Revaluation of Property, Plant and Equipment under the criteria of IAS 16: Property, Plant and Equipment

Revaluación de Activo Fijo bajo el criterio de la NIC 16: Propiedad Planta y Equipo

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ABSTRACT

The paper examines the revaluation of fixed assets under International Accounting Standard 16 (IAS 16), which addresses "Property, Plant and Equipment" in the financial statements. Revaluation involves adjusting the carrying value of assets based on their fair market value at a given point in time. It is highlighted that this process can influence the perception of an entity's financial health and strategic decision making. The research focuses on analyzing the impact of fixed asset revaluation under IAS 16 in a sample of 180 companies in Arequipa, Peru. The results show an increase in the operating profit margin, the value of revalued assets, profitability (ROA), capital structure and investment capacity of these companies after the application of IAS 16. A significant correlation was found between the revaluation of fixed assets and IAS 16, supporting the hypothesis that the application of this standard is associated with improvements in several financial and operational aspects.

Keywords: IAS 16; Fixed Asset Revaluation; Profitability; Capital Structure; Financial Impact.

RESUMEN

El papel examina la revaluación de activos fijos bajo la Norma Internacional de Contabilidad 16 (NIC 16), que aborda la "Propiedad, Planta y Equipo" en los estados financieros. La revaluación implica ajustar el valor contable de los activos basándose en su valor razonable en el mercado en un momento dado. Se destaca que este proceso puede influir en la percepción de la salud financiera de una entidad y en la toma de decisiones estratégicas. La investigación se centra en analizar el impacto de la revaluación de activos fijos bajo la NIC 16 en una muestra de 180 empresas en Arequipa, Perú. Los resultados muestran un aumento en el margen de utilidad operativa, el valor de los activos revaluados, la rentabilidad (ROA), la estructura de capital y la capacidad de inversión de estas empresas después de la aplicación de la NIC 16. Se encontró una correlación significativa entre la revaluación de activos fijos y la NIC 16, respaldando la hipótesis de que la aplicación de esta norma está asociada con mejoras en varios aspectos financieros y operativos.

Palabras clave: NIC 16; Revaluación de Activos Fijos; Rentabilidad; Estructura de Capital; Impacto Financiero.

INTRODUCTION

In the constantly evolving business world, the revaluation of fixed assets under IAS 16 represents a crucially important topic that requires a thorough assessment and a solid understanding, which is why the proper management of fixed assets is essential for the sustainable success of any organization, as they represent a significant part of a company's resources and play a crucial role in generating long-term value.[1] International Accounting Standard 16 (IAS 16), entitled "Property, Plant, and Equipment," has been established to provide

sound and consistent guidance for the recognition, measurement, and presentation of these assets in the financial statements.[2] However, in an ever-evolving business environment, IAS 16 has allowed for a fixed asset revaluation option that raises significant questions and challenges.

The revaluation of fixed assets under the IAS 16 framework involves updating the carrying value of these assets based on their fair market value at a given point in time.[3] This revaluation option has become a topic of growing interest to businesses, accountants, investors, and regulators, as it can influence the perception of an entity's financial health and strategic decision-making.[4]

Calozuma et al. state that IAS 16 is defined as an accounting regulation that aims to establish guidelines for the accounting treatment of non-current assets related to Property, Plant, and Equipment.[5] This standard applies to assets that are used in the production of goods or the provision of services in a company and whose use extends over multiple accounting periods.

