Study on the Competency in Human Resources for Successful Completion of Construction Projects

by

Muhammad Faiz Aizat Bin Zainal
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Dissertation submitted in partial fulfillment of
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UniversitiTeknologi PETRONAS
Bandar Seri Iskandar
31750 Tronoh
Perak DarulRidzuan

CERTIFICATION OF APPROVAL

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A project dissertation submitted to the
Civil Engineering Programme
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Approved by,

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(IR IDRIS BIN OTHMAN)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
May 2013

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

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MUHAMMAD FAIZ AIZAT BIN ZAINAL

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ABSTRACT

Competence in this report means the ability of a person to carry out responsibilities and to perform job to a recognized standard on a regular basis. Competence involved a combination of technical and thinking skills (intelligences), knowledge and experience, and may include a willingness to undertake specified job activities and performed in accordance with agreed standards, rules and procedures. The purpose of this research is to study the competency in human resource for successful completion of construction projects and how competencies are defined based on different work group of the construction team. This research paper will focus into five main parts related to competency. From the literature review, the researcher will identify some of the competency criteria of stakeholders that are crucial in successfully completing a construction projects. Based on those criteria discussed, the researcher will then look into the Critical Success Factor (CSF) of a construction project in terms of competency in human resources. Semi-structured interviews and survey questionnaires will be used as the tools to carry out this study. These survey questionnaires will be distributed to lists of developers, architects, engineers, and contractors both through online and offline (hardcopy) method. These papers will also presents the findings of a survey aimed for identifying some of the factors contributing to employee incompetency in construction projects. It also identifies the problems cause by incompetency in a construction project. This report also explores some of the ways to overcome employee incompetency in the construction project. It is hoped that these findings will be one of reference guide for developers, engineers, architects and contractors in an efforts to improve competency of employees and enhance the performance of the construction industry.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1: INTRODUCTION

1.1 Background of Study

Competence in this report means the ability of a person to carry out responsibilities and to perform job to a recognized standard on a regular basis. Competence involved a combination of technical and thinking skills, intelligences, knowledge and experience, and may include a willingness to undertake specified job activities and performed in accordance with agreed standards, rules and procedures. (Office of Rail Regulation, 2007)

Competencies are varied. It depends on the situation and the working environment in which the work is performed, and the working culture of the company. In the working environment, competence is the standard of work expected to satisfy a number of requirements, including company objectives.

Competence plays a vital role in controlling the quality of the result, health and safety risks on construction projects. Such responsibilities can only be achieved when it is undertake by competent individual, and this is why competent worker is very important.

Competence in construction projects varied among the team members. Different job activities demands different type of competency. The concept of competency in construction projects is that each member is capable of performing their work activities excellently to accomplish the expected project outcome which are in accordance or exceed client expectation. For companies to have competitive advantages over fellow competitors within the industry, the ability of a construction company to have an effective competency management in human resource has become increasing vital. It is all about earning clients satisfaction that would lead to long term competitiveness and business survival for the companies by delivering the job at client's standard.

1.2 Problem Statement

1.2.1 Problem Identification

Throughout the years, the growing of development in construction industry has been tremendous. High rise buildings, residential housings, and many other construction projects is being constructed all over the world. However, every year thousands of construction projects face failures.

Such failure had cause a significant impact to a company in terms of financial bankruptcy, cost overrun, damage of company reputation, delay of work, etc. Poor communications, inadequate knowledge, unskillful workers, and many other factors can lead to construction failures. These factors are cause by incompetence employee and are a major concern for organization nowadays.

Construction teams consist of group of members with different set of specialized skills brought together for a specific construction project. Fundamentally a construction team is composed of engineering consultants, architects, contractors and the client himself. Each members carry different job activities, values and intentions to other team members. The ability of each members of the team to perform their specialized activities excellently is crucial for successful completion of the project.

Statistic by Peterson, (2005) shows that in 1997, 10,867 construction companies in the United States failed, bringing the total number of construction company failures for the eight-year period beginning in 1990 to more than 80,000. While in 2002, two of Japan's largest construction companies, the Sato Kogy Company and Nissan Construction, filed for bankruptcy. (Belson, 2002) In Malaysia, the failure rate of construction firms is high. Based on Construction Industry Development Board Malaysia (CIDB), from January 2006 to August 2008, 11,321 construction firms were classified as dormant and non-active. The main culprit of failures is delay. Delay in high cost construction projects can lead to failures.

The causes of these failures can be identified in two overlapping areas: problem caused by clients and engineers/architects; and problems caused by contractor’s inadequacies. This are related with the incompetency of the stakeholders

(Client, Consultants, Architects, and Contractors) involved in the construction projects. Below is some of the review the researcher managed to cite as common problems in construction projects:

1.2.2 Owners

The most frequently cited cause of project delays/failures is change orders from the owners. Change orders tend to occur more often in private projects because private owners are in the habit of changing plans to be in line with the changing economic climate. Some change orders are so large, requiring extensive redesign, which results in wasting contractor's resources, over budget and thus bringing the project into halt as it declared bankruptcy.

1.2.3 Engineers/Architects (Designers)

There is a general agreement that one of the major cause of project delays/failures is due to the designer's incomplete drawings, particularly inconsistent detailing of drawings. Delays can also be associated with the growing in construction industry, which resulted in many design offices being overloaded and understaffed. Thus, project designs are often done without proper feasibility studies, detailed briefing and rushed to tender in short time to meet bid dates. This results in many incomplete information and will require changes during construction.

1.2.4 Contractors

The contractor is normally blamed for the majority of project delays/failures, generally being pointed at poor management and technical performance. Poor leadership, management leads to inadequate site management, lack of coordination and inadequate planning thus resulting in cost, time and budget deficiencies.

In summary, these failures are cause by many factors related to incompetence of the stakeholders in the organization. As a result from this previous failure in the construction industry, this research will focus on competency criteria of stakeholders in construction industry, the critical success factor in construction projects, determining the cause of incompetency and to find ways of overcoming problems of incompetency for the betterment of construction industry.

1.3 Significant of the project

Based on the research, data collection, and data analysis, the importance of competencies in human resources of construction projects can be a guide to many companies associated with construction development for a deeper understanding. This research work will also explore the factors contributing to incompetence workers and the problem it causes to a company based on facts gather throughout the research.

This research work also explained it readers with a solution on how incompetence in a workplace can be overcome through various ways.

This report sets out the essential attributes of members in construction team to be considered as competent. Basically this report is relevant to projects involved in construction work. The recommendations provided offers some relevant information that should be applicable to diverse nature of construction projects.

1.4 Objective

- To determine the competency criteria of different work group in construction projects.
- To determine the Critical Success Factor (CSF) in construction projects.
- To determine the factors contributing to employee incompetency.
- To identify the problem causes by employee incompetency.
- To recognize ways to overcome employee incompetency.

1.5 Scope of Study

This research report is about the study of competency in human resources for successful completion of infrastructure projects. This research will be focusing on competency criteria of the stakeholders in construction teams namely the owner/client, engineering consultants, architects, and contractors. To do so, study of this research will be made based on the case study of an apartment project where the author was involved in during his working period. Selection of the project is made

based on the numbers of problems involved with the project due certain factors in which cause by incompetence of workers.

Collection of information will be based on the factors contributing to incompetency and ways to overcome the problems of incompetency. In order to collect information, interviews with several members of construction teams, will be conducted. In addition to that, survey questionnaires will also be hand out to a number of engineering consultants, architects, contractors, and owner. The data collected will then be analyzed and rank using a Relative Important Index (RII).

1.6 Relevancy of the project

Competency in a workplace nowadays has been taken seriously by many companies all around the world. Since competitions in current market are very strong, clients are demanding for a quality products and services from companies. Employees in a company play a very important role in helping raise the company public image in the world market. Thus employers needs employees who are capable of delivering activities or services excellently and achieved a recognized standard at a regular basis. The ability of an employee to deliver a work excellently is considered as a competence employee.

Under this circumstance, the ability of companies to effectively maximize the use of their human resource capital on employing a competence employee has been crucial for their survivals. That being said, it is evidence that the field of competency development been taken seriously and growing in popularity with administrative management in business and agencies worldwide.

1.7 Background of Case Study

The project selected for this case study is an apartment in Bandar BaruKundang, Gombak. Some details regarding this project are tabulated below.

