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CONTENTS

- 1 Determinant of Human Capital Disclosure in the Post IFRS Regime: An Examination of Listed Firms in Nigeria
Mutalib Anifowose, Hafiz Majdi Ab. Rashid and Hairul Azlan Bin Annuar
- 31 R&D Information and Market Valuation: Empirical Evidence from Malaysian Listed Firms
Sunarti Halid, Amizahanum Adam, Marina Ibrahim, Masetah Ahmad Tarmizi and Prof. Dr. Muhd Kamil Ibrahim
- 55 Risk Management Practices in Tourism Industry – A Case Study of Resort Management
Nur Rahifah Amirudin, Anuar Nawawi and Ahmad Saiful Azlin Puteh Salin
- 75 Analysis of Unconditional Conservatism and Earnings Quality on Financial Reporting Practices in Indonesia upon IFRS Convergence
Monica Santi, Evita Puspitasari and Erlane K Ghani
- 89 The Effect of Corporate Social Responsibility Disclosure and Corporate Governance Mechanisms on Earnings Management and Stock Risk: Evidence from Public Banks in Indonesia
Idrianita Anis and Ancella A. Hermawan
- 119 Effective Depreciation Model for Commercial Vehicles 119-136 in Malaysia
Alan Lim Khiew Loon, Dr. Krishna Moorthy Manicka and Theresa Wong Lai Har
- 137 Zakat Fund in Malaysia: Where Does it Go To?
Roshaiza Taha, Mohd Nazli Mohd Nor, Mohd Rodzi Embong and Muhammad Faris Zulkifli

- 167 Retailers' Behavioural Factors Towards Goods and Services Tax (Gst) Compliance: Sociological and Psychological Approach Study
Norhasliza Zainan, Rohaya Md Noor, Normah Omar, Roszainun Abd Aziz and Soliha Sanusi
- 189 Corporate Risk Governance and Board of Directors: Evidence from Malaysian Listed Companies
Grace Hwee-Ling, Lee and Angeline Kiew-Heong, Yap
- 213 The Relevance of Internal Governance Mechanisms to Financial Reports Timeliness
Rahimah Mohamed Yunos

Effective Depreciation Model for Commercial Vehicles in Malaysia

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ABSTRACT

Malaysian Financial Reporting Standards (MFRS) offers a choice for corporations to select their preferable depreciation methods to allocate the cost of the assets every year. Findings shown that majority of the corporations apply Straight Line method in depreciation calculation nowadays. However, Straight Line method is unable to show the fair value of the assets and received major criticism from past researchers. Hence, current research has applied a newly proposed method to conduct the depreciation calculation with the secondary data collected with the three existing accounting depreciation models. The net book value result was compared against the market value, and the analysis showed that newly proposed method could produce the closest proportion to the market value of the vehicles, and hence it is determined as the most effective depreciation model that can best reflect the current value of the motor vehicles.

Keywords: *MFRS; Depreciation Model; Commercial Vehicles*

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BACKGROUND

In accounting depreciation is defined as the systematic allocation process of an asset depreciable amount over its useful life (Malaysian Accounting Standards Board, 2012). Typically, assets will begin to age from the day they are bought and used. During the usage period, an asset could be physically damaged which will lead to poorer functioning from time to time, or become outdated or obsolete. Such conditions will result in asset value reduction, which is no longer comparable to the original asset value. Hence, the depreciation concept is required to gradually reduce the asset value from its original cost until the end of its useful service life. Conventional depreciation may be defined as an allocation that allows a constant rate of return on net revenue. The fundamental task for an accounting theorist is to ensure that the purpose of accounting is best served by either by a constant rate of return on net revenue or by any other depreciation method (Johnson, 1968). In Malaysia, general depreciation methods were permitted by the Malaysian Financial Reporting Standards (MFRS) since its establishment in 2012, including Straight Line, Declining Balance, Sum-of-digit, and Unit of Production methods. However, Johnson (1968) stated that the determination to use straight line, sum-of-digits or some other conventional patterns is basically not an argument over the proper depreciation method. Rather, the important task for accounting theorists, at the measurement level, is to improve the techniques for predicting the pattern of benefits that is derived from the assets. Therefore, it is important to investigate the effectiveness of methods currently being applied for depreciation calculation, as well as the fair assets' value determination in Malaysia, to determine the most suitable method for accounting method standardisation process.

