

EDUCATION ON PLANT AND MACHINERY VALUATION FOR THE REAL MARKET: MALAYSIAN PRACTICALITY

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ABSTRACT

The purpose of this paper is to determine and discuss on the plant and machinery valuation syllabus for higher learning education in Malaysia to ensure the practicality of the subject in the real market. There have been limited studies in plant and machinery area, either by scholars or practitioners. Most papers highlighted the methodologies but limited papers discussed on the plant and machinery valuation education. This paper will determine inputs for plant and machinery valuation guidance focussing on the syllabus set up and references for valuers interested in this area of expertise. A qualitative approach via content analysis is conducted to compare international and Malaysian plant and machinery valuation syllabus and suggest improvements for Malaysian syllabus. It is found that there are few higher education institutions in the world that provide plant and machinery valuation courses as part of their property studies syllabus. Further investigation revealed that on the job training is the preferable method for plant and machinery valuation education and based on the valuers experience. The significance of this paper is to increase the level of understanding of plant and machinery valuation criteria and provide suggestions to Malaysian stakeholders with the relevant elements in plant and machinery valuation education syllabus.

Keywords: Plant and machinery, plant and machinery valuation, plant and machinery education.

1.0 INTRODUCTION

Plant and machinery valuation is important to every company's annual financial reporting. It is stated under the Non-Current Asset and was normally reported by the accountants on two basis, either Historical Cost or Revaluation basis. Independent valuers must be employed to provide the current, up to date valuation on the non-current assets valuation such as property, plant, equipment and intangible assets. The property type and amount owned are depend on the nature of its operation. Table 1 below shows the portion of property, plant and equipment for five (5) selected companies in Malaysia based on the annual financial report:

For companies that rely upon assets as the major tools for their businesses, it is clearly justified that the percentage of property, plant and equipment is high with the range between 40% – 85% of the total assets. With this high numbers of contributions involved, it is important to understand plant and machinery valuation from the beginning, as well as to create the education syllabus for these types of properties.

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Table 1: Apportionment of Property, Plant and Equipment in Selected Malaysian Companies Annual Financial Report

No	Company	Nature of Business	Total Property, Plant & equipment	Total Non-Current Asset	Total Current Asset	Total Assets	Ratio of Property, Plant & Machinery to Total Assets (%)	Sources
1	Media Prima Limited	Broadcasting, Advertising and Printing	748,025,000	1,485,772,000	599,942,000	2,085,714,000	71.2	Media Prima Limited Annual Report 2009
2	Sime Darby Limited	Plantation, property, industrial, healthcare, motors and energy.	9,439,600,000	17,393,700,000	17,983,700,000	35,377,400,000	26.7	Sime Darby Limited Annual Report 2009
3	Petronas	GLC focussing on petroleum, petrochemical, shipping and petroleum related businesses.	154,056,144,000	197,769,098,000	141,783,120,000	339,552,218,000	45.4	Petronas Annual Report 2009
4	TNB Limited	Malaysia main electricity supplier.	56,405,300,000	57,528,900,000	10,195,700,000	67,724,600,000	83.3	TNB Limited Annual Report 2007
5	Fraser & Neave Holding Limited	Malaysian major player in food and beverage industry.	1,102,372,000	1,362,640,000	1,397,262,000	2,759,902,000	39.9	Fraser & Neave Holding Limited Annual Report 2009

Source: Various Malaysian companies' annual reports

With consideration the importance of plant and machinery valuation to businesses, this paper aim to discuss on the plant and machinery valuation academic syllabus. The syllabus is important to equip the ongoing student or the practicing valuers with the current, up-to-date plant and machinery valuation knowledge.

2.0 PLANT AND MACHINERY VALUATION IN THE FINANCIAL SYSTEM

Property valuations are an important modern economy. They support the banking system by setting the benchmarks for collateral values. In the corporate sector, property valuations are important inputs in balance sheets and property assets are sought after for business loans. Property valuations are also important for the ordinary layman when they buy, sell or rent houses and other types of properties. Thus property valuations need to be carried out with a higher level of integrity and professional competence.

The International Valuation Standard Committee (IVSC), an international institution for the valuation and property management discipline has recognised the needs for the international valuation structure via the International Valuation Standards (IVS). The standard is essential as there are major concerns from auditors, bankers, financial analysts and

company directors that a consistent basis of valuation is used, to enable valid comparisons to be drawn, for the valuation of fixed assets throughout the world.

