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Depreciation Methods and Life-Cycle Costing (LCC) Methodology

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Abstract

Fixed assets are tangible assets that are used by a business to produce income. Accounting fairness refers mostly to the fair presentation and, therefore, to the measurement or valuation of an element recognized in the entity's financial statements. Depreciation is the process of allocating costs to an asset over its entire life. This allocation is done in a way that the cost of the asset (depreciation expense) is charged to the accounting periods during the economic life of the asset and decreases the net value of fixed assets. Applying different depreciation accounting and valuation methods across firms or countries makes financial statements incomparable to each other. The research objective of the paper is a presentation of depreciation methods in comparison with life-cycle costing (LCC) methodology. Both LCC and depreciation methods are applied to: i) a typical commercial property asset – an office building, as part of a real property developer's fixed assets portfolio – and ii) a vessel – a Handymax, as part of the fixed assets of a shipping company – in order to explore the relationship between these methods when applied to the valuation of fixed assets and how these methods correlate with each other. Following the above mentioned procedure, our aim is to provide answers to the following questions: i) 'which depreciation method is more appropriate to be used as the accounting method for fixed assets?' and ii) 'in what way the LCC methodology is associated with depreciation methods and more broadly with accounting methods and practices?'.

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Keywords: Fixed Assets; Depreciation Methods; LCC; Accounting.

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1. Introduction

According to microeconomics, *property* is defined as a good able to provide a constant flow of services, such as housing services or a source of cash inflow. *Assets* are consumer durable goods held either by households for housing needs, or by firms in order to install their business activities necessary to operate. As goods traded in the market, asset prices are defined through the law of demand and supply. In markets under equilibrium current values must reflect the assets' present values taking into account the time value of money. Any variations from the valuation under present values leave space for moving from the equilibrium spot and the movement will continue until all current values reflect present values. Economics recognize the financial return of the asset by consumption or sale as a capital gain arising from the increase of the value of the asset. By establishing variable accounting treatments for assets, assets have developed into a prosperous investment tool for companies in order to obtain economic benefits, not only through consumption (own use) or sale, but also through investing. Accounting fairness refers mostly to the fair presentation – and therefore, measurement or valuation – of an element recognized in the entity's financial statements. According to the Generally Accepted Accounting Principles (GAAP) across countries, two basic methods exist for asset valuation: the accounting of *fair value* and the accounting of *historical cost.* Fair value is a rational and unbiased estimate of the potential market price of a good, service, or asset. It takes into account such objective factors as: acquisition/production/distribution costs, replacement costs, or costs of close substitutes; actual utility at a given level of development of social productive capability; supply vs. demand; and subjective factors such as risk characteristics; cost of and return on capital; and individually perceived utility. In accounting, fair value is used as a certainty of the *market value* of an asset (or liability) for which a market price cannot be determined (usually because there is no established market for the asset). Historical cost states that each financial effect of a realized transaction stated in the firm's financial position shall be recorded at acquisition cost. Applying different accounting methods across firms or countries makes financial statements incomparable to each other. Even within the International Financial Reporting Standards (IFRS) framework the choice between the two valuation models for certain asset portfolios is a given option. US GAAP, also seem to have a different approach in property valuation. Under US GAAP (FAS 157), fair value is the amount at which the asset could be bought or sold in a current transaction between willing parties, or transferred to an equivalent party, other than in a liquidation sale. The latest edition of the International Valuation Standards (IVS, 2007), clearly distinguishes between fair value (as defined in the IFRS), and market value (as defined in the IVS): so, as the term is generally used, fair value can be clearly distinguished from market value. It requires the assessment of the price that is fair between two specific parties taking into account the respective advantages/disadvantages that each will gain from a transaction. Although market value may meet these criteria, this is not necessarily always the case. Fair value is frequently used when undertaking due diligence in corporate transactions, where particular synergies between the two parties may mean that the price that is fair between them is higher than the price that might be obtainable on the wider market. In other words, a *special value* may be generated. Market value requires this element of special value to be disregarded, but it forms part of the assessment of fair value.

Depreciation is the process of allocating costs to an asset over its entire useful life. This allocation is done in a way that the cost of the asset (depreciation expense) is charged to the accounting periods during the economic life of the asset and decreases the net value of fixed assets. Applying different depreciation accounting and valuation methods across firms or countries makes financial statements incomparable to each other. Furthermore, no account is taken for the *life-cycle costing* (LCC) of the asset and there is no formal framework that imposes LCC calculations in fixed assets valuation, in spite of the fact that LCC is a field of continuous growing interest and substantial amounts of research can be found in the literature. Hence, although funding and insurance organisations are strongly interested in LCC its application has not been implemented into standard practice (Davis Langdon, 2007).

The aim of the study is to explore the relationship between depreciation and LCC methodologies when these are applied to the valuation of fixed assets and how these methods correlate with each other. The methods are applied to: i) a typical commercial property asset (an office building, as part of a real property developer's fixed assets portfolio) and ii) a vessel (a Handymax, as part of the fixed assets of a shipping company).

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