

PROJECT MANAGEMENT SKILLS FOR NEW ENGINEERS IN  
JABATAN KERJA RAYA MALAYSIA

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PROJECT MANAGEMENT SKILLS FOR NEW ENGINEERS IN  
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A special feeling of gratitude to my loving family for all the love and support and to people around me especially my best friends who continuous encouragement and motivation while completing this capstone project

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## ABSTRACT

There are several problems related to work readiness of new engineers in project management industry. With little experience in managing project and lack in soft skills, they are expected to become a team member and to manage stakeholders. Although new engineers typically have academic and technical knowledge and skills, they often lack some basic managerial skills, also referred as work readiness skills. The aim of this study is to investigate the level of work readiness and project management skills among new engineers in JKR. The objectives of the study are as follows: (1) identify the project management skills for new engineers, (2) determine the level of work readiness in project management among new engineers and (3) propose the program for new engineers to become competent in project management. The approach of the study will be a combination between quantitative and qualitative methods. Findings have shown that communication and teamwork are the skills needed to be developed for the first-two years' service with JKR, followed by action orientation skills between three to four years and leadership skill for services more than five years. Findings also indicated that new entrances engineers are not ready with project management. The findings will also be used to improve the existing induction program for new engineers in JKR especially in project management.

## ABSTRAK

Terdapat beberapa masalah yang berkaitan dengan kesediaan untuk berkerja bagi jurutera baru dalam industri pengurusan projek. Dengan sedikit pengalaman dalam menguruskan projek dan kurangnya kemahiran, mereka dijangka untuk menjadi ahli pasukan dan mengurus pihak-pihak berkepentingan dalam pengurusan projek. Jurutera baru biasanya mempunyai pengetahuan dan kemahiran akademik dan teknikal walau bagaimanapun mereka mempunyai kekurangan dalam beberapa kemahiran asas pengurusan, juga dirujuk sebagai kemahiran kesediaan untuk berkerja. Tujuan kajian ini adalah untuk meninjau tahap kesediaan kerja dan keperluan kemahiran pengurusan projek di kalangan jurutera baru di JKR. Objektif kajian ini adalah seperti berikut: (1) mengenal pasti keperluan kemahiran pengurusan projek untuk jurutera baru, (2) menentukan tahap kesediaan kerja dalam pengurusan projek di kalangan jurutera baru dan (3) mencadangkan induksi program bagi jurutera baru untuk menjadi kompeten dalam pengurusan projek. Pendekatan kajian adalah menggunakan gabungan antara kaedah kuantitatif dan kualitatif. Daripada kajian yang dijalankan menunjukkan bahawa komunikasi dan kerja berpasukan adalah kemahiran yang diperlukan untuk dibangunkan bagi tahun pertama hingga kedua dalam perkhidmatan JKR, diikuti dengan kemahiran orientasi tindakan antara tiga hingga empat tahun dan kemahiran kepimpinan untuk perkhidmatan yang lebih daripada lima tahun di Jabatan untuk jurutera baru. Daripada kajian ini juga menunjukkan bahawa jurutera baru di Jabatan tidak bersedia untuk berkerja dalam pengurusan projek. Kajian ini juga akan digunakan untuk meningkatkan program induksi yang sedia ada untuk jurutera baru di JKR terutamanya dalam pengurusan projek.

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**LIST OF ABBREVIATIONS**

HODT	Head of Design Team
HOPT	Head of Project Team
HR	Human Resource
Ir.	Professional Engineer
JKR	Jabatan Kerja Raya
KPI	Key Performances Indicator
PWD	Public Work of Department
RII	Relative importance index
SKT	<i>Sasaran Kerja Tahunan</i>
SME	Subject Matter Expert
SPSS	Statistic Package for Social Science



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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

Work readiness contains particular work-related skills that new engineers needed in order to be successful as entry-level engineers in Jabatan Kerja Raya (JKR). Department needs to hire the new engineers with excellent technical skills and high soft skills competencies. It is very important to determine the level of work readiness among new engineers and project management set skills needed for new engineer to become competent engineers in department. This chapter of the study introduces to the background of the research, problem statement, research aim and objectives, significance of the study, scope and limitations in terms of the study.

