'an, Surah al-Baqarah, verse 148.

[15]Al-Qur'an, Surah al-Ma'idah verse 2

[16]Al-Qur'an, Al-Mudathir, verses 37

"Joseph said: "Set me over the store-houses of the land (finance ministry): I will indeed guard them, as one that knows (their importance)."

Quality of work is also derived by structural set up. It refers to the process of constructing or structuring an organization using human knowledge and power. This process aims at the unification of the employees within a company and obedience to the group leader.

Here the Qur'anic approach on the issue of organizational structure is to make sure that the staff remains as one block, unity of leadership and consensus in decision making.

وَلاَ تَنَازَعُواْ فَتَفْشَلُواْ وَتَذْهَبَ رِيحُكُمْ [18]

"And fall into no disputes, lest ye lose heart and your power depart; and be patient and persevering: For Allah is with those who patiently persevere."

But without an effective leader, the structure and system will collapse. Effective leadership involves an element of vision, as vision provides direction to influence process; to move successfully towards a goal; leaders therefore have to build a vision of the future for motivation and decision making. The Qur'an emphasizes on decision making:

فَإِذَا عَزَمْتَ فَتَوَكَّلْ عَلَى اللهِ إِنَّ اللهَ يُحِبُّ الْمُتَوَكِّلِينَ.19

"Then, when thou hast Taken a decision put thy trust in Allah. For Allah loves those who put their trust (in Him)."

7.4. PROJECT MANAGEMENT

Another theme of the course is Software Project Management (SPM). The concept of management in the Qur'an requires planning, change, knowledge and motivation. Muslim professionals have to therefore accept and promote changes in projects. The Qur'an argues that changes in attitude and outlook are personal initiatives:

إِنَّ اللهَ لاَ يُغَيِّرُ مَا بِقَوْمٍ حَتَّى يُغَيِّرُواْ مَا بِأَنْفُسِهِمْ وَإِذَا أَرَادَ اللهُ بِقَوْمٍ سُوءًا فَلاَ مَرَدَّ لَهُ وَمَا لَهُم مِّن دُونِهِ مِن وَالٍ[20]

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[17]Al-Qur'an, Surah Yusuf, verse 55

[18]Al-Qur'an, Surah al-Anfal, verse 46

[19]Al-Qur'an, Surah Ala 'Imran, verse 159

[20]Al-Qur'an, Surah ar-Ra'ad, verse11

"Never will Allah change the condition of a people until they change it themselves (with their own souls)."

Software project management also entails the knowledge of management, critical orientation, and motivation. Muslims professionals derive their motivation from the Qur'anic promises which reads:

وَسَارِعُواْ إِلَى مَغْفِرَةٍ مِّن رَّبِّكُمْ وَجَنَّةٍ عَرْضُهَا السَّمَوَاتُ وَالأَرْضُ أُعِدَّتْ لِلْمُتَّقِينَ[21]

"Be quick in the race for forgiveness from your Lord, and for a Garden whose width is that (of the whole) of the heavens and of the earth, prepared for the righteous."

Again, we read in the Qur'an:

فَاسْتَبِقُواْ الْخَيْرَاتِ أَيْنَ مَا تَكُونُواْ يَأْتِ بِكُمُ اللهُ جَمِيعًا إِنَّ اللهَ عَلَى كُلِّ شَىْءٍ قَدِير[22]

"Then strive together (as in a race) Towards all that is good. Wheresoever ye are, Allah will bring you Together. For Allah Hath power over all things."

Another verse in the Qur'an repeats:

سَابِقُوا إِلَى مَغْفِرَةٍ مِّن رَّبِّكُمْ وَجَنَّةٍ عَرْضُهَا كَعَرْضِ السَّمَاء وَالأَرْضِ أُعِدَّتْ لِلَّذِينَ ءامَنُوا بِاللهِ وَرُسُلِهِ ذَلِكَ فَضْلُ اللهِ يُؤْتِيهِ مَن يَشَاء وَاللهُ ذُو الْفَضْلِ الْعَظِيمِ[23]

"Be ye foremost (in seeking) Forgiveness from your Lord, and a Garden (of Bliss), the width whereof is as the width of heaven and earth, prepared for those who believe in Allah and His apostles: that is the Grace of Allah, which He bestows on whom he pleases: and Allah is the Lord of Grace abounding."

