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ScienceDirect

Procedia - Social and Behavioral Sciences 202 (2015) 89 – 97

Procedia
Social and Behavioral Sciences

ASEAN-Turkey ASLI (Annual Serial Landmark International) Conference on Quality of Life 2014, ABRA International Conference on Quality of Life, AQoL2014, 26-28 December 2014, Istanbul, Turkey

Perceived Project Sustainability Performance Indicators (PPSPI) for Value Planning

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Abstract

Sustainability is a global aim to balance the rapid growth of human needs and rapid deterioration of resources. Towards that, this conceptual paper explores existing major government policies in Malaysia to conceive PPSPI. These indicators shall serve as the basis for evaluating the impact of any development project on sustainability aspects during the early planning stage. Besides that, PPSPI complements the existing Malaysian Quality of Life Index in addressing sustainability issues during the stage. Adopting PPSPI comprehensively during Value Planning will naturally induce sustainable development aimed to improve peoples' quality of life in the long-term.

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Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers) and cE-Bs (Centre for Environment-Behaviour Studies, Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia).

Keywords: Value management; sustainability indicators; government policies

1. Introduction

World population is growing over the years. According to the Population Reference Bureau (<http://www.prb.org>) in World Population Data Sheet 2014, the world population in mid of 2014 is recorded as 7.238 billion. It is projected to be 8.444 billion in mid-2030 and 9.683 billion in mid-2050. The numbers indicate that the world population is expected to increase in the rate of almost 68 million people a year. In Malaysia, the official recorded population of the country in 2013 is 29.95mil. For the past five years, the annual growth rate was between 1.4%-1.8% (Department of Statistics Malaysia, 2014). The increase of the human population will increase human needs

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collectively. In this modern world, these needs can only be fulfilled through progressive economy, decent community as well as a safe environment. Everyone has a dream of having a better quality of life based on individual interpretation. The government bears the responsibility to rationalize these dreams and develop an environment that best suits for everyone in the country. One of the problems the government is facing is that each development shall require resources that are definite in nature, while others are too slow to regenerate. The progressive economy results from the rapid development. Economic growth is almost impossible without the development. Hence, it can be deduced that fulfilling human needs and progressive development are inseparable agendas.

Sustainable development is a concept that addresses this development versus human and environmental needs issue. The famous definition of sustainable development is meeting present needs without jeopardising the ability of future generations to meet theirs (The Brundtland Report, 1987). The issue of rapid deterioration of resources to fulfil the rapid growth of human needs has become an official world agenda since the late 1980s. In 2010, Malaysia introduced the New Economic Model (NEM) that addresses the sustainable development needs. The gist of this model is, the government believes that to improving the People's quality of life through three inter-related aim of high-income, sustainability and inclusiveness (NEAC Malaysia, 2010). 'The high-income' target indicates that the country should achieve income per capita between USD15,000 to USD20,000 by the year 2020. 'Sustainability' focuses on meeting present needs without compromising the ability of future generation to meet theirs. Lastly, 'inclusiveness' aimed at the wealth of the country should be shared by all Malaysian regardless their differences. The NEM is in tandem with the World Economic Forum's Sustainability Adjusted Global Competitiveness Index (SAGCI), which introduced in 2012. The SAGCI is the latest measurement instrument replacing Global Competitiveness Index (GCI) in defining the economic categorisation of countries (World Economic Forum, 2012). According to the Forum, a high-income nation with the income per capita of more than USD17,000 should focus on innovation in generating their wealth rather than enhancing the basic requirements. Resources should be utilised to its best potential to produce the greatest return to the country.

The 10th Malaysia Plan (2011-2015) introduced macro-level initiatives to encapsulate all efforts towards the realisation of high-income status underpinned by the philosophy of NEM. This plan inter-alia focus on the value for money in public spending and Value Management (VM) is the management tool to achieve that (EPU Malaysia, 2010). Government's Circular no 3/2009 was issued to make it a mandatory for government-funded programmes and projects that worth RM50 million and above to undergo for a VM study (EPU Malaysia, 2009). As a tool to support NEM, VM should recognise sustainability performance as the principal value driver for any government programmes and projects. Although the relationship between sustainable development, NEM and VM had been established, the sustainable development themes that should become the value drivers within individual VM study still unclear.