#### **1.2 Background of the Problem**

In today's era of government transformation and as the country heads towards high income nation by 2020, many departments' heads have voiced the need for new entrances to be competent government servant. This is to ensure better and efficient

deliveries hence increasing customers and stakeholder's satisfaction. Public Works Department (PWD) or JKR being a project based organisation, whence it is important that new entrances graduate engineer must have work readiness skills in project management.

Work readiness skills in project management include both foundational perceptive and behavioural skills. Perceptive skills can be defined as personal characteristics such as reading for information of project management knowledge area, problem solving, critical thinking and soft skills. Meanwhile behavioural skills are skills that enhance individual's interactions, job performance and career visions such as adaptability, integrity, cooperation and discipline.

From the employers' perspective, employability seems to refer to work readiness, that is, possession of the skills, knowledge, attitudes and marketable understanding that will enable new graduates to make useful contributions to organizational objectives soon after beginning engagement (Mason *et al.*, 2006). Employability skills are those basic skills required for getting, keeping, and doing well on a job (Robinson, 2000).

For the new graduate engineer or entrances, work readiness might include adjusting to a new working culture, knowing their skills and capacity in learning, coping with new colleagues and environment, flexibility to adapt to changes, keeping physically and mentally fit and also having a good work ethic. Therefore, it is a big challenge to the department in identifying the work readiness among new graduate engineers.

Currently, there are 1335 junior graduate engineers in JKR at Grade J41 from various engineering field such as Civil, Mechanical, Electrical and Architecture and also Quantity Surveyor. Recently, there are 45 new entrances graduate engineers appointed in Jun 2014 and another 38 new entrances graduate engineer appointed in

July 2014. They are placed based on Department Career Development and Placement Policy, their current competencies and the needs of the department. They are stationed either at the project site or design office.

To this date, there are no clear levels of work readiness among the new entrances in JKR in relation to their competent involvement in project management. It is crucial to determine the level of work readiness among new entrances graduate engineer in project management because the mission and vision of the department is to provide world class service and center of excellence in asset management, project management and engineering for the national infrastructure development based on human capital and the creative and innovative.

### **1.3 Problem Statement**

Work readiness is a concept to start a graduate's transition to the workplace. It can be defined as a complex of general attributes that allow new entrances graduate engineers to apply their technical knowledge to problem identification and solving. According to Jollands et al. (2012), new engineers lack in preferred attributes and some skill gaps were identified such as project management knowledge, problem solving, communication skills and report writing skills. According to Khir (2006), graduates now are lacking in both technical knowhow and generic skills. This can be proven where JKR'S administrators received numerous complaints from the head of department stated that new entrance engineers lack in communication, writing skills and technical knowledge.

According to Lee (2003) the integration of project management (PM) skills into the university engineering curriculum offers one solution for training and preparing students with the required transferable hard- and soft-skills from the

classroom to the workplace. Unfortunately, essential non-technical skills are still lacking among engineering graduates because most engineering schools provide students with little practical experience and few applications competencies.

Sherer and Eadie (1987, p.16) explain that too many young graduates leave universities without the skills, attitudes, and understanding that are required to well enter the world of work. New entrances graduate engineers are often being expected by their superior to manage team members almost from the day they started working. In many cases, new entrances graduate engineers from technical background are placed into project management positions without any development or structured training in team or project management (Bothma, 2012). The feedback on current induction program that has been introduced to new engineer was not effective. There is need to improve the existing induction program for new engineers in JKR especially in project management.

#### **1.4 Research Questions**

The research questions relevant to study aimed to answer are:

- a) What are the project management skills needed for new engineers to become competent engineer?
- b) What is the level of work readiness in project management among new engineers in JKR?
- c) What is the suitable induction program for new engineer to become competent in project management?

## **1.5 The Aim and Objectives of the Study**

This aim of the study is to investigate the level of work readiness and needs in project management skills among new entrances graduate engineers in JKR and the relevant guideline and program needed to close this gap.

This study is undertaken with the following objectives:

- a) To identify the project management skills for new engineers.
- b) To determine the level of work readiness in project management among new entrances engineers in JKR.
- c) To propose an induction program for new engineers to become competent in project management.