Problem Statement

Since the MFRS implementation in Malaysia on 1 February 2012, there is no specific standard which states the required depreciation method to be used by anyone in valuing one's assets, which is similar as to the International Financial Reporting Standards (IFRS). This provides an accounting choice, meaning most visible and long-term choices, such as depreciation and inventory methods (Li & Dichev, 2013). Schiff (1966) stated that the choice of accounting method is an available device for managers to please their stockholders. There is substantial past evidence

that institutional executives were engaged in earnings management, which means managing earnings by manipulation of accruals with no direct effect on cash flow (accrual manipulation) (Roychowdhury, 2006). Depreciation is one of the accounting accruals that requires estimates and a current reporting standard which allows it to become a potential item for manipulation by any person to publish earnings or financial statements that reflect the management's desired outcome or image (Baruch Lev, 2003). It represents a serious problem for financial statements users to make decisions based on the designed financial information produced by the management (Mendes, 2012). Hence, recently the financial reporting reliability has become a severe problem (Lin et al., 2014).

Research Objective and Significance

To avoid such profit exaggeration activity by managers, a better prescription will presumably tighten accounting rules by making the rules more specific and uniform (Lev, 2003). Therefore, accounting method standardisation is suggested to work out, and the current research will concentrate on the standardisation of the depreciation model to act as, at least, one of the efforts in preventing earnings management activity. It would be the primary objective of the current research to conduct an analysis that can determine a better depreciation method to be regulated by the Malaysian Accounting Standards Board (MASB) to become a standard depreciation allocation practice by the management of corporations. The current research will focus on one particular asset category, which is the motor vehicle, to conduct the analysis of relevant factors that can influence the depreciation expense of this asset category to act as the starting point on the suggested depreciation method standardisation process. Such asset category is selected due to high trading frequency in Malaysia and is commonly owned by major corporations as compared to other asset categories.

Meanwhile, the variable that is applied in most previous research were the vehicle age. However, the odometre mileage may describe the variability better in resale price as compared to the vehicle age (Engers, Hartmann, & Stern, 2009; Gilmore & Lave, 2013). Generally, the vehicle age is not the main factor that causes the reduction of motor vehicle values, for which the main factor should be the motor vehicle consumption. According to Para 62 in the Australian Accounting Standards Board (AASB) 116 Property,

Plant and Equipment, it states that “*The entity selects the method that most closely reflects the expected pattern of consumption of the future economic benefits embodied in the asset.*” Therefore, the inclusion of the motor vehicle consumption, measured in terms of mileage, would produce more accurate results (Storchmann, 2004). However, very few past research had included this key variable in their analyses or calculations. Additionally, another study claimed that there is always a need to determine the value of an equipment that exceeds its reasonable service life, but which may have been utilised less intensely, making its condition comparable with younger equipment (Smolyak, 2012). Since assets are used over their reasonable life, it is again proven that the age of an asset would no longer be an effective factor to determine the asset value. Hence, the current research applies mileage as the key variable to combine with the vehicle age in conducting analysis to produce a new conceptual framework for the motor vehicle depreciation model, known as the Consumption Method. This is a novel research which differs from that done in the past. The current research motivates corporations to show more transparent and comparable financial reporting practices in terms of depreciation recognition. Hence, it will enhance public confidence level towards a better and standardised financial reporting among corporations.

Preliminary Analysis

The Current research conducted a preliminary study on the depreciation model used by listed companies in Bursa Malaysia with data gathered from the annual reports provided by the listed companies. By applying a sample selection technique of systematic random sampling, with a total of 817 companies listed on the main market in Bursa Malaysia, and an initial startup number of 2, the interval number would be 3 since the number of samples required for the population is 265 companies, as stated in the sample size table produced by Krejcie and Morgan (1970) and Sekaran (2003). The data showed that there was only one company, out of a total of 265 in the selected samples, that had applied Reducing Balance (Declining Balance) Method as its depreciation model, while 9 companies were not applicable because they were investment companies. The rest of the 255 companies used the Straight Line Method in depreciating their motor vehicle values.

