Effects of Different Accounting Classification and Measurement Models on Cryptocurrencies

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Abstract:
The aim of this study is to assess the effects of employing different classification models for measuring cryptocurrencies in financial statements in terms of equity position and performance, as well as through an economic and financial analysis. The cryptocurrency market has made significant progress in recent years and attained a market value that is similar to that of the German or Australian stock exchanges. Owing to the absence or limited scope of certain types of accounting standards for cryptocurrencies, those who draft financial reports rely on interpretative guidelines and must both meet a wide range of requirements and adopt the underlying principles of different national jurisdictions. The analysis was carried out by simulating the operational accounting procedures needed for cryptocurrencies in a fictitious company. As a result, it was found that the different classification and measurement models currently being applied in cryptocurrency accounting give the financial statements unique features which means they can give rise to misinterpretation by the users. The study assists in creating an environment for discussion, interpretation and the application of accounting standards in cryptocurrency transactions and highlights the importance of accounting in a user's analysis and economic decision-making. Additionally, the study sets out a pathway for creating new regulations on the subject in the future, as well as recommending promising fields for new research.

Keywords: Cryptocurrencies; Classification; Measurement; Accounting; IFRS [International Financial Reporting Standards].

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1. Introduction

The aim of this study is to assess the effects of employing different classification models for measuring cryptocurrencies in financial statements in terms of equity position and performance, as well as through an economic and financial analysis. The reason for this can be explained by the growth of the cryptocurrency market and the absence or limited scope of accounting standards designed for digital currency regulation.

The cryptocurrency market has witnessed a sharp growth in recent years and risen from a minor phenomenon to becoming a market of a size comparable to a medium-sized stock exchange. According to the CoinMarketCap site (CoinMarketCap, 2024), in June 2023 there were about 10,500 cryptocurrencies traded in 640 different platforms, with a total market value of approximately 1.1 trillion US dollars. Although this figure is much lower than the total value of the US stock market, which amounts to roughly $40 trillion, it is close to the value of the stock markets in countries such as Germany ($1.3 trillion) and Australia ($1.4 trillion) (Pisani, 2023).

Regarding accounting regulations, cryptoassets in general and, in particular, cryptocurrencies, have attracted the attention of marketing professionals, regulators, policymakers and academics, as has been established by the European Financial Reporting Advisory Group [EFRAG] (2020). However, despite this popular appeal, there have still not been any official declarations with regard to cryptocurrency accounting in the International Financial Reporting Standards [IFRS] issued by the International Accounting Standards Board [IASB] (Moosa, 2023) and they do not easily fit into the framework of applicable financial reports (Grant Thornton, 2018). In December 2023, the Financial Accounting Standards Board [FASB] issued an updated version of the U.S. Generally Accepted Accounting Principles [U.S. GAAP] with the aim of improving accounting practices and cryptoasset disclosure. The alterations introduced by the FASB are mandatory for financial statements relating to any periods that commence after 15th December , 2024 (FASB, 2023). However, they do not change the situation regarding the non-convergence of international accounting practices and fail to address key concerns of stakeholders about the faithful representation of the essential features of cryptocurrency operations, as pointed out by Jackson and Luu (2023) and Chou, Agrawal and Birt (2022).

Considering this situation, there are a wide range of interpretations being made by all the different judicial authorities. Luo and Yu (2022) and Marques and Santos (2024) argue that this loophole and the limited guidance given to cryptocurrency accounting, allow the entities to adopt different classificatory procedures and measurement methods. The study carried out by EFRAG (2020) found that there are, indeed, a wide diversity of requirements being made by different judicial authorities that are based on underlying principles. In the view of Alsalmi, Ullah and Rafique (2023), the lack of uniform standards for cryptocurrency accounting can have a detrimental effect on the way the financial information supplied is employed and thus affect the decision-making processes of those who make use of the financial reports. In addition, although the innovative features of cryptocurrency challenge the *status quo* of accounting practices, there are few studies in the area of accounting that are devoted to exploring the technical details of cryptocurrency or the troublesome aspects of accounting (Alsalmi et al., 2023; Luo & Yu, 2022; Ramassa & Leoni, 2022).

This study is conducted against the background of the various cryptocurrency practices being adopted, together with their potential harm to information users and the serious lack of research devoted to this question. It seeks to analyze the effects of the different classification models and measurement techniques for cryptocurrency by simulating the accounting practices of a fictitious company involved in cryptocurrency operations, which uses the real-time quotes of the Bitcoin [BTC], Binance Coin [BNB] and Ethereum [ETH] cryptocurrencies as its database, in the period from 2017 to 2023.

The results of the simulations showed that the wide range of classification models and accounting measurement procedures for cryptocurrencies adopted in the different judicial authorities have led to completely different equity situations, performance reports and financial indicators. This situation resulted in accounting information that was unreliable and lacked comparability of data, as well as being susceptible to tampering - which thus meant that those making use of the financial statements could be prone to errors in judgment during the decision-making process.

The study created an environment that was conducive to discussion, interpretation and the application of accounting standards in the registration of cryptoshares, by broadening an awareness of the financial and informational effects of different classification models and measurement systems, as well as allowing greater clarity on how they can influence the perceptions of the users. By simulating the effects of different classification criteria and methods of asset valuation, the results of the research can be useful for those drawing up financial reports, investors, auditors and regulators in so far as they can underpin any possible regulatory measures in the area concerned.

The next section establishes a theoretical framework which will determine the accounting standards currently being employed for cryptocurrencies and examine the inconsistencies that arise from the application of these standards. The third section sets out the methodology that is employed for the simulations of the impacts of the different classifications and applicable measurements. In the fourth section, there is an investigation of the outcomes of the simulations, followed by a discussion and analysis of the results obtained. The final section includes some concluding comments with regard to the contribution made by this study and makes some recommendations for future research.

2. Theoretical Framework

2.1 Accounting standards employed in the accounting system of cryptocurrencies

Entities that either purchase or take possession of a cryptoasset or adopt it in some other way (for example as the payment of a client), might be surprised to learn that the accounting standards that are currently applicable for a fixed asset register, are more closely related to inventories and intangible assets than with cash, the equivalent of cash or financial instruments (KPMG, 2022).

In June 2019, the IFRS Interpretations Committee [IFRS IC] (2019) recognized that cryptocurrencies do not fit into the conventional definitions of cash or financial instruments set out by the International Accounting Standard [IAS] 32 (Financial Instruments: Presentation), but met the conditions required for being classified as inventories or intangible assets. Based on this analysis, the Committee concluded that the holders of cryptocurrencies should employ the IAS 2 Inventories when the cryptocurrencies are kept for sale in the normal course of business. As an alternative the application of IAS 38 (Intangible Assets) was recommended.

The Association of International Certified Professional Accountants [AICPA] & Chartered Institute of Management Accountants [CIMA] (2023) evaluated cryptocurrencies in the light of the U.S. Generally Accepted Accounting Principles [U.S. GAAP] and also concluded that the cryptocurrencies did not meet the required conditions to be classified as cash, the equivalent of cash or financial instruments. However, unlike the opinion held in the domain of the IFRS, the AICPA & CIMA (2023) also thought that the cryptocurrencies did not meet the definition of inventories (since they are not tangible assets), although they recognized that the cryptocurrencies can be kept for sale in the normal course of business. Based on this understanding, the cryptoassets began to be viewed as intangible assets with an indefinite useful life. When this approach is adopted, the intangible cryptoassets are recorded at cost, which

includes any transaction costs or fees but not amortized costs. The value of these assets is reduced to the fair value whenever this value falls below the book value. Once this is assumed, this disparity cannot be altered, even if the fair value assumes recovery of the asset during the reported period (KPMG, 2022).

