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Accounting for intangibles in the digital economy: Are current standards sufficient?

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Abstract
The digital economy has shifted corporate value from tangible assets to intangibles like software, data, and algorithms. However, current accounting standards—specifically IAS 38 and IFRS 3—remain rooted in the industrial age. This qualitative study examines how effectively these frameworks address the recognition, measurement, and reporting of digital assets. Using purposive and snowball sampling, interviews were conducted with 15 financial professionals, including accountants, auditors, and managers. Thematic analysis revealed critical recognition gaps, valuation hurdles, and reporting discrepancies concerning customer data, algorithms, and internally generated intellectual property. Respondents noted that existing standards fail to capture the full economic value of digital assets. This limitation distorts corporate valuations and creates information asymmetry, which ultimately misinforms investors. Consequently, current frameworks offer an inadequate foundation for evaluating digital-driven companies. To address these transparency and comparability challenges, regulatory bodies must provide more detailed standards. The study recommends developing modern reporting guidelines, implementing hybrid valuation methods, and enhancing qualitative disclosures. Ultimately, this research contributes an integrative critique of IAS 38 and IFRS 3, advancing the debate on financial reporting sufficiency in the digital era.

Keywords: Intangible assets, Digital economy, IAS 38, IFRS 3, Financial reporting, Accounting standards

1. Introduction

The digital economy of the 21st century has changed the fundamental basis of how businesses create value. Companies are increasingly using intangibles like software, algorithms, and databases, as well as the prestige of brands, for revenue generation and gaining a competitive advantage [1],[2]. Such representations create and capture value for the majority of corporate market offers in high technology fields, signaling the economy's transformation from material resources to knowledge and informational resources [3].The digitalization of worldwide markets through cloud computing, AI, blockchain technologies, and platform economies has emerged as a new class of intangibles that traditional accounting frameworks are ill-equipped to assess [4].

The developments mentioned above highlight the importance of redefining the current accounting practices. For instance, IAS 38 Intangible Assets and IFRS 3 Business Combinations have struggled to keep pace with the

new, multifaceted phenomenon. Under the Guidelines of IAS 38, the recognition of measurement of an intangible asset is limited to those that are identifiable, controllable, and can be measured reliably, while IFRS 3 only allows recognition of identifiable intangibles when they are acquired through business combinations [5]. The lack of recognition of internally generated intangibles and business combinations is the main reason that accounting standards are unable to reflect the full value of innovative companies [6]. In an age when the most important resources and the dominant drivers of value creation are data, algorithms, and user networks, the current accounting practices are outdated and problematic.

For years, the profession has been questioned for the degree to which financial statements accurately represent the book owner's equity of companies. Lev and Gu [7]. attributed the differences to the "failure of accounting to capture intangible capital". Recent evidence [8], [9] confirms that the valuation and performance of the firm are associated with unaccounted intangible assets. However, accounting recognition still lags, and decision-makers lack reliable information on the real sources of value within a firm. Digital assets, such as proprietary algorithms and customer data, widen the information opacity gap. Additionally, in the case of cryptocurrencies, smart contracts, and non-fungible tokens (NFTs), the development of new technologies is influencing the classification and valuation of digital-era intangibles [10], [11]. These technologies challenge the distinction between tangible and intangible property, putting a preparer and auditor at a crossroads on how to recognize intangibles and to reliably measure intangibles. A lack of clear, authoritative guidance has led to varying accounting practices across regions, undermining comparability and demoralizing investors.

Another issue is the accounting of internally generated intangibles. IAS 38 mandates that all research costs be expensed and that the cost of development be capitalized only under very specific circumstances. These standards will always keep useful assets unnoticed in the fast-moving digital industry, where innovation and the intellectual property that comes with it change within months [12], [13]. It follows that internally constructed digital platforms appear to have fewer assets than those acquired by the firms that purchase the assets of the same nature, although internally constructed platforms may be more valuable. This unequal accounting treatment renders some performance measures irrelevant and hinders meaningful comparisons across firms. The Intangible Assets Project being developed by the International Accounting Standards Board (IASB) attempts to address restrictions on disclosure and valuation that do not effectively align with business models and the integration of new technology within business [14]. However, the IASB's efforts on the intangible project raise questions about the relevance and adequacy of its work amid the complexities of the digital economy. Digital value attributes on user participation, algorithmic learning, and platform network effects, and the accounting of intangible business assets raise an imbalance that is widening [15], [16].

The significant role of intangible assets in modern enterprises cannot be ignored. Yet, seemingly, the main accounting standards have not been developed. Value creation in the context where IAS 38 and IFRS 3 were developed was tangible and easily measurable. As a result, these standards allow the dismissal of internally generated digital assets, such as software, data, and algorithms, from financial statements [17], [18]. This leads to a significant misleading depiction of an enterprise's financial resources as a loss (financial statements become a loss). Yet, accurate financial representations become probable. Under these conditions, reporting gaps in financial statements hinder understanding of the underlying economic reality of a technology-driven firm. For instance, inaccurate financial statements create poor comparability and rationality of the statements across the various stages of the value chain [19], [20]. This situation results in information being lost in financial statements. Investors and regulators are left trying to address the resulting gaps, losing the ability to rationally value a firm and the market [21]. The problems of capturing the value of intangible assets are worse in emerging economies that have adopted IFRS, and are further compounded by sparse technical resources and inconsistent interpretations of the guidance on intangible assets [22].

Although the digital economy is increasingly dominated by intangible assets, the existing accounting standards, specifically IAS 38 and IFRS 3, have been widely criticized for their inadequate inclusion, measurement, and reporting of the economic values of internally generated intangibles, including data, algorithms, platforms, and

user networks. The restrictive recognition rules of IAS 38 that capitalize most internally generated intangibles result in a large discrepancy between the market values and the reported financial positions of firms, which lowers the decision-usefulness of financial statements [23]. Moreover, the approach of IFRS 3 to goodwill, which consolidates unidentifiable intangible assets to residual values, which are tested only under impairment, has been criticized for concealing transparency and not reflecting underlying value-creating forces in digital firms [19], [24]. The latter is also complicated by the fact that new digital assets like cryptocurrencies and data-driven business models emerge, which current standards do not explicitly cover, representing a disconnect between accounting practice and economic reality [14]. Despite the IASB's reconsideration of intangibles, the conceptual and empirical understanding of whether to adapt the existing frameworks or undertake a fundamental overhaul of the current framework remains lacking. As a result, the primary research question focuses on whether current IFRS standards provide a fair reflection of the digital-economy intangible assets, or are systematically understated and misrepresent the creation of value in contemporary companies.