Figure 1: Apartment

Table 1: Project detail

Project Title	**CADANGAN SKIM PERUMAHAN BANDAR BARU KUNDANG (FASA IIA) YANG MENGANDUNGI:** **A) 3 BLOK RUMAH PANGSA SEDERHANA TINGGI 8 TINGKAT (168 UNIT) DAN 24 UNIT 'PENTHOUSE' (JUMLAH 192 UNIT) – (Q, R, & S)** **B) KELAB REKREASI 2 TINGKAT DENGAN KOLAM RENANG** **C) PENCAWANGAN ELEKTRIK BERASINGAN (1 UNIT)** **DI ATAS LOT PT. 19315 & 19316 (LOT LAMA 1991) PEKAN KUNDANG, MUKIM RAWANG, DAERAH GOMBAK, SELANGOR DARULEHSAN UNTUK TETUAN NILAI IDAMAN SDN. BHD.**
Owner	**NILAI IDAMAN SDN. BHD.**
C&S Consultant	**JURUTERA PERUNDING WAWASAN SDN. BHD.**
Architect	**AA ARKITEK STUDIO SDN. BHD.**
Contractor	**AUSSIN SDN. BHD.**
Developer	**NILAI IDAMAN SDN. BHD.**

The different type of group background for this project are the owner/client who is also the developer, the engineering consultant, the architect, and the contractor. This project has completed half of its building but are now facing problems obtaining water supply due to some problems. This project has been non-active and delayed for too long and can be declared as “failure”. Thus, from this project the researcher will look to study how incompetency effects project progress, understand that different working individual has different competencies, factors contributing to incompetency, and ways to overcome incompetency by several methods explain in methodology section.

Figure 2: Sluice Valve

Figure 3: Abandoned TNB

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Competencies refer to skills or knowledge that leads to superior performance. Individual/organization's skills, knowledge, and abilities form the level of competency and provide benchmark to differentiate between poor performances and excellent performance. Competencies can relate to individual, team, organizational, occupational and functional level. Competencies are individual abilities that are developed through experiences and hard work which are keys to quality and success completion of a project. (HR, 2010)

Employee's competencies are very crucial for the success of a company. Thus it is important for employees and their managers to identify which competencies would be most helpful to work on to improve the employee's effectiveness.

Competencies are the ability of a person to use their knowledge, skills, to help achieved a quality result that meets the job expectations and demands of the client. Competency is a tool that an individual can use in order to demonstrate a high standard of performance.(Adam, 2011)

Some examples of competencies required by the employees are (HR, 2010):-

- Adaptability
- Analytical Reasoning
- Creativity
- Commitment
- Leadership
- Motivation
- Foresight
- Communication Skills
- Independence
- Emotional Stability

2.2 Types of Competency

Competency can be classified into four major types, which are explain in terms of organizational, functional, job, and leadership. The following are types of competencies as explained by Matthew, (Type of competency models, 2002):-

2.2.1 Organizational

Known as core competencies which focus on a number of behaviors sets that each employee are expected to poses for the success of organization. All levels of employees are required to poses these behavior sets and skills.

2.2.2 Functional

Functional competency is the standards of performance poses by an individual working in a specific role or function. Individuals working in different area for example, in sales and marketing, construction, or research and development, have different functional competencies.

2.2.3 Job

Job competency basically describes specific behaviors, skills and knowledge sets required for excellent performance to a task given. Companies and human resource departments typically develop specific competency models for each job within the organization. In a construction environment, for example, the engineering consultants have different job competencies than architects, and contractors.

2.2.4 Leadership

Leadership or managerial competency models describe the factors that lead to success for leaders, executives, senior staff, and others who fill top management or leadership roles. For executive coaching and the creation of leadership development programs, organizations often use leadership competency models. The model describes about eight to 12 different competencies, focusing on areas like leadership, self-development, innovation, relationship development, professional judgment and self-assurance.

This research paper will focus on job competency.

2.3 Competency in Human Resources in Construction Projects

In developing countries, the market of public construction projects is sizable. As global business competition in area of construction projects focus on cost effective, quality of projects and value in design, consultant firms, architects and contractors compete with each other to win the contract. Thus it is crucial for their company management to orient towards the strategic use of human resources. With these conditions, the ability of companies to effectively carry out competency based human resources is becoming more and more crucial for their survival. (Antonio, 2008) The field of competency development is growing within the members of construction of infrastructure and building structure teams. Different type of members of the team has different job competencies.

Although there are variety type of members involves in construction projects, for the purpose of this research, the researcher will look into the most common members of construction team which are as follows:

1. Developer / Client
2. Engineering Consultants
3. Architects
4. Contractors

2.4 Competency Criteria of Different Work Group in Construction Projects

2.4.1 Competence Developer / Client

There are two types of client, namely the competence and the incompetence client. Competence client are those who know their works, had knowledge about the projects, how projects are to be delivered and are skillful in appointing the right team members. Laura, (2009) states that competence client have the following attributes:-

1. Communicates clearly.
   Able to express their expectation clearly. This ability is vital for consultants and contractors to visualize the outcomes and thus design and construct the project based on the client needs.
2. Provide adequate time period for projects.
   A competence client understands that quality work takes time and plans accordingly. Often, an incompetence client allows a short period of time to consultants and contractors leads to rushed job full of mistakes and needing a lot of rework.
3. Make themselves available.
   Competence client makes themselves available for any discussions with the construction teams. They know that it's cheaper to get it right the first time than to fix it later.
4. Pays a fair amount for work required.
   A competence client often made background research of the future employee. They know that paying a fair amount to competence consultants and contractors will results in quality works.
5. Pays on time.
   A competence client knows that paying on time can help raise their professional reputation and even their credit history.
6. Integrity.
   Honesty is at the core of every successful business relationship, and successful completion of construction projects. They conduct activities in an honest and transparent fashion.
7. Allows spaces for the employee to use their creativity.

Competence client always keep an open mind about their consultants proposes ideas. They do not second-guessing their team abilities.

8. Maintain relationship.

   The best clients understand the value of an ongoing relationship. They will consider continue partnership with their successful team (consultants and contractors) whenever there is a new project.

9. Expect high quality result.

   A good client always wants a high quality project completion.

2.4.2 Competence Engineering Consultants

Consulting engineering is a professional service that provides expertise in engineering, industries, developers and construction firms. Basically, consulting engineers are responsible for designing and building infrastructure and building structures. Engineers in consulting engineering companies come from almost every discipline and specialty, mainly C&S Consultants (Civil & Structural) and M&E Consultants (Mechanical & Electrical). (Walt, 2007)

Although there are many consulting engineering firms that could be found, it is normally difficult for the client to find a good consultant. There are several characteristics that differentiate a competence consultant and the incompetence. (Jack, 2011)

1. Possesses a Strong Analytical Aptitude: A competence engineer has excellent analytical skills and is constantly observing things and thinking of better solutions to problems. They are naturally curious and thoughtful.
2. Shows an Attention to Detail: They pay thorough attention to detail. They understand that slightest error can cause disaster, structure failure. So every detail must be reviewed thoroughly during the course of completing a project.
3. Has Excellent Communication Skills: Competence engineer are able translate complex technical jargon into plain English for layman's understanding and can also convey message clearly with clients and other engineers working together on a project.

4. Takes Part in Continuing Education: As changes in technology happen rapidly, competence engineers were never left behind as they keep up-to-date of new research and ideas.
5. Creative: A great engineer is a problem solver. They will always find a solution to solve things with whatever resources they have.
6. Ability to Think Logically: Competence engineer is a able to think logically. They are able to understand complex systems and recognize the mechanism of things.
7. Excellent Mathematical Knowledge: A competence engineer has excellent math skills. They are able to solve complex engineering calculation of varying difficulty.
8. Excellent Problem Solving Skills: Problems at work site are very common and normally occur unexpectedly. Competence engineers are able to figure out source of problems and develop a solution quickly.
9. Team Player: A competence engineer work well as part of a large team player to make one project successful.
10. Excellent Technical Knowledge: As technology is always evolving, competence engineer kept their knowledge up-to-date with latest software engineering programs that are commonly used in engineering projects.

2.4.3 Competence Architects

In any infrastructure projects, architects will translate the needs of the client needs into a drawing. Architects will guide the client through the design and construction process. They must consider many factors such as materials, cost, structural stability, aesthetic, and practical qualities of the design. Great and competence architects haveshaped cityscapes around the world. There are common personality's traits among competences and successful architects. According to Mark Hamilton, (2011) a skillful architect has:-

1. Excellent Communication Skills: All competent architects have excellent communication skills verbally and on paper (writing skills). They can discuss with clients and builders effectively to ensure project at hand satisfied each party wants and needs.