The emerging demands from national and international companies, financial institutions and other organisations for current valuations, reflecting the importance of asset values in new issues for shares (share prospectuses), acquisitions, mergers, takeovers, and as a basis for loans have been one of the factors for the formation of the IVS. The IVS has become more important as the result of simultaneous emergence of the professions whose principal activity is the valuation of fixed assets and with an interest in ensuring that only consistent and coherent valuation data are provided by the practitioners in a manner acceptable to users of valuations.

Mansfield and Royston (2006) highlighted that since the deregulation of international financial services in 1986, cross-border financial business expansion has led to a demand for a greater understanding and acceptance of internationally prepared financial statements. Various market systems have seen changes accordingly with aim to create greater efficiency in capital markets. The intention is that the regulatory changes would increase overall transparency, to provide broader market with more information of public listed companies and to enhance the benchmarking system against cross-border competitors (Ernst and Young, 2003).

This led to a move in February 2001, where EU Financial Services Action Plan was approved by the European Union's Council of Ministers, which required all public listed companies in Europe to submit annual reports according to the International Financial Reporting Standards (IFRS) from January 2005. Furthermore, the Regulations PE-CONS 3626/02 (European Commission, 2002) requires significant changes in the way that a company's assets, namely property, plant and equipment are being treated following the adoption of the international accounting standards. The changes have spread to the rest of the world, and Malaysian financial business response to this 2005 amendment has been varied. Some hold to the Historical Cost basis, whilst some venture more towards the present Market Value basis.

Plant and machinery valuation are stated and regulated under various international standards. From the valuers' perspective, the IVSC Guidance Notes 3 provides brief explanation of the plant and machinery valuation practices. Furthermore, the plant and machinery valuation recognised by the financial discipline, mainly from the current IFRS Standard 116 and International Accounting Standards 16 (IAS 16). Various countries valuation standards do recognise plant and machinery valuation such as United Standard of Professional Standard Practices (USA), Royal Institute of Chartered Surveyors Red Book (UK), Australia and New Zealand Valuation and Property Standard.

3.0 PLANT AND MACHINERY: THE DEFINITION

There are various definitions provided by various scholars, manuals and standards from different perspectives or professions. To start with, plant and machinery as defined by the International Valuation Standards Council (IVSC, 2010) is as follows:

- | | | |
|---------------|---|---|
| (a) Plant | - | Assets that are inextricably combined with others and that may include specialised structures, machinery and equipment, |
| (b) Machinery | - | An apparatus used for a specific process in connection with the operation of an entity, |
| (c) Equipment | - | Other assets that are used to assist the operation of an enterprise or entity. |
- (IVSC, 2010)

An extension to this interpretation was clearly stated in the IVSC Standards that plant and equipment collectively constitute a class of tangible assets that are (a) held by an entity for use in the production or supply of goods or services, for rental by others or for administrative purposes, and (b) expected to be used over a period of time. Plant and equipment assets have characteristics that distinguish them from the land and buildings in or on which they are located and that influence both the approach to and reporting of their value. Plant and equipment assets are normally capable of being moved or relocated without significant damage or disruption to the land or buildings, and usually will have a significantly shorter useful life (IVSC, 2010).

The IVSC and the International Accounting Standards Board (IASB), has worked closely to define plant and machinery terms. It is essential for IASB, since the application of valuers report under IVSC has domino effect on the current IASB financial reporting standards. IASB has not defined plant and machinery. However, it recognised plant and machinery as part of tangible assets, which is categorised into lands, land and buildings, machinery, ship, aircrafts, motor vehicles, furniture and fixture, and office equipment. The International Accounting Standards 16 (IASB), particularly for property, plant and equipment has similar interpretation as in International Valuation Standards Notes 3 (IVS), which identified tangible assets as (a) has an entity for use in the production or supply of goods and services, for lease to third parties or for administrative purposes, and (b) are expected to use for more than a year.