Consequently, this study is driven by the disparity between the current accounting frameworks and the economic realities of the digital era. The failure of current frameworks to recognize, measure, and incorporate digital assets, which are vital to a firm's competitiveness, compromises the transparency, comparability, and accountability of the firm's financial statements. Hence, this paper aims to critically examine whether existing accounting standards (particularly IAS 38 and IFRS 3) adequately capture, measure, and report intangible assets in the digital economy. Therefore, the study adds to the current discussion of the sufficiency of financial reporting frameworks in the digital economy by offering a critical and integrative examination of IAS 38 and IFRS 3 regarding new intangible assets. In particular, the paper contributes to the literature by integrating disparate debates on digital intangibles, including data, platforms, and cryptocurrencies, into a unified analytical framework that assesses the deficiencies in the recognition, measurement, and disclosure of these intangibles under existing standards. The following research questions guide this study:

i. How do Accounting professionals perceive the adequacy of current accounting standards (IAS 38 and IFRS 3) in recognizing and measuring intangible assets within the digital economy?
ii. What practical challenges do accountants, auditors, and financial managers encounter when applying IAS 38 and IFRS 3 to digital-specific intangibles such as algorithms, software, and customer data?
iii. In what ways do the restrictive recognition criteria under IAS 38 contribute to the underreporting or misvaluation of internally generated intangible assets in technology-driven firms?
iv. How do differences in accounting treatment between internally generated and acquired intangibles influence the transparency, comparability, and reliability of financial statements?
v. What are the implications of current intangible asset reporting practices on investor confidence, firm valuation, and market perception in the digital era?
vi. To what extent do accounting practitioners believe that the ongoing IASB Intangible Assets Project can address the limitations of existing standards in the digital context?

1.1. Concept of intangible assets

Intangible assets are resources that are not physical in nature but provide a long-term economic benefit to a business. Austin [17] notes that these assets are identifiable, non-monetary, and intangible, and their value comes from ownership rights, intellectual property, and know-how. Under IAS 38, an intangible asset must also be identifiable, controlled by the entity, and expected to generate future economic benefits. These benefits could include proprietary algorithms, software, licenses, patents, trademarks, and customer relationships, among others. The definition that ascribes value to intangible assets solely on the basis of ownership rights and measurable costs has come under scrutiny, particularly with the rise of data- and platform-based businesses [25]. The importance of intellectual, knowledge-based, and intangible assets has grown in contemporary businesses. Al-Khazaleh [25] identified that intangible assets are the primary source of business competitiveness, particularly in the tech, biotechnology, and financial sectors. Additional research by [8] found that firm value is strongly affected by both recorded and unrecorded intangible assets, with a large share of

unrecorded digital assets. The growing importance of intangible assets demonstrates the limitations of traditional accounting principles, which were designed for tangible assets.

1.2. IFRS and IAS framework

Reporting on intangible assets is guided by IAS 38 Intangible Assets and IFRS 3 Business Combinations. For an intangible asset to be recognized by IAS 38, it must be identifiable, controlled by the entity, and measurable with reliability [5]. However, internally generated intangibles such as brand equity, data sets, or in-house software typically do not satisfy these criteria. This is the reason firms must expense research costs, and only under very strict criteria, capitalize development costs [26]. Whereas IFRS 3 allows the recognition and measurement of intangible assets acquired in a business combination at fair value as of the acquisition date. This is a paradoxical situation as identical assets are recognized when purchased, but not when internally developed [6], [27]. In [28], the asymmetry in recognition is argued to result in incomplete financial statements and firms' productive capacity not being fully realized. Disclosing internally generated intangibles, Lundh Set al. [12] suggest that reliance on narrative as justification within standards and the resulting disclosure indicates a lack of recognition of the economic substance of the standards. This is further recognized by [14] with the Intangible Assets Project, which seeks to redefine and update standards, measurement bases, and disclosures with respect to the digital age.

Table 1. Comparison of current accounting standards for intangible assets

Dimension	IAS 38 – Intangible Assets	IFRS 3 – Business Combinations	Implications / Issues in Digital Economy
Scope	Governs accounting for intangible assets *not covered elsewhere* (e.g., internally generated brands, software, licenses).	Governs recognition of identifiable intangibles acquired during a business combination.	IAS 38 applies to internal development (e.g., in-house software); IFRS 3 applies to acquisitions of assets (e.g., mergers, acquisitions).
Definition	Intangible asset = *identifiable*, *non-monetary*, *without physical substance*, *controlled* by the entity, and *expected to generate future economic benefits*.	Similar definition, but focused on *identifiable* assets arising from acquisitions.	Definitions do not explicitly address data, AI models, digital platforms, or algorithms.
Recognition Criteria	(1) Probable future economic benefits; (2) Cost can be measured reliably. Research costs expensed; development costs capitalized if criteria met.	Recognize all *identifiable* intangibles at fair value on the acquisition date if separable or arising from contractual/legal rights.	Many digital assets (e.g., user data, network effects) fail the IAS 38 recognition test, though acquirers may recognize them under IFRS 3 — creating inconsistency.
Measurement (Initial)	Measured at *cost*. Includes purchase price and directly attributable costs.	Measured at *fair value* at the acquisition date.	Valuing digital intangibles (like software ecosystems, algorithms) at fair value is highly subjective.
Subsequent Measurement	Cost model (cost – amortization – impairment) or revaluation model (if an active market exists).	Not directly covered (after acquisition, IAS 36 impairment and IAS 38 amortization apply).	Few active markets exist for digital assets, so revaluation is rarely possible.
Internally Generated Assets	Research costs → expensed; Development → capitalized if technical feasibility, intent, ability, future benefits, and	Not applicable (acquisition only).	Digital platforms, data sets, and software often fail feasibility or measurability tests → underreporting.