2. Creative: Have an analytical and scientific mind, and at the same time is having creative mind.
3. Interest in cultures and other discipline: Keeps an eye open to culture uniqueness, and able to extract ideas from the culture to produce a magnificent masterpiece. Very competence architect can bring architecture to the level of engineering.
4. Excellent Listening Skills: In order to fully understand clearly the need of the client, as well as the needs of builders and other parties involved,
5. Has an Excellent Sense of Design: Great architects have an eye for good design and can translate ideas onto paper to show clients and builders.
6. Possesses Solid Technical Abilities: Great architects are able to successfully incorporate engineering elements into their designs as well as account for the unique requirements of particular building materials.
7. Believes in Collaboration: Great architects have good teamwork attributes. They understand the importance of collaboration as the entire construction process, together with collaboration between architects, engineers, contractors, and clients.
8. Can Visualize a Project: Not all architects are great visualizer. Competent architects are able to visualize the end results through all steps of the designing and building processes.
9. Obsession and Passion: Competent architect are normally obsessing and passionate with surrounding. They formulate ideas, develop the ideas over time, and determine to finish the ideas.
10. Confidence: They never feel self-conscious and never doubt their worth around them. Have high self-esteem to push them ahead. They are comfortable in their own skin and confident in their abilities.
11. Persistence: Never gave up when difficulties rise. They kept on course and kept going back to it time and time again.
12. Adapt to Change: Keep a grasp of technology both in term of computer technology and building technology.
13. Attention to both Micro and Macro: Doesn't not limit themselves. They concentrate on both small and big details.

2.4.4 Competence Contractors

A contractor is a group or individual that bonds with other organization or individual (owner or client) for works involved in construction, demolition or renovation of an infrastructures or building structure. A contractor is as the builder of the prime construction contract for the project. They execute a well-planned design projects. (Joseph, 2009).

The duty of contractor is to properly plan and organize work during the construction phase in order to ensure that hazards are identified and risks are properly controlled. The characteristics of competence contractor as stated by Lynn, 2011, are as follows

a) Competent contractors carry out the work in a safe manner and ensure they give proper consideration to the potential effects of their activities on everyone who may be affected by them.
b) Competent contractors have sufficient resources, including properly trained and experienced staff, to carry out the project.
c) Fully aware that time is a resource and reasonable time should be given for them to plan activities with proper regard to health and safety.
d) Competent contractors never take health and safety factors for granted and assesses the health and safety implications of all decisions.
e) They keep responsible for supervising activities of their contractors and sub-contractors should any changes occur.

Competence contractors are also referred as follows (Dean, 2011)

a) Have knowledge on the permits and building inspections importance and necessity to verify the work has been done according to industry standards and local building codes.
b) Integrity. They do not substitute quality materials with cheaper and lower quality goods.
c) Take pride in their work and want to produce high quality work.
d) Completes the work within the time schedule.

2.4.5Summary of Competency Criteria

WORK GROUP	CRITERIA
1) Client/Owner	• Communicates clearly. • Provide adequate time period for projects. • Make themselves available. • Pays a fair amount for work required. • Pays on time. • Integrity. • Allows spaces for the employee to use their creativity. • Maintain relationship. • Expect high quality result. *(Lenard, D. and Eckersley, Y. 1997; Laura, 2009)*
2) Engineering Consultants	• Excellent Technical Knowledge • Team Player • Excellent Problem Solving Skills • Excellent Mathematical Knowledge • Ability to Think Logically • Creative • Takes Part in Continuing Education • Has Excellent Communication Skills • Shows an Attention to Detail • Possesses a Strong Analytical Aptitude *(Walt, 2007; Jack, 2011)*

3) Architects	• Excellent Communication Skills • Creative • Interest in cultures and other discipline • Excellent Listening Skills • Has an Excellent Sense of Design • Possesses Solid Technical Abilities • Believes in Collaboration • Can Visualize a Project • Obsession and Passion • Confidence • Persistence • Adapt to Change • Attention to both Micro and Macro *(Mark Hamilton, 2011; Müller, R., Turner, R., 2010)*
4) Contractors	• Concern about safety of workplace • Well trained and good resources • Manage time and work progress properly • Responsible • Knowledgeable • Integrity • Complete work within time frame • Have sufficient resources, including properly trained and experienced staff *(Joseph, 2009; Lynn, 2011; Dean, 2011)*

Table 2: Summary of Competency Criteria

2.5 Critical Success Factors (CSFs) in construction projects

A construction project is completed through a combination of many events and situations, planned or unplanned situations, with changing participants and processes in a constantly changing environment. A lot of factors contribute to the success of the projects. But certain factors are more critical than others in making a project successful. These factors are called critical success factors.

Success in construction projects especially large-scale is a challenging matter and depends on several aspects which may include human-related factors, management related factors, and external environment factors. However, for this report, the researcher will focus on human-related factors. A study by Shamas-ur-RehmanToor and Stephen O.Ogunlana (2007) agrees that commitment, competence, comprehension, and communication are fundamental essentials for project success.

There are a number of variables in human-related factors that influence the success of construction projects which had been identified through literature reviews. A study of previous literature suggests that CSFs can be grouped into (1) Client-related Factors; (2) Design team-related Factors; and (3) Contractor-related Factors.

2.5.1 Client-related Factors

According to Chua et al. (1999), project participants / workers is defined as the key players, which includes the client, contractor, consultants, project manager subcontractor, manufacturers and supplier. Walker (1995) measured clients influence is an important factor on construction success. The client related factors concerned with client characteristics in terms of client experience, understanding of construction project organization, project financing, confidence with construction team, client's construction needs, precise explanation, owner's risk mitigation, and client project management. (Chan and Kumaraswamy 1997; Songer and Molenaar 1997; Dissanayaka and Kumaraswamy 1999).

2.5.2 Design team-related Factors

Designers play an important role as their work involves from inception to completion on a project. Chan and Kumaraswamy (1997) considered that design team-related factors consist of design team experience, knowledge on the project, project design difficulty, and mistakes in preparing design documents.

2.5.3 Contractor-related Factors

When the project reaches the construction stage, the duties of main contractor and subcontractors begin. Contractor-related factors include contractor experience, management, supervision and involvement of subcontracting, effectiveness of cost control system, contractor's cash flow, and speed of information directed. (Chan and Kumaraswamy 1997; Dissanayaka and Kumaraswamy 1999).

2.5.4 Identification of the Critical Success Factors in Human-Related Factors affecting the success of construction projects.

A study by Muhammad Saqib, Rizwan U. Farooqui, Sarosh. H. Lodi (2008) rank the factors from the most significant factors to least significant factors as follows:

Factors affecting project success	Factors
Client-Related Factors	1. Client's experience 2. Client's knowledge of construction project organization 3. Client's confidence in construction team 4. Owner's construction sophistication 5. Owner's clear and precise definition of project scope &objectives 6. Timely decision by owner/ owner's representative 7. Owner's risk attitude (willingness to take risk) 8. Client's emphasis on low construction cost 9. Client's emphasis on high quality of construction 10. Client's emphasis of quick construction 11. Client's project management 12. Client's ability to brief 13. Client's ability to make decision 14. Client's ability to define roles *Chua et al. (1999);Walker (1995)*

Design Team-Related Factors	1. Design team experience 2. Project design complexity 3. Mistakes/ delays in producing design documents 4. Design team's contribution to construction (constructability review, value engineering, etc.) 5. Adequacy of plans and specifications *Chan and Kumaraswamy (1997)*
Contractor-Related Factors	1. Contractor experience 2. Site management 3. Supervision 4. Extent (Involvement) of Subcontracting 5. Contractor's cash flow 6. Effectiveness of cost control system 7. Speed of information flow *Chan and Kumaraswamy (1997);* *Dissanayaka and Kumaraswamy (1999).*

Table 3 Critical Success Factors (CSFs)

To summarize, this findings on critical success factors (CSF) is to show which factors rank as the most critical in contributing to success of construction projects. Based on the three human-related factors (Client, Design Team, and Contractor), we can rank the top four CSF factors in general terms as follow:-

1. Experiences
2. Knowledge
3. Intelligences / Thinking Skills
4. Technical Skills

2.6 Factors Contributing to Employee Incompetency

Incompetence is the inability to do job properly or failing to perform activities to a recognized standard. An article by Dave Samuel, (2007) explains that employee that is incompetence can be caused by the following:-

2.6.1 Procrastination

Delay work progress, postpone following project status, and waiting until deadline just to learn that a project won't be delivered is another factors that cause a job failed to meet a recognized standard. This can lead to silly mistakes, errors, lateness and other problems. Especially in construction work, silly mistakes can turn up to be a costly mistake.

2.6.2 Poor Communication

Other type of core incompetency is not being able to deliver a message clearly. This will lead to coworkers or clients to misunderstand the message and eventually the result does not meet the requirement. The incompetency of one worker will affect other workers work.

2.6.3 Inexperienced

Employee who are not used to do a given job task will face a lot of problems performing the job to achieve the expected results.

2.6.4 Lack of Training

The lack of training is a major cause of incompetency of an employee. An employee that lacks necessary knowledge and skills will show incompetency in their works.

2.6.5 Handling of Multiple Projects

An employee handling a multiple projects is also one of the factors contributing to incompetency. When concentration is not 100%, competency of an individual can decrease.

2.6.6 Poor Management System

Poor management system such as poor records on work progress, missing documents and drawings, can cause project failure.