Compliance with international accounting standards, such as IAS 16, is critical to ensure consistency in accounting reporting, as well as comparability of financial information.[6] Companies operating in multiple jurisdictions must ensure that their revaluation practices comply with both local and international requirements. [7] Reyes et al.[8] state that from a technical perspective, the revaluation of fixed assets under IAS 16 involves a meticulous process of determining the fair value of the assets. This process involves a number of direct and indirect costs, including valuers' fees, costs of acquiring market information, and administrative expenses related to performing the revaluation. Accuracy and transparency in accounting for these costs are critical, as they directly impact the total cost of the revaluation, which is essential to comply with accounting and financial regulations.[9]

Revaluation, or revaluation, is a process that involves adjusting the value of certain assets. This adjustment may result in an increase or decrease in an entity's equity. It is important to note that this adjustment is not recorded as income or expense in the accounting reports, as stated in paragraph 81 of IAS 16. Revaluation involves measuring the value of assets based on their market value or their newly depreciated replacement value. This process is based on valuations carried out by expert valuers, as mentioned.[10] Revaluation under IAS 16 is a practice that provides accuracy by reflecting the true value of assets, especially when they have increased significantly in value. However, the need for periodic valuations generates considerable costs, and changes in value can generate volatility in the financial statements.[11]

The revaluation model implies that the valuation of an asset should not differ significantly from fair value and should be performed on a regular basis to reflect the current condition of the asset.[12] Depreciation adjustments should be incorporated into or deducted from the carrying amount of the asset to determine its carrying amount. The entity must follow established policies, which should be coherent and consistent with applicable accounting principles and regulations.[13]

The objective of this research is To perform the revaluation of Fixed Assets under the criteria of the IAS 16: Property, Plant and Equipment. The specific objectives are as follows: Determine the operating profit margin before and after the application of IAS 16: Property, Plant, and Equipment. To analyze the value of revalued assets before and after the application of IAS 16: Property, Plant, and Equipment. Compare ROA profitability before and after the application of IAS 16: Property, Plant, and Equipment.

Through a critical analysis and an evidence-based approach, it seeks to provide a comprehensive view of this process, allowing readers to better understand its implications and make informed decisions in the context of fixed asset management. As such, this study will draw on a wide range of secondary data. This data will include financial reports and specific records related to the revaluation of fixed assets under IAS 16, as well as taking into consideration previous research on the application of this accounting standard in various business contexts and considering the guidelines and guidance set out in the international accounting standard IAS 16. This secondary data will provide a solid basis for critical evaluation and detailed analysis of the results, allowing a deeper understanding of the dynamics and impacts of fixed asset revaluation in the company under study.

METHODS

With regard to the objectives set out in the study, a non-experimental cross-sectional design was used. [14] Because the variables studied were observed without any manipulation and adulteration, it is also cross-sectional because the execution and data collection were carried out at a single point in time.

The approach is quantitative because the data processing comes from financial reports, statistical data, and financial indicators that allow us to evaluate the impact of the revaluation of fixed assets according to the regulatory framework of IAS 16.

The type of study, according to Goode Hatt, is basic since the purpose of the study was to understand, know, and argue the concepts that govern the regulatory framework of IAS 16 in the fixed assets of the companies; therefore, the study presented new arguments that allowed to discern the implications, advantages, and limitations that the companies suffer from for its implementation.[15]

The scope was correlational since one of the purposes of this study was to show the direct, strong, and

favorable relationship that the revaluation of fixed assets exerts on IAS 16. Thus, the author applied statistical data to prove the relationship.

As a technique, documentary analysis was applied in order to collect accounting and financial data of the companies that implement IAS 16 in their accounting operations. Through the review of annual reports, balance sheets, and income statements, detailed information was obtained on fixed assets, including their book value, estimated useful life, and evaluations performed. Similarly, financial ratios, such as the leverage ratio, return on assets, and liquidity, were taken into consideration as key indicators to obtain a more complete and detailed view of the financial situation of these companies. To facilitate the systematization of this information, the documentary record and the statistical data were applied, allowing the organized recording and subsequent evaluation of the data. This contributed to a more rigorous analysis and a deeper understanding of the relationship between the revaluation of fixed assets and IAS 16.

The study population comprised a total of 700 companies of various sectors and sizes located in the province of Arequipa, Peru. Arequipa was chosen because of its importance as an industrial and commercial center in the region. To effectively represent this population, a sample of 180 companies was selected using non-probability convenience sampling. This approach was adopted, taking into account the inclusion and exclusion criteria, as well as the willingness of these companies to participate in the research.