Dimension	IAS 38 – Intangible Assets	IFRS 3 – Business Combinations	Implications / Issues in Digital Economy
	reliable measurement are proven.		
Goodwill	Not applicable.	Residual value after recognizing all identifiable assets and liabilities.	Over-reliance on goodwill leads to lumping unrecognized intangibles, reducing transparency.
Disclosure Requirements	Amortization methods, useful lives, gross carrying amount, accumulated amortization, impairment losses, and line-item disclosures.	Disclose details of business combinations, valuation methods, and intangible types recognized.	Limited disclosure on internally generated digital intangibles; inconsistent across firms.
Guidance on Digital Assets	No explicit mention of cryptocurrencies, data, or AI-generated assets (currently under IASB review).	Same — no explicit guidance on digital or algorithmic intangibles.	Standards lag behind technological innovation and emerging digital asset types.
Key Limitation	Conservative recognition fails to reflect modern, data-driven value creation.	Recognition is usually limited to acquisitions and does not reflect ongoing internal innovation.	Combined, they understate firm value and distort financial ratios in digital industries.
Ongoing Reforms / Projects	IASB (2023) "Intangible Assets Project" exploring modernization and enhanced disclosures.	IASB reviewing goodwill and impairment interactions with IFRS 3.	Expected to provide digital-era guidance, but reforms are still in the early consultation stage.

Table 1 outlines the differences between IAS 38 Intangible Assets and IFRS 3 Business Combinations. This reveals a significant difference between the concept and the practical applications of the accounting treatment of intangible assets. IAS 38 covers the accounting recognition and measurement of internally generated intangible assets, which include software, trademarks, and licenses, while IFRS 3 covers the accounting treatment of intangible assets acquired through mergers and acquisitions. This results in a dual framework which, as a recognition under the accounting literature, results in the asymmetric recognition of intangible assets, i.e., internally created intangibles are expensed while equivalent externally acquired assets are capitalized [5], [6]. This clearly serves as recognition, distorting the firm's true underlying asset base and contributing to the widening of the book-to-market ratio, especially for firms operating at a high level of intangibles.

The difference in recognition criteria creates a gap. Under IAS 38, many assets in the digital age are omitted, such as user data, algorithms, and customer networks [4]. This is because IAS 38 requires the demonstration of future economic benefits and a reliable cost value. Alternatively, IFRS 3 states that, during acquisition, these assets can be recognized at fair value if they are separable and are obtained through contractual or legal rights. It leads to the situation in which acquirers are allowed to record intangible assets, while internally developed firms are not, resulting in inconsistent reporting within the same industry [20]. The innovative firms thus report low asset values and profitability in their financial statements, whereas firms that acquire other firms are more asset-intensive.

Measurement and valuation practices also add to the inconsistency. Whereas IAS 38 recommends a cost method unless revaluations are possible in active markets, IFRS 3 requires fair value to be determined as of the date of acquisition. In practice, there is virtually no active market of digital intangibles, and revaluations under IAS 38 are thus impossible [9]. Even IFRS 3 does not do quite the job since estimation and subjectivity in arriving at the fair value of data and AI systems remain a significant part [15]. Comparability among entities is undermined,

and investors are unaware of the role of intangible assets in future earnings. That is why scholars such as Hussinki et al. [16] suggest the hybrid valuation frameworks.

The disclosure requirements in both standards are very limited. IAS 38 merely refers to amortization policies, carrying amounts, and impairment losses. Conversely, IFRS 3 only addresses the disclosure of intangibles acquired and how they are valued. Both of them need a comprehensive qualitative and quantitative evaluation of the economic worth of internally developed digital assets [21]. The absence of complete disclosure guidance leads to uneven and inconsistent behavior by firms, which eventually deprives investors and regulators of visibility. Lundh et al. [12] note that firms use voluntary disclosure or legitimacy narratives to address this information asymmetry gap.

Finally, Table 1 highlights the necessity of taking action. The IASB 2023 Intangible Assets Project and the corresponding IFRS 3 revival demonstrate that the IASB has already begun to acknowledge such shortcomings, and that the majority of efforts remain at the consulting stage. The accounting profession will be stuck in the pre-digital accounting era unless new principles are updated with digital-specific assets such as data, algorithms, and platform goodwill [10]. The consequence of conservatively recognizing assets, coupled with inflexible valuation and limited disclosure, is the systematic undervaluation of digital value creation. Thus, resolving the discrepancy between accounting standards and the digital economy will require a new approach to accounting that prioritizes untapped potential and incorporates the principles of full disclosure, faithful representation, and flexibility in the accounting for intangible assets.

2. Challenges in the digital context

The digital economy encompasses new types of assets that challenge accounting conventions: data stores, AI algorithms, and digital platforms. Resources without a legal definition that are fluid, co-created, and dynamic are particularly difficult to recognize, according to IAS 38 [4]. Heiling [15] points out that the digital transformation of the private and public sectors particularly highlights the inadequacy of standards in addressing new evolving intangibles. The existence of a market or reliable cost base determines the valuation of an asset, and without such a market, the valuation is subjective [9]. In addition, overly conservative standards result in significant underreporting of economic value and widening gaps between book and market value. Research conducted by King et al. [19] as well as Mehnaz et al. [21] shows that identifiable intangible assets have low value relevance, even when recognized, due to inconsistent measurement. The use of new digital technologies, such as blockchain and NFTs, requires hybrid valuation models that integrate accounting with elements of fair value and other valuation approaches [10], [11], [29].

2.1. Prior qualitative findings

Several qualitative and conceptual studies on practitioners' perspectives and views on accounting for and integrating intangible assets have been published. Lundh et al. [12] documented that accountants who comply and report conservatively under fuzzy guidelines adopt more conservative and relevant approaches to integrating and reporting intangible assets, to the point where they are superfluous. Barker et al. [5] suggest a more relevant practice. Researchers suggested more extensive narrative disclosure and separate intangible asset statements. On the other hand, Barth [6] proposed a more radical integration of intangible reporting into integrated reporting frameworks and views of tangible assets. Novikov [22] highlights the practice variation in digital asset reporting and the enforcement of conflicting frameworks under IFRS 3 and IAS 38 in emerging markets. He also noted the regulatory gap in open-access digital assets.

Concerns over the adequacy of existing standards have also surfaced in more recent studies. According to Hussinki et al. [16] who published research in the area of accounting for intangible assets, provided frameworks that inform accounting standards and integrated reporting for tangible and intangible assets, and concluded that current intangible accounting frameworks lack conceptual coherence in the digital era. Ievsieieva et al. [4] documented that practitioners in developing markets report problems in valuing algorithmic assets, research vs. development cost distinction, and inconsistent disclosure. These studies converge on the theme that the

accounting standards practitioners are working with are inflexible, outdated, and poorly aligned with digital models.