2.6.7 Complexity of the job

Job that is complex and are beyond the knowledge and skills of an employee will affect their performance. Not understanding the job well are also factors that contribute to incompetence.

2.7 Problems Causes by Employee Incompetency

There are many effects that can be cause by incompetence workers. (Buzzle, 2008) made some list of suggestion of the problems:-

2.7.1 Design Problem

Calculation mistakes in design stage normally occur due to carelessness, poor assumptions, inexperienced and lack of knowledge and understanding of the designs and material selection. Unable to analyze design correctly is also common mistakes.

2.7.2 Delay of construction work

Problem in design stage will lead to delay in construction works. Incompetence consultants who repeatedly have design problem are unable to obtain approval from authorities. Incompetence engineer consultant who is unable to find solution for problems during construction also might delay the construction work.

2.7.3 Performance Problems

Incompetence workers with poor performance often do not meeting expected project results, do not construct according to the design, and miss-operation.

2.7.4 Accidents

Incompetence workers who had poor knowledge on safety often cause accidents. Incompetence contractors are also the cause of accident since they fail to implement the safety precaution, and fail to supervise the workers. Accidents at construction are caused by design faults, miss-operation, and construction faults. And in some cases, fire accidents also occur due to lack of safety fire measurement and insufficient fire safety.

2.8 Ways to Overcome Employee Incompetency

Incompetence or poor workers will hinder goal achievement resulting in less of everything: revenue and profitability. Worst thing that could happen is, incompetence workers affect everyone else in the organization. People are not interested to work with a person who is unable to do their work properly (Sujansky, 2007).

However, Sujansky, (2007) also states some ways of overcoming incompetence at workers. The ways she suggested are as follow:-

2.8.1 Provide training

Some learning takes place in the employment relationship. New workers which are incompetent should be trained with necessary skills and knowledge for them to be competent.

2.8.2 Motivation

An additional bonus to workers with excellent performances will motivate the incompetence worker to strive and perform better in their job tasks.

2.8.3 Using feedback

Consistently worker with poor performance should be given a feedback so that the individual is aware of what just happened for them to improve their performance.

2.8.4 Close supervision

Co-workers who are competence can help by guiding and sharing their knowledge to the incompetence worker.

2.8.5 Disciplinary Action

A written notice or disciplinary action on poor performers might actually give them a “wake up call” for them to take their job seriously and improve their work performance.

CHAPTER 3: METHODOLOGY

3.1 Research Methodology

The current status of the apartment projects has been studied in this research work. This paper attempts to contribute towards developing some ideas and methods that is useful to the owners, consultants, architects and /or contractors for successful completion of construction projects at a specified quality. To achieve the objective, it first attempts to critically review the literature to identify and describe generally type of competencies among different members of construction team. In order to obtain the perceptions of four main participants; owner, consultant, architects and contractor to the factors contributing to incompetence, and ways to overcome employees incompetency, field survey has been conducted by personal interviews and postal questionnaire.

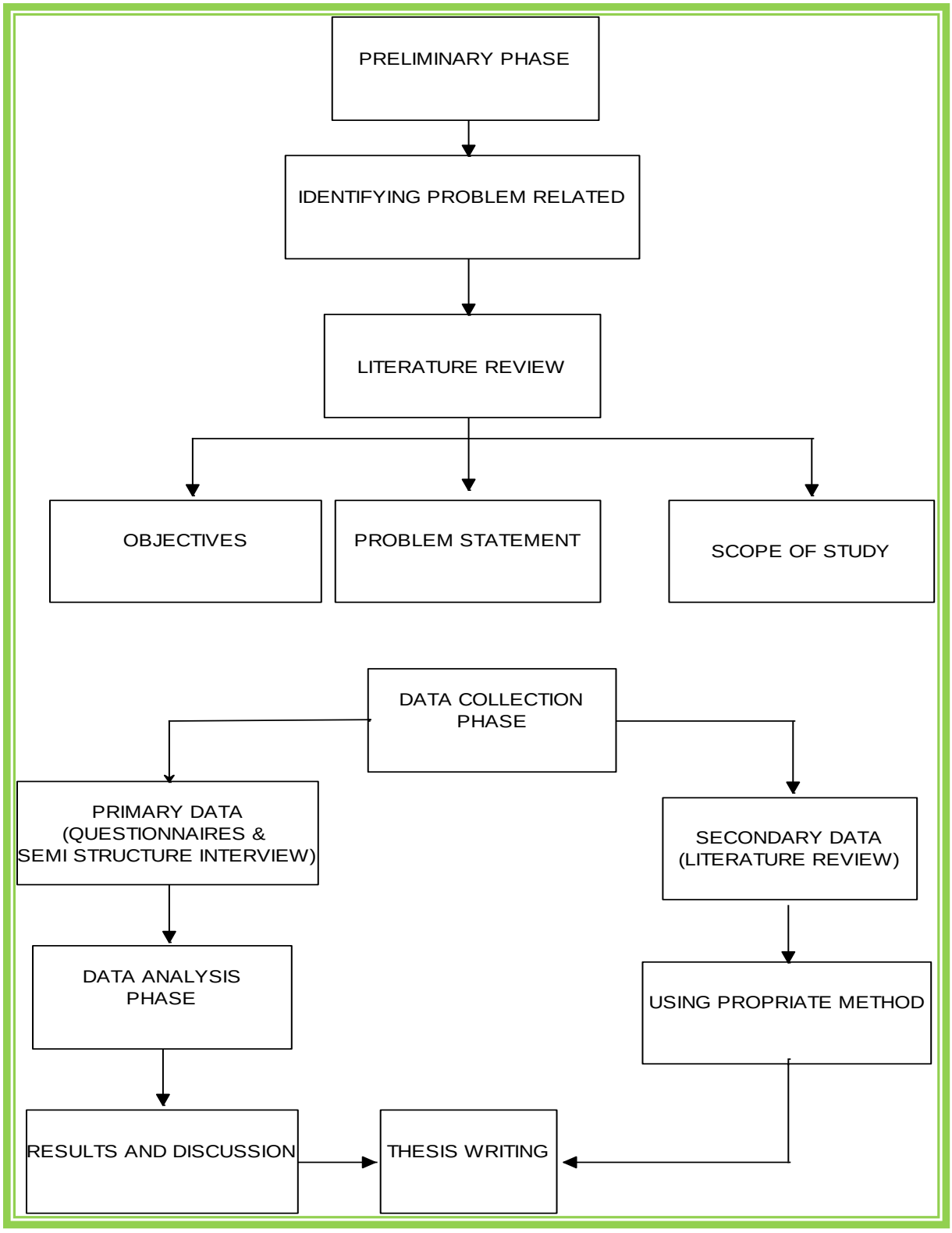

Figure 4: Research Methodology Flow Chart

3.2 Personal Interview

An interview with some staff involve in the construction project will be conducted. Each interviewee will be from different members of construction team, the consultant, architect, contractors and the owner himself. This interview will be aiming to explore some personal view of the interviewee on factors contributing to employee incompetency and their methods and/or ideas to overcome employee incompetency.

3.3 Questionnaire Survey

This survey is done to have genuine information, essential to be realized the problems faces in the construction projects. The purpose of doing survey in this study is to validate the findings of the literature review.

Distribution of surveys through emailing and hardcopy was conducted to find the extent and the factors contributing to incompetency in construction projects.

The survey questionnaire was prepared in three parts. The first part is general information of participants. The second part of the questionnaire contains eight important questions that are related with factors contributing to employee incompetence whereas the third part of the questionnaire is based on the ways to overcome employee incompetency containing five questions. Both second and third questionnaire were identified from the literature survey.

The survey questionnaire will only be targeting the main members of construction industry which is the owner/client, consultants, architects, and contractors.

3.4 Data Analysis

The data from the questionnaire survey will be used to analyze to determine the most significant factors contributing to employee incompetency and the best way to overcome employee incompetency in construction industry.

Analysis of the survey will be done by using Relative Importance Index (RII) method.

The Relative Important Index Formula:

$$RII = \frac{\sum w}{AN}$$

where W = weights given to each factor by the respondents and will ranges from 1 to 5 where '1' is less significant and '5' is extremely significant. A = highest weight (i.e. 5 in this case), and N = total number of respondents.

