

Corporate Crypto-Asset Disclosures and Liquidity Policy: Evidence from SEC 10-K Filings

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ABSTRACT

The rapid mainstreaming of digital assets is reshaping both corporate financial reporting and treasury strategy. Between 2024 and mid-2025, the number of publicly traded firms disclosing Bitcoin positions increased from 64 to 151, signaling a shift toward integrating crypto assets into formal balance-sheet management. This study investigates: (1) the factors that drive variation in crypto-related disclosures within SEC Form 10-K filings, and (2) how corporate crypto holdings relate to traditional liquidity allocations, including trading, available-for-sale (AFS), and held-to-maturity (HTM) securities. Drawing on SEC EDGAR filings and text-mining techniques, we document substantial cross-firm heterogeneity: firms operating at the core of the crypto ecosystem provide extensive disclosures, whereas firms with moderate exposure appear to use disclosure strategically. Using Signaling Theory as a framework, we evaluate whether digital assets function as liquidity substitutes or as higher-risk complements, offering implications for disclosure behavior, treasury management, and emerging regulatory policy.

KEYWORDS:

Cryptocurrency disclosure, digital asset reporting, blockchain financial reporting, crypto-related risk factors, SEC form analysis

INTRODUCTION

The institutionalization of digital assets has accelerated dramatically in recent years, reshaping corporate treasury management and financial reporting practices. Between 2024 and mid-2025, the number of publicly traded companies reporting Bitcoin on their balance sheets surged from 64 to 151, signaling a fundamental shift from peripheral speculation to strategic asset allocation. This transformation reflects several macroeconomic and regulatory drivers, including U.S. policy developments recognizing Bitcoin as a strategic asset, enhanced regulatory clarity following the implementation of FASB Accounting Standards Update (ASU) 2023-08, and the persistent perception of digital assets as a hedge against inflationary pressures.

Historically, cryptocurrencies such as Bitcoin and Ethereum were confined to fintech outliers. Today, they permeate the treasury strategies of diverse firms across multiple industries, introducing novel dynamics into corporate finance. As corporations allocate capital to these high-volatility assets, financial statement users face a critical challenge: determining whether crypto holdings function as liquidity substitutes akin to cash equivalents or as speculative additions that amplify portfolio risk. This uncertainty is compounded by the principle-based nature of U.S. disclosure requirements under Regulation S-K Items 105 (Risk Factors) and 303 (Management's Discussion and Analysis), which grant firms considerable discretion in framing narrative disclosures about emerging technologies.

Despite the growing materiality of these holdings, the interaction between crypto-assets and traditional financial instruments remains underexplored. Prior research has not examined whether corporate adoption of digital assets complements existing risk-taking strategies or displaces conventional liquidity buffers such as trading securities, available-for-sale (AFS) securities, and held-to-maturity (HTM) securities. Nor has it fully addressed how disclosure practices vary systematically with industry specialization and operational exposure in the crypto domain.

RESEARCH QUESTION AND CONTRIBUTIONS

Research Question:

Do corporate crypto-asset holdings serve as substitutes for traditional liquidity instruments or as complements that increase overall portfolio risk?

Contributions:

First, this study extends Signaling Theory to the crypto-disclosure context by demonstrating that industry specialization and operational exposure are associated with systematic variation in 10-K crypto narratives (Spence, 1973; Healy & Palepu, 2001). Second, it connects discretionary disclosure economics to modern SEC reporting venues, showing how principle-based items (105/303) enable tailored signals in emerging technologies (Verrecchia, 1983). Third, it explores treasury portfolio implications of crypto adoption, providing evidence on whether digital assets function as liquidity substitutes or speculative complements, thereby informing both academic theory and regulatory policy.