2.2. Research gap

The analysis of IAS 38 and IFRS 3 highlights the gap between current accounting standards and the accounting for value creation in the digital age. Both accounting standards make assumptions about the industrial age of accounting, which focused primarily on measurable, transaction-based accounting. As a result, accounting standards give little consideration to the dynamic, data-driven resources that account for the majority of a company's value. This under-reporting is particularly evident among companies in the digital economy that create value through software ecosystems, platform networks, and proprietary algorithms. This gap between the substance of the economy and its representation in accounting underscores the need for a deeper investigation into accountants' practices and the application of these standards. This study seeks to bridge the gap in the literature by examining professional practitioners' experiences applying these standards to gauge their relevance and how they could be adapted to capture the financial reporting of an intangible-driven digital economy.

Even though literature is abundant on the value of intangible assets, much of the research remains conceptual, quantitative, or focused on the Western context. Very few studies have investigated how accounting professionals in developing countries understand and implement the provisions of IAS 38 and IFRS 3 during the digital transformation process. Furthermore, few studies incorporate the lived experiences of practitioners in the context of regulatory challenges, especially concerning internally generated digital assets, such as data and software [28]. Most of the existing literature overlooks the role of these assets in creating firm value, enhancing investor confidence, and improving market efficiency. This study attempts to fill these gaps by examining accounting professionals' perceptions that some standards are insufficient and how digitalization affects the recognition, measurement, and disclosure of intangible assets.

3. Research method

This study adopts an exploratory research design grounded in the interpretivist paradigm, focusing on understanding people's experiences and the meanings they attach to them, rather than relying on quantifiable results. The design focuses on improving the understanding and application of IAS 38 and IFRS 3 by accounting professionals in the reporting of intangible assets in the digital economy. It emphasizes the articulation of professional meaning, challenges, and judgments that transcend minimum compliance with accounting regulations. The design is based on Braun and Clarke's [30] guidelines for qualitative research within the framework of an emerging theoretical framework for the recognition of digital-era intangibles. The study population included accountants, auditors, financial controllers, and IFRS consultants in financial reporting and consulting/advisory roles for technology- or service-oriented firms in Jordan. For purposive and snowball sampling, the criteria were expertise in reporting intangible assets and application of IFRS.

The study adopted purposive and snowball sampling techniques to ensure the selection of participants with specialized expertise in intangible asset reporting and IFRS application. Purposive sampling helps identify individuals with the information needed about the research problem, while snowball sampling facilitates access to additional qualified experts within professional networks. A sample of 15 people was pre-identified to ensure a wide range of perspectives around the concept while also achieving data saturation. The primary data for the study were obtained through semi-structured interviews, which enabled the capture of participants' experiences regarding the valuation and disclosure of digital intangibles in a comprehensive manner. The interviews were conducted in person, as were the companies' documentation, such as financial statements and audited disclosures, for triangulation and analysis. The interviews were all recorded with the participant's consent.

Thematic analysis was conducted according to Braun and Clarke's [30] six steps: familiarization, coding, theme identification, review, definition, and reporting. Both inductive and deductive coding were used to analyze practitioner-driven insights and align these with theories related to IAS 38 and IFRS 3. Data were organized,

and preliminary themes were created using NVivo. The analysis was intended to understand how practitioners perceive the standards as sufficient and how they modify their reporting to address the complex nature of digital intangible assets.

4. Results and discussion

The participants consisted of fifteen (15) accounting professionals from Jordan's technology-oriented, service-oriented, and finance companies that operate within the IFRS framework. The sample included six chartered accountants, four audit managers, three chief financial officers (CFOs), and two IFRS consultants, each with between 7 and 20 years of hands-on experience. Respondents included 60% from privately owned companies (fintech and telecommunications), while 40% of the participants came from publicly owned accounting and IFRS audit professions. The gender balance was achieved with 8 males and 7 females; inclusivity in the profession was achieved. The large number (73%) of participants with postgraduate-level education, including master 's-level qualifications, as well as professional qualifications (JACPA, HCAP, ACCA, ACPA), points to their advanced capabilities in financial reporting and high-standard implementation. Such varied professional experience made it possible to gather rich and informed perspectives as regards the recognition, measurement, and reporting of intangible assets in the digital economy.

4.1. Data analysis procedure: Braun and Clarke's six-phase thematic process

The analysis of qualitative data used in this study follows the six-phase process of thematic analysis recommended by Braun and Clarke [30], as it provides a consistent and flexible approach to identifying and interpreting patterns in qualitative data. During the familiarization stage of the analysis, the interview transcripts were read several times to gain a deep understanding of the participants. The second step in the analysis process was the initial coding, where data segments that answered the study questions were meaningfully coded. During the third phase, preliminary themes were developed to capture the overarching ideas and patterns participants expressed. In phase four, the themes were evaluated for coherence and redefined to enhance their internal consistency and alignment with the dataset. In the fifth step, the themes that were defined and named were translated into narrative form. Lastly, the integration of themes in the report described the interpretation of themes and used direct quotations to support the analysis. The report reconstructed the relationship between the accounting practices, perceptions of the profession, and the standards that currently exist for reporting intangible assets in the digital economy. The themes were aligned with relevant literature.

Table 2. Interview note matrix

Interview Question	Research Objective Addressed	Theme / Concept	Analytical Focus / Notes
1. How do you apply IAS 38 in recognizing and measuring internally generated intangible assets such as software, data, and algorithms?	To explore how accounting professionals perceive current standards in recognizing intangible assets.	Recognition Ambiguity	Examine practitioners' interpretation of IAS 38 criteria (identifiability, control, measurement). Identify perceived difficulties in recognition and valuation.
2. What challenges do you face in applying IFRS 3 when accounting for acquired intangible assets during mergers or acquisitions?	To identify practical challenges in applying current standards to acquired intangibles.	Valuation and Consistency Issues	Explore fairness and subjectivity in fair-value estimation. Compare with IAS 38 treatment for internally generated intangibles.
3. Do you think IAS 38 and IFRS 3 adequately capture the value of digital-specific assets (e.g., algorithms, platforms, user data)?	To assess professionals' perceptions of the sufficiency of current standards.	Misalignment with Digital Business Models	Identify gaps between accounting representation and digital value creation. Assess opinions on the relevance and timeliness of existing IFRS guidance.