1 = Strongly disagree

2 = Disagree

3 = Moderately

4 = Agree

5 = Strongly agree

3.5 Project Activities and Key Milestones

No.	Detail/ Week	1	2	3	4	5	6	7	MID SEM BREAK	8	9	10	11	12	13	14
1	Selection of Project Topic	■														
2	Literatures Review		■	■	■	■										
3	Submission of Extended Proposal						●									
4	Preliminary Research Work							■		■						
5	Proposal Defense										●					
6	Drafting Survey Questionare											■	■	■	■	
7	Submission of Interim Draft Report														●	
8	Submission of Interim Report															●

Legends:

■ Project Activity

● Key Milestone

Figure 6: Project Activities and Key Milestones for FYP 1

No.	Detail/ Week	1	2	3	4	5	6	7	MID SEM BREAK	8	9	10	11	12	13	14	15
1	Preparing survey questionnaire	■	■	■	■												
2	Conduct semi Structure Interview					■	■	■									
3	Submission of Progress Report									●							
4	Data Analysis										■	■	■	■			
5	Pre-EDX												●				
6	Submission of Draft Report													●			
7	Submission of Dissertation (soft bound)														●		
8	Submission of Technical Paper														●		
9	Oral Presentation															●	
10	Submission of Project Dissertation (Hard Bound)																●

Legends:

■ Project Activity

● Key Milestone

Figure 5: Project Activities and Key Milestones for FYP 2

CHAPTER 4: RESULT AND DISCUSSION

4.1 Overview

The questionnaire was used to conduct personal interviews with representatives from a total of 11companies. (I.e. architects, engineering consultants, contractors, and developers companies) so as to get their views and opinions on (1) the Critical Success Factors (CSFs) of construction projects success, (2) factors contributing to incompetence workers, and (3) ways to overcome incompetence workers.

The respondents were asked to rank and score the listed factors at each parts of the survey for their level of criticality towards project success. Most of the companies approached are small-medium size organizations thus the questionnaires handed out are completed by the people involved in the project planning, executing, procurement and decision making processes such as the project engineers, site engineers, architects, main contractors in charge of a project. It can be inferred that the respondents had adequate knowledge of the project management activities in their organizations based on their position, work experience and professional background.

Out of 100 survey forms distributed both through online (email) and offline (hardcopy), 31 were received back. The survey response is analyzed in the following section.

4.2 Profile of Respondents

The first section in the questionnaire contained the respondent profile. The information to be provided by the respondents consisted of:

1. Respondent’s designation
2. Respondent’s experience in construction

SECTION	NO OF RESPONSES	Percentage
Architect	9	29%
Consultant	9	29%
Contractor	6	19%
Client / Developer	7	23%
Total	**31**	**100%**

Table 4: Percentage of Respondent's Designation

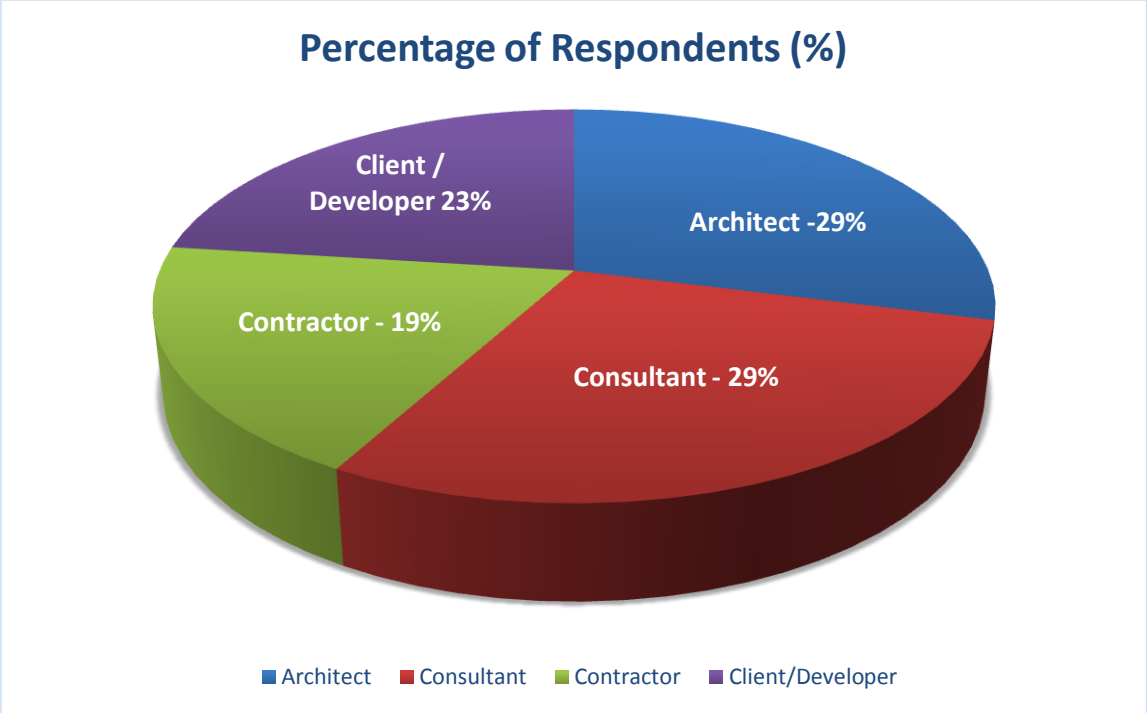

Figure 7: Percentage of Respondents

The survey questionnaire handed out had managed to obtain a total of 31 respondents. Figure 7 shows the respondent's designation which consist of architects, consultants, contractors, and client/developers. Respondent's designation category is much important in this research as it adds validity to set opinions and ideas of respondents on definition of competency from different point of views. From Table 4 and Figure 7 above, it is noticed that both architects and engineering consultants have the highest feedback with at total of 9 (29%) respondents each, follow by clients/developers and contractors with 7 (23%), and 6 (19%) number of responses respectively.

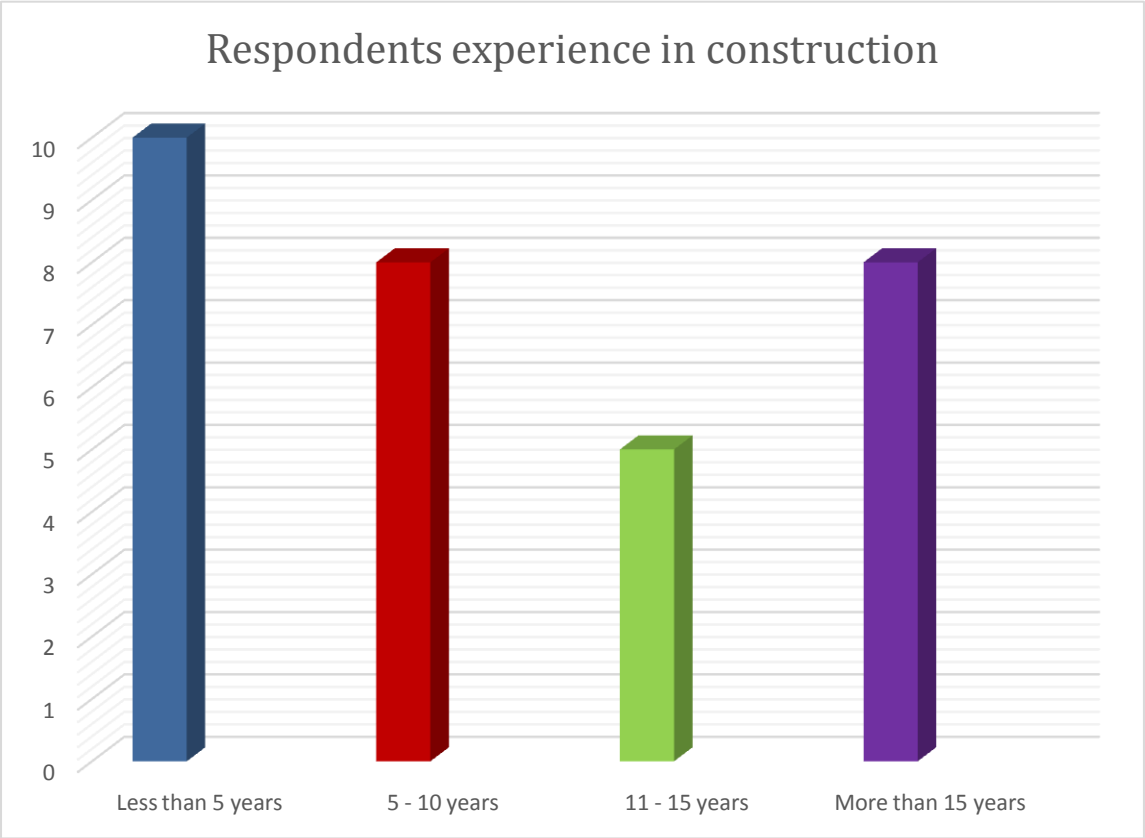

Figure 8: Respondents experience in construction

Figure 8 shows the respondent's experience in a construction projects. Based on the graph, the highest respondents fall into the less than 5 years of experiences category with a total of 32%. While respondents having 5 to 10 years of experiences are at par with respondents with more than 15 years of experiences with each having a total of 26% from the total respondents. Only 16% of respondents have 11 to 15 years of experiences. This adds the validity to the responses obtained because the more the years of working experiences the more accurate the responses would be because of long period of involvement in construction projects.

