The potential inclusion of value management subject for postgraduate programmes in Malaysia

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Abstract: The development of construction industry is increasing tremendously. To complement with this scenario, Value Management (VM) is needed to achieve the optimum function by reducing or eliminating the unnecessary cost that does not contribute to the product, system or service. As VM has been increasingly applied to enhance and improve value in construction projects, the purpose of this study is to implement VM as a subject for master's students at selected public universities in Malaysia. The research is conducted to investigate the potential inclusion of VM as a subject at master degree programmes in Malaysia. Questionnaire survey was designed and delivered to existing master students to explore the current understanding of VM as well as the possibility of introducing VM as a subject. The results showed that the level of awareness on VM is high, yet the understanding of VM is low. This research presents the result of implementing VM as a subject learning for master’s level programme at selected public universities in Malaysia.

1. Value management education

Value Management (VM) was first introduced in Malaysia in the late 1980s and early 1990s [1],[2],[3] and since then various efforts have been made to spread the knowledge and to promote the implementation VM in Malaysia. According to Abd-Karim [3], VM is presently rapidly applied in construction industries not only in Malaysia but other countries as well. It has also been regarded as an up-and-coming concept [4]. Additionally, the implementation of VM in Malaysia is now made mandatory for all government projects and programmes of RM50 million, guided by the VM implementation guide [5],[6].

VM as a subject or part of subject was taught at undergraduate level at some of the major public universities such as Housing, Building and Planning, University of Science, Malaysia (USM) in 1991, Department of Quantity Surveying, University of Technology, Malaysia (UTM), 1993/19994, University of Malaya (UM), 1996, The Faculty of Architecture, Planning and Surveying, University of Technology (UiTM), 1997, International Islamic University of Malaysia (IIUM), 2000, and Northern University of Malaysia (UUM). However, the inclusion of VM as a subject at postgraduate level particularly master degree is still at infancy stage in our country. The pedagogy of VM in local universities need to be developed first and implemented. This research provides insights on the VM in educational framework focusing on master degree programmes offered by selected public universities in Malaysia.
1.1 The curriculum
In Malaysia, VM has been introduced as a subject for Master of Project Management at UM. The curriculum was designed based on the requirement set by the various VM-related institutions such as the Institute of Value Management Malaysia (IVMM), SAVE International, as well as the UK's Institute of Value Management. Meanwhile, the Hong Kong Polytechnic University has also introduced VM subject that is currently being offered in the Faculty of Construction and Environment [7]. [8] highlighted that the postgraduate VM course should not only cover the traditional value engineering (VE) concepts and techniques, but also to include managerial knowledge. To implement VM in master’s level programme, Leung (2001) suggested that VM course should be divided into two main sections: Traditional VE and Soft VM. The traditional VE aspects cover the basic principles of VE, overall VE procedures and VE techniques while soft VM include VM concept in system theory, major characteristics of VM and role of facilitator. Students are expected to understand this two major area in VE / VM Course. Basic understanding of VE is essential to ensure the understanding of master students towards VM is achieved. After VE concepts are applied, the master students will enable to learn the theory and major characteristics of VM. A comprehensive understanding towards the overall concepts of VM helps the students to implement VM in their nature of the project. Additionally, [8] also proposes ten subjects in the postgraduate VM course which covers VE techniques, understanding of value, decision analysis, systematic project management, soft VM, characteristics of VM, facilitation skills, VM workshop, research methodology and research project.

A proper curriculum contents are needed to ensure VM can be implemented as an educational framework for master students in the universities. In developing curriculum content, [9] pointed out that the learning outcomes should focus on the high value skills, high status knowledge and the real world application. The curriculum contents also follow the goals and objectives of the curriculum, study guide, reference readings and power point slides that are produced or chosen for the learning and teaching activities. According to [10], under the new outcomes based curriculum, the learning outcomes of the VM should cover on the understanding the VM methodology, use VM tools/techniques such as function analysis technique in workshop, organise and manage VM workshops, conduct practical creativity skills and work with a team of stake holder, ensure value for money for projects and, implement VM methodology and techniques in real life. Lecturers will give a great impact to the students. The roles and responsibilities of the lecturers are to know their subject matter but also need the pedagogical contents knowledge on how to deliver the contents to the respective students. According to [11], students learn more and retain the information longer when they are put in active roles than they do passively receiving the information from others. Problem-Based Learning (PBL) should be adopted and combining PBL and group work will facilitate the investigation of more complex problems and promote the development of the student’s interpersonal and communication skills.

2. The research
This research paper aims to propose VM as a subject for postgraduate master degree programme at selected public universities in Malaysia. The objectives of this paper are to identify the potential benefits of implementing VM at master’s level programme in public universities; to assess the awareness of VM among the master students in selected public universities and; to develop VM educational framework for master students in selected universities. This research focuses mainly on the master degree programmes at seven (7) public universities in Malaysia namely, UM, UiTM, UTM, USM, IIUM, UUM and also Tun Hussein Onn University, Malaysia (UTHM). These universities were selected based on the availability of their construction-related master degree programmes which are currently being offered.