Interview Question	Research Objective Addressed	Theme / Concept	Analytical Focus / Notes
4. What types of intangible assets are hardest to recognize or measure in your organization?	To examine specific problem areas within intangible asset accounting.	Recognition Ambiguity / Measurement Constraints	Understand which asset types (e.g., brand equity, software, data) create the most uncertainty. Evaluate methods currently used to overcome recognition barriers.
5. How do current accounting treatments affect the transparency and comparability of financial reports?	To investigate the implications of inadequate standards on firm transparency and investor confidence.	Investor Confidence and Valuation Gaps	Explore perceptions of financial reporting reliability. Link recognition gaps to information asymmetry and market misvaluation.
6. In your opinion, what is the impact of expensing versus capitalizing intangible assets on firm performance indicators?	To understand the perceived economic and reporting implications of recognition choices.	Reporting Impact / Valuation Bias	Evaluate how recognition methods affect profit, asset base, and investor perception.
7. Have you adopted any alternative or supplementary methods to reflect intangible value (e.g., narrative disclosure, management commentary, or valuation notes)?	To identify adaptive practices among accounting professionals.	Disclosure Practices / Legitimacy Strategies	Examine voluntary reporting techniques used to compensate for recognition limitations.
8. What improvements would you recommend for IAS 38 and IFRS 3 to make them more relevant for digital-economy firms?	To collect expert recommendations for reforming current standards.	Reform and Policy Recommendations	Capture professional proposals for hybrid valuation, sector-specific guidelines, and new IFRS models.
9. How do investors and auditors in your experience respond to the reporting of intangible assets?	To examine stakeholder perspectives and implications for audit and assurance.	Investor Confidence / Audit Challenges	Identify how intangible accounting affects audit judgments and investor trust.
10. Do you believe the IASB's Intangible Assets Project will effectively address current challenges?	To evaluate professional expectations regarding ongoing standard-setting efforts.	Future Standards and Reform	Assess awareness, optimism, and perceived gaps in IASB's current consultation processes.

The notes captured during interviews (Table 2) acted as a critical framework for analysis, identifying how each interview question was aligned with a specific research aim, a theme that arose during interviews, and a focus for analysis. Following Braun and Clarke's [30] in six phases, the questions were intended to serve as a scaffold for the research, with a focus on the accounting professions' lived and interpretative experiences of IAS 38 and IFRS 3. During familiarization and initial coding, patterns began to emerge around questions 1-4, in which respondents consistently raised issues of ambiguity in recognition and measurement constraints, especially regarding internally generated assets such as data, algorithms, and proprietary software. When developing codes into themes, participant responses around questions 2 and 3 on valuation inconsistencies and the subjective estimation of fair value were grouped under misalignment with digital business models to capture the essence of how current standards do not reflect the realities of value creation in digital firms. The review and refinement phases affirmed that these patterns were accurately aligned with the intent of assessing the sufficiency of current standards on intangible assets.

As the defining and naming themes progressed, the responses to questions 5-10 consolidated into three dominant conceptual clusters: investor confidence and valuation gaps, disclosure and legitimacy practices, and reform recommendations. Participants' comments on the impact of recognition choices on transparency and comparability (questions 5 and 6) were associated with the valuation bias theme, while reflections on voluntary disclosure (question 7) and standard-setting reform (questions 8-10) seemed to indicate professional adaptation and expectation shifts with respect to the IASB's ongoing Intangible Assets Project [14]. These insights and others were included in the final reporting phase that focused on the ambiguity of recognition and longitudinal reforms that practitioners continue to propose in order to adjust to the gaps in digital realities to ensure that illustrative quotations and relevant theories were embedded to reflect congruence with the objectives of the reporting phases. Therefore, the matrix not only structurally organized the interview process but also directed thematic development toward coherence, from individual accounts to larger patterns, ensuring analytical coherence and methodological rigor aligned with Braun and Clarke's interpretive model.

Table 3. Coding summary matrix for thematic analysis

Initial Codes (Raw Data Segments)	**Subthemes (Grouped Meanings)**	**Main Themes**	**Illustrative Quotes / Notes (from Participants)**
"We often expense internally developed software because measurement is subjective." "IAS 38 is too rigid; it doesn't fit data or algorithms." "The development cost is clear, but proving future benefits is almost impossible."	Difficulty applying recognition criteria; Unclear measurement of digital intangibles	**Recognition Ambiguity of Internally Generated Intangibles**	*"Even if we know the software adds value, we can't show it meets the recognition test."* — CFO, Fintech Firm *"The accountants are left guessing what 'control' means when data is shared across cloud servers."* — Senior Accountant, Telecoms. *"IAS 38 feels designed for patents and copyrights, not data or code."* — IFRS Consultant.
"Data and platform value come from user activity, not something you can own." "Our business relies on engagement, but accounting ignores that." "User data is valuable, but no accountant can place it on the balance sheet."	Intangible value co-created by users; Lack of ownership clarity	**Recognition Ambiguity of Internally Generated Intangibles**	*"User data generates our revenue, but we can't claim ownership for accounting purposes."* — Chief Accountant, E-commerce *"The platform itself grows in value with user participation, yet this growth is invisible in financial reports."* — Finance Manager, Digital Services.
"We capitalize only what we buy, not what we build." "Firms that acquire tech look richer on paper." "Internally generated IP is treated as an expense, acquired IP becomes an asset."	Asymmetry between acquired and internally developed assets; IFRS 3 vs IAS 38 inconsistency	**Misalignment with Digital Business Models**	*"We've acquired small startups mainly to book their IP at fair value."* — CFO, Software Company. *"The accounting system encourages acquisitions because it rewards recognizable intangibles."* — Audit Partner. *"Our competitors who buy software appear more valuable, even if ours performs better."* — Controller, ICT Firm.

