A Study on the Determination of Depreciation in the Valuation of Plant Machinery and Equipment

Presenter: Fatim Masitah binti Ghani

Organization: Valuation and Property Services Department, Malaysia

27th ASEAN Valuers Association (AVA) Congress 2025 Theme: *"Valuation Challenges: Innovating with Technology"*

INTRODUCTION

- PME valuation is a vital branch of professional valuation practice, forming the backbone of industrial asset assessment.
- It has evolved significantly since the early industrial era in Europe and remains an essential part of the asset valuation profession today.
- The process is guided internationally by standards such as the **International Valuation Standards (IVS)**, **IFRS 116**, and **IAS 16**, while locally referenced in the **Malaysian Valuation Standards (MVS)**.
- Despite its importance, PME valuation is less frequently practiced in Malaysia compared to land and building valuation.
- **Challenges:** Limited market data, inconsistent methods, technical complexity.

RESEARCH BACKGROUND

&

PROBLEM STATEMENT

- PME assets can represent up to **80% of a company's total asset value**, yet valuation approaches remain inconsistent.
- The **Rushton's Table**, widely used in Malaysia, is a simplified guide to determine depreciation rates.
- Concerns have been raised about potential **double counting** when valuers apply separate adjustments for functional and economic obsolescence after using the table.
- Lack of uniformity and standardised guidance has led to inconsistencies and reduced valuation transparency.

RESEARCH OBJECTIVES & SIGNIFICANCE

1
To examine current methods used in determining depreciation in PME valuation.

2
To identify factors contributing to the issue of double counting.

3
To propose a more consistent and comprehensive depreciation approach for PME valuation in Malaysia.
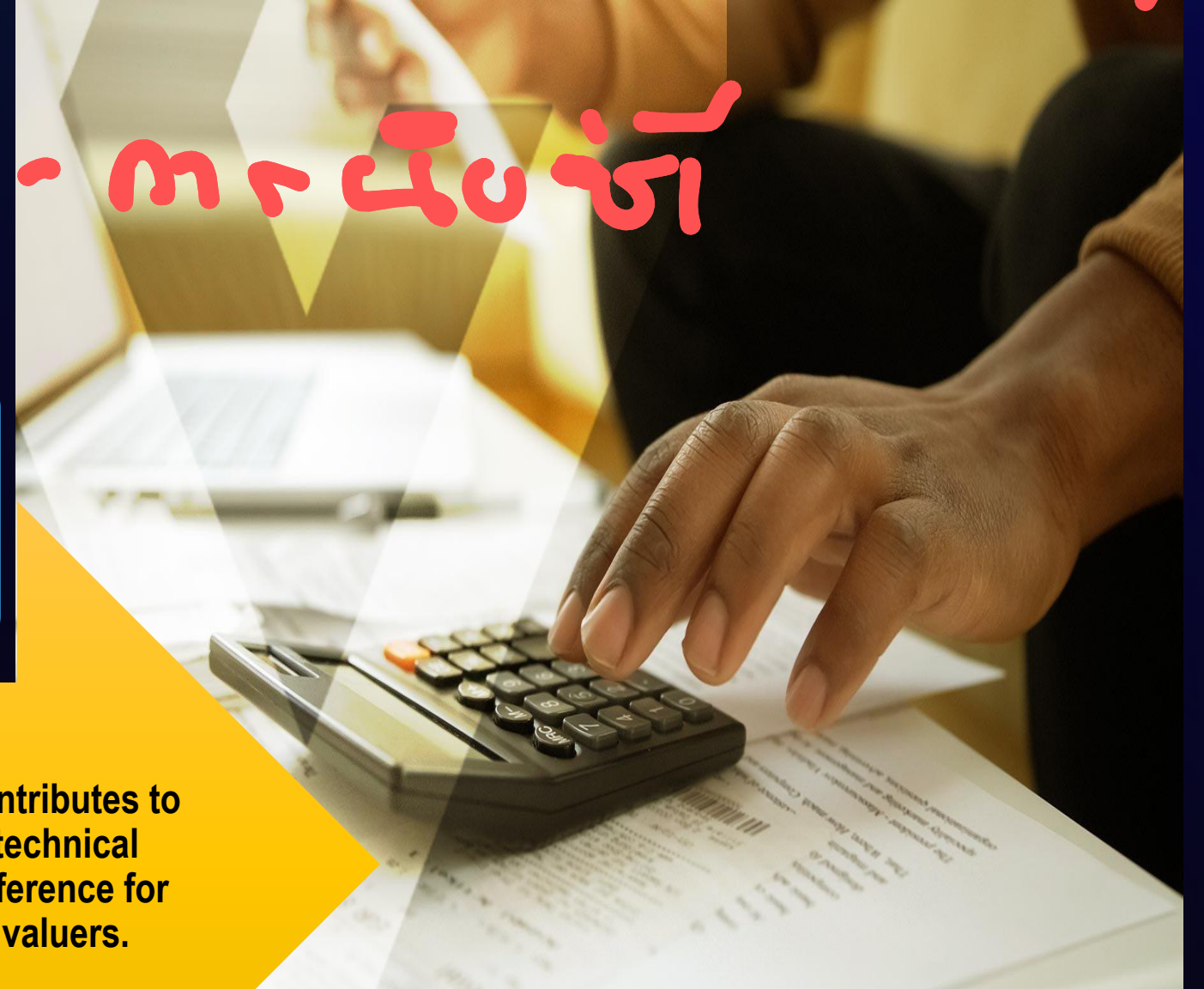
SIGNIFICANCE OF STUDY