4.3 Critical Success Factors (CSFs) contribute to success of a construction projects.

One of the main objectives of this research is to determine the critical success factors (CSFs) that contribute to success of a construction projects. This requires opinions and views from people with varying experiences in construction projects. Table 3 below shows the relative important index (RII) of the most important factors in determining the success of a construction projects based on the feedback from respondents.

Rank	Critical Success Factors (CSFs)	RII
1	Experience	0.96
2	Knowledge	0.92
3	Intelligences / Thinking Skills	0.84
4	Technical Skills	0.81

Table 5: Critical Success Factors (CSFs)

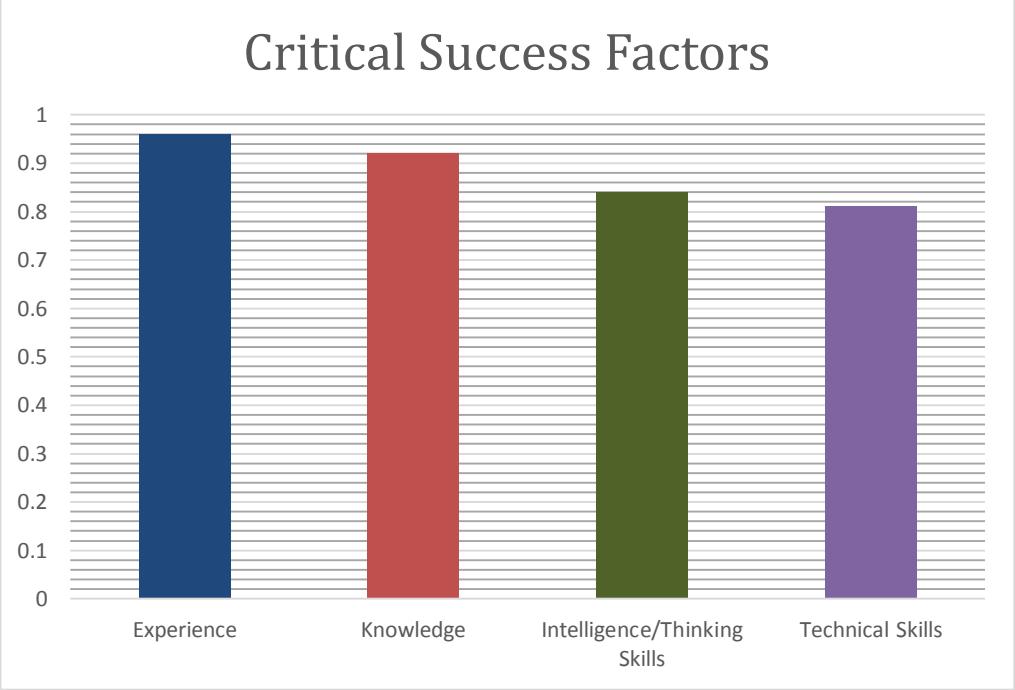

Figure 9: Critical Success Factors

Based on the table and bar chart, it can be seen that the result obtain are in accordance with the literature review conclusion made earlier in this research. All the four critical success factors towards project success ranking are agreed by majority of the respondents with experience, knowledge, intelligences/thinking skills and technical skills rank first, second, third and fourth respectively.

The majority of the respondents agreed that experience are the most important aspect of critical success factors of construction projects because experience forms the basis of all the other 3 elements. As construction projects are very challenging and have a lot of problems arising, experiences will be critical in solving ad-hoc problems. Experience workers are used to facing thousands of problems before thus they are more confident in taking corrective actions. This demonstrates that the more experiences a worker, the more knowledge he/she develop, thus the reason knowledge rank second.

As for intelligences/thinking skills, this factor falls below knowledge due to the fact that a workers intelligences/thinking skill (creativity) depends on their level of knowledge. The greater the knowledge, the greater the intelligences/thinking skills. In every construction projects, there will be many complex and different problems arising from design stage to execution stage. Thus designers need to find solutions to each problem they encounter. With greater knowledge along with experiences, the designers will have different ways of dealing with the problems. Normally the one with greater knowledge and experience will have a better ideas and solutions to tackle problems. Technical skills ranked as the least important aspect as compared to the other factors. This is because having good technical skills without appropriate intelligences, knowledge and experiences would not help much as construction is a very complex work that needs a lot of problem solving. However, technical skills may rank the highest for lower level of worker in contractors as they will only be involved in executing the works instructed to them. (Casting of beams, column, slab, handling of heavy complicated machines, etc.)

4.4 Factors Contributing to Employee Incompetency

Incompetency in this context means the inability of an employee to perform tasks at a required standard. Incompetency can be causes by many factors and for this research, the researcher had listed out some of the most critical factors that cause incompetency. Views and opinions are then obtained from employees from different background of work (architects, engineers, contractors, developers) on the most common cause of incompetency. The results of the survey are as shown in the table.

Rank	Factors contributing to employee incompetency	RII
1	Poor communication	0.92
2	Procrastination	0.68
3	Inexperience	0.86
4	Multiple projects handling	0.81
5	Lack of training – Lack of knowledge and skills	0.78
6	Poor management system	0.84
7	Complexity of the task	0.70

Table 6: Factors contribute to employee incompetency

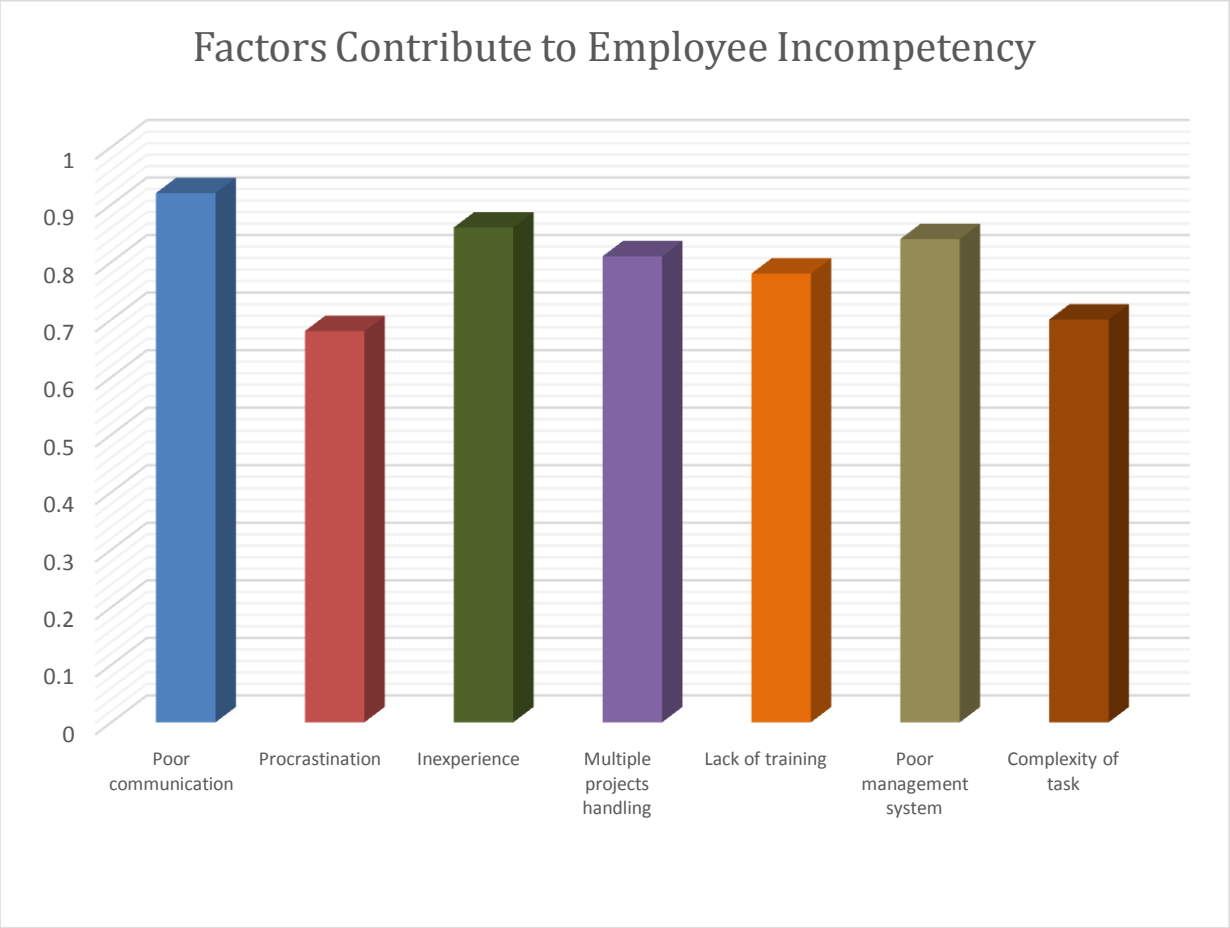

Figure 10: Factors contribute to employee incompetency

From the table, poor communication rank as the most critical factor that cause employee incompetency follow by inexperience, poor management system, multiple projects handling, lack of training, complexity of the job, and lastly procrastination as the least cause of incompetency.