Initial Codes (Raw Data Segments)	Subthemes (Grouped Meanings)	Main Themes	Illustrative Quotes / Notes (from Participants)
"Our financials understate value because AI and data are off-balance sheet." "Investors question our low asset base despite huge digital investment." "We look unprofitable due to high R&D expense, but the investment is creating long-term value."	Underreporting of digital assets; Perception gaps among investors	**Investor Confidence and Valuation Gaps**	*"The share price reflects our data analytics potential, but IAS 38 doesn't."* — Investor Relations Officer. *"Analysts tell us our earnings don't reflect innovation; they use external metrics to assess us."* — CFO, Tech Firm. *"The gap between book and market value is embarrassing; it makes our reports seem misleading."* — Senior Auditor.
"There is no reliable market to revalue data or algorithms." "Fair value estimates differ widely between auditors." "Even valuation specialists can't agree on how to price proprietary data."	Valuation uncertainty; Lack of active markets for digital assets	**Investor Confidence and Valuation Gaps**	*"Fair value models depend on assumptions — if you change one input, the value doubles or halves."* — Audit Manager, Consulting Firm. *"Intangible valuation is the most subjective part of our audit; we spend weeks debating."* — Audit Partner. *"There's no active market for algorithms; it's pure expert judgment."* — IFRS Consultant.
"IAS 38 and IFRS 3 should be revised to fit the digital age." "We need hybrid models that recognize both cost and fair value." "The IASB project is a good start, but it's moving too slowly."	Calls for reform; Need for digital-specific guidance; Hybrid valuation frameworks	**Recommendations for Reform and Future Standards**	*"If data drives value, standards should treat it like any other asset."* — Accounting Lecturer & IFRS Consultant. *"Hybrid valuation combining cost and expected benefits could capture reality better."* — CFO, Fintech *"IASB should issue sectoral guidance for tech and digital companies."* — Senior Auditor.
"Narrative disclosure helps us explain unrecognized value to stakeholders." "We use management commentary to compensate for accounting gaps." "Transparency through non-financial disclosure keeps investors confident."	Alternative disclosure strategies; Legitimacy reporting; Non-financial transparency	**Recommendations for Reform and Future Standards**	*"We include KPIs on innovation, user growth, and data utilization in the management report."* — Finance Director. *"Voluntary disclosures make up for what accounting doesn't show."* — Audit Partner. *"Enhanced disclosure on intangible performance metrics builds trust with investors."* — Corporate Reporting Manager.

The coding summary matrix (Table 3) illustrates how the initial interview data were organized into subthemes and main themes, which served as the basis for the thematic network diagram. The analysis, based on Braun and Clarke's [30] the six-phase process progressed from open coding to identifying meaning clusters that showed consistent experiential patterns within the narratives. The first meaning cluster, Recognition Ambiguity

of Internally Generated Intangibles, was formed from varying accounts of frustration with the rigid recognition criteria in IAS 38 and with its failure to consider evolving digital assets such as data, algorithms, and software. Respondents argued that while internally generated assets are economically significant, the under-recognition, control, or reliable measurement of a few intangible assets leads to immediate expensing instead of capitalization. This suggests IAS 38 still operates on industrial-era assumptions [12], [26]. The first branch of the thematic network diagram illustrates this theme by showing how recognition ambiguity arises from the practical challenges of applying definitional criteria, and that IAS 38 is fundamentally out-of-date for digital intangibles.

The flow of the diagram from left to right depicts the order in which clusters Misalignment with Digital Business Models, Investor Confidence and Valuation Gaps, and Recommendations for Reform and Future Standards relate to each other. This reflects a logical order of progression that the participants go through from the more technical issues of recognition and ultimately to the issues of market and institutional frameworks. Participants noted that the recognition issues with IAS 38 and IFRS 3 result in frameworks that financially assess digital and platform-driven business models in a manner that creates asymmetries between recognition of internally developed and acquired assets. This span develops within a biased and confidence-eroding framework for estimated valuations that appears to underlie the investor confidence issues, particularly in respondents' quotes describing the widening paradox between book-to-market ratios and estimated fair values.

The values underpinning the contrapositive of the last thematic node in the diagram, Reform and Future Standards, highlight the embedded need and the profession's consensus on an emergent need for hybrid valuation frameworks within other sectors, coupled with IFRS standards and sector guidance, and even more prescriptive narrative disclosures. Interconnectedness reflects recognition of the evolving stance from issues relating to recognition, systemic consequences, and pathways toward reform. Consistency between the matrix and the visual model underscores the clarity of the analysis and the conclusion that existing accounting standards poorly capture the economic reality of intangible assets in the digital economy, which is consistent with recent IASB consultations and current scholarly work [5], [16].

Figure 1. Word cloud representative

The keywords in the word cloud highlight the main issues and discussions regarding the accounting for intangible assets in the digital economy. The most frequent ones, namely Recognition Ambiguity, Measurement Valuation, IAS 38, and Intangible Assets, indicate that the problem of uncertainty in recognizing and valuing intangibles is prevalent. The recurring use of the words transparency, comparability, disclosure, and consistency suggests that people are still concerned about the quality and usefulness of financial reporting under the existing standards. Also, terms such as data, algorithms, platform economy, and digital transformation indicate the growing significance of contemporary digital resources that are not adequately covered by current frameworks. The use of words like reform, regulatory reform, investor confidence, and book-to-market gap further suggests a felt need to improve standard-setting to bridge the gap between accounting value and market reality, which will eventually result in greater trust and better decision-making among stakeholders.