The AICPA & CIMA allow some key exceptions to this interpretation. The association recognizes that an entity that is characterized as an investment company can classify cryptocurrencies as investment. In this case, the entity should determine whether these cryptocurrencies represent a debt instrument, an equity instrument or some other type of investment and follow the appropriate guidance. In this case, the company should measure the investments in cryptocurrencies by fair value unless an exception is made that requires accounting or consolidation by the equity equivalence method. It is also recognized that, owing to the practice adopted in industry of allowing the definition of inventories to include assets such as financial instruments and the material commodities held by broker-dealers as a business owner´s position, it is reasonable to extend the interpretation of inventories (exceptionally for the broker-dealers) as a means of also including the cryptocurrencies maintained for proprietary deals (AICPA & CIMA, 2023).

In response to the feedback of several stakeholders, and government directives encouraging the regulatory bodies to set out rules and guidelines to handle both the current and emerging risks of the ecosystem of digital assets (The White House, 2022), in December, 2023, the FASB issued an updated report on the matter which addresses the question of intangible asset accounting, goodwill and other factors within the domain of the U.S. GAAP, with a view to improving the practices currently in force. However, these changes will only have an effect on financial information that is relative to periods following December 15th, 2024 (FASB, 2023). They will not alter the scenario of non-convergence within international accounting practices and will not overcome some of the main problems found in cryptocurrency accounting such as the fact that the essential features of the operations involving these operations are not properly represented.

As well as this, the EFRAG (2020) investigated the existence of particular guidelines laid down by the National Standard Setters [NSS] of various jurisdictions. As a result, the EFRAG found that there are a wide range of requirements being made by different jurisdictions based on underlying principles. In Japan, for example, there is uncertainty about how to apply legal ownership rights but despite this, regarding cryptocurrency accounting, they are regarded as a separate category of assets. If there is an active market, the cryptocurrencies are measured at fair value by means of the financial outcome. When there is no active market, the measuring is calculated by the historical cost, reduced to the estimated disposal fixed value, or even a net book value of zero, if this is lower than the historical cost. Another example which is worth mentioning, is the case of Switzerland. Since there are no formal guidelines there, the accounting policies and procedures are derived from legislation, i.e. the Swiss Code of Obligations. The financial reports that are disclosed in the country suggest that the cryptocurrencies are being classified in accordance with the business purposes of the holders and are usually classified as either (short or long term) financial assets, inventories or intangible assets. In Holland, the cryptoassets are also classified in accordance with the business model of the holder: intangible fixed assets, inventories or other investments. In contrast, there are some countries like Slovakia and Lithuania that classify cryptocurrencies as financial assets.

Table 1 shows the main combinations for the classification and measurement of cryptocurrencies reported in the analytical studies:

Table 1
The main combinations for the classification and accounting measurement of cryptocurrencies

Classification	Measurement	Accounting Standard		
		IFRS	U.S. GAAP[1]	NSS
Intangibles	Revaluation	X		X
	Costs subject to depreciation or impairment	X	X	X
Inventories	Fair value through profit and loss (FVPL)	X	X	X
	Cost or net realizable value (the lower of them)	X		X
Financial Instruments	Fair value through profit and loss			X
Other Investments	Fair value through profit and loss		X	X
	Fair value through other comprehensive income			X
	Historical costs			X
Cryptoassets	Fair value through profit and loss			X
	Costs subject to depreciation or impairment			X

[1] In the Table, account was taken of the current practices adopted by entities acting under United States jurisdiction. The recent adjustments to the U.S. GAAP, which are mandatory and will begin to take effect in the financial statements applicable to periods after December 15th, 2024, are phasing out the practice of accounting cryptocurrencies as intangible assets with an indefinite useful life which are measured by the cost subject to *impairment* and are now requiring fair value measurement (Deloitte, 2023).

Source: based on IFRS IC (2019), EFRAG (2020), AICPA & CIMA (2023)

As can be seen, the studies are designed to cover a wide range of accounting practices and lead to different combinations for classifying and measuring cryptocurrencies. Based on the data displayed in Table 1, four key methods can be distinguished for the subsequent measurement of cryptocurrencies:

(1) Fair value through profit or loss [FVPL] – the price that will be earned by the sale of an asset in a transaction between the market participants that is not enforced at the measurement date. The changes in fair value are recognized in the income statement of the period;
(2) Fair value by means of other comprehensive income [FVOCI] – similar to FVPL, with the difference that the variations are recognized in the other comprehensive income and accumulated in the net assets. The FVOCI model is introduced in this study together with retraining or rather, the accumulated funds of the net asset variations are transferred to the Income Statement of the period at the time of the realization of the capital (write-off or asset disposal);
(3) The revaluation method [REV] – fair value at the revaluation date deducted from amortization or any accumulated impairment losses. Positive variations are recognized in other comprehensive income and accumulated on equity, while those that are negative are recognized in the income statements of the period; and
(4) Costs subject to amortization or impairment [CAI] – the value assigned to the asset in the initial recognition deducted from the accumulated amortization or the impairment losses, when the accounting asset value exceeds its recoverable value. It is assumed in this study that the cryptocurrencies are assets with an indefinite useful life and thus are not amortized.

In the case of inventories, the applicable cost model considers the lowest figure between the historical cost and the net realizable value. Although the net realizable value may not be exactly equal to the fair value as a standard used in impairment tests, it is thought that there will not be significant difference between these two values and hence, it was decided to employ a single cost-effective measurement model.

2.2 Inconsistencies in the Application of Accounting Standards

The innovative features of cryptocurrencies do not seem to fit in with the way the current definitions of accounting are classified, which makes an accounting recognition of these assets a challenging task (Pelucio-Grecco, Santos Neto & Constancio, 2020). Chou et al. (2022) add that the rapid development of cryptoassets and their fluid nature makes it hard to draw up guidelines for accounting. Owing to the lack of these guidelines and taking note of the elements in accounting theory, Hubbard (2023) argues that a model that can produce the most useful information for users, should treat cryptocurrencies as assets classified as fair value through profit or loss.

When analyzing the accounting conditions and disclosure of cryptocurrencies around the world, a number of researchers have found inconsistencies and significant distortions. Anderson, Fang, Moon and Shipman (2022) noted that American companies were only beginning to adopt intangible asset accounting in a more consistent way from 2018 onwards, presumably after the introduction of the interpretive guidelines recommended by auditing firms and by AICPA & CIMA (2023). Despite this, the authors noted significant variations in the basic assumptions of the tests used for the reduction of recoverable value and in the extension of the supplementary disclosures in their financial reports.

