

QUANTIFYING DEPRECIATION IN PLANT AND MACHINERY VALUATION

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QUANTIFYING DEPRECIATION IN PLANT AND MACHINERY
VALUATION

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A Project report submitted in fulfillment of the
requirement for the award of degree of Master of
Science in Real Estate Valuation

Faculty of Geoinformation Science and Engineering
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MAY 2009

ABSTRACT

The Malaysian industrial sector is growing dramatically, and this situation leads to the increasing of needs in Plant and Machinery Valuation. However, in Malaysia there are no intensive and aggressive efforts being done to generate knowledge and exposure to the Valuers on the Plant and Machinery Valuation. The process of valuing plant and machinery involved a lot of works and need plant and machinery valuers with high skill and expertise. Market Comparison method has been considered as the most appropriate method. However because of inadequate comparable sales and inefficiency data collection, the application comparison method is difficult and the cost method is more reliable. Nevertheless, depreciation is one of the critical elements that exist on plant and machinery regardless the type and nature of the plants and machinery. However, there is no standard or guidelines on determination of Depreciation. The depreciation is influenced by physical deterioration, functional and economic obsolesces. The identification of the factor of depreciation for plant or machinery is normally too subjective and thus required thorough analysis. The purpose of this study is to identify the process of plant and machinery valuation and determine the factors or causes of depreciation through market analysis and interviews with the professionals. In order to accomplish the objective of this study, comparative and cross-sectional analyses are adopted. The study revealed that the appropriate method in determine depreciation is Declining Balance Method and the depreciation of plant and machinery is influenced by the Physical deterioration, functional obsolesce, economic obsolesces and external factor of obsolesces.

ABSTRAK

Sektor perindustri di Malaysia berkembang secara dramatik, situasi ini secara tidak langsung menyebabkan permintaan terhadap penilaian Loji dan Jentera turut meningkat. Walaubagaimanapun, kesungguhan untuk menjana pengetahuan terhadap Penilai mengenai penilaian Loji dan Jentera masih berada ditahap yang tidak memuaskan. Proses penilaian Loji dan Jentera adalah proses yang rumit dan memerlukan Penilai yang mahir dan berkebolehan. Manakala, kaedah perbandingan adalah kaedah yang paling bersesuaian untuk menilai Loji dan Jentera, oleh kerana maklumat transaksi pasaran yang tidak lengkap kaedah ini menyebabkan kaedah perbandingan sudah lagi tidak bersesuaian, dan sebagai ganti kaedah kos digunapakai. Susut nilai adalah elemen yang paling penting yang terdapat didalam Loji dan Jentera, tetapi ianya bergantung terhadap jenis dan keadaan Loji dan Jentera tersebut. Namun begitu, sehingga kini masih lagi tiada sebarang piawaian dan panduan yang ditetapkan bagi mengangar susut nilai Loji dan Jentera. Susut nilai sesuatu loji dan jentera itu adalah dipengaruhi oleh Kerosakan Fizikal, Keusangan Fungsi dan Keusangan Ekonomi, bagi mengenalpasti faktor-faktor yang mempengaruhi susut nilai sesuatu Loji dan Jentera satu analysis yang sistematik diperlukan. Namun Begitu tujuan kajian ini adalah bagi mengenal pasti proses penilaian dan jentera, dan mengenal pasti faktor-faktor dan penyebab susut nilai sesuatu Loji dan Jentera melaluai analisis pasaran dan temubual. Bagi mecapai objektif kajian Kaedah "comparative analysis" dan "Cross-sectional analysis" digunapakai. Hasil daripada kajian ini, kaedah yang sesuai untuk menggar susut nilai sesuatu Loji dan Jentera ialah Kaedah Susut Nilai Baki Berkurangan, manakala susut nilai sesuatu Loji dan Jentera tersebut adalah dipengaruhi oleh faktor Kerosakan Fizika, Keusangan Fungsi, Keusangan Ekonomi, dan Faktor Keusangan luar masin tersebut.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Malaysia is a growing and relatively an open economy country. In year 2007, the economy of Malaysia was the 29th largest economy in the world by purchasing power parity with Gross Domestic Product (GDP) for year 2007 was estimated to be RM 357.9 billion with a growth rate of 5% to 7% since 2007, meanwhile for year 2008 Malaysia Economic growth rate projected the at 6% to 7%.