LITERATURE REVIEW

The rapid growth of cryptocurrencies has attracted substantial academic attention, particularly regarding the factors that influence individual and organizational adoption. Drawing on established technology adoption theories, researchers have sought to understand why users embrace or resist cryptocurrency-based financial innovations. Alkhwalidi et al. (2023) examined cryptocurrency adoption in Jordan using the Unified Theory of Acceptance and Use of Technology (UTAUT), enhanced with innovativeness and perceived readiness. Based on survey responses from 391 participants, the study found that performance expectancy, effort expectancy, and facilitating conditions significantly influence cryptocurrency adoption. Individuals were more willing to adopt cryptocurrencies when they perceived them as useful, easy to use, and supported by adequate technological infrastructure. Contrary to expectations, social influence and perceived readiness did not significantly predict adoption behavior, suggesting that users in developing economies may remain cautious despite growing global acceptance. The

authors conclude that trust, usability, and infrastructure are critical determinants of cryptocurrency adoption in emerging markets.

Similarly, Bommer, Milevoj, and Rana (2023) synthesized evidence from 42 empirical studies involving 9,482 participants through a meta-analysis of cryptocurrency adoption determinants. Integrating perspectives from UTAUT, UTAUT2, the Technology Acceptance Model (TAM), the Theory of Reasoned Action (TRA), and the Theory of Planned Behavior (TPB), the authors found that attitude toward cryptocurrency, performance expectancy, and price value are the strongest predictors of behavioral intention. Their results indicate that these factors collectively explain nearly 60 percent of the variance in cryptocurrency adoption intentions. Notably, the effects remained relatively consistent across different countries, economic environments, and cryptocurrency types, suggesting that the primary drivers of adoption are largely universal. Together, these studies demonstrate that perceived usefulness, value creation, trust, and technological support systems remain fundamental to cryptocurrency acceptance.

While individual-level adoption has received considerable attention, researchers have increasingly focused on organizational adoption of blockchain and cryptocurrency technologies. Stratopoulos, Wang, and Ye (2022) contribute to this literature by proposing corporate disclosures as a novel mechanism for assessing the stage of blockchain adoption. Analyzing SEC filings and earnings conference calls from 2013 to 2019, the authors demonstrate that corporate disclosures provide direct insight into managerial intentions, expectations, and strategic plans regarding blockchain technology. Their findings suggest that blockchain adoption remains in the transition from the innovator stage to the early adopter stage and has not yet achieved mainstream adoption.

A key contribution of the study is the identification of an important shift in disclosure content. Early disclosures focused heavily on Bitcoin mining and cryptocurrency-related activities, whereas more recent disclosures emphasize business applications, supply chain management, data processing, and operational efficiency improvements. This evolution suggests that blockchain is maturing from a speculative

financial innovation into a foundational business technology. The study further highlights the importance of managerial communication as a signal of technological readiness and future strategic direction.

As cryptocurrency markets are characterized by substantial information asymmetry, signaling theory has emerged as a useful framework for explaining investor behavior and market outcomes. Kreppmeier and Laschinger (2023) apply signaling theory to Security Token Offerings (STOs) and examine how firms communicate quality to prospective investors. Using a hand-collected dataset of 138 STOs, the authors find that pre-sale phases and explicit announcements regarding token transferability function as credible quality signals that enhance fundraising success. These findings demonstrate that traditional signaling mechanisms remain highly effective even within blockchain-based financial markets.

Their analysis of secondary market performance reveals that initial underpricing is relatively uncommon and is driven primarily by broader cryptocurrency market sentiment rather than firm-specific signals. Furthermore, although decentralized exchanges reduce entry barriers, they generally exhibit lower liquidity than centralized exchanges. These findings suggest that crypto-financial markets continue to evolve and remain dependent on mechanisms that reduce uncertainty and improve investor confidence.

Complementing this perspective, Risius et al. (2023) investigate how social media signals affect fundraising outcomes in Initial Coin Offerings (ICOs) and Initial Exchange Offerings (IEOs). Analyzing 305 token offerings, the authors find that both social media volume and sentiment positively influence fundraising success. However, positive sentiment exerts a significantly stronger effect on ICOs than on IEOs. The authors attribute this difference to the role of cryptocurrency exchanges as trusted intermediaries in IEOs. Because exchanges conduct screening and due diligence, investors rely less on social media sentiment when assessing offering quality. Their findings challenge the notion that blockchain finance is entirely decentralized and underscore the continuing importance of trust, institutional legitimacy, and reputation in digital financial markets.