Luo and Yu (2022) analyzed the financial statements of 40 global companies which were exposed to cryptocurrencies and found various inconsistencies in the application of accounting standards. For example, the authors found inconsistencies in the recognition and value of assets between the companies that comply with the U.S. GAAP and those that adopt the IFRS standards, as well as among the entities that follow the IFRS. Sixt and Himmer (2019) drew attention to the fact that the different methods currently being employed for the recognition and measurement of cryptocurrencies, have not assisted in improving the comparability of financial reports on a global scale. In addition, Luo and Yu (2022) stress that presenting cryptocurrencies as intangible assets in financial statements may not accurately represent the liquidity position of a company.

By broadening the discussion on the classification and measurement of cryptocurrencies, this study seeks to extend the knowledge of this subject by analyzing the relevant classification and measurement models in terms of equity position, performance and economic/financial factors.

3. Methodological Procedures

Owing to the exploratory character of this study, no specific hypotheses have been formulated with regard to its expected results. In practical terms, its aim is to determine in what ways the equity position, performance and financial indicators might be affected if different classification and measurement criteria for the cryptocurrencies are adopted.

3.1 An illustrative scenario

For the purposes of this research, an illustrative scenario was created which involves a fictitious company called CryptoCurrency Company (CryptoCo), that has no reference to any actual situation. In the study it was decided to ignore the business model of CryptoCo so that a comparison could be made with the recognition, measurement and disclosure models that are designed to undertake the same operations.

As a reference-point, the following suppositions were made, together with a number of imaginary operations carried out by CryptoCo, with a view to designing a framework which could allow several nuances in the classification and measurement criteria to be explored:

- A decision to draw on $75,000 of its own capital and $25,000 of capital from third parties for the purchase of $ 100,000 in cryptocurrencies;

- The acquisition of a loan of $25,000 on 31.12.2017, at an interest rate of 5% a year for a fixed period of 6 years which had to be settled at the end of the contracted period;
- The purchase on 31.12.2017, of the equivalent of $ 60,000 in BTC; $30,000 in ETH; and $10,000 in BNB;
- The acquisitions in cryptocurrency should be retained until 31.12.2023, when the whole amount would be sold and the contracted loan would be repaid in its entirety.

3.2 Data

The Bitcoin (BTC), Ethereum (ETH) and Binance Coin (BNB) currencies were selected for the cryptocurrency simulation, which from now on will be referred to by their abbreviations. These coins were chosen by virtue of the importance of their market values. Although there are about 9,000 cryptocurrencies currently being traded, only four of them make up 75% of the total value of this market – which include Tether (USDT), as well as the three selected currencies – according to CoinMarketCap (2024). Unlike the other three, USDT is classified in the group of "stablecoins", which by their nature are designed to ensure that their quotation remains indexed at the value of a fixed asset, which in the event is the US dollar. Considering this, just analyzing this currency with a view to assessing its effects on asset accounting, income and net equity, will not significantly benefit the research and for this reason it was ignored in the interests of the simulation.

In any event, taken together, BTC, ETH and BNB represent more than 70% of the total value of the cryptocurrency market, which testifies to the representativeness of these currencies for the objectives of this study. The number of positions maintained in each of these cryptocurrencies in the baseline scenario (60/30/10) was only mediated for the purposes of the simulation and, the starting date for each of these currencies to enter the market was fixed at 12/31/2017, as a reference-point. The choice of this criterion arose from a desire to reduce the discretionary expenditure for compiling the portfolio by making use of a parameter based on the reality of the market.

The period covered by the research was chosen from the creation of the most recent currency of those selected – in this case the BNB – in which the first record of a transaction occurred in November 2017. In this way, it was believed that an analysis of the data from the end of the year in 2017 to the end of 2023, allowed simulations to be carried out by means of six consecutive annual statements. The simulations were carried out together with the four principal measurement models – FVPL, FVOCI, REV and CAI – and these can be found in Table 1.

The cryptocurrency quotation data were obtained from the Investing.com site, one of the three main global financial websites in the world. Investing.com provides data in real time for 250 stock exchanges around the world, as well as information about commodities, cryptocurrencies, indexes, currencies, securities, interest rates and derivatives (Investing, 2024).

Since there is an active market for cryptocurrencies, with transactions being carried out 24 hours a day, the daily quotations (both at the opening and closure of the market - at maximum and minimum levels) were available for the survey conducted and the closing share price was selected for the simulation of the recorded accounts.

Finally, as prices are traded in American dollars in this market, it was decided to make the dollar the functional currency for the entity in question and the figures are shown together with separate decimal points. If another functional currency had been chosen, the accounting reports would have been affected, not only by the pattern of behavior followed by the measuring value of the cryptocurrencies but also by the fluctuations in the currency exchange with regard to the US dollar; this would have shifted the focus away from the main purpose of the research which is to analyze the particular effects of different classification and measurement models on

cryptocurrencies. For this reason, only the transactions described in the fictitious scenario were considered, without any attention being paid to other operations in the company.

3.3 Indicators

To complement this, there is an assessment of return on assets [ROA] and general indebtedness [GI] resulting from the employment of different models of recognition, measurement and disclosure, which is a means of highlighting the effects of different practices on the economic/financial analysis of the entities holding cryptocurrencies.

ROA is an indicator that measures the profitability of an organization in terms of its total assets and reveals the capacity of a company to generate value on the basis of its shares. In this study, it was calculated by means of the following formula:

$$ROA = \frac{Net\ income\ [loss]\ for\ the\ year}{Total\ assets\ for\ the\ previous\ financial\ year} \quad (1)$$

GI, in turn is the relation between third-party capital (i.e. debts and loans) and total assets and tends to be used to demonstrate the financial health of the entities. In this study, the formula used to calculate GI was as follows:

$$GI = \frac{loan}{total\ assets} \quad (2)$$

The reason for choosing ROA and GI is that these indicators are widely used in a fundamental analysis, and because, unlike the other indicators, they allow the simplified information employed in the study to be adjusted in a suitable way. This means the information about the purchase of the cryptocurrency portfolio can be confined to divestitures in a six-year period, by making use of the funds from a loan operation. The simplification of the transactions restricts the use of more sophisticated indicators but does not impose constraints on the objectives of this study, since the indicators that are used, allow conclusions to be drawn about the effects of different classification and measuring criteria on cryptocurrencies.

4. Results

4.1 Cryptocurrency quotes

Data were obtained from the closing daily quotes for the BTC, ETH and BNB cryptocurrencies in the period from 12/31/2017 to 12/31/2023 directly on website Investing.com (Investing, 2024). Although the closing quotes on the last day of each financial year might be the most important for the simulation of the equity positions and the income at the end of each period, the daily closing data for the whole period were analyzed so that the AICPA & CIMA guidelines could be followed for the CAI model. This was to make clear that if the value of what was classified as an intangible asset with indefinite useful life, fell below the accounting value during the period of the report, the impairment loss would have to be recorded even if the asset had recovered by the end of the same period (AICPA & CIMA, 2023).

After the recognition of loss by impairment, the adjusted carrying amount becomes the new accounting basis of the intangible asset. Thus, a total of 2,192 price observations for each of the three cryptocurrencies selected for the study have been analyzed. The descriptive statistics of these daily quotes are displayed in Table 2.

Table 2
Descriptive statistics (in US dollars)

Cryptocurrency	Obs.	Average	Minimum	P25	Median	P75	Maximum	Standard Deviation
BTC	2.192	21.74	3.23	8.29	16.97	32.21	67.53	16.00
ETH	2.192	1.25	0.08	0.23	1.08	1.87	4.81	1.13
BNB	2.192	0.17	0.005	0.02	0.04	0.30	0.68	0.17

Source: Investing.com site (Investing, 2024).