## **1.6 Scope of the Study**

This study focuses on the level work readiness in project management area among new entrances graduate engineers such as knowledge in project management, communication skills, problem solving, teamwork and leadership. In this study also, the feedback from junior graduate engineers in the department on project management skills needed for new entrances graduate engineers will also being listed and ranked.

## **1.7 Significance of the Study**

### **i. For JKR**

Corporate Management Branch, PWD will benefit from this research, they will become aware of the work readiness and skills among new engineer. This study will produce an indication level of work readiness among new entrances engineers in JKR for project management and ultimately can benefit any present and future organizations. By the establishment of the set skills, the department can develop appropriate training system for new engineer. This study also can assist in preparing inventory of work readiness and further ease the planning process for new engineer placement.

### **ii. For JKR Staff**

This study will provide information on project management skills, competency and training required for new engineers who are involved in any project management environment. Based on this study, the new engineer can improve their skills and further reduce the gap of competencies in project management. This is important to increase the confidence among new engineers to work in the department and to liaise with stakeholders involved in the project.

## **1.8 Limitation of the Study**

This study is limited to civil engineers in JKR since they form the majority involved in project management as project manager. The data was gathered through comprehensive literature review, interview with selected expert panel and through questionnaire survey process. The questionnaire survey has been designed guided by the objective to get the feedback from the respondents. The respondents' groups

form are new entrances graduate engineers, junior graduate engineers with six years experiences Grade J41 and expert panel (interview) in JKR.

## **1.9 Conceptual Definition**

There are many conceptual definition can be obtained from various source available. Some of them are related to this study as listed as below.

### **1.9.1 Readiness**

“Readiness is a state of being ready and able to deal with what might or will happen and the state of being willing to do something (MacMillan Dictionary)”,

“Readiness is the process of preparing mentally or physically for some experience or action and at the same time preparing for immediate use, or immediately available (Merriam-Webster Dictionary)”,

“Readiness theories of learning lean heavily on the concept of maturation in stages of biological and mental development. It is assumed that a child passes through all stages of development in reaching maturity. The teacher finds out what a child is ready for and then devises appropriate materials and methods. Much of the work on reading skills, for instance, makes use of the readiness concept. The Italian educator Maria Montessori claimed that “periods of sensitivity,” corresponding to



certain ages, exist when a child's interest and mental capacity are best suited to acquiring knowledge of such things (Britannica Encyclopedia)".

"The degree of preparedness to act or respond to a particular stimulus and The level of preparation for a given task sufficient to result in meaningful learning (Psychology Dictionary)". "Readiness level is high, though some concerns were raised in workforce training supports, legal and integration issues (Nita, 2013)".

### **1.9.2 Skill**

"Skill is the ability to use one's knowledge effectively and readily in execution or performance. The dexterity or coordinating especially in the execution of learned physical tasks. Skill is a learned power of doing something competently; a developed aptitude or ability (Merriam-Webster Dictionary)",

"Skill is an ability and capacity acquired through deliberate, systematic, and sustained effort to smoothly and adaptively carryout complex activities or job functions involving ideas (cognitive skills), things (technical skills), and/or people (interpersonal skills) (Business Dictionary)"

### **1.9.3 Graduate Engineers**

Graduate engineers basically required to complete a four-year Bachelor of Science in Engineering degree at local or international university or to those who

have diploma in engineering and need complete two and half-year in degree. Graduate engineers work within the engineering profession. Graduate engineers can come from any of the engineering disciplines, including civil, mechanical, and electrical.

## **1.10 Summary**

This chapter was consists of an overview and background to the study. The research aims and objectives, scope and limitation of the study are discussed. There are some of the problems linked to work readiness of new engineers in JKR. With little experience before entry JKR and lack in technical and generic skills, the new engineers are expected to become a good project manager and to manage stakeholders.

Although new engineers typically have excellent academic and technical knowledge, they often lack some basic generic skills, also referred as work readiness skills. Based on this study, the department and new engineers can improve the existing program to reduce the gap of competencies with determine set skills for new engineers in project management. The second chapter of this study consists of a comprehensive literature review on the topics of work readiness and project management skills.

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