

**APPLICATION OF VALUE MANAGEMENT AT
DESIGN STAGE – A CASE STUDY (IDENTIFYING THE
AWARENESS LEVEL)**

ONNY IRIAWAN BIN OTHMAN

UNIVERSITI TEKNOLOGI MALAYSIA

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ONNY IRIAWAN BIN OTHMAN

**A Project report submitted in partial fulfilment of the requirements for the
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DEDICATION

*To my beautiful children, Azureen Sofia, Arif Imran and Aryssa Khadija,
My wife, Ainul Azura Izhar
And the rest of my family & friends for giving me support in completing this thesis*

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In the name of Allah the Most Benevolent and Most Merciful.

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ABSTRACT

The paper investigates the VM awareness in the context of its being a project management tool. It is hypothesized that the VM can contribute to improvement of the construction process. VM has been proven to provide a structured framework, together with other supporting tools and techniques that facilitate effective decision making in achieving **'best value'** for clients. One of the major success factors of VM in achieving better project objectives for clients is through the provision of beneficial input by multi-disciplinary team members being involved in critical decision-making discussions during the early stage of construction projects. Findings reveal that early initial stage are vitally important to; **the design process; contract strategy; performance of time; cost and quality; and contractor health and safety performance.** The aims is to study the effects of VM awareness in particularly how well the methodology addresses issues related resulting from poor coordination and overlooking of critical constructability issues amongst team members in construction projects. It is proposed that through team members' early involvement during design stage, combined with the use of the VM methodology, particularly as a decision-making tool, better optimization of construction cost can be achieved, thus promoting more efficient and effective constructability. The expectation values of VM in this thesis of case study are to reconcile all stakeholders' views and to achieve the best balance between satisfied needs and resources. Integration of these management tools in the process will provide a more **practical and holistic solution** to construction problems, particularly, in term of inadequate financial, technical resources and managerial expertise, and specifically for developing countries.

ABSTRAK

Kertas kerja ini mengkaji kesedaran pengurusan nilai (VM) didalam konteks sebagai alat bantuan pengurusan projek. Secara hipotesis VM boleh menyumbang kepada penambah baikan proses pembinaan. VM juga telah terbukti didalam menyediakan rangka kerja berstruktur, bersama-sama dengan alat sokongan dan teknik-teknik lain untuk membuat keputusan yang berkesan dalam mencapai 'nilai terbaik' untuk pelanggan. Salah satu daripada faktor-faktor kejayaan utama didalam VM bagi mencapai objektif projek dengan lebih baik untuk pelanggan-pelanggan adalah melalui penyediaan input berfaedah oleh setiap ahli pasukan dari pelbagai disiplin yang terlibat dalam perbincangan bagi membuat keputusan kritikal semasa diperingkat awal projek-projek pembinaan. Penemuan mendedahkan bahawa pada seawal peringkat mula adalah amat penting kepada proses reka bentuk; strategi kontrak, prestasi masa; kos dan kualiti; dan kesihatan dan prestasi keselamatan kontraktor. Ianya adalah bertujuan untuk mengkaji kesan terhadap kesedaran VM terutamanya didalam cara-cara dan kaedah-kaedah untuk menangani isu-isu yang berkaitan hasil daripada kelemahan penyelarasan dan terhadap isu-isu constructability kritikal yang penting dikalangan ahli-ahli pasukan didalam projek-projek pembinaan. Adalah dicadangkan bahawa melalui penglibatan ahli pasukan diperingkat awal semasa peringkat reka bentuk, serta digabungkan dengan menggunakan kaedah VM, terutama sebagai alat membuat keputusan, pengoptimuman kos pembinaan yang lebih baik boleh dicapai, sekali gus menggalakkan constructability yang lebih cekap dan berkesan. Jangkaan penilaian VM didalam kajian kertas ini adalah untuk menggabungkan pandangan daripada semua pihak yang berkepentingan dan untuk mencapai keseimbangan yang terbaik antara keperluan sumber dan kepuasan keperluan yang diberikan. Integrasi alat pengurusan ini didalam proses tersebut akan menyediakan satu penyelesaian yang lebih praktikal dan menyeluruh kepada masalah pembinaan, terutamanya, dalam tempoh jangka sumber-sumber yang tidak mencukupi, kewangan dan kepakaran teknikal pengurusan, dan secara khusus untuk negara-negara membangun.