The data in Table 2 reveal the significant volatility and dispersion of the cryptocurrency quotes selected for the period being analyzed. What is particularly striking is the variation between the minimum and maximum values. These variations between the minimum and maximum are 1.991% for BTC, 5.637% for ETH and 14.868% for BNB. The standard deviation of the three currencies represented a dispersion of the order of 75% to 100% in relation to the average. This lack of uniformity in the pattern of behavior of the cryptocurrency prices, of course yields sharply different results in the simulation, which explains the reason for defining the criterion employed when compiling the first portfolio – 60/30/10 – as the basis for participating in the currency market on 12/31/2017 – which is important as a means of reducing the discretionary expenditure of the researcher.

This becomes clearer when the closing quotations at the end of each accounting year are examined, together with the annual variations for each of the three cryptocurrencies selected, as outlined below in Table 3.

Table 3
Closing price quotations and annual variations

Data	BTC		ETH		BNB	
	Quotation (US Dollars)	Var. (%)	Quotation (US Dollars)	Var. (%)	Quotation (US Dollars)	Var. (%)
12/31/2017	13,850.40	-	736.77	-	8.53	-
12/31/2018	3,709.40	(73.2%)	131.90	(82.1%)	6.11	(28.4%)
12/31/2019	7,196.40	94.0%	129.21	(2.0%)	13.73	124.7%
12/31/2020	28,949.40	302.3%	735.94	469.6%	37.34	172.0%
12/31/2021	46,219.50	59.7%	3,677.85	399.7%	511.7	1270.4%
12/31/2022	16,537.40	(64.2%)	1,195.67	(67.5%)	246.10	(51.9%)
12/31/2023	42,272.50	155.6%	2,281.90	90.8%	312.00	26.8%

Source: Investing.com site (Investing, 2024).

These data underline the great volatility of the cryptocurrency quotations which have significant variations (both positive and negative) in the yearly periods. For example, in the case of BNB, from one year to the next, the variation in the closing quotation reached the notable figure of 1.270% in 2021. The yearly average for BTC in the module was 125%, for ETH 185% and for BNB 279%.

4.2 Simulation of Financial Information and Economic Indicators

The simulations of the annual financial information of the company were based on the premises of the CryptoCo case, described in Section 3, and the data for the quotations outlined

in Section 4.1; this was used for the subsequent measurement models shown in Section 2.1: FVPL, FVOCI, REV and CAI.

It should be pointed out that there may be some variations in these models depending on the nature of the jurisdiction. For example, when the cost model is employed for classifying intangible assets, the U.S. GAAP standards treat cryptocurrencies as intangible assets with an indefinite useful life. Thus, they are not subject to amortization, whereas the model adopted in France requires cryptocurrencies to be amortized throughout their useful life and are thus regarded as the estimated period of service. Despite these differences, it can be assumed that these four models are sufficient to represent the different measuring criteria that are applied in cryptocurrency accounting.

In addition, in this study only the direct impact of transactions with cryptocurrencies was taken into account and the possible tax-related outcomes, transaction costs, result distribution and other transactions were disregarded. The purpose of this was to ensure that the effects of the transactions with cryptocurrencies were kept separately within the financial information produced by the different measurement models.

Table 4 displays the shortened equity position, (without going into detail, for example the equity item in the classified balance sheet), the financial outcome, the comprehensive income, the ROA and the GI, and includes the adoption of the model for subsequent measurement which is based on fair value through result.

Table 4: CryptoCo Annual Financial Information - FVPL Model (in USD thousands)

	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
ASSETS	100.0	28.6	52.5	199.2	949.9	408.8	608.3
Cash	-	-	-	-	-	-	608.3
BTC	60.0	16.1	31.2	125.4	200.2	71.6	-
ETH	30.0	5.4	5.3	30.0	149.8	48.7	-
BNB	10.0	7.2	16.1	43.8	599.9	288.5	-
LIABILITIES	25.0	26.3	27.6	28.9	30.4	31.9	-
Loans	25.0	26.3	27.6	28.9	30.4	31.9	-
EQUITY	75.0	2.4	25.0	170.2	919.5	376.9	608.3
Capital	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Retained Earnings/Accum. Losses	-	(72.6)	(50.0)	95.2	844.5	301.9	533.3
Equity Valuation Adjustments	-	-	-	-	-	-	-
Income (Expenses) with Cryptocurrencies	-	(71.4)	23.9	146.6	750.7	(541.0)	233.0
Interest Expenses	-	(1.3)	(1.3)	(1.4)	(1.4)	(1.5)	(1.6)
NET INCOME (LOSS)	-	(72.6)	22.6	145.2	749.3	(542.5)	231.4
Other Comprehensive Income	-	-	-	-	-	-	-
COMPREHENSIVE INCOME	-	(72.6)	22.6	145.2	749.3	(542.5)	231.4
ROA	-	(73%)	79%	276%	376%	(57%)	57%
GI	25%	92%	52%	15%	3%	8%	-

In this model, the changes in the fair value are fully recognized in the income statement of the period. It is the model that shows greater volatility because it recognizes all the fluctuations in the value of the cryptocurrencies from the income generated during the reporting

period and even if it is unrealized income or loss. The volatility of the fair value of the cryptocurrencies and consequent effect of the income or loss of each period, underlines the importance of having a suitable model for the measurement and recognition of income profits and losses and thus ensures the relevance of the financial information.

Table 5 displays information that is equivalent to that of Table 4, except that it includes the adoption of a subsequent measurement model based on the fair value through other comprehensive income.

Table 5: CryptoCo Annual Financial Information - FVOCI Model (in USD thousands)

	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
ASSETS	100.0	28.6	52.5	199.2	949.9	408.8	608.3
CASH	-	-	-	-	-	-	608.3
BTC	60.0	16.1	31.2	125.4	200.2	71.6	-
ETH	30.0	5.4	5.3	30.0	149.8	48.7	-
BNB	10.0	7.2	16.1	43.8	599.9	288.5	-
LIABILITIES	25.0	26.3	27.6	28.9	30.4	31.9	-
Loans	25.0	26.3	27.6	28.9	30.4	31.9	-
EQUITY	75.0	2.4	25.0	170.2	919.5	376.9	608.3
Capital	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Retained Earnings/Accum. Losses	-	(1.3)	(2.6)	(3.9)	(5.4)	(6.9)	533.3
Equity Valuation Adjustments	-	(71.4)	(47.5)	99.2	849.9	308.8	-
Income (Expenses) with Cryptocurrencies	-	-	-	-	-	-	541.8
Interest Expenses	-	(1.3)	(1.3)	(1.4)	(1.4)	(1.5)	(1.6)
NET INCOME (LOSS)	-	(1.3)	(1.3)	(1.4)	(1.4)	(1.5)	540.2
Other Comprehensive Income	-	(71.4)	23.9	146.6	750.7	(541.0)	(308.8)
COMPREHENSIVE INCOME	-	(72.6)	22.6	145.2	749.3	(542.5)	231.4
ROA	-	(1%)	(5%)	(3%)	(1%)	(0%)	132%
GI	25%	92%	52%	15%	3%	8%	-

The model also adopts fair value as the basis of measurement, in a similar way to the FVPL model, with the difference that the variations are recognized in other comprehensive income and accumulated in equity, rather than being recognized in the income statement of the period. In this study, the FVOCI model is examined together with recycling, or in other words, the accumulated variations in equity are transferred to the income of the period at the time of realization (write-off or disposal of the assets).