Usage of the Straight Line Method is a significant problem as it produces a depreciation figure and generates a net book value of motor vehicles, which is very different from the fair value of the motor vehicles. Such problem was discovered by using another pilot study with the vehicles data collected from one of the famous car trading websites, namely Carlist.my. From the 70 samples data collected on 10 May, 2014, a pilot study conducted a series of calculation in terms of depreciation by applying the Straight Line Method and assuming that the vehicle costis remained constant throughout the years with a vehicle service life of 10 years and found that 69 out of the total 70 selected Toyota Vios would make a profit on disposal even if they were purchased in different years and have different ages, and the profit could be reaching RM40,000 in a duration of 10 years. Underestimating the service life of assets will lead to an overestimation of depreciation (Gravelle, 1999). This implies that the Straight Line Method is unable to produce a net book value of vehicles that is close to reflecting the fair value of the asset, and the use of Straight Line Method is skeptical in 'big bath' accounting, which is an attempt to increase reported earnings in subsequent periods by charging items that may have negative future impact to expenses in the current period, and further worsening the current period business results in an accounting period in which results are bad (Itoh, 2007).

THEORETICAL FRAMEWORK

The current research has applied Normative Accounting Theory (Miller & Bahnson, 2010), whereby one must enter the normative realm and search for practices that should be used in contrast to describing practices that were used. Such a theory contains a proposition of what could and should be done, without regards to what is actually being done. As a result, Normative Accounting Theory serves to set a vision for improving financial reporting processes by identifying what ought to be done in practice, and to provide a basis for identifying the weaknesses in the status quo that needs improvement. The Normative Accounting Theory seeks to prescribe some basis of accounting measurement, particular accounting procedures, and the contents of financial reports (Ijiri, 1975; Watts & Zimmerman, 1986). This is applicable to the current research, as the current research is also looking for the weakness of the existing depreciation methods that are still currently applied in practice and to discover a better alternative which may be used to

fix weaknesses. Brief (1967) argued that even the rules of depreciation have to consider almost every kind of asset and rules. However, the practicality and usefulness are insufficient. It should review the particular system that was already adopted, and to point out its particular defects and their consequences to see exactly how far it is true and fallacious.

Several past literature completed by Liapis and Kantianis (2015), Smolyak (2012), Radu and Marius (2011), Gylfason and Zoega (2007), Storchmann (2004), Dumler, Burton and Kastens (2003), Hill (1999), Peles (1990), Parks (1977), Wykoff (1970), and Cramer (1958) that are related to the depreciation of motor vehicles were reviewed and a few findings were concluded.

Research Objective

The main research objective of determining a better depreciation method seems to be achieved in respective literature. However, the method determined by the respective literature was inconsistent as the finalised research result for each of the literature was subjected to the researchers' data analysis by using different collected data. There is still no consensus on which depreciation models tend to be the best depreciation model of automobiles until the current date.

Variables of Depreciation

Most of past literature mentioned above applied car age as the main variable that determines the depreciation charges of motor vehicles. However, the asset age, especially in terms of automobiles, may not be a main factor to determine their secondhand value, which several past research believed that the mileage of the automobile should determine the reduction value of such assets (Engers, Hartmann, & Stern, 2009; Gilmore & Lave, 2013).

Data Collection

Most of past literature were used to collect a small number of data based on convenience sampling. By using the data collected from periodicals and publications, the collected data may be subjected to unfair judgement or bias, while being very unlikely to represent the overall population in

producing the desired outcome. This will greatly undermine the ability to make generalisations from the sample selected to the studied population.

RESEARCH RESULT

A majority of the past research concluded that the depreciation value is higher in the early years and lower in later years, and benefit of automobiles is vulnerable to factors like repairs cost. The result indicated that depreciation is not consistently allocated throughout the service life of the asset; however, it generates higher depreciation expenses at the beginning of the asset life and the depreciation expenses fall yearly till the end of the asset service life. As a result, such inconsistent depreciation allocation which generates uneven depreciation expenses throughout the asset service life is an unfair financial reporting as it distorts the earnings value that is generated from the company actual performance of the, and it does not reflect the assets real value.