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LIST OF ABBREVIATIONS

BOOT	Billed, Owned, Operate and Transfer
CIDB	Construction Industry Development Board
EPU	Economic Planning Unit
GDP	Gross Domestic Product
LCC	Life Cycle Cost
PWD	Public Work Department
RIBA	Royal Institute of British Architects
SAVE	Society of American Value Engineer
UK	United Kingdom
USA	United States of America
VA	Value Analysis
VE	Value Engineering
VM	Value Management
VMCP	Value Management Change Proposal

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Value, in its largest sensation, means the advantage to the consumer – whereby, the venture is value doing and is able to be quantified in enterprise conditions (although not in economical terms). Value indicates making certain that the right choices are created about getting the best possible stability of advantage in regards to price and possibility.

Value Management (VM) provides a arranged strategy to the evaluation and progression of a venture to improve the chance of hitting these requirements at the best possible whole life value for money. In practice, VM is the exercises that are first to be carried out, in order to figure out precisely what comprises business value commencing project delivery. A desired option (or options) is determined; along with the threats that are most probably to happen should the option was integrated. The construction industry is composed of heterogeneous and fragmented parties. It is a project-based industry with each project being unique. In VM the incorporated venture group repeat the similar workouts of interpreting value and associated threats until they go to the the best possible balance of value and risk.

VM allows the stakeholders to recognize the best way of getting together with enterprise need. Whereby it allows the stakeholders to determine the benefits and risks of certain options. It can furthermore help the business owner figure out substitute programs of measures. Moreover, it gives the top management and stakeholders the confidence to decline a business decision because it will not function out or go on as thought out. In a certain style, these records can preserve on persistence by installing down the results of particular activities. Nevertheless, VM is a common process of analyzing problems and making decisions that could be applied in most areas of decision-making.

1.2 BACKGROUND OF THE STUDY

According to Walker (1998), as a result of technical improvements, not sure economic circumstances, social demands and intense competitors both country wide and around the world, the development industry's customer have placed increasing needs upon the industry conditions of tasks efficiency, investment and running costs, time given from perception of tasks to profession and above all, value for money in projects.

In hitting client's needs, there are several problems experienced during the development and designs of project. Some of the significant issues have substandard interaction between events involved, lack of experienced effort, drawback of venture brief, differences between images and records, lacking developers that do not keep up with the technical changes and new materials. According to Dell I'sola (1997), value is defined, as the best cost effective method to dependably achieve an operation that is able to accomplish the users' desires, requirements and expectations. The important element of the VM strategy is to remove the unnecessary cost that does not promote the value of the assistance, items, techniques and which clearly contains the development tasks.

Therefore, it was essential for the analysis to be conducted to decide the level of acceptance by the stakeholders on the effects of VM because they are unveiled to fast technical changes and buildability. VM enables stakeholders to determine and achieve their needs through facilitated workshops that motivate participation, team working and end-user buy-in. The focus of VM is on function and value for money, NOT reducing cost. As Che Mat, M.M. (2004) defined VM as a rigorous, systematic and innovative methodology with multi disciplinary approach to obtain better value for projects, products, facilities and systems without compromising the prescribed efficiency level. It is an innovative way of collaborating in achieving the requirements of the client and stakeholders.

1.3 PROBLEM STATEMENT

Despite an overall achievement by Malaysian construction firms, there are still a lot of potential risks and problems experienced by local construction companies when developing projects. VM is an essential device in the construction industry to increase the value of projects (Vellu 2001). Normally, it appears to be fragmented efforts by the clients, project managers, engineers, quantity surveyors, architects, and owners in realizing the projects being proposed, but in most instances, the parties associated in the planning and design development has the tendencies to work in “silos”.

Vellu (2001) motivate regional contractors and clients to utilize the VM research in the starting of progression due to high potential cost keeping but without limiting on quality. The most effective VA application is early in the project design phase. Changes or re-direction in the design can be met without comprehensive upgrade at this factor, thereby saving the owner/user/stakeholder's time and money. According to Borkenhagen (1998), VM can be an effective device to increase the

strength of cost saving, increase the quality and increase performance and productiveness.

Miles in the original VM framework defined VA as a “philosophy being implemented by the utilization of a particular techniques, a set of knowledge and a group of acquired skills”. VM offers an effective product to include this different self discipline and events to operate on common goals and organized techniques. Dell I’sola (1982) subsequently refined Miles’s definition as “the modern arranged approach that is able to boost the efficiency of a ability or system”. VM has been acknowledged within the last several years as a growing paradigm which concentrates on continually improving the value given to the consumer and is generally acknowledged as a significant product in the effective control of projects development (Ellis, Wood and Keel 2005). VM goals are to increase the client value system in projects, products, processes and systems (Kelly, Male and Graham 2004).