In this way, it can be seen that the income statement of the period is only affected at the time of the sale of assets, unlike the FVPL model, which recognizes the variation of values in the income statement of all the periods. In a comparable way to the data in Table 4, the data in Table 5 show that the main effect of the difference between the FVPL and FVOCI models becomes apparent in the ROA, which in the second model is affected by the variations in the net equity.

The effects of adopting the subsequent measurement model that is based on the revaluation method (REV) are shown in Table 6 below.

Table 6: CryptoCo Annual Financial Information - REV Model (in USD thousands)

	2017	2018	2019	2020	2021	2022	2023
ASSETS	100.0	28.6	52.5	199.2	949.9	408.8	608.3
Cash	-	-	-	-	-	-	608.3
BTC	60.0	16.1	31.2	125.4	200.2	71.6	-
ETH	30.0	5.4	5.3	30.0	149.8	48.7	-
BNB	10.0	7.2	16.1	43.8	599.9	288.5	-
LIABILITIES	25.0	26.3	27.6	28.9	30.4	31.9	-
Loans	25.0	26.3	27.6	28.9	30.4	31.9	-
EQUITY	75.0	2.4	25.0	170.2	919.5	376.9	608.3
Capital	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Retained Earnings/Accum. Losses	-	(72.6)	(50.0)	(3.9)	(5.4)	(6.9)	533.3
Equity Valuation Adjustments	-	-	-	99.2	849.9	308.8	-
Income (Expenses) with Cryptocurrencies	-	(71.4)	23.9	47.5	-	-	233.0
Interest Expenses	-	(1.3)	(1.3)	(1.4)	(1.4)	(1.5)	(1.6)
NET INCOME (LOSS)	-	(72.6)	22.6	46.1	(1.4)	(1.5)	231.4
Other Comprehensive Income	-	-	-	99.2	750.7	(541.0)	(308.8)
COMPREHENSIVE INCOME	-	(72.6)	22.6	145.2	749.3	(542.5)	(77.5)
ROA	-	(73%)	79%	88%	(1%)	(0%)	57%
GI	25%	92%	52%	15%	3%	8%	-

In the revaluation model, the fair value reflects the variations in the revaluation data, including impairment losses. If the accounting asset value rises, the increase is recognized in the other comprehensive income (OCI) and is accumulated in the equity under the equity valuation adjustments heading. However, it can be recognized as profit or loss to the extent that it reverses a revaluation decrease of the same asset previously recognized in the income statement. The reductions in accounting value are recognized in the income statement of the period except when there is a surplus revaluation that is recognized in the equity valuation adjustments heading. Any accumulated revaluation surplus may be directly transferred to the retained earnings/accumulated losses heading when the asset is written off.

The key feature in this model, in terms of performance assessment, is that only the accumulated negative results are reflected in the income statement of the period. It is notable, for example, that even in the case of the asset sale in 2023, the transfer of the revaluation surplus to retained earnings was not made through the income statement of the period, in compliance with the guidelines set out in Paragraph 87 of IAS 38; this distorted the profitability indicators that depended entirely on their reference to the income statement of the period.

Table 7 covers the fourth scenario and displays the results of the simulations regarding the adoption of the cost model that is subject to amortization or impairment (CAI).

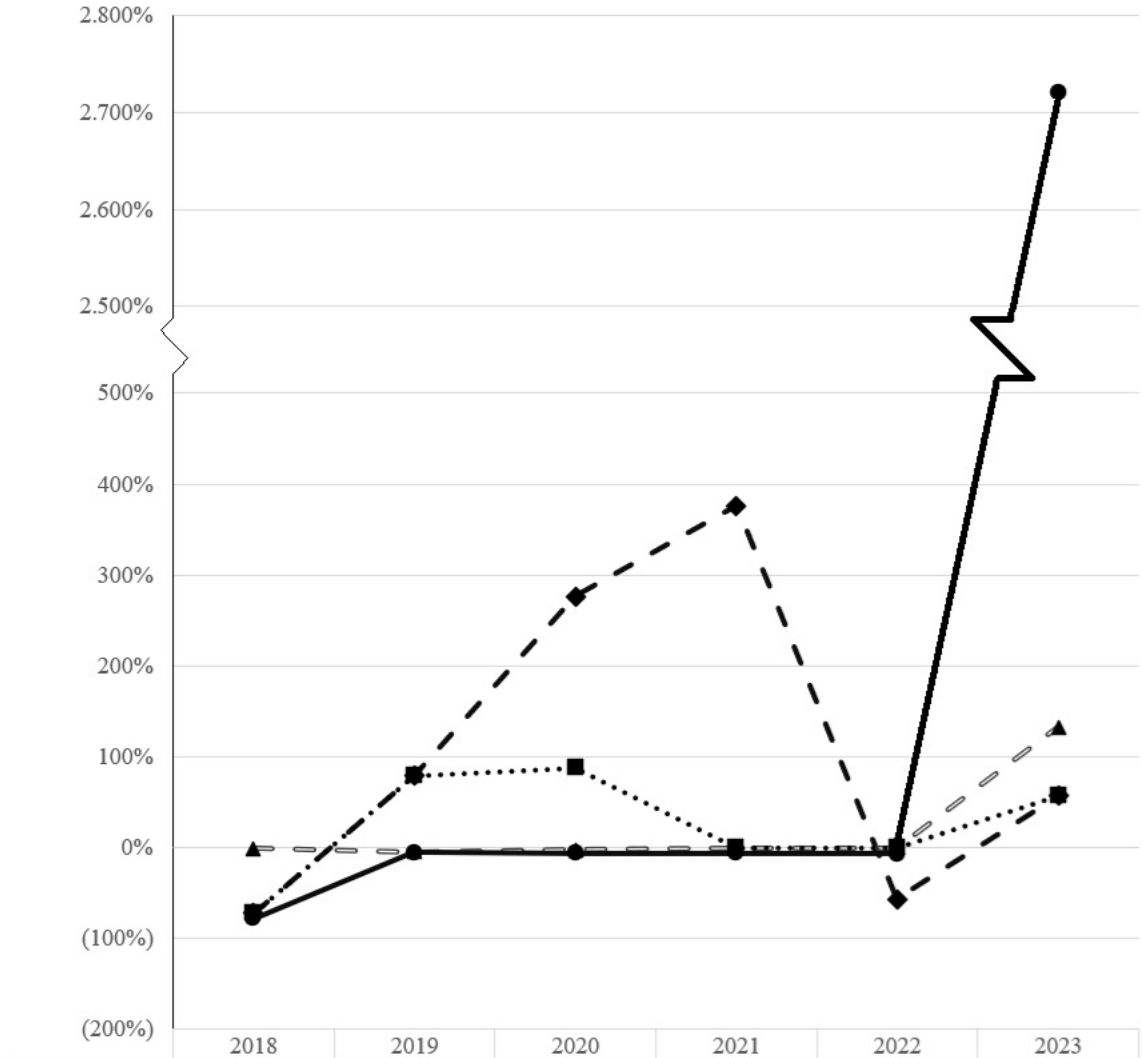
Table 7: CryptoCo Annual Financial Information - CAI Model (in USD thousands)