Past Conceptual Framework of Depreciation Models

John H. Myers (1958) depreciation formulas were quite similar with the formulas provided by Aijaz Ahmad Baba (2013) in his research work entitled *A Conceptual Framework on Depreciation*. In Aijaz's research, the formula of Straight Line Method, Declining *balance method* and *Sum-of-digit method* are written as follows:

$$\text{Straight line : Depreciation} = \frac{\text{Cost of asset-Scrap values at the end}}{\text{Life of the asset}}$$

$$\text{Declining balance : Depreciation} = \text{Balance value of asset} \times \text{certain \%}$$

$$\text{Sum-of-digit : Depreciation} =$$

$$\text{Amount to be written off } X \frac{\text{Number of years of the remaining life of asset including the current year}}{\text{The total number of all the digits representing the life of the asset}}$$

With the above displayed methods, the conceptual framework of depreciation for the existing accounting standard can be summarised as follows:

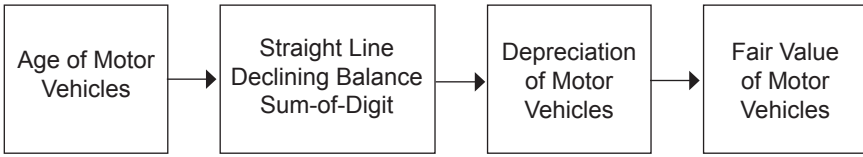


Figure 1: Existing Framework of Depreciation

Proposed Conceptual Framework of Depreciation Models

There always exists a need to determine the equipment value that exceeds its reasonable service life, which could have been utilised less intensely and makes its condition comparable with the younger age equipment (Smolyak, 2012). Since assets are used over its reasonable life, the asset age would no longer be an effective factor to determine the asset value, and hence, the current research will apply mileage as the key variable in conducting the analysis and to produce a new conceptual framework for the depreciation model of motor vehicles, which is named as Consumption Model. Based on the formulas provided by both researchers, Myers (1958) and Aijaz (2013), the current research will include an additional formula named as the Consumption Method, which is the average of Straight Line Method together with modifications done on the Unit-of-Production Method formula by incorporating the M, which represents the total mileage of an automobile can be consumed, and m, which represents the mileage consumed by a particular automobile since its production time. After Myers and Aijaz’s formulas, the newly included Consumption Method formula would then be written as follows:

Consumption : Depreciation =

$$\frac{(Cost-Scrap Value) \times m}{M} + \frac{(Cost-Scrap Value) \times Age of Cars}{Total Life of Cars}$$

2

The proposed conceptual framework of depreciation for the existing accounting standard can be summarised as follows:

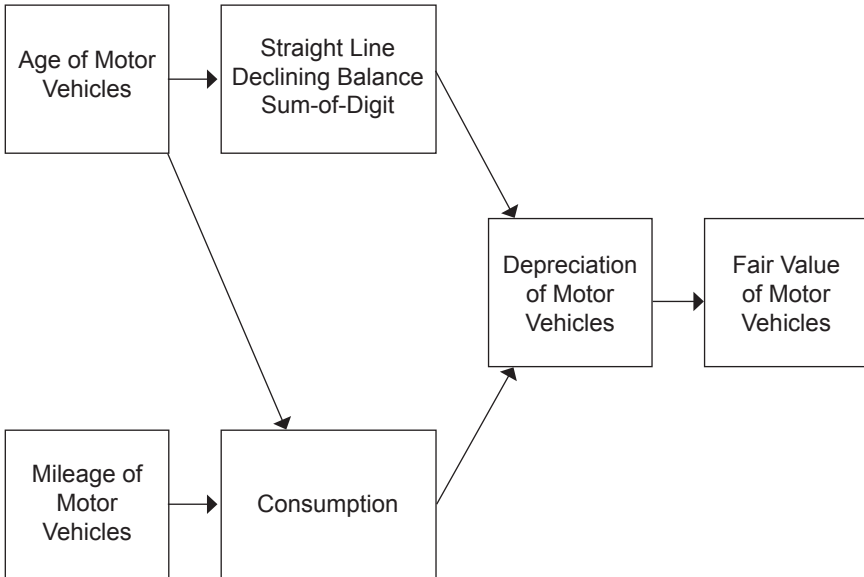


Figure 2: Research Framework of Depreciation

Since Consumption Method will calculate the depreciation of a vehicle by using the mileage used and the maximum total mileage that a vehicle commonly practises, an assumption on the total mileage that is practised by all vehicles would be required. Referring to the proposed framework for End-of-life vehicle (ELV) recycling system in Malaysia, as prepared by Muhammad Azmi et al. in 2013, there is no standard working practice for ELV recycling in Malaysia, but it is available in China. The ELV age set under Statute 307 in China for motor vehicles is either 10 years or 500,000 km. Assuming the ELV recycling system in other countries will follow the ELV age set by China, then we can generally assume that the total mileage consumed in the life of a motor vehicle would be 500,000 km and 10 years would be the maximum life applied in a formula like Straight Line Method and Sum-of-digit Method. Then, the maximum life will be further converted into percentage. If a motor vehicle needs to be fully depreciated at the end of 10 years, it indicates that such motor vehicle should be depreciated by around 60% per annum by using the Reducing Balance Method, and then the balance value, known as net book value, of the asset can only reach almost zero value.

By applying the assumed total life of the motor vehicle in years, percentage, and mileage into the four depreciation methods that were analysed in current research, the formula of respective depreciation methods can be rewritten as follows:

$$\text{Straight line : Depreciation} = \frac{(\text{Cost-Scrap Value}) - \text{Scrap values at the end}}{10}$$

$$\text{Declining balance : Depreciation} = \text{Balance value of asset} \times 60\%$$

$$\text{Sum-of-digit : Depreciation} =$$

$$\text{Amount to be written off} \times \frac{\text{Number of years of the remaining life of asset including the current year}}{55}$$

$$\text{Consumption : Depreciation} = \frac{(\text{Cost of asset}) - \text{Scrap values at the end} \times m}{500,000}$$

Data Collection

The information was gathered from the Motor Trader website in July, 2014. A total of 8,756 used cars were traded in the websites, and the state with the highest used car trading was Kuala Lumpur (4,996), followed by Selangor (1,048) and Penang (985). Meanwhile, the used car data obtained in July, 2014 from Carlist.my showed that the state with the highest used car trading was Kuala Lumpur (52,566), followed by Selangor (36,244), Negeri Sembilan (5,949), and Penang (3,389). Therefore, the current research obtained usedcar details from secondhand car dealers in the three states that have the most used cars trading on average, which are Kuala Lumpur, Selangor and Penang, and the details obtained from these states were used to represent the overall used car details in Malaysia.

Sample Size

To determine the sample size of the usedcar selection for the research analysis, the following sample size formula was applied :

$$SS = \frac{Z^2 \times p \times (1-p)}{C^2}$$

Where Z is the confidence level in which the actual mean falls, p is the percentage of picking a choice or standard deviation that determines the expected variance of response, and e is the confidence interval, which is also known as margin of error, that indicates the allowable error percentage. In the current research, it is common to have 95% confidence level, which is indicated as 0.05 of the alpha level with a t -value of 1.96. According to Bartlett, Kotrlik and Higgins (2001), 0.05 alpha level is generally acceptable as 0.01 alpha level may only be used in certain cases, in which the decision can cause a significant financial or personal harm. In addition, a 50% standard deviation was selected with a 5% allowable error percentage, as it is acceptable for categorical data (Krejcie & Morgan, 1970). Therefore, the sample size can be calculated based on the formula below:

$$SS = \frac{1.96^2 \times 0.5 \times (1-0.5)}{0.05^2} = 384.16$$

Target Population

The current research obtained secondary data by gathering the necessary information on usedcar details from Internet sources, including the used car age, mileage consumed, and market value of the 385 samples from the most famous car trading website in Malaysia, which is Carlist.my. Current research sets priority on gathering details for transport vehicles from the Internet source by looking at the details of vehicles that were related to transport, which were commonly owned by corporations and comprised the biggest portion of vehicle value in the corporations, such as lorries, vans and trucks. With the relevant selected transport vehicle data, the dealers involved were contacted to arrange for physical visits and data verification.