Supports the establishment of a national PME valuation framework.

Promotes consistency, accuracy, and transparency in valuation reports.

Contributes to technical reference for valuers.

LITERATURE REVIEW

1 Definition of PME

- **Plant:** integrated assets forming part of industrial infrastructure.
- **Machinery:** tools used for specific production processes.
- **Equipment:** supporting assets used in operations.
- Recognised as tangible assets used for production, service, or rental.

2 Depreciation Concepts

- **Physical Depreciation:** loss due to wear and tear.
- **Functional Obsolescence:** inefficiency due to design or capacity.
- **Economic Obsolescence:** external factors such as market demand or cost.
- **Technological Obsolescence:** replacement by newer technology.

LITERATURE REVIEW

③ Rushton's Table

- Practical tool to obtain depreciation multiplier (age × economic life).
- Widely used in Malaysia and other countries (UK, NZ, AUS).
- Represents **physical depreciation only**, but some valuers interpret it as **inclusive of all forms** — source of *double-counting debate*.

④ Depreciation Calculation Methods

- Several techniques exist to quantify depreciation:
- **Straight-Line Method** – simplest, uniform depreciation per year.
- **Diminishing Balance Method** – applies decreasing percentage annually.
- **Sum-of-the-Years' Digits** – accelerates depreciation for earlier years.
- **Sinking Fund Method** – reflects accumulated reserve for replacement.

RESEARCH METHODOLOGY

Research Design

- **Applied research**, Qualitative approach
- **Method:** Content analysis, semi-structured interviews, and case simulations
- **Purpose:** Explore valuers' judgment and approaches in determining PME depreciation

Data Sources

- **Primary data:**
- 5 expert valuers (public & private sectors)
- Registered under **BOVAEP**; each with >20 years experience
- **Secondary data:**
- Valuation and Property Services Department valuation manuals & reports Journals, academic papers, and international standards (IVSC, MVS, TAQEEM

Research Instruments

- **Semi-structured interview questions** developed for:
  - (i) Methods of depreciation
  - (ii) Issues of double counting
  - (iii) Interpretation of Rushton's Table

Data Analysis

- Thematic analysis for interviews
- Comparative simulation analysis to verify presence of double counting
- Triangulation between qualitative findings and market data

Made with GAMMA

ANALYSIS & FINDINGS

All five expert respondents confirmed no standardized method exists. Valuers rely on professional judgment, with Straight-Line and Diminishing Balance methods most common.