Most countries valuation standards have adopted the IVS definition of plant and equipment. It is set under tangible assets, and was frequently used in the financial and accounting reporting. For examples, Australia Property Institute (API) and Property Institute of New Zealand (PINZ) (2009) provide similar interpretation of the plant and equipment under the Guidance Notes 3, IVS (2007 edition). However, United States (2010) has no separate definition of plant and equipment but instead categorised it under personal property. The term personal property in United States is identified as “identifiable tangible objects that are considered by the general public as being personal, for examples furnishing, artworks, antiques, gems and jewellery, collectibles, machinery and equipment; all tangible property that are not classified as real estate” as prescribed in the Uniform Standards of Professional Appraisal Practice (USPAP, 2010)

The Malaysia Valuation Standards (MVS, 2006) applied the definition of plant and machinery consistent with the IVS. Plant, machinery and equipment are identified as building services installations and process plant, machinery and equipment installed wholly in connection with the occupier’s industrial or commercial processes and also business occupation furniture and furnishings, fixture and fittings, vehicles, mould and loose tools. It also constitutes a class of property other than real property, and for accounting standards these are classified as tangible assets. They are individually distinguished and defined as follows:

- a. Plant includes assemblages of asset that may include specialised non-permanent buildings, machinery and equipment.
- b. Machinery includes individual machines or collection of machines. A machine is an apparatus using or applying mechanical power, having several parts each with a define function, and together performing certain kind of work.
- c. Equipment includes ancillary assets that are used to assist in the functioning the function of the enterprise.
(MVS, 2006)

The Malaysian Accounting Standards Board (MASB) definition of plant, machinery and equipment is in line with the MVS recognises plant, machinery and equipment as tangible assets. MASB (2010) definition of property, plant and equipment are tangible assets that firstly are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes; and secondly are expected to be used during more than one period.

4.0 PLANT AND MACHINERY VALUATION PREMISE/ CONCEPT OF VALUE

Sze (2006) claims that the main problem for the plant and machinery valuation is to standardise the usage of premise of value since it differs from one country to another. Some international standards do implement the extension of premise of value, and provide description and definition of Market Value In-Situ, Market Value Ex-Situ, Market Value for Removal and others (IVS 2010, ANZPVS 2010). However, the United States provide different terms, implementation and understanding of premise of value such as Liquidation Value, Orderly Liquidation Value and Forced Liquidation Value (USPAP 2010).

Different interpretation and usage of premise of value terms has significant effect on the current localised market, such as Malaysia. A part from Market Value, the Malaysian Valuation Standards (MVS) lacks in interpreting the other concepts of premise of value, which is already differentiate by continents (either UK or United States basis). This has major impact on how the valuers in Malaysia reported their plant and machinery report.

However, all international standards, including MVS agree with the definition of Fair Value and Market Value. This is because most of the time, the term Fair Value and Market Value is accepted by other professions, namely accountants and auditors. The term Fair Value is accepted as equivalent to the Market Value (Christensen and Nikolaev, 2009). The definition of Market Value and Fair Value are as follows:

Table 2: Definition of Market Value and Fair Value from Different Perspective

Premise of Value	Source	Definition
Market Value / Fair Value	International Valuation Standards, Guidance Notes 3 (Proposed amendment 2011)	The estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's-length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently, and without compulsion.
	International Accounting Standard 16 (2005)	Same as definition by IVS.
	Uniform Standard of Professional Standard Practices (2010/2011) United States	Is the estimated amount, expressed in terms of money that may be reasonably expected for a property in an exchange between a willing buyer and a willing seller, with equity to both, neither under any compulsion to buy or sell, and both fully aware of all relevant facts, as of a specific date.
	Australia & New Zealand Valuation & Property Standard 2009	Same as definition by IVS.
	Malaysian Valuation Standard 2006	Same as definition by IVS.

Source: IVS 2010, IAS 2005, USPAP 2010, ANZVPS 2009 and MVS 2006

Even though there are similarities among the international standards to accept the definition of Market Value and Fair Value, the extension of the premise of value varies either from UK or the United States definition. The differentiation and application of premise of value being used are tabulated in Table 3 below:

From Table 3 below, it is clearly shown that the term 'Market Value In-Situ' used in IVS and ANZPS is equivalent to 'Fair Market Value-Installed' used in USPAP. The problem lies in the premise of value which is not stated as equivalent, such as Liquidation Value in Place, Orderly Liquidation Value and Forced Liquidation Value. The MVS is silent on all of these value premises.

The IVS (2010), IAS (2005) and USPAP (2010) provide recognition on some elements or factors that constitute the market value of plant and machinery, such as cost of installation, testing and commissioning, cost of dismantling and cost of removal. However, there are no significance synchronisation in any of the international valuation standards, to link between different type of premise of value, factors affecting value and methods of valuation (Sze, 2006). The same situation happens to the Malaysian Valuation Standards.