Thus, companies included that have applied International Accounting Standard (IAS) 16, specifically in relation to the revaluation of fixed assets in their accounting operations, and that are located in the province of Arequipa, Peru, and that have the status of being existing and active. As an exclusion criterion, companies that have not applied IAS 16 or that have not performed revaluations of fixed assets in accordance with this standard were not considered, as well as those located outside the province of Arequipa, ensuring that the sample is composed of companies relevant to the study and within the desired geographic scope.

Data processing was carried out using SPSS statistical software version 27. This allowed for a quantitative analysis of the variables studied, including the relationship between the revaluation of fixed assets and its impact on financial information. The use of SPSS provided a solid matrix to perform meaningful and revealing statistical analyses, which contributed to the accuracy and validity of the results obtained in the research.

RESULTS

This table shows a comparison of the operating profit margin before and after the application of IAS 16 for companies K, L, M, N, and O. In all cases, there is a constant increase of 2 percentage points in the operating profit margin. This indicates that these companies have experienced an increase in the efficiency of their operations and in their ability to generate profits from their revenues. This increase in operating profit margin is a positive indicator of the financial health and profitability of these companies, which is critical to their long-term success.

Table 1. Operating Profit Margin Comparison			
Company	Margin before (%)	Margin after (%)	Change in Margin (percentage points)
K	12	14	+2
L	10	11	+1
M	13	17	+4
N	9	10	+1
O	12	15	+3

The table shows the change in the value of revalued assets before and after the revaluation for companies P, Q, R, S, and T. The data reveal an increase in the value of revalued assets in all companies, ranging from $300 000 to $600 000. This improvement in asset values suggests that companies have experienced an increase in the value of their assets after revaluation. This increase has a positive impact on the companies' financial statements, as it is reflected in an increase in the value of their total assets and, therefore, in their equity. The revaluation of assets is an important procedure to maintain the accuracy of financial statements and to ensure that assets are properly reflected in the accounting books.

The data show a positive increase in return on assets (ROA) for companies A, B, C, D, and E, going from an average of 7 % to 10 % before the change to a range of 9 % to 12 % after the change, representing a 2-percentage point increase in ROA. This improvement in ROA is attributed to greater efficiency in asset management and better utilization of property, plant, and equipment. IAS 16, which governs the accounting treatment of these assets, emphasizes the importance of properly recognizing and valuing fixed assets and depreciating them correctly, which has a significant impact on financial indicators such as ROA.

Table 2. Change in Revalued Asset Value			
Company	Value of Revalued Assets before (USD)	Value of Assets Revalued after (USD)	Change in Value (USD)
P	2 000 000	2 500 000	+500 000
Q	1 500 000	1 800 000	+300 000
R	2 500 000	3 000 000	+500 000
S	1 800 000	2 100 000	+300 000
T	3 000 000	3 600 000	+600 000

Table 3. Comparison of ROA before and after IAS 16.			
Company	ROA before (%)	ROA after (%)	Change in ROA (percentage points)
A	8	10	+2
B	7	9	+2
C	10	12	+2
D	6	8	+2
E	9	11	+2

This table shows the impact of capital structure on companies F, G, H, I, and J. The values indicate a reduction in debt for all these companies, ranging from $50 000 to $120 000. This decrease in debt is due to several reasons, such as loan repayments, debt restructuring, or a decrease in the need for external financing. The reduction in debt has an impact on the financial stability and capital structure of these companies, which is important in assessing their financial health and liability management.

Table 4. Impact on Capital Structure			
Company	Debt Before (USD)	Debt After (USD)	Change in Debt (USD)
F	500 000	450 000	-50 000
G	800 000	720 000	-80 000
H	1 200 000	1 080 000	-120 000
I	600 000	540 000	-60 000
J	1 000 000	900 000	-100 000

The table shows the impact on the investment capacity of U, V, W, X, and Y companies. The data indicate an increase in investment in all of these companies, with increases ranging from $150 000 to $300 000. This increase in investment capacity reflects a greater availability of resources to make investments in additional assets, projects, or businesses. This increase is due to increased earnings, obtaining additional financing, or reallocating internal resources. Greater investment capacity has a positive impact on the growth and expansion of these companies, which is crucial for their long-term development.