As expected, most of the respondents have the same view that poor communication is the major culprit. Effective communication in construction projects are very crucial as informationis being transmitted between the various group of workersin the design team and for this reason, method of communication should not only clarify issues but must also attempt to bring harmony to the entire work process and also foster co-operation between the parties to ensure maximum contribution from members.In construction projects, misinterpretation of information can cause serious problems. If the information is misinterpreted, the projects will screws up, and lead to loss of time, money and thus could eventually lead to project failure.

Inexperience are not far behind with second on the rank as employee with insufficient experience will normally have a hard time performing a task since they lack exposure and are not familiar with the task. Slow work progress demonstrate incompetency which leads to lower productivity.

Poor management system and multiple projects handling rank at third and fourth respectively. Incompetency cause by poor management system in this context means failing to manage project documents properly for easy access on project status. This leads to projects being not updated and lose track of project status. With a proper management system, project documents are up-to-date can be access easily. It is very important to have updated information of a project to make sure project are delivered at latest and required standards. While handling multiple projects at a same time can lead an employee to lose focus on important details of a project. Thus the project is not delivered at a required standard.

While lack of training is seen as more critical than complexity of the task because complexity is seen as something very subjective. A task might be complex to one person while easy to the other person. A task is considered complex because the person performing it is lack of knowledge and skills. However with proper training, and increased in knowledge and skills, complex job becomes less complex, thus the reason why lack of training cause employee incompetency more than complexity of the task.

Procrastinations are the least cause of incompetency. Employee who often delays work progress, delay in following up project statuses will often deliver poor work quality. Postponing a task only to know that deadline is near cause employee to rush on the task and neglect quality thus delivering a poor work result.

4.5 Practices adopted by employers to overcome employee incompetency.

Table 4 below shows the average index of current practices in industry to improve effectiveness of communication in construction project.

Rank	Ways to overcome employee incompetency	RII
1	Provide trainings	0.86
2	Motivate employee	0.82
3	Feedback system – Review of employee performance and improvement needed by them.	0.72
4	Close supervision – At the early stage by senior employee	0.76
5	Discipline – Written notice / Using a direct simple language	0.54

Table 7: Ways to overcome employee incompetency

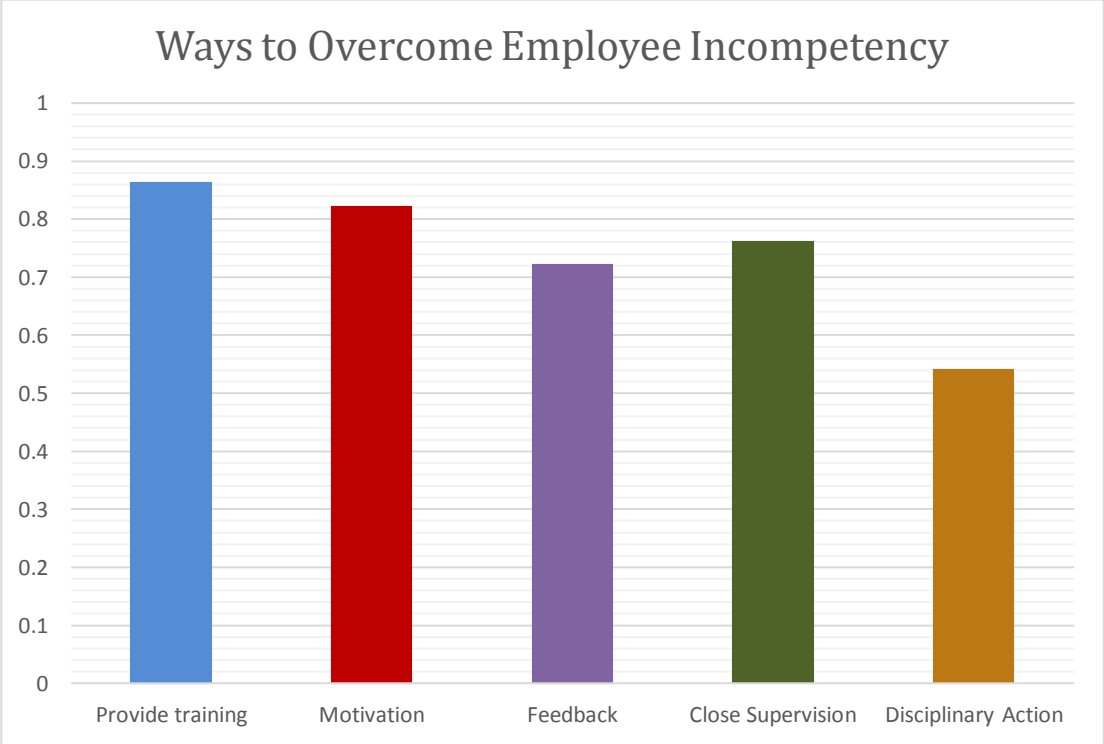

Figure 11: Ways to overcome employee incompetency

Bar chart above illustrate five common practices adopted in many organizations to improve competency of employees in construction project. Based on the survey taken, it can be seen that providing training to employees is second to none in improving the competency of an employee. The majority of the respondents

agreed that the best way to increase competency is through attending workshops and seminars to get the latest information and knowledge on engineering design breakthrough.

Motivation surprisingly rank second in helping to improve employee competency. In one interview, one of the respondents explains that motivation can boost an employee attitude on handling the task given. There are two ways of motivating. The first method is by rewarding employee with outstanding performance a bonus. This is a normal practice in many organizations. The next method is quite interesting. Normally this employees are confronted in a short session and being explained the goal of the organization, and how the task he is been responsibly assigned plays a very important part in realizing the goal. This indirectly made the employee feels recognized and important to the organization. By doing this, their attitude becomes more positive as they now see their task differently and are motivated to perform well in their job. He also said that lack of motivation is the cause of incompetency, thus injecting motivation works all the time.

Close supervision by more experienced employee are also one of the common practice to improve competency of inexperience employee. This method is normally done at the early period of a task until the supervisor feels that the person is prepared to handle the task independently. These methods are practiced in many organizations due to its effectiveness. However, this supervision method is said tocause an employee to be too dependable and not having the initiative to find solutions independently and also distract the work of the other employee.

The other two ways to improve employee competency are by using feedback system and taking disciplinary actions in which both rank fourth and fifth respectively. Feedback system are used by employer to give review to their employees regarding their performance matters and which the employee with poor performance will need to step up and improve their work to achieve required standards. Lastly, the most unfavorable approach is by taking disciplinary actions to employee. This is normally given if the employees are still continuing the poor performance after feedback had been given to them.

CHAPTER 5: CONCLUSION & RECOMMENDATION

The general objectives of this research were to study the competency in human resources that lead to construction project success. In order to do so, the researcher needs to provide a forecasting tool to enable parties to rapidly assess the possibility of a successful project from their viewpoint. Thus this research report will focus into five main components which is 1) to study the competency criteria of stakeholders in construction projects; 2) to determine the critical success factor (CSF) in construction projects; 3) to determine the factors contributing to incompetence workers; 4) to identify the problem causes by incompetence workers; and 5) to recognize ways to overcome incompetence workers. These, general objectives were met through the accomplishments of the research. The initial study was carry out first based on the literature review. Based on the previous literature review, it has been demonstrated that there is strong agreement between groups (owners, contractors, and design teams) on contributing to success of a construction projects in their characteristics.

To complement the literature review, the researcher had conduct a survey to identify the critical success factors, factors contributing to employee incompetency, and best practice to overcome employee incompetency through survey questionnaires, semi-structured interviews. The research results shows that most of the respondents although have different work background agreed that the most critical success factor of construction project is experience, followed by knowledge, intelligence/thinking skills, and lastly technical skills. These survey findings complement the literature review made earlier.

This research paper also looks beyond competency. The researcher manages to also determine the factors that contribute to employee incompetency. Incompetency in this context means the inability of a worker to perform job at a required standards. The observed results indicate that poor communication is the major cause of employee incompetency. Poor communication in construction projects can cause a lot of damage as misunderstanding of information can effects the project execution. The result delivered will not achieved required standards as wrong information is pass through during the construction process. Thus, it is important to have an

effective communication skill to make sure information pass are not distorted and thus improve the work quality.

From the survey, the researcher had also has discovered the effective ways to improve employees competency. It is observed that the most common practice adopted by employers is providing the incompetent employee with necessary trainings. This involves incorporating them to training workshops and seminars to improve their knowledge and skills. While taking disciplinary actions are least chosen ways to improve competency as these method success rate is quite low.

