

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the conclusions and main findings of this research endeavour. It also includes recommendations for further research in this area so as to improve the level of EVM knowledge, acceptance and application in the Malaysian construction industry.

6.2 Conclusions

As a conclusion, this study has achieved all the three objectives which were stated earlier.

Objective No. 1: To determine the current level of EVM usage and its perception as a monitoring and controlling method

The response of the questionnaire survey indicated that the understanding of EVM method was already established in the Malaysian construction industry as 23% of the respondents sent their complete feedbacks. However, the survey analysis revealed that the application of EVM method is still in its infancy as 80% of the respondents from public and private sector did not practice the EVM methodology in their working environment. The remaining 20% of the respondents are using EVM method mostly on large scale projects. According to the survey, the current perception of organizations towards the implementation of EVM method is vague.

From the findings, 20% of the respondents rated their awareness about the implementation of EVM as 'difficult' compared with the majority i.e. 80% who remain neutral. No organization rated their perception about EVM implementation as "quite easy" or "very easy". This nil percentage shows the respondents unclear view about the processes of EVM system. Based on the analysis, it is also encouraging that 60% of the respondents from the private sector are interested to adopt EVM method within the next five years. This result shows the respondents future inclination towards the EVM methodology. This status of EVM acceptance in Malaysian construction industry is satisfactorily as compared to the other developed countries like USA where 82% of the project manager accept or strongly accept EVM methodology and this ratio is common in both public and private sectors [51].

Objective No. 2: To investigate barriers and enablers of EVM implementation

The low usage and application of EVM method in the Malaysian construction industry is related to significant barriers that inhibit its implementation. In this regard, the average index rating of seven common barriers (drawn from literature review) range between 1.76 and 4.0, indicating that respondents who understand or have used EVM perceive these problems as "low" to "high". Especially, "lack of EVM knowledge, expertise and experience" and "too many rules and requirements to learn and implement" are considered as the important and high ranking problems. These two high ranking barriers were also surveyed by Kim et al. in 2003. This survey was carried out from the 2500 members of Project Management Institute (UAS) and the former Performance Management Association (PMA). According to them, these EVM problems have been considered as "minor" to "insignificant" respectively. This is due to the fact that majority of the respondents (PMI and PMA members) who have participated in that survey was practicing EVM method in their projects [51]. That's why they do not believe in these two "high" ranking EVM barriers as revealed from the current survey of Malaysian scenario. Furthermore, "lack of EVM knowledge, expertise and experience" and "too many rules and requirements to learn and implement" are also identified as important barriers in the research survey of Bower (2007) and ranked by the respondents as 2nd and 3rd choices respectively [76].

The results of the survey also indicate that the respondents generally agree on EVM enablers in improving project performance measurement. The mean rating ranges between 3.02 and 3.83 which show the respondents agreement as “average” and “high” for EVM enablers. The “high” ranking EVM enablers identified by the respondents are as follows;

- It contributes to achieving project schedule objectives
- It provides early warning of performance problems.
- It allows people to communicate objective progress to stakeholders, and keep the project team focused on achieving progress.

In regards to ascertaining current survey agreement on EVM enablers, the results of the survey conducted by Vertenten et. al (2009) in South African context shows that the participants have mostly “neutral” to “strong” agreement that EVM’s performance indices contributed positively to controlling scope, schedule, cost and managing changes of a project [52].

Objective No. 3: To study potential scope, explore knowledge and opportunities for using EVM method through case studies of real projects

The scope of EVM method, its knowledge and prospects are studied for the Malaysian construction industry through case studies of ongoing and completed projects. These case studies were conducted to validate the effectiveness EVM performance indices, variances and forecasting parameters to evaluate time and cost performance of projects. Some conclusions of this analysis are as follows;

- A better implementation of EVM method is based on systematic procedures as defined by EVM Standards.
- A simple framework of EVM method as demonstrated in the case studies improves the current planning approach and builds a supportive culture for its application.
- The EVM method is applicable to all types of construction projects and supports the contractor and the clients in achieving project success.

6.3 Implications for Project Organizations

The research findings highlighted the importance of EVM method as an integrated time and cost monitoring approach for the Malaysian construction industry. The encouraging results towards the acceptance of EVM method envisage its further application for the project organizations. The survey analysis would help the project planners and practitioners to establish confidence level in order to successfully integrate EVM method in their project monitoring practices. In addition, the ranking of EVM barriers also facilitate the senior management to prevail the key underlying issues that hinder the EVM usage in the current scenario. The EVM System as outlined in this thesis may be adopted by project organizations that do not need to comply with a specific EVM Standard. This may result in improving the effectiveness of their overall project planning process.

6.4 Recommendations

Some recommendations for the purpose of improving the future research on the application of EVM method is listed below;

- i. The sample of questionnaire survey would be increased and may include other categories of contractors as classified by CIDB Malaysia.
- ii. The data for case studies were taken from the completed projects or ongoing construction jobs. However, an effective analysis and assessment of EVM method can only be achieved, if it is taken into consideration from the planning phases of a project.
- iii. It would be advantageous to interview project managers / experts who have used EVM method on their projects.
- iv. The research scope can be extended towards a development of a performance base payment system i.e. payment by Earned Value.
- v. The research scope also provides a basis for further studies in order to measure the risk associated in execution of construction projects through EVM.