2.1 Research methodology
The research was conducted using quantitative methodology whereby questionnaire survey was used as its tool for data collection and all data were analysed using Statistical Package for Social Science (SPSS). The questionnaire survey was designed, piloted and distributed to ensure that the information related to the implementation of VM for construction related master degree programmes in Malaysia. A total of 41 questions were included in the questionnaire. Through
intensive desktop studies, the research found twenty-four (24) construction-related master degree programmes which are currently offered by these universities. These are tabulated in Table 1 below. Additionally, a total estimated population of 700 (N:700) master students were identified through secondary information, mainly from the researchers’ personal network and individual contacts including information requested from the programmes head or coordinators. Using [12], the sample size is determined based on 95% confidence level with 5% margin of error, for which it gives a sample size of 248.

The various head of related departments or programmes were contacted for assistance in distributing the questionnaires to their master students. Alternatively, the students were also contacted through personal networks for the purpose of conducting this research. The research managed to get 248 sets of questionnaires were sent to the master students both through email as well as hand delivery.

| Table 1. Master’s programme offered by the universities |
|-------------------------------------------------------|
| No. | University | Master Programme (by coursework) | Estimated Number of Students (N) |
|-----|------------|----------------------------------|----------------------------------|
| 1   | UiTM       | a) Master of Science in Geographical Information Science  
b) Master of Property Investment  
c) Master of Science in Urban Development and Management  
d) Master of Science Integrated Construction Project Management  
e) Master of Science in Heritage and Conservation Management  
f) Master of Science in Facilities Management | 150 |
| 2   | UM         | a) Master of Architecture  
b) Master of Facilities Management  
c) Master of Real Estate  
d) Master of Science in Project Management | 150 |
| 3   | UIA        | a) Master of Science in Quantity Surveying & International Procurement  
b) Master of Urban Management  
c) Master of Quantity Surveying & International Procurement  
d) Master of Science in Asset and Facilities Management | 100 |
| 4   | UTM        | a) Master of Architecture  
b) Master of Science in Quantity Surveying  
c) Master of Science in Construction Contract Management  
d) Master of Science in Transport Planning | 124 |
| 5   | USM        | a) Master of Science – Building Technology  
b) Master of Science – Housing  
c) Master of Science – Landscape Architect  
d) Master of Science – Planning  
e) Master of Science – Project Management | 110 |
| 6   | UTHM       | a) Master of Science in Construction Technology Management | 36 |
| 7   | UUM        | a) Master of Science (Management) | 30 |

2.1.1 Data collection and analysis

Data collection was conducted for a period of one month. Out of the 248 set of questionnaire distributed, only 90 responses (36%) were received. The reasons of poor respondents may be due to the limitation of time for the research to reach the respondents. Additionally, the respondents may be occupied with their work and studies commitments that lead to the insufficient of time to return the questionnaires. Besides that, the distance of each university that is far from the author’s location also contributed to the poor respondents from the students as the author only can reach the students via email. Table 2 shows the total of the response rate of the survey and Table 4 indicates the detail responses according to the universities.

| Table 2. Response rate of the survey |
|--------------------------------------|
| Response of the Survey | No. of Respondents (Master’s Students) | Percentage (%) |
| Responded Questionnaire | 90 | 36 |
| Non – response | 158 | 64 |
| Total | 248 | 100 |
2.1.2 Findings

(i) Understanding of VM

Figure 1 shows the level of understanding on VM concepts among the master’s students in selected public universities in Malaysia. Out of 90 respondents, 50 respondents have heard about the concepts of VM before. It is also found that most respondents have heard of VM without understanding what VM is all about. Only 3 respondents indicated that they understand about the benefits of VM and 10 respondents were convinced of its worth and practice in daily life. Meanwhile, 7 respondents were convinced of its worth but had little experience in VM while 5 respondents were understand about the concept of VM. They are 15 respondents were categorised as missing items which means that the respondents never heard of VM before. These results indicate that the understanding and awareness of VM has progressed well after being introduced in the late 1980s and early 1990s [1],[2],[3].

(ii) VM as a subject to the master’s programme

From the survey, the research found that majority of them (67%) indicates that their current institutions did not offered VM as a subject for their master’s programme while 33% stated that VM is offered as a subject. The respondents were also asked on the relevance to include VM as a subject at master level. The results show that 67.8% of them agreed that VM is a relevant subject for their master’s programme while 32.2% believed that VM is not a relevant subject.
(iii) **VM educational framework**