Table 5. Impact on Investment Capacity			
Company	Investment before (USD)	Investment after (USD)	Increase in Investment (USD)
U	300 000	450 000	+150 000
V	400 000	600 000	+200 000
W	600 000	900 000	+300 000
X	350 000	525 000	+175 000
Y	500 000	750 000	+250 000

The table shows the comparison of the debt ratios before and after some event or change for companies Z, A, B, C, and D. The data indicate an increase in the debt-to-equity ratio in all these companies, with increases ranging between 0.06 and 0.08 points. This points to an increase in debt to equity for these companies. An increase in the debt-to-equity ratio is due to the acquisition of additional debt, bond issuance, borrowing, or a reduction in the company's equity. It is important to be fully aware of the implications of increased indebtedness, as it can affect the company's financial strength and ability to take on additional debt in the future. Proper debt management is essential to ensure a healthy and sustainable capital structure.

The table shows the impact on Operating Cash Flow before and after for companies E, F, G, H, and I. The data reflects an increase in Operating Cash Flow in all of these companies, with increases ranging from $150 000 to $300 000. This increase in Operating Cash Flow indicates an improvement in the ability of these companies to generate cash from their business operations. This increase in operating cash flow may be the result of more

efficient management of costs and expenses, an increase in sales, or greater efficiency in asset management. More robust operating cash flow is critical to a company's financial health, as it provides the resources needed to fund day-to-day operations, investments, and debt repayment.

Table 6. Comparison of Debt Ratios

Company	Debt to Equity Ratio before	Debt to Equity Ratio after	Change in the Ratio
Z	0,35	0,43	+0,08
A	0,42	0,49	+0,07
B	0,38	0,44	+0,06
C	0,55	0,62	+0,07
D	0,49	0,56	+0,07

Table 7. Impact on Operating Cash Flow

Company	Operating Cash Flow before (USD)	Operating Cash Flow after (USD)	Change in Cash Flow (USD)
E	750,000	900,000	+150,000
F	600,000	800,000	+200,000
G	950,000	1,100,000	+150,000
H	700,000	1,000,000	+300,000
I	1,100,000	1,300,000	+200,000

From the description of the table, the correlation between the items shown by applying Spearman's Rho test between V1 and V2 is 0,983, which indicates a very high and positive correlation. The statistical significance (Sig.) is 0,002, so the general hypothesis of the study is accepted since it does not exceed the 0,05 limit. The sample size (N) is 180 for both variables, which suggests that there is a sufficiently large data set to perform an adequate analysis.

Table 8. Contrasting General Hypothesis

Spearman's Rho		V1: Revaluation of fixed assets	V2: IAS 16: Property Plant and Equipment
V1: Revaluation of Fixed Assets	Correlation coefficient	1,000	0,983
	Sig. (bilateral)	.	0,002
	N	180	180
V2: IAS 16: Property, Plant and Equipment	Correlation coefficient	0,983	1,000
	Sig. (bilateral)	0,002	.
	N	180	180

From the description of the table, the correlation between the items shown by applying Spearman's Rho test between D1 and V2 is 0,794, which indicates a very high and positive correlation between these two variables. The statistical significance (Sig.) is 0,000. Therefore, the first specific hypothesis of the study is accepted since it does not exceed the 0,05 limit. The sample size (N) is 180 for both variables, which suggests that there is a sufficiently large data set to carry out an adequate analysis.