	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
ASSETS	100.0	22.7	22.7	22.7	22.7	22.7	608.3
Caixa	-	-	-	-	-	-	608.3
BTC	60.0	14.0	14.0	14.0	14.0	14.0	-
ETH	30.0	3.4	3.4	3.4	3.4	3.4	-
BNB	10.0	5.3	5.3	5.3	5.3	5.3	-
LIABILITIES	25.0	26.3	27.6	28.9	30.4	31.9	-
Loans	25.0	26.3	27.6	28.9	30.4	31.9	-
EQUITY	75.0	(3.6)	(4.9)	(6.2)	(7.7)	(9.2)	608.3
Capital	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Retained Earnings/Accum. Losses	-	(78.6)	(79.9)	(81.2)	(82.7)	(84.2)	533.3
Equity Valuation Adjustments	-	-	-	-	-	-	-
Income (Expenses) with Cryptocurrencies	-	(77.3)	-	-	-	-	619.1
Interest Expenses	-	(1.3)	(1.3)	(1.4)	(1.4)	(1.5)	(1.6)
NET INCOME (LOSS)	-	(78.6)	(1.3)	(1.4)	(1.4)	(1.5)	617.5
Other Comprehensive Income	-	-	-	-	-	-	-
COMPREHENSIVE INCOME	-	(78.6)	(1.3)	(1.4)	(1.4)	(1.5)	617.5
ROA	-	(79%)	(6%)	(6%)	(6%)	(7%)	2.721%
GI	25%	116%	121%	128%	134%	141%	-

In this model, the asset value represents the value assigned to the asset deducted from the accumulated amortization or impairment loss, which occurs when the accounting value exceeds its recoverable value. Since cryptocurrencies are usually treated as assets of indefinite useful life, they were not considered to be amortizations in the model. Thus, as the measurement takes the lowest value between the amortized cost and the net realizable value, only reductions in the value are recognized in the income statement until the settlement. If the asset value falls below the accounting value during the period of the report, the impairment must be recorded, even if the asset recovers by the end of the same period. Moreover, after the impairment has been recognized, the adjusted book value becomes the new asset base.

The results of the simulation in Table 7 reveal the extent of the asset freeze in the significant loss that occurred at the end of the financial year in 2018, which lasted until the end of 2023, when the assets were disposed of. As a result, the company's net equity was negative for practically the entire period, which revealed an uncovered liability in the balance sheets from 2018 to 2022.

Finally, based on the financial information disclosed in Tables 4 to 7, a comparison of ROA was carried out - this is a fundamentalist index that is often used in economic/financial analyses - and takes account of further different measuring methods. The results are shown in Figure 1.

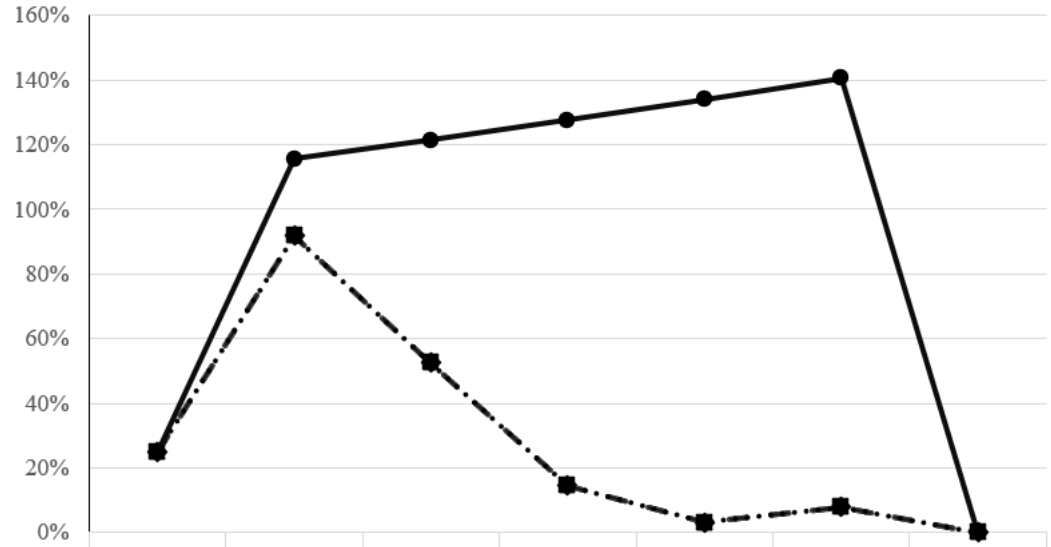


	2018	2019	2020	2021	2022	2023
VJR	(73%)	79%	276%	376%	(57%)	57%
VJORA	(1%)	(5%)	(3%)	(1%)	(0%)	132%
REV	(73%)	79%	88%	(1%)	(0%)	57%
CAI	(79%)	(6%)	(6%)	(6%)	(7%)	2.721%

Figure 1 - ROA of the CryptoCo, including the FVPL, FVOCI, REV and CAI models

In the first year, 2018, all the models showed ROA as negative. In the case of the CAI model, the ROA had a 79% negative return on assets. Over the years, only the FVPL and REV models achieved positive results, with returns of up to 376% a year. In the last year in which the assets were sold, the CAI model had a positive ROA of 2.721% - the result for the valuation of the assets in the whole period.

Figure 2 shows the evolving pattern of GI in the period being analyzed and includes the different measuring techniques that are displayed in Tables 4 to 7.



	2017	2018	2019	2020	2021	2022	2023
VJR	25%	92%	52%	15%	3%	8%	0%
VJORA	25%	92%	52%	15%	3%	8%	0%
REV	25%	92%	52%	15%	3%	8%	0%
CAI	25%	116%	121%	128%	134%	141%	0%

Figure 2 - GI of the CryptoCo, including the FVPL, FVOCI, REV and CAI models

In the case of GI, all the models that employ fair value as a basis for the cryptocurrency measurement model, (FVPL, FVOCI and REV) behave in the same way, with a significant increase of GI in the first year and successive falls in the years that follow. Regarding the CAI model, the indicator only rose gradually, reaching 141% in 2022, whereas the other models had a GI of 8%. In the last year, the GI of all the models converged to a level of 0% with the settlement of the debt.

4.3 Analysis of the Results

Tables 4 to 7 provide evidence that the use of different measuring models can lead to significant inconsistencies and distortions in the equity position and income of the business entity. For example, while the assets and net equity showed fluctuations in every year in the fair value and revaluation method evaluation models (FVPL, FVOCI and REV), the cost method (CAI) showed a negative correction factor in its asset value in the first year and then remained stable until the time of settlement, which revealed that the assets were clearly undervaluated. At the end of the financial year in 2021, for example, the total assets were estimated by the CAI model to be worth $22.700, while in the other models they were valuated at $949.900, an amount that is 42 times greater. The net equity in the CAI model, was negative from 2018 to 2022, which was not the case on a single occasion with the other models.