Overall, based on all the research and findings of the survey being made, it is evidence that competency in human resources are very much important towards success of a construction project. Competency is a general terms to describe the ability of an employee to perform job at a required standards. The four elements of critical success factors discovered and discusses in this research paper can help an organization achieved the standards set by construction industry. Factors causing incompetency and ways to improve employee competency are also determined to provide guide for developers, engineers, architects and contractors in their effort to improve competency of their employees.

REFERENCES

MohdSuberi Ab. Halim, MasturaJaafar, Omar Osman and Md. ShariffHaniff. *Journal of Construction in Developing Countries, Supp. 1, 71–78, 2012*

Strischek, D. and McIntyre, M. (2008). Red flags and warning signs of contractors failure. *The RMA Journal*, 90: 72–79.

Yin, K.Y. (2006). How to become a competent contractor. *Jurutera*, February.

Harris, F., &McCaffer, R. (2001). Modern construction management (5th ed.). Oxford: Blackwell Science Ltd

Laura Spencer. (2007). *Ten Characteristics of Good Client.*Business&Marketing.

Clark Wilson. (2006). *Role of Consultant in Construction.* BC's Law Firm For Business.

SrikanthSubbarao. (2011). *Role of Private Sector, Consultants and Project Owners in CDM approval and Promotion.*

Sanford-Brown Institute(2008) ,*Top 10 Quality of Great Engineer*

Meredith, J.R. and Mantel, S.J. (2006), Project Management – A Managerial Approach, 6th ed.,Wiley, New York, NY.

Abdul-Rahman H,BerawiMA,BerawiAR,Mohamed O , Othman M, and Yahya IA (2006).
Delay mitigation in the Malaysian constructionindustry. *Journal of Construction Engineering*
*and Management, **132** (2):125-33.*

Lenard, D. and Eckersley, Y. 1997, Driving Innovation: the Role of the Client and the Contractor, Report No. 11, Construction Industry Institute, Adelaide, Australia.
Abd. Majid M. Z. and Ronald M. (1998). Factors of Non-Excusable Delays That Influence Contractor's Performance, in UK.

Leybourne, S.A., 2007. The changing bias of project management research: a consideration of the literatures and an application of extant theory. Project Management Journal 38 (1), 61–73.

Boyatzis, R.E., 1982. The CompetentManager: aModel for Effective Performance. John Wley& Sons, New York.

Müller, R., Turner, R., 2010. Leadership competency profiles of successful project managers. International Journal of Project Management 28 (4), 437–448.

Ahadzie, D.K., Proverbs, D.G., Olomolaiye, P., 2008. Towards developing competency-based measures for construction project managers: should contextual behaviours be distinguished from task behaviours. International Journal of Project Management 26 (6), 631–645.

Muhammad Saqib **,**Rizwan U. Farooqui **,** Sarosh. H. Lodi, 2008**.“**Advancing and Integrating Construction Education, Research & Practice"

Belassi, W., and Tukel, O. I. (1996). ''A new framework for determining critical success/failure factors in projects.'' Int. J. Proj. Manage., 14(3), 141–151.

Chua, D. K. H., Kog, Y. C., and Loh, P. K. (1999). ''Critical success factors for different project
objectives.'' J. Constr. Eng. Manage., 125(3), 142–150.

Sanvido, V., Grobler, F., Pariff, K., Guvents, M., and Coyle, M. (1992). ''Critical success factors for construction projects.'' J. Constr. Eng. Manage., 118(1), 94 –111.

Zeng, S.X., Wang, H.C., Tam, C.M. “A SURVEY OF CONSTRUCTION SITE SAFETY IN CHINA.”

Chua, D. K. H., Kog, Y. C., and Loh, P. K. (1999). ‘‘Critical success factors for different project
objectives.’’ J. Constr. Eng. Manage., 125(3), 142–150.

Rockart, J. F. (1982). "The changing role of the information systems executive: A critical success factors perspective." Sloan Mgmt. Review, 24(1), 3-13.

Sanvido, V., Grobler, F., Pariff, K., Guvents, M., and Coyle, M. (1992). ‘‘Critical success factors for construction projects.’’ J. Constr. Eng. Manage., 118(1), 94 –111.

Abdul-Rahman., Berawi H., Berawa M.A., Othaman M., and Yahya I.A.(2006), Delay mitigation in the Malaysian Construction industry, Journal Construction Engineering Management, 132(2), pp.125-133

Albert, P.C Chan., David Scott & Ada, P.L.Chan (2004), Factors affecting the success of a construction project, Journal of Construction Engineering and Management, Vol. 130(1),pp. 153-155

Ashley & Jaselskis (1987), Determinants of construction project success, Project Management Journal, Vol. 18(2),pp. 69-79

Cash C. and Fox R. (1992), Elements of Successful project management. Journal of System Management,pp. 10-12.

Chan D.W.M., & Kumaraswamy M.M. (1997), A comparative study of causes of time overruns in Hong Kong construction projects. *Journal Management Engineering, Vol 15(1):55-63*

Chan A.P.C., Scott D., & Lam E.W.M. (1999). Critical success factors for different project objectives. *Journal Construction Engineering Management,* Vol 18(3), pp 120-128

Belout, A. (1998). ‘‘Effects of human resource management on project effectiveness and success: toward a new conceptual framework.’’ Int. J. Proj. Manage., 16(1), 21–26.

Belassi, W., and Tukel, O. I. (1996). ‘‘A new framework for determining critical success/failure factors in projects.’’ Int. J. Proj. Manage., 14(3), 141–151.

Rockart, J. F. (1982). "The changing role of the information systems executive: A critical success factors perspective." Sloan Mgmt. Review, 24(1), 3-13.

Sanvido, V., Grobler, F., Pariff, K., Guvents, M., and Coyle, M. (1992). ‘‘Critical success factors for construction projects.’’ J. Constr. Eng. Manage., 118(1), 94 –111.

APPENDIX

APPENDIX A: SURVEY FORM

Questionnaire Form

QUESTIONNAIRES

CASE STUDY ON COMPETENCY IN HUMAN RESOURCE FOR SUCCESSFUL COMPLETION OF CONSTRUCTION PROJECTS

Objectives:

1. To determine the critical success factors of construction projects
2. To identify the factors contributing to employee incompetency
3. To determine ways to overcome employee incompetency

Instructions:

1. Please fill in the space available and tick ☑ in the respective box
2. All information's will be treated as CONFIDENTIAL and shall be used for academic purposes only.
3. All the data information will be on aggregated basis and no individual data will be published.
4. If more information's are required, please contact Muhammad Faiz Aizat Bin Zainal by phone 012-6275215 or email to faizaizatzainal@gmail.com

SECTION A: GENERAL INFORMATION OF THE AGENCY/ ORGANISATION

1. Name of respondent's company :

…….

2. Respondent's experience (years):

	Less than 5 years
	5 to 10 years
	10 to 15 years
	More than 15 years

For each statement below please tick ☑ on the appropriate number to indicate whether it is:

1 - STRONGLY DISAGREE 2 - DISAGREE 3 - MODERATELY

4 - AGREE 5 - STRONGLY AGREE

SECTION B: CRITICAL SUCCESS FACTORS (CSFs)

What are the factors that play the most important role in determining the success of a project based on your opinions/experiences?

No	Items	1	2	3	4	5
1.	Experience					
2.	Knowledge					
3.	Intelligences / Thinking Skills					
4.	Technical Skills					
5.	(any other practices that respondent think necessary)					
6.						
7.						

Any comments or suggestions

……

SECTION C: FACTORS CONTRIBUTING TO EMPLOYEE INCOMPETENCY

Based on the lists, what could be the main factors that cause employees incompetency?

**Incompetency in this context means inability of a worker to perform job at a required standards.*

No	Items	1	2	3	4	5
8.	Poor communication – Misunderstanding of information					
9.	Procrastination – Delay work progress, postpone following project status, and waiting until deadline					
10.	Inexperienced – Not familiar with scope of work					
11.	Multiple projects handle by a worker					
12.	Lack of training – Lack of knowledge and skills					
13.	Poor management system - Poor records on project progress					
14.	Complexity of the job					
15.	(any other practices that respondent think necessary)					

Any comments or suggestions

……

SECTION D: WAYS TO OVERCOME EMPLOYEE INCOMPETENCY

What do you think would be the best way to overcome incompetency?
**Incompetency in this context means inability of a worker to perform job at a required standards.*

No	**Items**	1	2	3	4	5
1.	Provide necessary training – Workshops, seminars					
2.	Reward workers with outstanding performance a bonus					
3.	Feedback system – Make sure the employee is aware with their performance					
4.	Close supervision					
5.	Discipline – Written notice / Disciplinary action					
6.	(any other practices that respondent think necessary)					

Any comments or suggestions

……