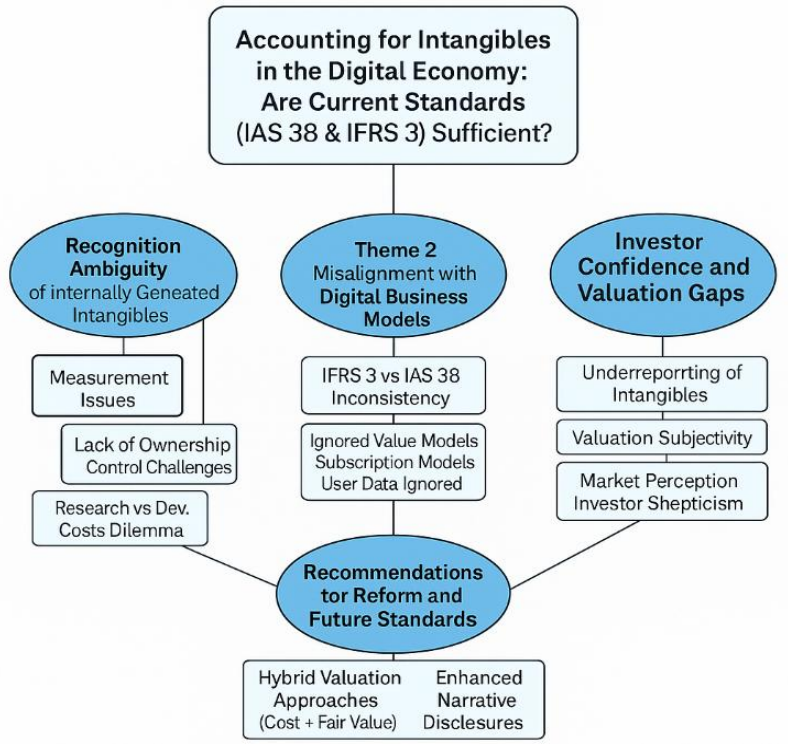

Figure 2. Thematic outcomes

The thematic framework illustrates that the inadequacy of current standards (IAS 38 and IFRS 3) stems from three interconnected problem areas. First, recognition ambiguity highlights the difficulty in accounting for internally generated intangibles due to measurement challenges, unclear ownership/control, and the research versus development cost dilemma. Second, there is a clear misalignment with digital business models, where existing standards fail to capture value drivers such as user data, subscription-based platforms, and digital ecosystems, while inconsistencies between IFRS 3 and IAS 38 further compound reporting issues. Third, these limitations lead to investor confidence and valuation gaps, as underreporting and subjective valuation of intangibles distort market perceptions and widen the gap between book and market values. Collectively, the framework points toward the need for reforms, particularly through hybrid valuation approaches and enhanced disclosures, to improve the relevance, transparency, and reliability of financial reporting in the digital economy.

4.2. Why does this debate matter now?

The digital economy has moved the focus of value away from tangible assets and towards knowledge-intensive assets (software, algorithms, data, brands, and platform ecosystems), resulting in balance sheets becoming more and more unrepresentative of a firm's productive value [31]. Financial statements still focus on standards created for the industrial economy. The IASB has responded to these pressures in the Intangible Assets Project, but the gap between the theoretical and the practical continues to produce the book-to-market gaps and information asymmetry that the literature and empirical work have documented [6], [7], [8].

4.2.1. Theme 1 — Recognition ambiguity of internally generated intangibles

Recognition under IAS 38 requires identifiability, along with conditions of control and reliable measurement. These conditions are challenging to fulfill for co-created, iterative, and relational digital assets, such as an evolving data set that takes and derives value from user activities, or machine-learning models that are continuously retrained in production and deployed in real-time [4], [32]. Research-related activity results in expenses, and only limited development expenditures may be capitalized with development activity meeting tightly defined criteria, a bright line that strips away much of the value produced by nimble software-based firms [26]. Qualitative studies demonstrate that conservative expensing is a default position to which auditors may attest, while preparers offset missing value with narrative disclosures [12]. All of this results in a growing

disparity between economic reality and accounting reality, the ‘Gap’ or ‘Penman Gap’, as defined by the author [16], [20].

4.2.2. Theme 2 — Misalignment with digital business models

Under IFRS 3, identifiable intangibles can be acquired at fair value, while IAS 38 prohibits recognition for internally constructed intangibles, leading to an acquisition/innovation asymmetry [5]. Current recognition and measurement rules for accounting do not adequately capture how platform businesses monetize subscriptions, network effects, and data externalities, despite the cash flows and competitive advantages they create [6]. Comparative studies demonstrate the asymmetry with differences in value relevance for purchased intangibles compared to internally generated intangibles, and the acquired ones are more likely to be recognized on balance sheets [19], [21]. This distorts incentives, identifiable by both practitioners and scholars: acquired strategies appear “asset-rich” compared to organic innovators, despite their economic assets being comparable or even superior.

4.2.3. Theme 3 — Investor confidence and valuation gaps

In the absence of fundamental value drivers on a balance sheet, users resort to non-GAAP metrics, alternative information, or the market narrative to evaluate a firm, and questions regarding comparability and verifiability arise [28], [33]. Research at both the cross-country and firm levels has linked the lack of recognition of intangibles within a firm to the market-to-book value gap, as well as the “noise” or distortion in the firm’s financial performance [8], [9]. Even in cases where recognition is allowed (e.g., use of IFRS 3), the measurement of the value is still heavily subjective as unique data assets and custom AI models exist in limited markets, thus estimating the fair value is highly sensitive to assumptions and intensive to audit [15], [29]. Users thus face a dual opacity problem of the conservative under-recognition prescribed by IAS 38 and model-driven uncertainty of valuation under IFRS 3.

4.3. Valuation mechanics at the core of the problem

Digital assets are rarely governed by an active market, as IAS 38’s revaluation method provides, leaving companies with nothing but cost-based amortization and impairment, which poorly captures the true value of assets whose economic utility grows with the user base and learning effects [17], [18]. The requirement to adopt fair value accounting at acquisition, as mandated by IFRS 3, places the intangible asset on the balance sheet but also exposes the entity to significant model risk (discounted cash flows, which are based on churn, cohort LTV, or option-style user base dynamic). The literature identifies large and persistent discrepancies in fair value assessments about similar intangible assets, judging by different auditors/valuers, which significantly points to the issue of reliability [19], [21]. This explains why the conservative accounting approach, as also highlighted by Penman [20], considers it “also an income statement problem.”

4.3.1. Theme 4 — Recommendations for reform and future standards

Three reform tracks have been identified across reviews and policy-oriented papers. First, hybrid valuation approaches wherein cost-anchoring is featured alongside transparent, model-based estimates for incremental digital rents, thereby striking a balance between verifiability and relevance [5], [20]. Second, sector-specific guidance for digital and platform models (data assets, trained models, customer networks), building on the IASB’s current initiatives, fostering a cohesive taxonomy and audit trail [14], [26]. Third, improved narrative and KPIs standard disclosures on R&D pipelines, the governance of data assets, cohorts of user economics, performance of models, and more to mitigate information asymmetry where recognition is impossible [12], [33]. These cohesive initiatives aim to enhance the information's decision-usefulness while preserving its quality.