This discrepancy between the models was even more striking when we evaluated the financial performance of the company. Each model showed a different pattern of behavior and in the case of the FVPL model, the profits and losses fluctuated most sharply. In contrast, the variations in asset value in the FVOCI model were only recorded as changes in the income statement at the time of the sale of the cryptoassets, which made it difficult to make an assessment of the performance of the company in the course of each year. In the REV model, there is a kind of midway point between the two previous models which requires close attention to determine what is (or what is not) crossing over from a company´s income statement. The CAI model, in turn, only recognizes a reduction in the value of income at the time of the

settlement. The increase in the value of cryptocurrencies that had occurred since their purchase was only recognized in the income statement at the time of settlement.

The indicators displayed in Figures 1 and 2 make the distortions caused by the different measurement models even more evident. As can be noted, the same events resulted in completely different indicators depending on the measurement model adopted. For example, the ROA of each period varied not only in terms of dimensions of return, but also of direction. In 2021, the returns varied from 376% positive to 6% negative. In the last year of the period evaluated, the returns were all positive but ranged from 57% to 2.721%.

The GI showed widely divergent situations of indebtedness. The cost-based model had high indices of indebtedness, whereas the models based on fair value had much lower values during the period being analyzed. Thus, there were sharply differing and hence erroneous conclusions about the profitability and indebtedness of the business entities holding cryptocurrencies which relied on different classification and measurement models.

This situation created a greater risk perspective owing to the lack of understanding and poor judgment on the part of the users with regard to the operations of the entities. If the accepted accounting criteria allow the dissemination of this kind of disparate information about the economic/financial situation of the entity and the assets which are causing this discrepancy are acquiring a greater significance in the economy, it is self-evident that the issuers of the accounting standards must find an answer to the problem.

As demonstrated in the test that was conducted, the different measurement bases used for the registration of cryptocurrencies have significantly different effects on asset values, net equity, and income statements, which also causes distortions in the performance indicators of the business entity. However, as well as these effects on equity position, performance and the economic/financial analysis, the combination of classification and measurement models also has other informational implications for drawing up financial reports.

Table 8 provides a summary of the equity position, the income statement and the comprehensive income, with reference to the end of the financial year in 2020, as an illustration, and includes the different mix of classification and the measuring models shown in Table 1.

Table 8: CryptoCo Annual Financial Information in 2020 – comparison (in USD thousands)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ASSETS	199.2	22.7	199.2	22.7	199.2	199.2	199.2	199.2	22.7
Cash	-	-	-	-	-	-	-	-	-
Financial Instruments	-	-	-	-	199.2	-	-	-	-
Cryptoassets	-	-	-	-	-	-	-	199.2	22.7
Inventories	-	-	199.2	22.7	-	-	-	-	-
Intangibles	199.2	22.7	-	-	-	-	-	-	-
Other Investments	-	-	-	-	-	199.2	199.2	-	-
LIABILITIES	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9
Loans	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9
EQUITY	170.2	(6.2)	170.2	(6.2)	170.2	170.2	170.2	170.2	(6.2)
Capital	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
Retained Earnings/Accum. Losses	(3.9)	(81.2)	95.2	(81.2)	95.2	95.2	(3.9)	95.2	(81.2)
Equity Valuation Adjustments	99.2	-	-	-	-	-	99.2	-	-
Income (Expenses) with Cryptocurrencies	47.5	-	146.6	-	146.6	146.6	-	146.6	-
Interest Expenses	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)
NET INCOME (LOSS)	46.1	(1.4)	145.2	(1.4)	145.2	145.2	(1.4)	145.2	(1.4)
Other Comprehensive Income	99.2	-	-	-	-	-	146.6	-	-
COMPREHENSIVE INCOME	145.2	(1.4)	145.2	(1.4)	145.2	145.2	145.2	145.2	(1.4)

The cryptocurrencies are divided into the following combinations of classification and measurement models: (1) Intangibles/REV; (2) Intangibles/CAI (3) Inventories/FVPL; (4) Inventories/CAI; (5) Financial Instruments/FVPL; (6) Other Investments /FVPL; (7) Other Investments /FVOCI; (8) Cryptoassets (Special Category)/FVPL; and (9) Cryptoassets (Special Category)/CAI.

Based on the information provided in Table 8, it is possible to determine the variations in the information obtained from the combined classification and measurement models. The positions of the cryptocurrencies in each combination not only impair comparability but also lead to distortions in the indicators of the economic/financial analysis. For example, cryptocurrencies classified as financial instruments, cryptoassets (a category particularly used in Japan) or inventories, tend to be designated as current assets. In contrast, cryptocurrencies classified as intangibles or other investments, are usually designated as non-current assets. This discrepancy can significantly affect the liquidity indicators of an entity.

In their study, Luo and Yu (2022) argued that cryptocurrencies classified as intangible assets should be listed as long-term assets. They also stated, in their analysis, that although this position is consistent with the implications of the traditional concept of liquidity, it is inconsistent with the generally liquid nature of cryptocurrencies. This heterogeneous classification, which is leveraged in the aggregation operations of databases, can lead to imprecise inferences being made about the liquidity position of companies.

In light of this, the results of the test conducted confirm the findings of previous studies. As was noted well by Sixt and Himmer (2019), reported information about an entity is more useful if it can be compared with similar information about other entities, because this comparability allows users to locate and understand similarities and differences between

informative entities. Clearly this objective is not being attained through cryptocurrency accounting because different accounting guidelines are being applied for both accounting and measurement techniques. The authors illustrate this from two similar entities located in Australia and Hong Kong which employ different measurement and classification methods for cryptocurrencies, which makes it difficult to compare their respective financial statements.

Anderson et al. (2022) concluded that the lack of comparability and consistency in cryptocurrency accounting, makes it hard to identify and compare information disclosed by investors and other interested parties. Luo and Yu (2022) also stated that the lack of uniformity in the recognition and classification of cryptocurrencies leads to inconsistencies and distortions which can cause users to make mistakes in estimating the asset values, profitability, and cash flow of a company. As well as the distortions caused by the classifications and measurement systems, the authors also underline the fact that the current models are detrimental to liquidity and the cash generating capacity of companies. This is because some of them classify cryptocurrencies as long-term intangibles, while others designate them as short-term liquid assets. For example, although Tesla, an American electric vehicle and energy company that holds a significant amount of cryptocurrency, has disclosed that it regards cryptocurrency as a liquid alternative, similar to cash, the company still assigns cryptocurrency in its usual long-term position as an intangible asset. In contrast, the authors found that some companies have decided to take a contrary stance by recognizing cryptocurrencies as liquid or short-term assets and designated these digital currencies as intangible assets - just below "cash and cash equivalents".

In the same vein, the results of the simulation reveal that the classification and measurement models currently being applied in cryptocurrency accounting, are becoming practically indecipherable financial statements that are almost encrypted. The users of the balance sheet of a holding entity of cryptocurrencies might have difficulties in determining in what group of assets the cryptocurrencies are classified but also in knowing what measurement model is being employed by the entity. Hence, the users will have difficulties in understanding the real economic/financial situation of the entity and may be misled in the economic decision-making process.

Owing to the problems detected in the classification and measurement models now being employed, the studies analyzed are almost unanimous in concluding that there is a need to revise the current standards or to create new standards for cryptocurrency accounting. The current models are based on definitions that fail to take account of the essential features and particular characteristics of these currencies. Thus, the interpretation is only carried out by a process of elimination; it occurs when the definitions do not categorically prevent the classification.