Due to the gap, this conceptual paper to identify a universal set of sustainable performance indicators that suitable for every VM study based on major government policies. As value drivers influence the flow and direction of any VM study (Zainul Abidin & Pasquire, 2007), these sustainability indicators should be also considered as the VM value drivers. Hence, the impact of the project proposal towards sustainable development should become one of the VM success indicators. If this proposal materialises, the issue of misconception of VM as a cost cutting exercise becomes irrelevant. At the end of this paper, a set of Perceived Project Sustainability Performance Indicators (PPSPI) will be presented, which can be used as an evaluation instrument to evaluate project proposal contribution towards sustainable development. Due to the strength of VM as a platform to address sustainability issues during early project planning stage (Zainul Abidin & Pasquire, 2005), PPSPI helps to assess the project proposal.

2. Value Management (VM) in Malaysia

VM was introduced officially for government-funded programmes and projects in Malaysia through EPU Circular No 3/2009 dated 29 December 2009. Through this circular, every government-funded programmes and projects worth RM50 million and above are subjected to VM study, which aimed to achieve value for money in public spending. There were issues concerned by the Committee of National Development Planning regarding project planning and delivery methodology in Malaysia that require immediate attention. The issues include (EPU Malaysia, 2009b):

- The sharing concept is not well practised during the scope determination process.
- The amount of financial budget allocated for a particular project does not comprehensive.
- Lack of inter-ministerial integration during the project planning (working in silos).

The role of VM in Malaysia is to identify, provide alternatives and eliminate least contributing project components (and costs) without jeopardising the predetermined objectives and functions. To serve the role, VM should involve a multi-disciplinary team and conduct in a systematic and innovative environment. The main activity during the study is to explore the functional requirement of the proposed project so that the value of the project can be enhanced, and cost associated can be optimised.

In 2011, EPU introduced EPU VM Guide to serve as the principle guidance for VM implementation in government-funded programmes and projects in Malaysia. Through this Guide, VM in Malaysia is divided into three study types. Value Planning or Value Assessment is the first study; Value Engineering is the second, and the Value Review or Value Analysis is the last. In short, Table 1 explains the three types of VM study in great detail. This guide suggests that all VM studies in Malaysia should be conducted using laboratory (lab) approach (EPU Malaysia, 2011). PEMANDU Malaysia defined lab within this context as: "*A lab is an intense forum in which relevant participants (from private sector corporations and public sector agencies) are brought together in a group with the objective of finding radical yet practical and specific solutions to problems. The lab creates an environment for participants to experiment, rigorously debate and challenge the status quo. During the course of a lab, participants conduct brainstorming sessions to generate ideas, conduct analysis to determine the feasibility of those ideas and test and refine them with multiple stakeholders*" (ETP Handbook, 2011, Page 77). Conceptually, the VM Lab in Malaysia shares the same philosophy with the internationally recognised VM Workshop (SAVE International, 2007).

Although VM is considered infant in Malaysia (Jaapar et. al., 2012) especially for government-funded programmes and projects, its practice is aligned with the established international standard of VM. Some pieces of evidence are:

- All VM studies in Malaysia adopted the SAVE International's VM Job Plan (EPU Malaysia, 2011; Jaapar et. al, 2012; Jaapar et. al., 2012b).
- It involves multi-disciplinary team synergy during the VM Lab (EPU Malaysia, 2011). This process aligned with the philosophy of knowledge development and innovation, as promoted by the Australian VM Standard (Standards Australia, 2007) and the SAVE International (Save International, 2007).
- It focuses on cost optimisation rather than cost saving (EPU Malaysia, 2011), which is the core value of VM found in most of the VM literature (For instance, Shen & Yu, 2012; Parera et. al. 2011 and Bowen et. al., 2010)

Table 1. Description of the 3 Types of VM study in Malaysia.