4.4. What does a realistic transition look like?

The absence of reform does not automatically lead to the full recognition of an asset as capitalized. The “milestone” or staged approach to recognizing assets as they progress from exploratory research to financially

monetizable development can follow the software life cycle. It can also help to mitigate the expensing and recognition cliff effects [5], [26]. In situations where recognition continues to not be appropriate, regulatory-required supplementary disclosures can help to standardize how firms communicate their data inventories, model training costs, and retention and engagement patterns, and frameworks that reveal potential value, to the users. This is in line with the evidence that structured disclosures on intangibles enhance inferences about the value of the intangible [19], [21]. Ultimately, integration of practice with the reporting should reduce reporting gaps in estimates of the value of productivity in the cross-country studies [3].

4.5. Synthesis and implication

There is accord in both literature and practice: contemporary sectoral standards are predominantly conservative in a directional sense and biased towards transactions. This bias results in unequal recognition of internally built and acquired entities and considerable measurement subjectivity where recognition is permitted. Together, these features account for valuation gaps, audit gaps, and increased reliance on alternative metrics within a sector. An institutional path to address these issues is the IASB's project. However, credible advancement will probably entail hybrid valuation approaches, guidance for the digital sector, and the disclosure of decision-useful KPIs—all of which will better align reporting with the ways digital firms create and maintain economic value [6], [14], [16].

5. Conclusions

This study aimed to assess the effectiveness of IAS 38 (Intangible Assets) and IFRS 3 (Business Combinations) in the recognition, measurement, and disclosure of intangible assets in the digital economy. Since the relevant literature focuses on the perspectives of accountants, auditors, and financial managers, the findings show that while both standards offer some guidance, they are of little help in accurately assessing the economic value of certain digital intangibles - software, data, algorithms, and customer interfaces. Respondents pointed out that IAS 38's recognition criteria of identifiability, control, and reliable measurement are nearly impossible to satisfy for internally generated digital assets, resulting in recognition and, in some extreme cases, innovation-related expense investments. Similarly, IFRS 3 was found to disproportionately favor the financial valuation of acquired intangible assets over internally generated ones, exacerbating the symmetry of economic valuation disparities across industries and, ultimately, firm performance. Additionally, the conservative nature of the current standards contributes to the widening of book-to-market valuation gaps, stifles investor trust, and ultimately reduces the usefulness of financial reports for decision-making in the high-technology sectors. Moreover, the lack of active markets for data and algorithmic assets adds to measurement ambiguity, leading to valuation subjectivity and comparability issues. Nevertheless, the absence of standards and the inconsistencies signaled to the field indicate that adaptive practitioners engage in voluntary disclosures, provide management commentary, and offer non-financial metrics.

In light of the conclusions above, the study recommends that the International Accounting Standards Board (IASB) revise the conceptual definitions of intangible assets to include data, algorithms, AI models, and digital platforms. The recognition criteria should be expanded to include assets that can produce a quantifiable future benefit, even without a physical form or exclusive right of possession. To find the balance between reliability and relevance, a mixed approach that incorporates both cost-based and fair-value methods will be created. This would enable firms to capture both the development costs incurred and the future economic potential, thereby reducing the undervaluation of internally-generated assets.

This paper adds to the current discussion of the sufficiency of financial reporting frameworks in the digital economy by offering a critical and integrative examination of IAS 38 and IFRS 3 regarding new intangible assets. In particular, the paper contributes to the literature by integrating disparate debates on digital intangibles, including data, platforms, and cryptocurrencies, into a unified analytical framework that assesses their recognition, measurement, and disclosure deficiencies in existing standards. This way, it builds on previous research that has mostly looked at intangible assets in isolation by tying the constraints of standard-setting to

the larger problem of misrepresentation of values in digital companies [19], [23]. Moreover, the study provides context-specific details on how internally generated intangibles are systematically excluded from financial reports, thereby highlighting the implications of such information for decision-making by users and standard setters.

5.1. Policy implications

In this regard, in the case of standard-setting organizations such as the IASB and IFRS Jordan, the research highlights the need to revise IAS 38 and IFRS 3 by defining data-driven, algorithmic, and platform-based assets. This will help address the underutilization of firms that acquire a competitive advantage largely due to intangible capital. Lastly, a more inclusive standard for including internally generated digital assets will assist firms in obtaining a more accurate reflection of their value and enhance the harmonization of reporting across borders. This is particularly significant in the case of Jordan, where data-driven, innovative fintech and tech startups are increasingly powered by AI.

The second step that regulators and policymakers should take is to integrate digital asset reporting systems into national accounting and taxation systems. To facilitate uniform reporting, regulators must target the evolution of standardized valuation and reporting models for digital assets, which should reduce the risk of manipulation and improve audit verifiability. Without the quantitative reporting, the story and non-financial reports on the expenditure on innovations, data governance structures, digital assets, and performance indicators are to be promoted. Such disclosure will help promote the protection of investors, increase transparency, and facilitate the cross-border comparability of financial statements, which is crucial in attracting international capital to the new digital economy that is starting to emerge in the digital jurisdiction.

Finally, concerning JACPA, HCAP, ACPA, and other professional accounting and audit bodies, it is suggested in this study that they introduce digital accounting, blockchain reporting, and AI-assisted valuation practices in their professional training programs. Continuous professional development (CPD) programs should focus on developing the ability of accountants to identify and value intangible assets that do not fit the traditional requirements of recognition. By undertaking this role, the quality of reporting will be enhanced, and the professionals will be ready to meet the IFRS reforms and other emerging technologies with ease.

5.2. Directions for future research

The scope of this study needs to be broadened to include comparative and mixed-method designs in future research to investigate differences in digital intangible accounting practices across developed and developing economies. Those comparative studies across jurisdictions (e.g., Jordan and the UK or Australia) may offer useful insights into the impact of contextual factors, including market maturity, regulatory enforcement, and audit practices, on the recognition and valuation of digital intangibles. Longitudinal studies might also be conducted by researchers to assess the financial and market performance consequences of intangible asset reporting changes over time, especially as the IASB's Intangible Assets Project advances.

Declaration of competing interest

The author declares that there are no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Informed consent

The participants in this study were fully aware of the study's aims, intervention procedures, and its voluntary nature before participating. The privacy statement emphasized to respondents that all of their responses were completely confidential and would be reported only for research purposes. After consenting to participate, the respondents gave their informed consent to the collection and analysis of their responses.

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