Jackson and Luu (2023) summarize the possible courses of action that can be taken to overcome this problem. The first suggestion is to continue allowing companies to define their accounting policies in a discretionary way. However, it does not seem to be sustainable to maintain the *status quo*. The second alternative is to revise or clarify the current standards, and the third would be to create an entirely new accounting standard for specifically dealing with cryptocurrencies and other digital assets such as distinct types of asset classes.

Luo and Yu (2022) believe in having a specific accounting standard for cryptocurrencies. They suggest devising a new category for assets and adopting a Fair Value approach for cryptocurrency accounting with changes in the Fair Value being recognized in the income statement. Jackson and Luu (2023), in turn, argue that since there is a lack of any desire to draft a new standard exclusively for digital assets, there is an opportunity to alter the current standards to ensure that they reflect the purpose of cryptocurrencies in a more appropriate way. In their view, the way they are being classified at present as intangible assets or inventories, is not the most suitable course of action. Sixt and Himmer (2019) also concluded that the standards

could be altered to reflect the economic substance of cryptocurrencies in a more appropriate way. After all, one of the basic principles of accounting standards involves taking into account the essential features of instruments and operations to the detriment of form. (Pelucio-Grecco et al., 2020).

Another alternative would be to examine the essential features of the operations involving cryptocurrencies, including, as a priority, the revision of the financial instruments regulations. Chou et al. (2022) interviewed several stakeholders to assess their perception of the current accounting standards for the classification and measurement of cryptocurrencies. Some of the interviewees stressed that although the cryptocurrencies did not meet the definition of a financial instrument laid down by IFRS 9, the basic framework of these cryptocurrencies is similar to that of financial instruments and thus they believe a change is needed in the way a financial instrument is defined. The study carried out by Marques and Santos (2024) which involved interviews with financial accounting tutors, showed there was a consensus among these specialists that there was a consensus among these specialists that the most appropriate accounting treatment for cryptocurrencies would be to classify them as a financial instrument, with both initial and subsequent measurements at their fair value. Pelucio-Greco et al. (2020), argue that the most suitable procedure for the accounting of bitcoins would be something similar to the standards adopted for foreign currencies in view of the similarities between these instruments. Jackson and Luu (2023) corroborate the view that the nature and purpose of cryptocurrencies seem to be consistent with the characteristics of a financial instrument. For this reason, they also concluded that a possible avenue to explore would be to extend the definition of financial instruments to include cryptocurrencies.

Some jurisdictions have already taken measures in this regard, with the aim of providing greater regulatory clarity. For example, the *Bundesanstalt für Finanzdienstleistungsaufsicht* [BaFin], the German federal authority for financial supervision, issued a statement in March 2020 which established that cryptocurrencies, (when described in their full sense as "digital representations of value" with specific features), should be defined as financial instruments (EFRAG, 2020).

In any event, it seems to be of the utmost importance that the regulatory bodies act in a timely way to correct the current inconsistencies and distortions so that they can ensure that the financial statements provide a faithful representation of the financial position and performance (Jackson & Luu, 2023). Finally, despite the debate about the accounting treatment of cryptocurrency operations, these instruments are being increasingly used by both individuals and companies in their operational transactions and as financial investment (Ramassa & Leoni, 2022).

In summary, the effects of the current practices of recognition, measurement and disclosure of cryptocurrencies (in defining the financial information in terms of equity position, performance and economic/financial analysis), highlights the distortions caused by the current accounting practices in the financial reports and the economic/financial indicators. In addition, they corroborate the conclusions of the reflective critical analysis with regard to the value of this information for the users.

5. Conclusion

This study has sought to analyze the effects of different classification and measurement models for cryptocurrencies on accounting statements, in terms of equity position, performance and an economic/financial analysis. The regulatory gap has resulted from a wide range of interpretations and the classification and measurement models being employed under different jurisdictions. The simulation of the impact of the real quotation of cryptocurrencies on the financial information of a fictitious company in a reference scenario in the period from 2017 to 2023, highlighted the distortions caused by the application of different measurement models.

The results of the research corroborate the findings of previous research studies in so far as the classification and measurement models currently being employed in cryptocurrency accounting are becoming unrivaled financial statements, which can lead users to make errors in their assessment of asset values, profitability and the economic/financial position of the company.

These results suggest there is a need for a review of the accounting standards as a means of ensuring a suitable accounting treatment for the cryptocurrencies that is consistent with the essence and the particular features of these instruments. The data shown in the study reveal that measuring cryptocurrencies at cost seems to be a problem, mainly because of their wide fluctuations in value cost and their liquid nature, which causes significant distortions in the assessment of the economic/financial position of these holding companies. Since there is usually an active market for cryptocurrencies, measuring them at fair value seems to be a practice that is more consistent with the inherent features of these assets. Another problem encountered in the study is that classifying the cryptocurrencies as intangible assets or inventories, does not seem to properly represent the essential features of the related operations. Considering this, one course of action that could be appropriate and more faithfully represent the features of these assets, is to carry out a review of the accounting standards for financial instruments, which takes into account the both the similarities and the perceptions of stakeholders about cryptocurrencies.

It is hoped that this study will provide a frame of reference for discussion, interpretation and the application of accounting standards in the registration of cryptoassets, by extending understanding of the informational impact of the different classification and measurement models and make them more comprehensible to users. The accounting simulation of a fictitious company that operates with cryptocurrencies, based on the real quotation data of the cryptocurrencies Bitcoin [BTC], Binance Coin [BNB] and Ethereum [ETH], from 2017 to 2023, underscored the distortions caused by the employment of different measurement models. Previous studies were based on the data of different companies, and different jurisdictions which may, to some extent, obscure these distortions.

There are some limitations to the scope of this study. First of all, in its concern to focus on more important issues, it only examined cryptocurrencies and no other cryptoassets such as utility tokens or security tokens. A review of standards should definitely include an analysis of these instruments to define the required conditions for these types of assets in an appropriate way. Hence, any passive accounting treatment of cryptoassets, as in the case of issuers, for example, was not included. Another factor that should be stressed is that within the context of the study´s objectives and the lack of structured secondary data, the methodological decision to use simulations of financial statements was not based on classical models of empirical assessment, which represented a further limitation. For example, the simplified setting adopted to allow a clear analysis of the classification and measurement models, was not suitable for an in-depth investigation of the impacts on the liquidity indicators, even though this effect had been mentioned in the study.

The distinctive features of the classification and measurement of other types of cryptoassets could be the object of further research. Future research studies in accounting could also explore the kind of differentiation that should exist between the cryptocurrencies and the digital currencies issued by the central banks (CBDC – Central Bank Digital Currency). It is hoped that this study will stimulate the spread of knowledge and provoke discussion about the world of digital assets and their effect on accounting. In addition, it should help understand how the classification, recognition and measurement of these instruments can achieve the basic objective of financial statements - that is to provide information that can be useful for financial decision-making and to enable users to make assessments. Finally, it should be emphasized that there is a lack of specialist literature about the effects of cryptocurrencies (including its

measurement criteria), on the regulatory capital of financial institutions, owing to the regulatory gap in the subject.

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