No	Value Management Study	Description	Who should conduct the study?
1	Value Planning	Value Planning is a strategic planning conducted before the absolute approval of a particular programme/project for execution. Hence, this study conducted at the very early project planning stage. The main function of Value Planning is to identify programmes/projects that can contribute to the ministerial objectives achievement with the optimum cost through the enhancement of project delivery methodology. At the end of the study, programme functional specifications and objectives should be finalised. In Malaysia, the team synergy for Value Planning is known as Value Assessment Lab.	Lead by the Economic Planning Unit of Prime Minister Department
2	Value Engineering	Value Engineering conducted after the programme/project approval at the government's central agency level at any time during the design stage. The main function of Value Engineering is to ensure that the programme/project design fulfil the predetermined functional specifications and objectives (the one that finalised during the Value Planning). At the end of the study, the most efficient design parameters should be finalised. In Malaysia, the team synergy for Value Engineering is known as Value Engineering Lab.	Lead by Technical Department. (For instance, the Public Works Department will lead the study for most of the building projects).
3	Value Review	Value Review conducted after the completion of the	Lead by the National

programmes/projects. For construction projects, this study should be conducted after the maturity period of the facility operational. The main function of this study is to identify the gaps between actual performance and its planning statements. The insights conceived from this study contribute to the planning purposes of future projects as input. In Malaysia, the team synergy for Value Review is known as Value Review Lab.

Accounts Department

Source: EPU Malaysia, 2011

Through literature, it can be concluded that VM practice in Malaysia is not much different from VM practice globally. Conceptually, VM in Malaysia can adopt any improvisation from VM system globally. This improvisation includes the integration of sustainability concept within VM process for construction projects. The integration should happen during the earliest project planning stage (Shen & Yu, 2012, Al-Saleh & Taleb, 2010, Zainul Abidin and Pasquire, 2007, Zainul Abidin and Pasquire, 2005). The integration at this stage will ensure the project needs to include sustainability considerations. Consequently, sustainability needs can be embedded into the project need statement as a part of project scope. Besides that, it avoids repetitive design works to cater sustainability features into the conventional design. Since Value Planning is the first VM study series conducted at the very early stage of project planning, it is the best platform to integrate sustainability concept into project planning.

Integrating sustainability concept into Value Planning requires for the establishment of sustainability themes as the value drivers during the Lab. As sustainable construction stemmed from sustainable development (Zainul Abidin & Pasquire, 2005), part of these sustainability themes should address sustainable construction issues. However, over focusing on sustainable construction might over-shadow the sustainability issues at the macro level as well as during operational stage. The Tenth Malaysia Plan had introduced the 'Whole-of-Government' approach (Please refer to the Plan at Page 314 for further information). To support this approach, these sustainability themes for Value Planning should consider relevant government policies so that they are capable to bridge the micro considerations of sustainable construction and the macro agenda of the sustainable development. Hence, these sustainability themes for Value Planning should cover meso level sustainability agenda. For reference, the dictionary definition for the word 'meso' is middle or intermediate.

As integrating sustainability consideration during various VM studies bear different roles (Zainul Abidin & Pasquire, 2007), it is important to identify the role of these sustainability themes within the Value Planning context. During the Pre-Lab Stage of Value Planning, the project proponent should clarify the specific sustainability issues that the proposed project tries to address. The EPU Circular No 1/2009 demanded project proponent to conduct several analyses during the project proposal development stage. These analyses should at the end, cover the Triple Bottom Line (TBL) reporting of Sustainable Development that encompasses the Economic, Social and Environmental issues (EPU Malaysia, 2009). According to the circular, project proponent, bears the responsibility to ensure this project proposal (project brief) ready before the project application stage. Hence, during the Pre-Lab stage the project proponent with the assistance of the EPU facilitation team should be able to align the project parameters (outcomes, objectives and functional specifications) with the Value Planning sustainability themes.

During the Value Planning Lab session, these sustainability themes should be transmitted to the lab team as the value drivers. These themes should become the project's higher order function within project's value tree, thus the assessment criteria for the Evaluation Phase. Traditionally, the evaluation phase focuses on evaluating ideas based on its associated cost, where the cheapest solution that fulfils the same function given highest consideration for Development Phase. If suitable sustainability themes intervene at this point, they might help to balance between sustainable design and its related costs. As a result, the cheapest solution for the sustainability needs can be achieved. During the Development Phase, sustainability themes help the lab team to embed sustainability features into the project proposal in order to conceive a sustainable concept design. During the Presentation Phase, sustainability themes help in highlighting the project's sustainability features as the product of the Value Assessment Lab. The advantage of having a standard PPSPI for Value Planning in Malaysia is it helps to define the value-added elements resulted from the lab activities in a standard and understandable manner. During the Post-Lab stage,

sustainability themes help the project proponent to formulate strategies to maintain sustainability initiatives in the project implementation plan.