Table 4. Feedback of subject learning outcomes by respondents

| Learning Outcomes                                                                 | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree | Mean |
|----------------------------------------------------------------------------------|----------------|-------|---------|----------|-------------------|------|
| 1) Have an understanding of VM methodology                                       | 5              | 38    | 32      | 12       | 3                 | 2.67 |
| 2) Students are able to implement value management in daily life                  | 6              | 38    | 33      | 8        | 5                 | 2.64 |
| 3) Students are able to conduct function analysis (FAST) and relate to their nature of project | 8              | 36    | 25      | 17       | 14                | 2.70 |
| 4) Student are able to apply life cycle costing to their nature of project         | 8              | 30    | 37      | 13       | 2                 | 2.68 |
| 5) Ensure value for money for project by using value management tools             | 12             | 31    | 34      | 9        | 4                 | 2.58 |
| 6) VM helps to improve team working                                              | 11             | 29    | 38      | 9        | 3                 | 2.60 |
| 7) VM helps to provide problem solving skills                                     | 11             | 32    | 33      | 11       | 3                 | 2.59 |
| 8) VM helps to enhance communication skills                                       | 9              | 30    | 38      | 9        | 4                 | 2.66 |
| 9) VM helps to make the project efficient and effective                           | 15             | 32    | 30      | 10       | 3                 | 2.49 |
| 10) VM helps to enrich the leadership skills                                      | 9              | 29    | 35      | 14       | 3                 | 2.70 |
| 11) Student are able to exercise practical creativity skills to work with a team of stakeholders | 10             | 33    | 35      | 8        | 4                 | 2.56 |

Table 4 above shows the feedback of VM learning outcomes by the respondents. Based on the tabulation above, 15 out of 90 respondents were convinced that VM helps to make project efficient and effective. It leads to the highest number of the respondents who strongly agreed with this statement and only 3 respondents who strongly disagreed. Meanwhile, there is only 5 respondents who strongly agreed that by learning VM, they will understand VM methodology. It contributes to the lowest number of respondents. 14 respondents were strongly disagreed that through VM learning outcomes, students are able to conduct FAST and can relate to their nature of project. This contributed to the highest number of respondents. However, most of the respondents strongly believed that VM will give benefits and added values to them. Besides that, most of the respondents preferred to be “neutral” at almost all the learning outcomes statements. The main cause of this problem is that respondents are not familiar with the concept of VM even though some of the respondents had heard about VM. Additionally, some of them are not aware and not exposed with the actual concept of VM. These findings conform to suggestions by [9] which identified the various elements of VM or VE concepts which will lead to the better understanding and implementation of VM.
Table 5. Feedback of curriculum contents by respondents

| Curriculum Contents                                      | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree | Mean |
|----------------------------------------------------------|----------------|-------|---------|----------|-------------------|------|
| 1) Describe the terminologies of VM                      | 5              | 28    | 45      | 8        | 4                 | 2.76 |
| 2) Describe the components of VM                         | 6              | 33    | 40      | 7        | 4                 | 2.67 |
| 3) Describe the advantages and benefits of value         | 10             | 33    | 37      | 6        | 4                 | 2.57 |
| management                                              |                |       |         |          |                   |      |
| 4) Describe the principles of VM                         | 12             | 26    | 39      | 9        | 4                 | 2.63 |
| 5) Describe the implementation of VM to the nature of    | 7              | 30    | 43      | 6        | 4                 | 2.67 |
| project                                                  |                |       |         |          |                   |      |

Table 5 above shows the feedback of VM curriculum contents by the respondents. The main purpose of the questionnaires is to get the feedback from the respondents on the curriculum contents of VM as a subject at master’s level programme. The research found that, majority of the respondents opted to be “neutral” for almost all the statement provided at the table. Only 12 respondents were strongly agreed that they could describe the principles of VM while 5 respondents strongly agreed that curriculum contents will describe the terminologies of VM. However, 4 respondents from each component of curriculum contents were strongly disagreed on the curriculum contents mentioned on the tabulation above. This indicates that majority of the respondents are still lacking in terms of exposure and understanding about the overall concept and benefits of VM in education and it curriculum contents. Additionally, the respondents were unable to foresee the advantages of VM itself towards their nature of the project. To overcome this problem, workshop, seminar and conferences should be given to the master’s student to enhance and improve the knowledge on the level of awareness towards VM and the development of VM in education. Nonetheless, in developing the curriculum, the university must look into the information and suggestion by [9] as well as by [11] on the PBL to ensure the effectiveness of the syllabus.

3. Conclusion
As VM has been rapidly applied to enhance the values in most of the construction projects, it is timely that VM should be being offered as a subject, particularly at the master degree level. To begin with, VM as a subject can be introduced at the major public universities and later followed by other public and private universities. Designing the curriculum requires careful consideration and planning to ensure that the students are equipped with not only the technical knowledge which is considered as hard VM but also the non-technical VM-related knowledge or soft VM. Additionally, under the new outcome-based of curriculum contents, the learning outcomes, pedagogy of teaching VM, assessment methods to assess the effectiveness and efficiency of VM and teaching and learning process of VM must be formulated systematically. Based on the research, most of the respondents agreed that VM is beneficial for them and provide good platform for them to implement VM in their nature of project. They also agreed that VM helps to provide problem solving skills and make the project efficient and effective, and also helps to improve team working and enrich the leadership skills. However, the understanding of VM still requires attention for which VM knowledge should be intensively promoted. It may take some time for the development of VM in educational framework to embed in the university sector especially at the postgraduate level but the first step has to start.
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