Further evidence supporting signaling theory is provided by Khalid, Liang, and Brown (2024), who investigate the influence of cryptocurrency-related signals on X (formerly Twitter). Examining more than 555,000 user responses to posts from major cryptocurrency influencers, including Elon Musk, the authors find that crypto-related signals generate significant user engagement and positive sentiment. Moreover, specific cryptocurrency signals are associated with measurable increases in cryptocurrency prices, while broader signals affect overall market movements. These findings demonstrate that social media communication serves as a powerful informational signal capable of influencing investor perceptions and market outcomes.

A growing body of literature examines the implications of cryptocurrency adoption for firm performance and market valuation. Bahmani (2026) investigates stock market reactions to corporate announcements of cryptocurrency acceptance as a payment method. Using an event study methodology on publicly traded U.S. firms between 2013 and 2023, the study finds that cryptocurrency acceptance announcements generate an average decline of 2.73 percent in firm value. Investor concerns regarding market volatility, consumer adoption barriers, and transaction risk appear to drive these negative reactions.

However, the study also finds important moderating effects. Firms that accept Bitcoin experience more favorable market reactions than those accepting alternative cryptocurrencies exclusively. In addition, companies announcing cryptocurrency acceptance in more recent years benefit from a more mature market environment and greater user familiarity. These findings suggest that while cryptocurrency adoption may offer strategic opportunities, investor responses depend heavily on implementation choices and market context.

Field and Inci (2023) similarly examine the relationship between cryptocurrency holdings and firm performance. Their findings indicate that cryptocurrency exposure significantly affects corporate risk profiles and stock market performance. Firms holding cryptocurrencies as treasury assets generally experience improved risk-adjusted returns, whereas operational applications of cryptocurrencies often generate less favorable

outcomes. These results highlight the importance of strategic deployment and transparent reporting of cryptocurrency-related activities.

As corporate cryptocurrency adoption increases, accounting treatment and disclosure practices have emerged as major concerns. The lack of comprehensive accounting standards under both U.S. GAAP and IFRS has resulted in significant reporting inconsistencies across organizations. Akanbi (2024) argues that current classifications of cryptocurrency as intangible assets, inventory, or financial instruments fail to adequately capture the economic characteristics of these assets. The author advocates for dedicated accounting standards to improve comparability, transparency, and decision usefulness.

Similarly, Luo (2024) documents substantial inconsistencies across global reporting frameworks and demonstrates how varying classification approaches distort measures of liquidity, profitability, and cash flow generation. The absence of harmonized accounting standards undermines comparability and increases information asymmetry for investors. Jackson and Luu (2023) further note that IFRS generally excludes cryptocurrencies from cash classifications while providing multiple alternative treatments depending on the nature of the asset and the holder's business model. Their analysis emphasizes the fragmented nature of current accounting guidance and the need for more comprehensive regulatory solutions.

Recent empirical evidence further underscores the importance of disclosure quality. Clark (2026) examines cryptocurrency-related disclosures contained in the Form 10-K filings of 18 companies between 2020 and 2025. The findings reveal that firms engaged in cryptocurrency activities provide significantly more detailed contingency disclosures related to market volatility, cybersecurity risks, technological uncertainty, and regulatory exposure. The study also identifies substantial variation in ESG disclosures, with some firms proactively discussing environmental and governance implications while others provide little information.

Quantitative results indicate a positive relationship between increases in cryptocurrency-related intangible assets and firm profitability, suggesting that digital asset investments may contribute to value creation despite increasing earnings volatility. Clark also finds that implementation of ASU 2023-08 enhances transparency through fair value measurement while simultaneously increasing income statement volatility. Collectively, these findings emphasize the growing importance of robust disclosure practices and standardized accounting treatment for cryptocurrency assets.