7.5 DESIGN

Conceptually speaking, design is considered in the context of engineering, architecture and, in some cases, in applied arts. It generally refers to the process of originating and developing a plan for a new product. Designing requires considerable effort in modeling, research and thought. Intelligent design is related here. As a concept it argues that certain features of the universe and all other living things are best explained by an intelligent design. That is to argue that the universe must have been designed by the best designer. By applying technologies from computer sciences, computer engineers design and maintain software applications.

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[21]Al-Qur'an, Surah Ala Imran, verse 133

[22]Al-Qur'an, Surah al-Baqarah, verse 148

[23]Al-Qur'an, Surah al-Hadid, verse 21

On design, the Qur'an elucidates how Allah designed the universe as the most complex physical entity. He challenges other designers of any flaws in His design.

الَّذِي خَلَقَ سَبْعَ سَمَوَاتٍ طِبَاقًا مَّا تَرَى فِي خَلْقِ الرَّحْمَنِ مِن تَفَاوُتٍ فَارْجِعِ الْبَصَرَ هَلْ تَرَى مِن فُطُور ثُمَّ ارْجِعِ الْبَصَرَ كَرَّتَيْنِ يَنقَلِبْ إِلَيْكَ الْبَصَرُ خَاسِأً وَهُوَ حَسِيرٌ[24]

"He Who created the seven heavens one above another: No want of proportion wilt thou see in the Creation of ((Allah)) Most Gracious. So turn thy vision again: seest thou any flaw? Again turn thy vision a second time: (thy) vision will come back to thee dull and discomfited, in a state worn out"

Embroidery aspect of products is part of design in any computer applications: The stars are part of the complicated design aimed at ornamentation of the heavens. The Qur'an explains: وَلَقَدْ زَيَّنَّا السَّمَاء الدُّنْيَا بِمَصَابِيحَ[25]

And we have, (from of old), adorned the lowest heaven with Lamps."

In another verse:

اللهُ الَّذِي رَفَعَ السَّمَوَاتِ بِغَيْرِ عَمَدٍ تَرَوْنَهَا ثُمَّ اسْتَوَى عَلَى الْعَرْشِ وَسَخَّرَ الشَّمْسَ وَالْقَمَرَ كُلٌّ يَجْرِي لأَجَلٍ مُّسَمًّى[26]

"Allah is He Who raised the heavens without any pillars that ye can see; is firmly established on the throne (of authority); He has subjected the sun and the moon (to his Law)! Each one runs (its course) for a term appointed."

8.0 MANUFACTURING STRATEGY (MME 4151)

Is an undergraduate course taught by the Manufacturing and Materials Engineering Department of IIUM. The intents of this course are to introduce the concept of manufacturing strategy and illustrate its relationship in relation to marketing and other corporate strategies. Students are also be introduced to the basic skills of developing and implementing various manufacturing strategies during the course.

Upon completion of the course, students are expected to apply the concepts of manufacturing strategy in relation to corporate strategy, business strategy and functional strategy. Students are also expected to develop a complete cycle of strategic model by understanding core strategic

[24]Al-Qur'an, Surah al-Mulk, verses 3

[25]Ibid., verses 4

[26]Al-Qur'an, Surah al-Ra'ad, Verse 2

management processes and learn how to make use of manufacturing strategy to cater for different levels of business activities.

The term manufacturing is defined as "the business or industry of producing goods in large quantities in factories"[27] while strategy is "the process of planning or putting a plan into action in a skilful way". Putting the two together, manufacturing strategies is a term describes the skilful process of planning and also executing a plan catering to the industry involved in the mass production of goods.

In the process of infusing Qur'anic values into the course has to instigate improvements within the main themes of manufacturing sector.

8.1 QUR'ANIC VALUES AND MANUFACTURING STRATEGY

In manufacturing strategy effectiveness should have direct influence on procedures and outcomes at the same time implementing strategy function and purpose should correspond, or else effort will be wasted. The Qur'an on this reads:

الَّذِينَ ضَلَّ سَعْيُهُمْ فِي الْحَيَاةِ الدُّنْيَا وَهُمْ يَحْسَبُونَ أَنَّهُمْ يُحْسِنُونَ صُنْعًا[28]

"Those whose efforts have been wasted; while they thought that they were acquiring good by their works"

We also read in the Qur'an:

يَا أَيُّهَا الَّذِينَ ءامَنُوا لِمَ تَقُولُونَ مَا لا تَفْعَلُونَ كَبُرَ مَقْتًا عِندَ اللهِ أن تَقُولُوا مَا لا تَفْعَلُونَ[29]

"O ye who believe! Why say ye that which ye do not? Grievously odious is it in the sight of Allah that ye say that which ye do not."