According to the Department of Statistics Malaysia, the percentage share of Industry in total Gross Domestic Product (GDP) has increased. The percentage share of industry has reached to 50.4% in 2004 from 38.5% in 1984; in year 2008 industrial index is projected to expand at 138.6, substantially higher than the 132.6 in year 2007, the positive impact to the industrial sector are influenced by the introduction of new regulation on the industrial guidelines.

Malaysian industrial revolution began since early 1980 with the introduction of Main Industrial Plan (MIP). In early 1990, the Government strategy continued with the introduction of new scheme for medium-light industrial under New Development Plan (NDP), however in achieving the vision 2020 to be an industrialised country, Malaysian industrial revolution continued with the introduction of Ninth Malaysian Plan (9MP).

The new launched infrastructure project under the Ninth Malaysia Plan (9MP) which had included the development of growth corridors and the implementation of the Second Penang Bridge, Penang Monorail, the Ipoh-Padang Besar double-tracking rail project and the extension of the Ampang and Kelana Jaya light rail transit lines expected to give a big impact to the industrial sector.

Besides that, under the Ninth Malaysian Plan (9MP), the industrial sector will promise a better growth in the future with many gigantic projects, including the ECER (East Corridor Economic Region), NCER (North Corridor Economic Region), IDC (Iskandar Development Corridor), SER (Sabah Economic Corridor) and SCORE (Sarawak Corridor of Renewable Energy) developments set to take place.

Generally, the strong growth of the industry sector together with the encouraging national economic growth has created opportunities for the valuation of Industry properties, and Plant and Machinery (PNM) valuation. Indirectly this situation creates a demand for the Professional Valuer in the Plant and Machinery field, but unfortunately the number of professionals in this field is relatively small and lack of competency.

According to the Valuers, Appraisal and Estate Agent Act 1981, Valuer has been given the authority to value properties including Plant and Machinery. However due to lack of knowledge and experience about the Plant and Machinery among valuers, this profession has been monopolised by other professional such as Accountants and Mechanical Engineers.

1.2 Problems Statement

The industrial sector is expanding tremendously and this situation will lead to the increase of the numbers of Plant and Machinery especially in low and medium industry sector. Indirectly this will increase the needs of Plant and Machinery Valuation.

However, in Malaysia there are no intensive and aggressive efforts being done to generate knowledge and exposure to the Valuers on the Plant and Machinery Valuation.

Real estate appraisal, property valuation, land valuation or plant and machinery valuation are the practices of developing an opinion of the value of real property, plant or machinery. Opinion of value usually refers to the Open Market Value. There are three general groups of methodologies for determining market value:-

- 1) The cost method,
- 2) The sales comparison method and;
- 3) The income method.

The purpose of valuation usually either for financing, insurance, or internal management purpose, thence the general process can be divided to three stages; before, during and after inspection.

Before inspection the plant's valuer should have the detail checklist to take down the necessary information during the inspection and prepare other related equipments, such as; Digital camera, Torch light, Measuring tape, Safety equipment and etc.

Meanwhile, during the inspection, the representative/staff, owner or engineer need to help the Valuers in inspecting and collecting the necessary information, and the substantial information usually come from the accounts department. Example of the substantial information required by the Valuers are; List of plant, purchase bills, balance sheets, year of purchase, chartered engineers certificate, address of manufacturer, installation cost, and etc. After the inspection, the Valuers have to analyze the information collected during the inspection to determine the fair value of the plant from the information.