THEORETICAL FRAMEWORK

Signaling Theory

Firms operating in environments characterized by uncertainty and information asymmetry often rely on signals, observable, credible actions, to communicate internal conditions to outside stakeholders. Signaling Theory, originating with Spence (1973), explains how firms use such mechanisms to reduce uncertainty when outsiders cannot easily verify underlying quality or risk. In accounting and disclosure settings, the framework has been widely used to interpret management's incentives to release voluntary or expanded information, particularly when such disclosures can influence investor perceptions or reduce financing frictions (Healy & Palepu, 2001).

In the context of digital-asset activities, signaling becomes especially salient. Crypto-related operations involve technological complexity, regulatory ambiguity, volatile asset valuations, and heightened operational risks. These characteristics create substantial information gaps between managers and market participants. Narrative disclosures in SEC Form 10-K filings, particularly those provided under Regulation S-K Items 105 (Risk Factors) and 303 (MD&A) offer a vehicle through which firms can signal competence, preparedness, innovation capacity, and regulatory awareness. Because these sections are principle-based and require tailored discussion of material risks and known trends, they allow managers to craft firm-specific signals that differentiate them from peers.

For crypto-centric firms, extensive disclosure may serve as a credibility mechanism, demonstrating to regulators and investors that the firm recognizes and

actively manages the unique risks of digital-asset operations. Similarly, firms with moderate or emerging crypto exposure may strategically highlight such activities to signal technological relevance or alignment with evolving market trends. Conversely, firms with minimal exposure may choose not to engage in such disclosure, implicitly signaling the absence of material crypto-related risks.

Signaling Theory therefore provides a coherent lens through which to interpret variation in crypto-related disclosure intensity. It suggests that differences in industry specialization, operational involvement, and treasury exposure shape the costs and benefits associated with disclosure and, by extension, the signaling strategies firms adopt. These signals have implications for investor attention, risk assessment, and ultimately, capital-market outcomes.

HYPOTHESES DEVELOPMENT

Building on Signaling Theory, firms' crypto-related disclosure choices can be interpreted as strategic responses to information asymmetry, technological uncertainty, and evolving regulatory expectations. Differences in industry positioning and operational involvement shape both the necessity and credibility of these signals, leading to predictable variation in disclosure intensity across firms.

H₁: Industry Specialization and Disclosure Intensity

Firms whose core business activities are deeply integrated with the crypto ecosystem—such as mining companies, blockchain infrastructure providers, and digital-asset exchanges, encounter heightened operational complexity and regulatory scrutiny. These firms operate in environments characterized by significant market volatility, evolving compliance requirements, and high technology-related risk. As a result, they face strong incentives to communicate their understanding and management of these risks through more extensive narrative disclosures.

Hypothesis 1 (**H₁**):

Firms operating in crypto-centric industries will disclose significantly more crypto-related information in their SEC Form 10-K filings than firms outside the crypto domain.

H₂: Operational Exposure and Transparency Incentives

Companies directly engaged in crypto-asset transactions—such as cryptocurrency custody, payment facilitation, trading services, or blockchain-based operations—confront diverse accounting, valuation, and compliance challenges. These firms must explain their approaches to volatility management, control environments, and evolving standards (such as ASU 2023-08), increasing the value of detailed, risk-oriented disclosures. The complexity of their operations makes disclosure a comparatively low-cost yet high-credibility signal of preparedness and transparency.

Hypothesis 2 (**H₂**):

The extent of a firm's operational exposure to digital assets is positively associated with crypto-related disclosure intensity in its SEC Form 10-K filings.

H₃: Strategic Signaling by Moderately Exposed Firms

Firms with limited or non-core crypto involvement may not face substantial crypto-specific risks, but they may still choose to highlight digital-asset initiatives as part of a broader innovation or market-positioning strategy. For these firms, crypto-related disclosures operate less as mandatory risk communication and more as discretionary strategic signaling aimed at appealing to investors who view digital assets as indicators of technological adaptability or growth potential.

Hypothesis 3 (**H₃**):

Firms with moderate crypto exposure will provide more crypto-related disclosure than firms with no exposure, consistent with the use of disclosure as a strategic signal of innovation and market relevance.