3. Sustainability themes in Malaysia

Sustainable development is a philosophical concept in nature. Many studies in this area (Joseph, 2013; Goyal et al., 2013; Delai and Takahashi, 2011) share the same definition of sustainable development with the one provided by The Brundtland's Report. Although most researchers share the same philosophical stance on the sustainable development concept, agenda towards it varies according to the local context. The United Nation recommended that every local government to introduce its own Local Agenda 21 (LA21). LA21 is a strategic planning at the community level to encapsulate all efforts towards sustainable development (Stakeholders Forum For a Sustainable Future, 2012). This scenario indicates that Malaysia needs its own sustainable agenda based on local sustainability issues. In the context of the Malaysian built environment, many studies related to sustainable development zoom into sustainable construction or Green Building aspects (Yiing et al., 2013; Abd. Hamid and Mohamad Kamar, 2012). While others (Joseph, 2013; Marzukhi et al. 2012), discussed sustainable development from the local authority's context. However, none of them discussed the concept from project planning point of view especially the one that is utilising VM protocol as the platform. Within construction project planning, sustainability issues should cover both construction and operational aspects. The impacts of the project to the people and surroundings during its operational bear the same weightage as the impact during the construction process. Although there are multiple points of view regarding sustainability due to the broadness of the concept, a similar pattern can be detected. Most of the studies start their enquiries from exploring the Triple Bottom Line (TBL) themes. TBL recognises sustainability as the formation of the three interrelated pillars of economic, social and environmental sustainability (Kucukvar et al., 2014).

Economic sustainability deals with various kinds of capital including man-made, natural, human and social that should be sustained in the process of achieving economic growth. This would include optimum resource management through efficient utilisation of renewable natural resources and energy or non-excessive usage of the non-renewable resources so that future generations can create their own wealth (Moldan et al., 2012). Social sustainability refers to the harmonious evolution of civil society towards compatible cohabitation of culturally and socially diverse groups that includes themes of equity, poverty reduction, livelihood, identity, sense of place, participation and access, social capital, social cohesion, the benefits of social networks, happiness and quality of life (Yung and Chan, 2012). Based on the OECD Environmental Strategy for the First Decade of the 21st Century, Moldan et al. (2012) refer environmental sustainability as the initiatives to maintain natural system through efficient utilisation of renewable and non-renewable resources, reducing hazardous pollutions and avoiding damaging actions of environmental eco-system. Based on the understanding of the TBL concept through literatures, this paper explores issues, initiatives and aspirations related to sustainable development through major government policies in Malaysia that can be used as the meso-level sustainability themes for value planning.

In general, sustainability state during the project planning can be achieved through a careful consideration so that the project cost can be optimised, negative impact to the surrounding community can be minimised and natural ecology is not excessively damaged. Such considerations should balance the associated economic, social and environmental needs of the project. Within the economic needs, project planning should consider the ability of the proposed project to contribute towards healthy economic growth of the nation. This should include the themes of (1) the Gross Domestic Product (GDP) growth, (2) reducing country's deficit and (3) improve Gross National Income (GNI) (EPU, 2010). Within social needs, project planning should consider the impact of the project towards preservation and enhancement unity in diversity of the people. In Malaysia, the National Principles had successfully unites the multi-ethnics and multi-religious society to live harmoniously as an entity. For reference, The National Principles as per officially introduced in 1970 are (1) Belief in God, (2) Loyalty to King and Country, (3) Supremacy of the Constitution, (4) Rules of Law and (5) Courtesy and Morality (Department of National Unity and Integration, Malaysia, 2014). To enhance the National Principles, the 1 Malaysia policy was introduced in 2009 (PMD Malaysia, 2009). The policy seeks to maintain and enhance relations of all Malaysians, regardless of racial, religious or cultural background. It upholds eight core values namely (1) culture of excellence, (2) perseverance, (3) humility, (4) acceptance, (5) loyalty, (6) meritocracy, (7) education and (8) integrity. Within environmental needs,

project planning should consider the impact of the project construction activities and the operational of the facility in the long-term to the ecological system. This would include the themes of (1) land and coastal exploration, (2) climate change, (3) Green House Gases emission, (4) efficient management and utilization of natural endowments (including fauna and flora bio-diversity, oil and gas as well as water) (EPU, 2010).