The sales comparison approach is the best method in determining the value; this approach is generally considered the most reliable if adequate comparable sales exist. This method is examined the price or price per unit area of similar Plant and Machinery being sold in the marketplace. Thence, the sales of properties similar to the subject are analyzed and the sales price adjusted to account for differences in the comparables to the subject to determine the value of the subject asset.

However because of inadequate comparable sales and inefficiency data collection in Malaysia, the comparison method is not reliable anymore for the Plant and Machinery valuation. Refer to Hishamuddin (1996), which he revealed that the Cost Method is most reliable method for this valuation.

In the **Cost approach** theory, the value of a plant and machinery can be estimated as value of new plant and machinery minus the depreciation value of the plant and machinery plus with other relevant costs (labor, transportation, and other costs). This technique is often referred to abbreviation RCNLD (*reproduction cost new less depreciation* or *replacement cost new less depreciation*); reproduction refers to reproducing an exact replica. Replacement cost refers to the cost of plant and machinery or other support machinery which has the same utility, workmanship and materials. In practice, appraisers use replacement cost and then deduct a factor for any functional disutility associated with the age of the subject property.

As cited by Hishamuddin (1996), the main reason why the cost method is being used as the main component in the valuation process is to determine the degree of depreciation (obsolesces). Nevertheless in Malaysia, there is no standard or guidelines in determining the percentage of depreciation. Besides, with the lack of information and experience about the plant and machinery, real estate valuers do not prefer this field as their favorite and priority.

According to French (2003) there is no standard or guidelines in determining the degree of depreciation and obsolesces for the Plant and Machinery Valuation. In fact, in the International Valuation Standards Committee (IVSC 2004) and Malaysia Valuation Standards (MVS2001) only states that the available method in Plant and Machinery valuation are sale comparison, cost approach and income capitalization, and there is no standard rules or guidelines in determining the degree of depreciation or obsolesces.

Meanwhile, referring to Swanson (1990), the most popular method that has been practised to determine the depreciation of Plant and Machinery is based on account method. This method is completely erroneous and do not consider the factor of Economic, Technology and Physical of Plant and Machinery.

In future, the market needs for the plant and machinery valuation could reach to higher level. Plant and Machinery valuation can be very complex and specialized in nature, and together with the fact of little and insufficient market evidence, the comparison method is not reliable anymore. This requires the Valuer to show a great care and reason in each step of the valuation process. The following questions will be the problem statement for this study.

1. What is the standard or guidelines need to comply in determining Obsolesce or Depreciation of Plant and Machinery?
2. What is the best method that can be used and how to measure the degree of obsolesce?

This study attempts to discuss some aspect of Plant and Machinery valuation's processes and method to determine the depreciation with a special reference to the valuation of Weight Bridge for FELCRA oil palm refinery. Besides, this study also attempts to segregate the type of depreciation used in the cost method. It is a hope that this study will give some information and guidelines in the valuation of plant and machinery.

1.3 Aims and Objectives

As discussed before, the valuation scope was widely broadened and the valuation is not only focusing on the land and building. The valuation of Plant and Machinery is equally important as any valuation of other properties. In certain case, the value of Plant and Machinery is higher than the value of the factory building.

However lately, Plant and Machinery valuation has become another important aspect of valuation is an addition to this profession. Based on the problems stated and issues discussed above, the aims and objectives of this paper will be:

- I.** To identify the appropriate method in determine the depreciation of Plant and Machinery.

- II.** To quantify the type of depreciation/obsolesces that need to be considered in Plant and Machinery valuation.

1.4 Applied Value of Research

Valuation of Plant and Machinery is a jurisdiction that needs specialization of skill and exercise; however as mentioned before, in Malaysia there are no specific or standard guidelines in order to expose the valuer on Plant and Machinery Valuation.

So based on this, the study is expected to be able give awareness and guidelines to the new practitioners in the Plant and Machinery valuation, and as a basic standard or guidelines in determining the depreciation. Besides that, this research will also expected to be able to give some guidelines and procedure on Plant and Machinery Valuation

processes, indirectly to generate knowledge and give exposure to the valuers in valuing Plant and Machinery.