1 — **NO SPECIFIC STANDARDS**

2 — **USE OF RUSHTON TABLE**

- Mixed perspectives:
- Some view Rushton's Table as a comprehensive factor.
- Others see it as limited to physical depreciation only.
- Common agreement: lack of formal guideline in Malaysia.
- Heavy reliance on professional judgment and market experience.

3 — **DOUBLE COUNTING ISSUE**

- Some valuers believe additional adjustments lead to double counting.
- Others argue separate adjustments are justified if each factor is measured distinctly.
- Consistency in valuation approach is essential to avoid over-depreciation.
- Methodological inconsistency = unreliable market values.

4 — **INTERNATIONAL PRACTICES**

- Rushton's Table widely used in: **UK, New Zealand, Australia, USA, Canada, India, South Africa**.
- Originally introduced from New Zealand into Malaysian practice (1995).
- Each country adapts it differently:
- Some apply comprehensively.
- Others limit to physical depreciation.
- Used as a **guide**, not as a mandatory valuation formula.

CASE STUDY

Perodua Viva 1.0 Auto (2013)

Scenario 1: Rushton's Table + separate functional & economic adjustments → RM6,800

Scenario 2: Rushton's Table only → RM8,600

Market Range: RM8,000–RM9,500

Observation: Additional adjustments caused undervaluation (15%–32%)

Conclusion: Using Rushton's Table alone provides a more realistic value aligned with the actual market

Canon EOS 800D DSLR

Scenario 1: Rushton's Table + functional & economic adjustments → RM1,300
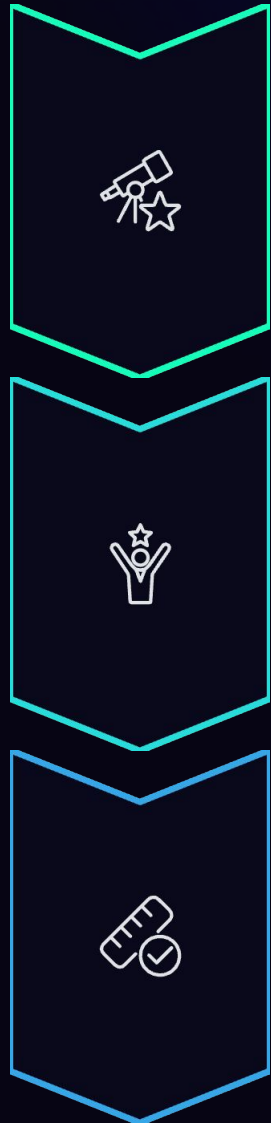
Scenario 2: Rushton's Table only → RM1,600

Market Range: RM1,600–RM1,700

Observation: Separate adjustments undervalued by 18%–23%

Conclusion: Rushton's Table already reflects comprehensive depreciation (physical, functional & economic)

CONCLUSIONS

✔ This study examined depreciation determination methods in the valuation of Plant, Machinery, and Equipment (PME) in Malaysia, focusing on the use of **Rushton's Table** and the potential occurrence of **double counting**.

✔ Findings reveal that Malaysia currently lacks a **standardised and comprehensive reference** for PME valuation.

✔ The study confirms that **Rushton's Table**, when applied appropriately, already incorporates physical, functional, and economic depreciation.

✔ **Additional adjustments** for obsolescence should only be made when supported by **strong evidence** or exceptional asset conditions.

✔ Using Rushton's Table as a **comprehensive depreciation factor** promotes **accuracy, consistency, and transparency** in PME valuation practices.

RECOMMENDATIONS

0
1

Apply Rushton's Table Comprehensively
Use Rushton's multipliers as inclusive of physical, functional, and economic depreciation without additional adjustments.

0
2

Exception for Technology Assets
For assets significantly affected by rapid technological change, apply higher depreciation rates with clear justification.

0
3

Develop National Standards
Create comprehensive PME valuation guidelines to ensure consistency, transparency, and professionalism across Malaysia.

0
4

Document Methodology Clearly
Valuers must explicitly state their depreciation approach and provide supporting evidence for all adjustments.

"This research contributes toward developing a national standard for PME valuation that promotes greater consistency, transparency, and professionalism in Malaysia's property and asset market."

THANK YOU