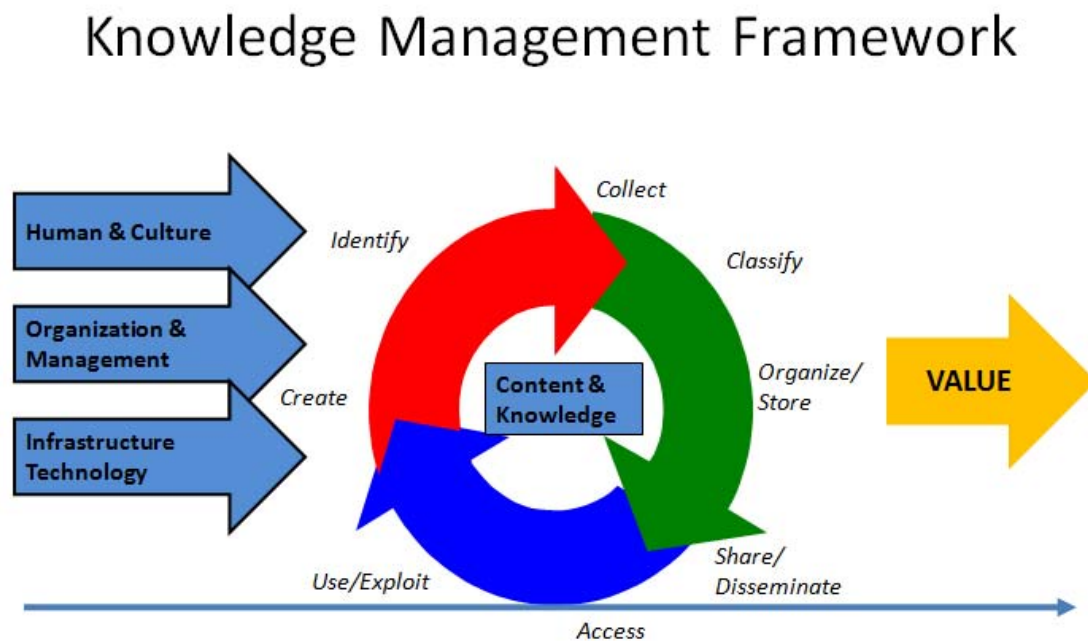


Figure 1.1 : Knowledge Management Framework

Therefore, in this analysis the issues of VM are acknowledged to have effects to a completely new and modern management approach. The analysis will focus on knowledge of VM application in the design level of a development venture and in

assessing the factor and the value of project teams' early engagement to more efficient and effective constructability, which in turn causes greater cost optimizations. This is to guarantee the exclusive conditions where they are not unsettling to suggest the clients on the cost savings because that will decrease the gain edge of the venture due to the loss of the contract sum. Furthermore there is no motivation for the venture group to put ahead their suggestions if there is any savings in cost or decrease in development time. Therefore it was essential for the analysis to be performed to figure out the stage of acceptance by the stakeholders on the awareness on application of VM during at design stage because they are revealed to fast technological changes and build ability.

1.4 RESEARCH AIM AND OBJECTIVES

The objectives of the evaluation were to uncover the VM acceptance in an company. VM is relatively new in Malaysia, which was only introduced, in early 1990's. As such the knowledge, awareness, comprehension and program of the strategy is still at the infant stage. VM must be conducted as early as possible prior to the obligation of funds, endorsement of design or system in order to achieve optimum results. By knowing the level of VM comprehension and ability amongst the stakeholders in an organization, VM methodology will take aspect in guiding on how it will help an organization to be more competitive.

The goals are than followed by two (2) objectives targeted to be obtained when performing this analysis and the objectives are as follow;

- i. To identify awareness level of the organization towards VM and,
- ii. To identify the importance of implication of VM at Design Stage.

VM awareness is the knowledge where the VM Process Re-aligning with the Project and Associated Project Value Chain. Through this analysis, comprehension the level of VM awareness of the stakeholders will cause and offer more realistic and holistic solution to construction problems, particularly in phrase of substandard financial, technical resources and managerial expertise. The application of VM will improved reasonably competitive advantages, improved professionalism and increased in terms of prestige and image in the future.

1.5 RESEARCH QUESTIONS

The above problem statements lead to the following research question:

- i. What is the stage of participant qualifications and common details towards the knowledge of effects of VM in an organization?
- ii. How VM implementation is familiar among respondent experience?
- iii. What is the level of importance and benefit of VM in the perspective of respondent?