1.5 Scope and Limitation

For this study, a few limitations have been set to ensure that the scope is within the objective. Among the limitation for this study are as follows:-

- a.** Limitation of this research will be on the principle used for Plant and Machinery valuation for Market Value purposes.
- b.** This research will fully discuss on the Plant and Machinery valuation process.
- c.** This research will also attempt to discuss on the cost method and methods to quantify the depreciation.
- d.** To a better understanding, this research will focus on an objective and Weight Bridge has been chosen as a case study in achieving research objective.

1.6 Research Methodology

The way to do the study will be based on the outlines drawn before the research starts. To ensure that the research is on the right track, the palette which consists of all the perspective available will be drawn accordingly. The main methodology of this research will be as follows:-

1.6.1 Phase One: Research Background

As a Research background, phase one will contain of first chapter, the overall view and needs of this research, the problems statement, objective, scope and limitation,

and the significant of the research. All will be discussed and settled throughout this study.

1.6.2 Phase Two : Literature Review

At this phase, a comprehensive literature review was conducted to explain three elements. The first element concerning the Plant and Machinery Valuation which described the definition, characteristics of Plant and Machinery, bases of valuation and the purposes of valuation, and the second phase will describe the procedure and process of valuing Plant and Machinery from the instruction to the reporting. Meanwhile the last element will discuss on the methods of valuing Plant and Machinery, theory of depreciation/obsolesces and method to quantify depreciation/obsolesces.

1.6.3 Phase Three : Data Collecting

Phase three will contains all elements from the chapter two, three and four, by using the source of data collected for this study which is:

a. Primary Data

Primary data is also known as main data in which is obtained directly from the respondents. This data is quite essential due to its originality, perfect and complete. By collecting the primary data, reliability and validity of certain research is unquestionable. In addition, inexistence of primary data will make the research incomplete and doubtful

The data were obtained from the interview with the related parties, such as Government agency, Private Valuers, Private Accountants and etc. On the other hand, the Observation is also conducted in order to collect the primary data. Observation, interviews and inspection are one of the most suitable methods that can be used to derive the data pertaining to this study. The process of observations starts from visiting the case study area, gathering data in suitable forms and finally administers findings from the observations, interviews and inspection.

b. Secondary Data

Secondary data refers to a minor facts or additional facts that are acquired from other sources of least importance. In this study, there are a few types of resources wherein being used to derive the secondary data. And the source would be based on the literature reviews which are including texts, articles, journals, books, seminar papers, annual report and others.

1.6.4 Phase Four : Case Study

Case study illustrated the reality in the field of study. In order to accomplish this research project, Weight Bridge for FELCRA oil palm refinery was selected as the case study. The study will focus on the process; procedure and methods in determine the depreciation/obsolesces in the Plant and Machinery Valuation.

1.6.5 Phase Five : Analysis and Finding

For this phase after all the information were collected, and parallel with the needs of the research, it will feature analyse, and the result will be sorted out or organised into topics and chapter to produce report writing.

Further explanation about the methodology of research will discuss in the chapter four of this paper, and the methodology framework for this paper illustrated in the Figure 1.1

1.7 Arrangement of Chapter

This study is organized and presented through six chapters as below:-

1.7.1 Chapter One: Introduction

This Chapter will discuss on the synopsis of the research, the overall view of research, problems statement and followed by identifying the objectives of the research, a brief discussion on the scope and limitation of research, significance of the research, methodology and chapter arrangement.

1.7.2 Chapter Two: Fundamental of Plant and Machinery

Chapter two is solely concerned on the theoretical or the literature part of the Plant and Machinery in general and also focused on the definition of Plant and Machinery, Basis of valuation and Purposes of valuation. The objective of this chapter is to define the definition of plant and machinery, to determine the basis of valuation for the purpose of valuation and to differentiate the difference between Plant and Machinery and Land and Building.

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