3.0 Introduction

This study aims to identify the differences of wastage level between prefabricated and conventional method in construction activity; and the differences of wastage level between types of building which are residential building and commercial building. This study also looks into the causes of waste generation on site. The methodology flow in this study is as shown in Figure 3.1. In summary, the scope of this study covers:

i. Study area involved in Kuala Lumpur and Petaling Jaya.
ii. Data of wastage level is collected base on cumulative.
iii. Wastage occurred on site.
iv. Focus on 2 types of construction method – Conventional method and Prefabrication method.
v. Focus on 3 types of construction materials – Steel, concrete and timber (conventional method).
vi. Focus on 2 types of building – Commercial and residential building.

3.1 Site visit and observation

Site visits were conducted in order to collect all related data. Site visits were conducted only on weekend especially Saturday because construction management is busy on weekdays. Site visits conducted were assisted by the officers at the construction site and it is very important to have guidance so that some important aspects about the study can be seen clearly and easy to understand. Before entering construction site zone, visitors must wear safety helmets and shoes as a safety precaution. However, visitors who did not have permission from the construction management are not allowed to enter the construction area. Photographs were taken to have the view of site condition as well as the management practice but first and foremost, permission from the construction manager should be gained first.

Site visits were conducted every week within 9 months duration of time starting from October 2006 until July 2007 for the three site projects. These three site projects were selected according to the location and differences of the construction methods employed.

Before the site visits, a set of checklist were prepared for the data collection on site.

i. Operational document
ii. Site generation information checklist
iii. Storage method form
iv. Truck record form
v. Amount of total material delivered at site
vi. Amount of total work done at site

Apart from site observations, interviews with construction managers and site foremen were conducted. The following topics related were covered in the interviews:

i. Sequence of site processes and activities
ii. Waste handling methods
iii. Housekeeping activity
iv. Suggestion to avoid and minimize waste

3.2 Data collection and analysis

3.2.1 Data collection

In order to know the amount of construction waste that was produced in every project site, a good and suitable calculation formula is essential to be applied in this study. This formula can be used to estimate quantities of waste that may arise as a result of a building project.

Due to the availability of data in Malaysian construction company, the formula/equation are adopted from Poon et al., (2001). Raw materials that were collected from the construction management are from October 2006 until July 2007 consists of cumulative order quantity, cumulative workdone, truck volume (m^3) and total number of trucks loads for waste proposal. Furthermore, due to the availability data record on site, only three materials are choosen in this study namely concrete, steel reinforcement and timber.

3.2.2 Data analysis

The methodology of calculating the waste index and wastage percentage are as follows:

A* Formula of measurement of total waste produced from overall project.

- ***V = truck volume (m^3)***
- ***N = total number of loads for waste proposal***
- ***W = total waste generated by the project (m^3) = (V) x (N)***
- ***C = Waste index = W / GFA (i.e $1m^2$ area of GFA generates (c)m^3 of waste).***

B* Formula of measurement of wastage percentage level

(1) Cumulative order quantity

(2) Cumulative workdone

(3) = (1) – (2) = wastage

(4) = (3) / (2) wastage % including disposed and reused materials

(Source of formula: Poon et al., 2001)

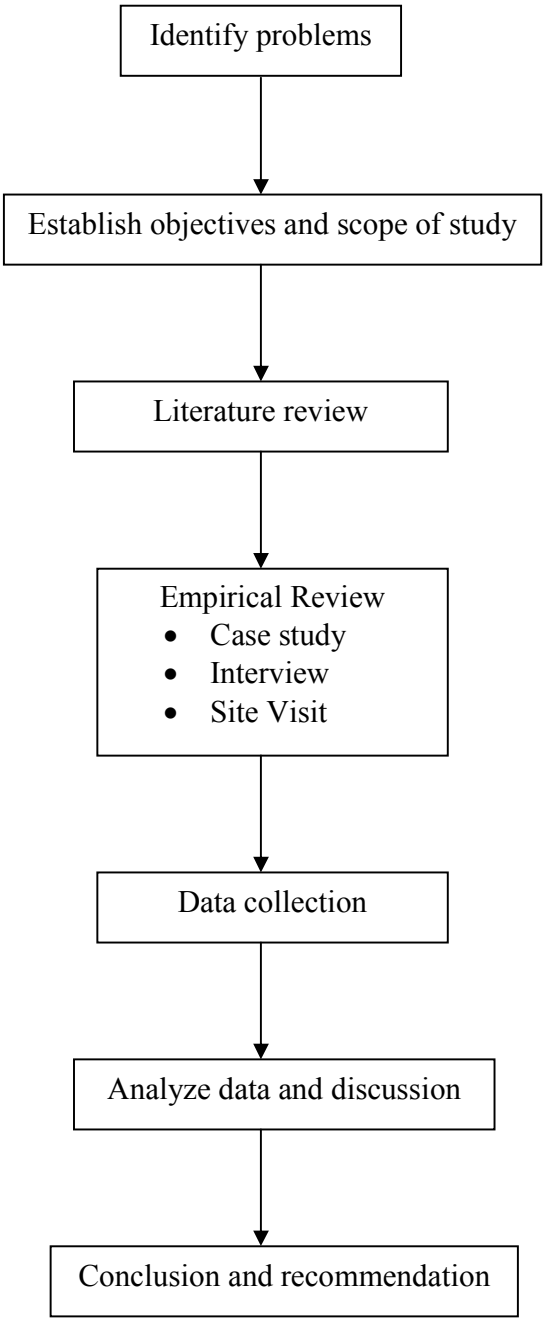

Figure 3.1: Research Methodology Flowchart