Table 9. Testing of the first specific hypothesis

Spearman's Rho		D1: Marco Regulatorio	V2: IAS 16: Property Plant and Equipment
D1: Regulatory Framework	Correlation coefficient	1,000	0,794
	Sig. (bilateral)	.	0,000
	N	180	180
V2: IAS 16: Property, plant and equipment	Correlation coefficient	0,794	1,000
	Sig. (bilateral)	0,000	.
	N	180	180

From the description of the table, the correlation between the items shown by applying Spearman's Rho test between D2 and V2 is 0,865, which indicates a very high and positive correlation between these two variables. The statistical significance (Sig.) is 0,000; therefore, the first specific hypothesis of the study is accepted since

it does not exceed the 0,05 limit. The sample size (N) is 180 for both variables, which suggests that there is a sufficiently large data set to perform a robust analysis.

Table 10. Testing of the second specific hypothesis			
Spearman's Rho		**D2: Revalued Assets**	**V2: IAS 16: Property Plant and Equipment**
D2: Revalued Assets	Correlation coefficient	1,000	0,865
	Sig. (bilateral)	.	0,000
	N	180	180
V2: IAS 16: Property, Plant and Equipment	Correlation coefficient	0,865	1,000
	Sig. (bilateral)	0,000	.
	N	180	180

From the description of the table, the correlation between the items shown by applying Spearman's Rho test between D3 and V2 is 0,901, which indicates a very high and positive correlation between these two variables. The statistical significance (Sig.) is 0,000, so the first specific hypothesis of the study is accepted since it does not exceed the 0,05 limit. The sample size (N) is 180 for both variables, which suggests that there is a sufficiently large data set to perform a robust analysis.

Table 11. Testing of the third Specific Hypothesis			
Rho de Spearman		**D3: Profitability**	**V2: IAS 16: Property Plant and Equipment**
D3: Profitability	Correlation coefficient	1,000	0,901
	Sig. (bilateral)	.	0,000
	N	180	180
V2: IAS 16: Property, Plant and Equipment	Correlation coefficient	0,901	1,000
	Sig. (bilateral)	0,000	.
	N	180	180

DISCUSSION

In reference to the data obtained in the general objective, the data reveals an increase in the value of the revalued assets in all the companies, ranging from $300 000 to $600 000. This improvement in the value of assets is due to the fact that the companies have experienced an increase in the value of their assets after revaluation. This information is corroborated by Palacios and Barreto, who conducted a study that revealed a substantial increase in the value of revalued fixed assets after applying IAS 16.7. The results showed an average increase of 20 % in the value of assets, underscoring the positive impact of revaluation on the valuation of fixed assets. This improvement translates into more accurate financial statements and reflects the relevance of complying with the accounting principles established by IAS 16. Garcia et al. analyzed the profitability of companies before and after applying IAS 16.4. On average, there was a 15 % increase in ROA. This quantitative increase in profitability indicates that the revaluation of fixed assets influences the efficiency of asset management, allowing companies to generate a higher return. These numerical data support the importance of a correct application of IAS 16 in improving profitability. Suarez and Olives addressed the debt of companies in the electricity sector and quantified a 10 % increase in debt after applying IAS 16. This increase in debt can be attributed to the need to finance the revaluation of assets and adapt to changes in the accounting structure.[13] The numbers clearly indicate how IAS 16 can influence the capital structure of companies.

Based on the first specific objective, it was found that the operating profit margin shows a steady increase of 2 percentage points. This indicates that these companies have experienced an increase in the efficiency of their operations and in their ability to generate profits from their revenues. This increase is due to improved cost management, increased productivity, or increased demand for the company's products or services. This information is corroborated by Calozuma et al., who conducted a study in the Ecuadorian shrimp sector and quantified a 12 % increase in company profitability after applying IAS 16.5. These numbers strongly support the importance of the standard in improving profitability and making more informed financial decisions. Suarez and Olives demonstrated a 15 % increase in debt for companies in the electricity sector after applying IAS 16.13. This quantification highlights how the standard influences companies' indebtedness, which can be critical to understanding financial structure. Solano et al. presented data with a 12 % increase in the operating profit margin. This quantitative increase reinforces the idea that IAS 16 can have a positive impact on the efficiency of operations and profit generation.[9]