As sustainability is all about meeting human needs both in the present and the future, it is good to look into the fundamental issue. It is claimed that development is inevitable to improve people's quality of life. Construction projects complement development as they provide infrastructure and space for human activities. The question is, what does 'quality of life' means? In the context of Malaysia, the government had identified seven key areas to improve the people's quality of life. These areas are (1) cost of living, (2) safety, (3) integrity, (4) education, (5) living standard, (6) rural development and (7) urban public transport efficiency. These seven areas serve the Government Transformation Programme (GTP) and recognised as the National Key Result Areas (NKRA) (PMD Malaysia, 2013). In 1999, The EPU had introduced Malaysian Quality of Life Index (MQLI) intended to be a comprehensive measures for the general well being of the People from a broader perspective (EPU Malaysia, 2012). The MQLI Report 2011 include themes of (1) income and distribution, (2) working conditions, (3) transport and communications, (4) health, (5) education, (6) housing, (7) environment, (8) family life, (9) social participation, (10) public safety and (11) culture and leisure in its measurement to determine the level of quality of life in Malaysian. Although MQLI can be considered as a comprehensive measures, it cannot be used directly for project planning. The main reason is that the MQLI requires real data and not the projection figure. Besides that, MQLI consists of 45 indicators that will be very time consuming if it is to be used as the PPSPI during the Value Planning. Furthermore, some of the indicators are not relevant for construction projects. Nonetheless, it provides good insights in inducing meso-level sustainability themes and its sub-themes.

After analysing the major government policies such as The Tenth Malaysia Plan, GTP, ETP, NEM and 1 Malaysia Concept, it can be concluded that:

- During Value Planning, Sustainability themes adopted must reflect the TBL concept. The economic sustainability should consider the ability of the proposed project to contribute towards healthy economic growth of the nation. The social sustainability should consider the impact of the project towards preservation and enhancement unity in diversity of the people. The environmental sustainability should consider the impact of the project construction activities and the operational of the facility in long-term towards eco-system.
- To explore the themes further, there are twenty-five sub-themes that can be used as a basis in indicators development. These sub-themes are: (1) Development cost optimisation, (2) Operational cost optimisation, (3) Workers productivity, (4) Project's direct beneficiary, (5) People's health, (6) People's safety, (7) Practicing religious teaching, (8) Heritage & Cultural conservation, (9) Air quality, (10) Water Quality, (11) Life Long Learning, (12) Up-skilling/Reskilling, (13) Transportation, (14) Residential, (15) Job Opportunities, (16) Local economic activities, (17) Social participation& inter-racial cohesion, (18) Natural landscape, (19) Natural endowments, (20) Local material utilisation, (21) Energy efficiency, (22) Renewable energy, (23) Hazardous materials, (24) Renewable materials and (25) Reducing material wastages.

4. Perceived Project Sustainability Performance Indicators (PPSPI) for value planning

Since Value Planning is conducted during early project planning stage, collective expertise and experience of the multi-disciplinary experts are very crucial in forecasting the project performance. After all, VM is hailed as an intensive knowledge development process that nurtures innovation in achieving the desired project outcomes and objectives (Fong et al., 2007). Adopting Delphi Technique as in the research strategy (Sobaih et al., 2012; Vakani, and Sheerani, 2012; Stylianides and Pashiardis, 2007), anonymity answers gathered from experts can be deemed as legitimate consensus in forecasting the project performance. Future needs and consequences of the proposal conceived through the Value Assessment Laboratory can be projected and evaluated. Project proposal that conceived through the Lab should at tandem with its value drivers. Since meso-level sustainability themes are treated as the value drivers in this scenario, the expected outcomes of the proposal towards sustainable development can be measured. In this case, Perceived Project Sustainability Performance Indicators (PPSPI) that covers the meso sustainability themes can be used. Table 2 presents the PPSPI that conceived through a thorough analysis of current major government policies in Malaysia.

Table 2. Perceived Project Sustainability Performance Indicators (PPSPI).