Figure 1.2 : "VALUE" in Value Management

1.6 SIGNIFICANCE OF STUDY

This thesis has been performed due to its significance and its prospective contribution to the organization. The former finance Minister, YB Tun Daim Zainuddin (1991) during his official opening speech for the VM National Seminar organized by IKRAM quoted that VM has lot of relationship with quality and recommended the adoption of VM as part of the methodology to optimize cost and open up the searching for alternative design solutions. Toward the end of this research, the organization involved should aware and view the significant of VM as VM revolve around improving value instead of cost cutting, eventhough this may be a by-product.

The principle and methodology of VM focus in obtaining the prescribed quality at the best whole life cost throughout the project development process. The advantages that can be carried out via this method consist of:

- i. An improved awareness of the business requirements, such as the mobility necessary to satisfy upcoming requirements
- ii. Easy, apparent information of particular stakeholder needs
- iii. Element of all alternatives, choices and innovative ideas
- iv. Accomplishment of optimum value for money whilst rewarding the variety of person requirements
- v. Avoidance of needless expenses via decreasing waste and inefficiency
- vi. Enhanced team working with joint ownership of solutions.

1.7 SCOPE OF THE STUDY

In the review market research, the participants were selected from within the organization framework. It is to comprehend the overall viewpoint on how the organization managed the primary progression on the knowledge of VM. This is where the study focused on the company's personnel knowledge conduct and their awareness towards VM through the questionnaires. Basically in the first section of questionnaire, it will provide comprehension on the respondent's background. The research will see the level of academic qualification and their designation. As such, designation and professionalism's qualifications were components of the part on the VM responsibility to their down liner.

By comprehending the level of awareness of the respondents cause and offer more realistic and holistic solution to construction problems, specifically in term of inadequate technical, financial resources and managerial expertise. The application of VM will improved competitive advantages, enhanced professionalism and increased in term of prestige and image in the future. Second section of the questionnaire will indicate the respondent's current experience on VM. This is where it will analyze respondent opinion on the importance of VM towards the organization's perspective. And the final section of questionnaire will analyze respondent view on how VM will be applied and their benefit to the organization. Generally by the feedback given by the respondents it is hope that this research can contribute to more understanding on the risk issues that might be faced by the organization.

This will allow them to resolves all potential risk issues to maximize their profit and loss. It also hopes that it will help to increase the awareness of organization towards managing risk. By understanding VM and its exposure definitely it will bring up the industry to the next level of managing project.

1.8 LIMITATION OF THE STUDY

This research will be based on a literature that was structured based on project development phases and construction sequence. Common construction VM or problems will be incorporated into project development phases and construction sequence and the impact will be value. There are two (2) limitations that are expected in conducting this research, the limitations are:

i. Restriction in releasing information for example.

Since the information's are sometimes can be consider as private especially between the contractors, probability the details accumulated might be incorrect for evaluation.

ii. Understand of the VM issues at micro level.

In the market, some organizations are enormous and others are not, which each organization have different strategy and design of management. Some of them are quite new in comprehension the VM concerns. Some of the organizations also have their own VM department, however the involvements are merely very lowest in implementing the successful VM program.

1.9 IMPORTANCE AND CONTRIBUTION OF RESEARCH

Following to extensive involvement of Malaysian construction firms in cost saving methods, it is important to conduct this research as a reference for Malaysian contractors in knowing what type of VM expected during early stage. This will help them to be more prepared in handling and managing the overall development process. Managing resources and techniques effectively will help regional development organizations to cope with their tasks correctly by implementing cost and alternatives, this will improve productiveness and quality of development projects.

It is wish that this research could promote more comprehension on the development and VM concerns that might be experienced by Malaysian development companies. This will allow them to take care of all danger concerns to improve their Profit and Loss account. It is also desires that this will allows to improve the knowledge of Malaysian development companies towards handling VM. By doing this Malaysian development companies will carry up Malaysian development market into the next level of handling VM in development venture.

1.10 METHODOLOGY

The purpose of the study on which this paper is based to assess and investigate the application of VM theory, and how this rolls out in practice within the early stage of construction context, particularly in design stage. The research will adopt a mix of quantitative and qualitative methodologies, however qualitative approach will be the dominant method used for conducting the study; specifically using a case study, conducting focus group sessions and development of a VM workshop approach specifically directed at the typical prevailing situation in the Malaysian construction industry.

The main research on which this paper is based encompasses a study and discussion of the philosophy and phenomenon of VM, design management constraints, decision making, project team operation, life cycle value and client value systems. It will integrate this issues in order to identify and focus on the potential benefits of using VM as a tool that facilitate decision making related to cost optimization and value adding in construction projects.