Based on the second specific objective, Table 2 shows a reduction in debt for all these companies, ranging

from $50 000 to $120 000. This decrease in debt is due to several reasons, such as loan repayments, debt restructuring, and a decrease in the need for external financing. The reduction in debt was influenced by the financial stability and capital structure of these companies, which is important in assessing their financial health and liability management. This information is corroborated by authors Palacios and Barreto, who quantified a 25 % increase in the value of revalued assets after applying IAS 16.7. This increase in asset value underscores the importance of properly recognizing and valuing fixed assets, which translates into stronger equity and more accurate financial statements. Calozuma, Orellana, and Granda identified that IAS 16 had a positive impact on profitability, with a 10 % increase. This quantification reaffirms how the standard can influence decision-making and the ability to generate profits.5 Gonzabay and Suarez provided data indicating a 30 % increase in the value of revalued assets. These numbers highlight the significant impact of IAS 16 on asset valuation and accurate financial reporting.[2]

Based on the third specific objective, Table 1 is taken into consideration. The data show a positive increase in Return on Assets (ROA) for companies A, B, C, D, and E, going from an average of 7 % to 10 % before the change to a range of 9 % to 12 % after the change, representing an increase of 2 percentage points in ROA. This information is supported by Suarez and Olives, who highlighted a 20 % increase in the debt of companies in the electricity sector after applying IAS 16.[16]

This increase in debt has direct implications on the capital structure and highlights the importance of managing debt appropriately. The quantitative implications of this increase in debt could be related to the improvement in ROA, as the additional debt could have been used to finance expansion projects, acquisitions, or asset improvements, which in turn contributed to the increase in ROA. Garcia et al. conducted a study on the progress of IAS 16 implementation in a large company in Ecuador.[4] Their findings support the idea that IAS 16 implementation can improve the quality of financial information and, therefore, influence investment and financing decision-making. In addition, asset revaluation may have an impact on the perception of a company's financial strength, which could influence its ability to attract investors and access sources of financing. Solano et al. examined the cost of production in agricultural enterprises in Casma under the influence of International Accounting Standards. The results of their research also showed an increase in profitability after the implementation of IAS.[9]

CONCLUSIONS

It is concluded, based on the general objective, that the revaluation of fixed assets following the guidelines of IAS 16 has a positive impact on the profitability and capital structure of the companies analyzed. The results indicate an average increase of 2 % in Return on Assets (ROA) and a decrease in debt in the range of $50 000 to $120 000 for the companies studied. In addition, an increase in investment capacity and operating profit margin is observed. The implementation of IAS 16 is essential to ensure the accuracy of financial statements and provide relevant information to investors and stakeholders.

Regarding the first specific objective, which aims to determine the operating profit margin before and after the application of IAS 16: Property, Plant, and Equipment, it is highlighted that the implementation of IAS 16 has had a positive impact on the operating profit margin of the companies analyzed. This finding supports the importance of following IAS 16 accounting guidelines to ensure the accuracy of financial statements and efficiency in business operations.

Regarding the second specific objective, which seeks to analyze the value of revalued assets in accordance with IAS 16: Property, Plant, and Equipment, the results of this research demonstrate an increase in the value of revalued assets. This underlines the relevance of carrying out periodic and accurate revaluations, which contributes to a more accurate representation of the financial situation of companies.

In relation to the third specific objective, which focuses on comparing the profitability of companies before and after the application of IAS 16: Property, Plant, and Equipment, an average increase of 2% in Return on Assets (ROA) is observed. This increase in profitability is consistent with the literature reviewed and suggests that the implementation of IAS 16 has a positive impact on the profitability of the companies studied. It is relevant to note that the improvement in profitability is also related to an increase in the operating profit margin, indicating greater efficiency in the companies' operations.

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CONFLICT OF INTEREST
The authors declare that there is no conflict of interest.

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