	Indicators	Project Sustainability Themes		
		ES	SS	ENS
1	The reduce in overall development cost	/		
2	The reduce in the overall operational cost (including maintenance cost) of the facility	/		
3	The increase in workers' productivity	/	/	
4	The increase in the overall people that will benefit from this facility		/	
5	The increase in the level of users', workers' and neighbours' health		/	
6	The increase in the level of users', workers' and neighbours' safety		/	
7	The increase in the ability of the facility to facilitate the community to practice religious teachings harmoniously		/	
8	The increase in the ability of the facility to help in maintaining the cultural heritage and leisure of the community		/	
9	The increase in the level of surrounding air quality upon the facility operation in the long term		/	/
10	The increase in the level of surrounding water quality upon the facility operation in the long term		/	/
11	The increase of potential life-long learning programmes for the community due to the existence of the project	/	/	
12	The increase of potential up-skilling/reskilling programmes for the community due to the existence of the project	/	/	
13	The potential of improving local transportation network due to the existence of the project	/	/	
14	The increase for new residential area developments	/	/	
15	The increase of job opportunities for the locals	/	/	
16	The increase of potential local (surrounding) economic activities	/	/	
17	The increase of social participation and inter-racial cohesion due to the existence of the project		/	
18	The increase of potential that the project will not lead to massive changes in the natural landscape			/
19	The increase of potential that the project will not lead massive extinction of plants and animals in the surrounding areas			/
20	The increase of potential that the project to utilise local materials	/		/
21	The increase of potential that the project to adopt energy efficiency solutions	/		/
22	The increase of potential that the project to adopt renewable energy sources			/
23	The increase of potential that project will not use hazardous materials		/	/
24	The increase of potential that that the project to utilise rapid renewable materials			/
25	The increase of potential that the project will reduce material wastages	/		/

Note:

Project Sustainability Themes:

ES = The ability of the proposed project to contribute towards healthy economic growth of the nation

SS = The impact of the proposed project towards the preservation and enhancing unity amongst the People

ENS = The impact of the project to the ecological system in the long-term.

Source: Authors

PPSPI helps to evaluate and report the forecasted contribution of the proposed project proposal towards national sustainable development agenda. It should be used during the Development Phase of Value Assessment Lab, and the result should be highlighted during the Presentation Phase. It can highlight the sustainability features within the project proposal to the project stakeholders. Indirectly, PSPPI helps in highlighting the value-add of the newly produced project proposal, which is conceived through the Lab. If every Value Assessment Lab utilises PSPPI, it can be used as a gauge for to evaluate the development concept of every economic sector in Malaysia at a specific periodic interval. Consequently, it helps to identify sectorial gaps during the mid-term review of any Malaysia Plan or the transaction of a Rolling Plan. As MQLI measures the actual performance of the completed development programme towards the People's quality of life, PSPPI plays the role of an early detection mechanism to evaluate the development planning itself. Hence, PSPPI complements MQLI in the long-term to formulate an effective and efficient strategy to improve people's quality of life.

5. Conclusion

There are clear directions on sustainable development agenda for the country as explained by major government policies. MQLI is a comprehensive mechanism to evaluate the level of people's quality of life through time at the macro level. Although The Green Building Index can measure individual project sustainability performance, it is too

micro in nature and not suitable to be adopted during early project planning stages. As sustainability issues should be integrated into project planning at the earliest possible juncture, Value Planning seems as the best platform for the purpose. Due to the absent of a formalised sustainability measurement instrument, the perceived project sustainability performance cannot be highlighted at the end of Value Assessment Lab. To overcome this problem, PPSPI is developed aimed to highlight and report the forecasted project proposal's contribution towards sustainable development. It helps to portray the advantage of having structured VM analysis for government-funded projects. Besides that, PPSPI has the strength to be used as the standard evaluation instrument to evaluate the effectiveness of development programme planning way before the actual data can be collected and analysed. Hence, PPSPI helps to bridge the gap between micro-level project sustainability measurement and macro-level quality of life measurement.

Acknowledgements

The author would like to acknowledge the contribution of Research Management Institute (RMI), Universiti Teknologi MARA (UiTM) and Ministry of Education (MOE) through supporting the research with Fundamental Research Grant Scheme (FRGS).

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