On the same issue the Qur'an emphasizes on the process of amelioration not incongruity:

وَمَا أُرِيدُ أَنْ أُخَالِفَكُمْ إِلَى مَا أَنْهَاكُمْ عَنْهُ إِنْ أُرِيدُ إِلاَّ الإِصْلاَحَ مَا اسْتَطَعْتُ[30]

"I wish not, in opposition to you, to do that which I forbid you to do. I only desire (your) betterment to the best of my power"

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[27] The Oxford Advanced Learner's Dictionary

[28] Al-Qur'an, Surah al-Kahfi, verse 104

[29] Al-Qur'an, Surah al-Saf, Verses 2

[30] Al-Qur'an, Surah Hud, Verse 88

In task prioritization and concentration of main precedence the Qur'an has stressed the ability to make mission manageable undertaking. This however may not be achievable without coordination:

مَّا جَعَلَ اللهُ لِرَجُلٍ مِّن قَلْبَيْنِ فِي جَوْفِهِ[31]

"Allah has not made for any man two hearts"

Another trait which shapes manufacturing strategy is the idea of comprehension. In the Qur'an we read:

وَلاَ تَقْفُ مَا لَيْسَ لَكَ بِهِ عِلْمٌ[32]

"And pursue not that of which thou hast no knowledge"

The Qur'an also talks about "*Tarasukh or Russukh*" in understanding and the interpretation of the actual professional life:

وَالرَّاسِخُونَ فِي الْعِلْمِ [33]

"And those who are firmly grounded in knowledge"

Another positive strategy which is also used in this area is motivation. We find in the Qur'an a high level of motivational strategies particularly in times where things are not in the desirable array:

وَلاَ تَهِنُوا وَلاَ تَحْزَنُوا وَأَنتُمُ الأَعْلَوْنَ إِن كُنتُم مُّؤْمِنِينَ، إِن يَمْسَسْكُمْ قَرْحٌ فَقَدْ مَسَّ الْقَوْمَ قَرْحٌ مِّثْلُهُ وَتِلْكَ الأَيَّامُ نُدَاوِلُهَا بَيْنَ النَّاسِ[34]

"So lose not heart, nor fall into despair: For ye must gain mastery if ye are true in Faith. If a wound hath touched you, be sure a similar wound hath touched the others. Such days (of varying fortunes) We give to men and men by turns: that Allah may know those that believe, and that He may take to Himself from your ranks Martyr-witnesses (to Truth). And Allah loveth not those that do wrong."

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[31]Al-Qur'an, Surah al-Ahzab, Verse 4

[32]Al-Qur'an, Surah al-Isra' verse 36

[33]Al-Qur'an, Ala Imran, verse 7

[34]Al-Qur'an, Ala Imran, verse 139

8.2 SOME CURRENT AND FUTURE CHALLENGES

Islamization programs are beyond the reach without the collective support of the staff in the Kulliyyah. Since the academics of this Kulliyyah are of assorted academic background, mostly with no formal Islamic education background some tend to feel burdened with these activities.

Although this tendency is on the downturn as there is a tremendous realization, among the staff, that as part of IIUM community islamization plays a major role, but this remains one of the challenges.

To overcome this challenge all are to work with common values in mind in line with Islamic ideals, with a sense of mission. Another challenge lays in the vicinity of inculcating Islamic values at all levels of the Kulliyyah hierarchy. We realized that this requires complex and specialized approach.

Other challenges include; islamization of the staff character as an individual, developing guidelines, manuals and resource materials on islamization. As far as the challenges on islamization of engineering curriculum are concerned modern engineering sciences are mainly based on western ideology with its particular growth and development and accreditation process of engineering curriculum is entirely dependent on western value-institutions.

Creating additional awareness on the role of engineering in human dimensions, its applications and compatibility with ecological notions and word peace is another challenge we face in the islamization process. To construct Islamic culture of engineering studies is also a related challenge for the Kulliyyah.

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