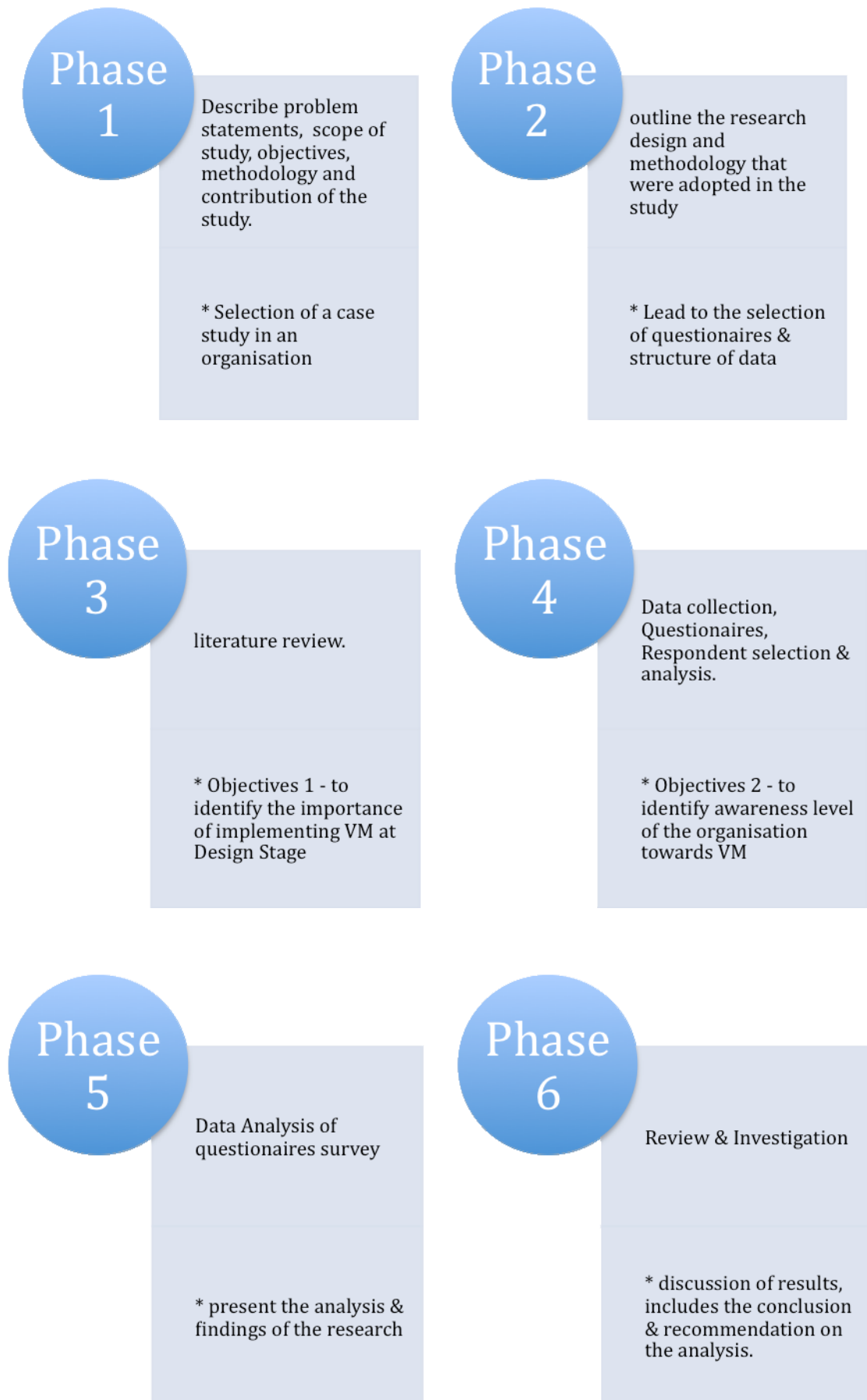


Figure 1.3 : Phase of Research Methodology

Throughout the materials, the collaboration of design and management features at design stage has often been outlined as a middle concern, which impedes the search of success in development projects. This means that any failing in managing management, development and designs among various events can seriously impact the reaching of the clients' purpose. The effect of such failing often causes a extended period being spent to complete the venture, poor end cost and quality overruns. According to case study conducted by Panciuk (2009), there is a high risk of the cost of the construction 'Blowing Up' if activities such as design coordination, contingency recommendation and the contractor not being provided with complete information, in particular drawings, are not properly managed during the early design stage of a project.