Data Analysis

Data analysis was conducted on the collected samples, by applying a mathematical calculation of all accounting depreciation models that is allowable by MASB in Malaysia, including Straight Line, Declining Balance and Sum-of-Digit Model and Consumption Method. With the fair values generated from the calculation, result was used to compare with the current market price of the used cars, respectively, and the difference or the discrepancy between the fair values calculated by various models with the actual market price was determined. As a result, the depreciation

model that managed to produce a fair value of the vehicle that is the closest to the market price of the vehicle on average was concluded as the best depreciation model to determine the fair value of the vehicles in Malaysia.

RESEARCH FINDINGS

All calculations of accumulated depreciation were based on the ELV Standard under Statute 307 of China (Azmi et al., 2013), which is a maximum of 10 year vehicle age and up to 500,000 km usage. After the proportions result were generated for all 385 samples, the current research identified the average proportions by comparing the NBV results with the selling price of the vehicle samples, respectively. This is shown in Table 3.

Table 1: Analysis of the Proportion of Net Book Value over Market Price

	Consumption	Straight Line	Reducing Balance	Sum-of-Digit
Average	103.96	44.16	3.90	63.29
Std Deviation	11.85	41.04	12.66	55.39
Max	134.75	126.96	112.62	166.27
Min	68.60	0	0	0

Based on the findings from Table 3, it may be noted that the average proportion of NBV over the market price of samples, by applying the proposed depreciation method – Consumption Method, was nearer to 100% of the market price among all depreciation methods. The analysis indicated that the Consumption Method can produce the accumulated depreciation amount for transport vehicles, which will then generate the NBV of the transport vehicles that is closest to the market price or current value of involved transport vehicles. In addition, the Consumption Method is the only method that produces an average difference in loss value when the disposal of vehicles as the proportion generated was above 100%, which means the NBV was slightly higher than the market price on average. Meanwhile, other existing methods had generated the gain value as the proportions generated by the three other depreciation methods were below 100%, which means the NBV was lesser than the market price, and this could result a big bath accounting practice. Furthermore, with the Standard Deviation (Std Deviation) results shown in Table 3, the proportions result

generated from 385 samples by using the Consumption Method showed the values in the sample dataset were closer to the mean of the data and less volatile as compared to the other three depreciation methods.

Discussion of Findings

With findings from the analysis, the Consumption Method is a better depreciation method as compared to other depreciation methods that were included in current research, which were the Straight Line Method, Reducing Balance Method and Sum-of-digit Method, in producing a more reliable asset value for motor vehicle category that reflects the real market value and the true and fair figure that should be shown in financial reports to deliver a clearer and more practical data for the financial reports users. The NBV produced by the existing three depreciation methods, as practised by companies, cannot show the real value of vehicles due to the average proportions produced by the methods, indicated that the NBV calculated were very different from the market value, and the values are unstable or fluctuated significantly.

Result of the current research implied that there was a need to incorporate mileage consumed by vehicles in order to obtain a better depreciation result that can show a net book value much closer to the market value of vehicles. Such implication should influence the local accounting body, the Malaysian Accounting Standards Board (MASB), to consider the acceptance of the proposed depreciation method for the enhancement of financial statement information as well as for the benefit of financial statement users. Also it served as a medium to enhance the credibility or reliability of the financial information that can reflect the true and fair view of the asset value in the financial statements prepared by major corporations in Malaysia. It is hoped that the research result will provide useful and appropriate information to policy makers and academicians in selecting the proper depreciation method for vehicles in Malaysia so as to generate better and more reliable financial information for the financial statement users and develop a better financial reporting system.

LIMITATIONS

The limitation is on the use of the sampling technique in current research, which is the convenience sampling technique. It is noted that the secondary data was obtained from the largest used cars trading website in Malaysia, namely Carlist.my, and the data were verified by using physical interviews with the selected user cars dealers by convenience sampling technique. The reasons for using the convenience sampling technique to select the used car dealers are: (1) there is no formal channel to obtain verified data about the used car details from a reliable source; and (2) some used car dealers are reluctant to provide the required details for research purposes. Hence, the current research adopted the convenience sampling technique to search for used car dealers from three different states who voluntarily provided the required used car details for the analysis of current research.

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