Table 3: Summarisation of Application in Premise of Value among the international standards

Premise of Value / International Standards	International Valuation Standards, Guidance Notes 3 (Proposed amendment 2011)	Uniform Standard of Professional Standard Practices (2010/2011) United States	Australia & New Zealand Valuation & Property Standard 2009	Malaysian Valuation Standard 2006
Market Value In-Situ	Yes	Yes	Yes	No
Market Value Ex-Situ	Yes	No	Yes	No
Market Value-Removal	Yes	No	Yes	No
Reproduction Cost New	No	Yes	No	No
Replacement Cost New	No	Yes	No	No
Fair Market Value In Continued Use	No	Yes	No	No
Fair market Value – Installed	No	Yes	No	No
Fair Market value – Removal	No	Yes	No	No
Liquidation Value in Place	No	Yes	No	No
Orderly Liquidation Value	No	Yes	No	No
Forced Liquidation Value	No	Yes	No	No

Source: IVS 2010, USPAP 2010, ANZVPS 2009 and MVS 2006

5.0 PLANT AND MACHINERY VALUATION METHODOLOGIES

There are various international standards and scholars that discussed on the plant and machinery valuation methodologies. On the surface, they are not minor differences between the approach/method of valuation applied on plant and machinery compares to the land and building valuation. IVSC (2010) recognises three approaches in valuing plant and machinery namely the sales comparison approach (market approach), the cost approach (depreciated replacement cost) and income capitalisation approach. However, the most accepted and applied valuation approaches are market approach and cost approach (Maninggo, 2009; Barton, 2007), even though the income capitalisation approach is not ignored (IVSC, 2010). The main reason behind these two approaches known to be common is the data availability for the machine being valued and the source of information for comparison from the market.

Apparently, scholars for plant and machinery valuation methodologies have practical experiences in the real market. Maninggo (2009) and Budbhatti (1999) explained that there are numbers of method under each of market approach, cost approach and income approach. The valuer should have a clear picture of what method to be employed to arrive at the market value. For instance, market approaches have direct match method, comparable match method and percent of cost method. In cost approach, methods adopted are detailed item estimation method, percentage of delivered equipment cost estimate, capacity ratio estimate and cost indexing (Maninggo, 2009; and Barton, 2007). Budbhatti (1999) segregated income capitalisation approach into two different methods namely the normal income method (capitalisation of earning method) and by using cash flow (discounted future earning method).

The type of data provided and valuation experience in using selective methods is the key factors to determine the methods to be applied by the valuers. In practice, most valuers prefer market approach and cost approach as it is more justifiable and defensible.

6.0 EDUCATION SYLLABUS ON PLANT AND MACHINERY VALUATION

The researchers have gathered several international and Malaysian plant and machinery valuation syllabus. The analysis and comparison of the syllabuses are as follows:

Table 4: Comparison of International Syllabus of Plant and Machinery Valuation

Parameters	Data 1	Data 2	Data 3
Syllabus Level	Training and development for professional valuer	Optional subject for Master in Property	Professional Diploma
Target Audience	Valuation Practitioner	Student of Master in Property	Practitioner with minimum Diploma in Valuation
Period	6 weeks (Full time)	12 weeks (Full time)	2 semesters (1 year) – Class only held during weekend.
Delivery method	Distance learning and corresponding through email.	Lectures and tutorial	Lectures and tutorial
Contents of Syllabus:			
a. Introduction to Valuation:			
1. Qualification and licensing	Yes	No	No
2. Definition of market value	Yes	Yes	Yes
3. Extension of market value	No	No	Yes
4. Purpose of valuation	Yes	Yes	Yes
5. Types of property	Yes	Yes	Yes
6. Legal ownership	Yes	Yes	Yes
b. Valuation Practice:			
1. Valuation process	Yes	Yes	Yes
2. Instructions	Yes	Yes	Yes
3. Inspection	Yes	Yes	Yes
4. Field notes	Yes	No	Yes
c. Valuation Methodology:			
1. Sales comparison approach	Yes	Yes	Yes
2. Cost approach	Yes	Yes	Yes
3. Income approach	Yes	Yes	Yes
4. Extension of all of the above approaches	No	No	No

d. Valuation Analysis:			
1. Research and resources	Yes	Yes	Yes
2. Valuation case study	Yes	Yes	Yes
e. Valuation Reports:			
1. Content	Yes	Yes	Yes
2. Disclaimer clauses	Yes	Yes	Yes
3. Professional indemnity insurance	Yes	Yes	Yes
f. Valuer Conduct:			
1. Ethics	Yes	No	Yes
g. International Valuation Standards and Law	No	Yes	Yes

Source: Author (2011)

The data are derived from different countries and different type of organisations. One is from the professional organisation; another is from the higher learning institution and the last one is from the government training institution. It is a mixture of different background, with similar objective in providing essential education and training in plant and machinery valuation. The analysis found that academic and training institution does not consider qualification and licensing in their syllabus. However, this is one of the content inside the introduction level for the professional institution. We do note that two of the data do not provide extension of market value in their syllabus, for example market value in-situ, market value ex-situ and market value for removal, and only one institution do provide it in its syllabus.

It should be highlighted that the academic institution (data 2) does not cover on how to conduct a proper field notes in its programme. Ironically, the professional institution and the government training institute provide it in the syllabus merely since the good data gathering is the main factor that reflects the valuers' capability in their valuation report. However, we also found that all the data are lacking in providing the synchronisation between the valuation methodologies and the premise of value. The syllabuses do not highlight or explain the importance of correlating between these two subject areas. It may be considered during lectures, but not being recognised in the syllabus.

Based on the above findings, we would like to suggest an addition to Malaysian plant and machinery valuation practicality, as follows:

a. Provides related international and local standards.

The Malaysian plant and machinery valuation syllabus should provide brief understanding of related and relevant international standards such as International Valuation Standards, International Financial Reporting Standards, International Accounting Standards, Uniform Standards of Professional Standards Practices (USA), Australia and New Zealand Valuation and Property Standards, Malaysian Financial Reporting Standards and Malaysian Valuation Standards. This will enhance the valuers' capability in understanding plant and machinery valuation standards from different countries.

b. Equip the valuers with the Malaysian related laws on plant and machinery valuation.

It is essential for the Malaysian valuers to equip themselves with local Malaysian laws related to plant and machinery valuation such as Malaysian Goods and Services Tax Bill 2010, Malaysian Customs Tariff (Harmonized System) On Import/Export Duty, Excise Duty, Sales Tax, Import/Export License (IL/EL), Regulations & Orders together with Asean Harmonized Tariff Nomenclature And Common Effective Preferential Tariff (CEPT) 2010, Customs Duties (Goods Under The Framework Agreement On Comprehensive Economic Co-operation Between ASEAN And China)

Order 2009, Securities Commission Guidelines on Asset Valuation, Electricity Supply Act 1990, National Land Code 1965 and Land Acquisition Act 1960.

c. *Synchronisation between plant and machinery premise of value and valuation methodologies.*

The plant and machinery valuation syllabus should consider on connecting this two subject areas. Further inquiries to several Malaysian valuers indicated that the problem is not with the valuation methodologies, but to use the best approach/method to cover different type of premise of value. By providing this, the valuers may have guidance on how to react to different type of premise of value. This will create similarities in the way premise of value being approach as well as improve the capability of the valuers.

d. *Similar standard of reporting for plant and machinery valuation*

Even though Malaysian Valuation Standards (MVS) stated on how the plant and machinery data should be reported, it is silent on the valuation methodologies, extension of market value and premise of value and standards of reporting for plant and machinery valuation. Therefore, there is a room for future research to be conducted to address this problem. Enhancing the plant and machinery understanding will create similar understanding for plant and machinery valuation from different professions, namely valuers, clients, accountants, engineers and bankers.

7.0 CONCLUSION

Based on the above discussions, there are more that can be done to improve the plant and machinery valuation syllabus. The improvement will make the syllabus more industry orientated base, with similarities in the way plant and machinery valuation being understand and reported. Clear understanding will improve the acceptance of valuation reported to other professions and clients, as well as to stimulate the plant and machinery valuers' capability. In addition, there is a need for synchronising between the premise of value with various application of valuation approach and methodologies. Since each valuation of plant and machinery is different in nature of purpose, type of machine and valuation methodologies, it is likely that further future studies are conducted to link between premise of value and valuation methodologies. For Malaysian context, the syllabus should provide guidance for Malaysian higher academic institution to consider it as a subject within specialised property valuation, or by course on its own.

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