Conceptual Framework of Hypotheses:

Figure 1: Conceptual Framework

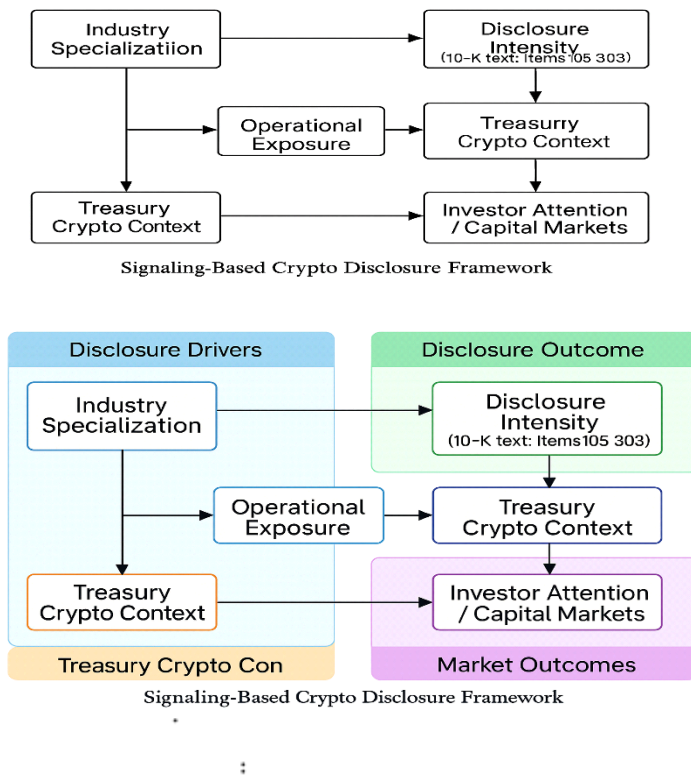


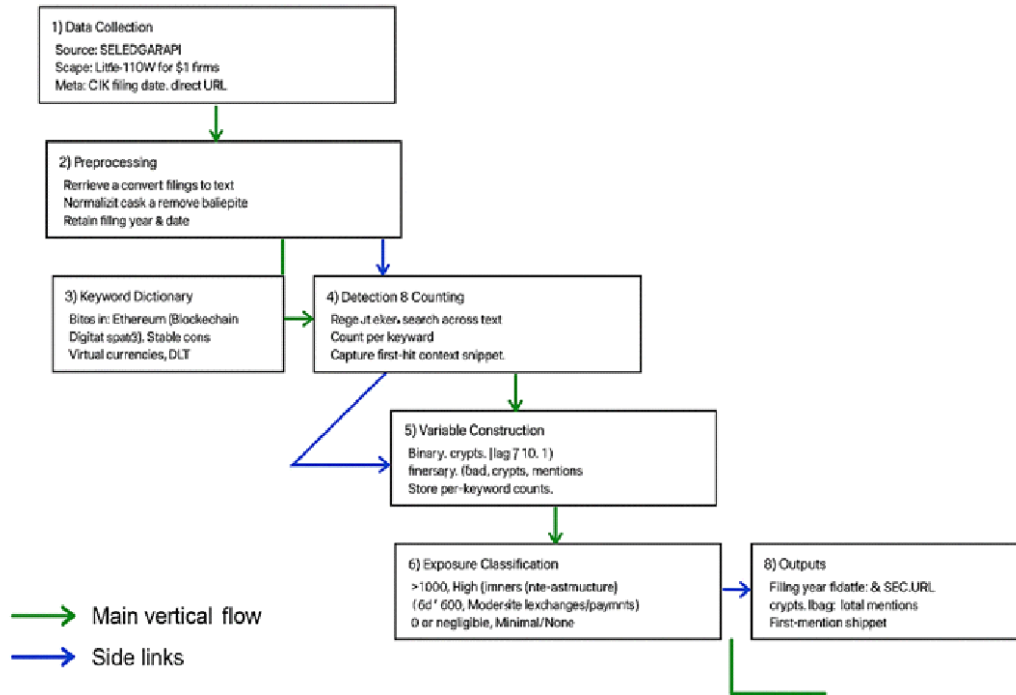
Figure 1 illustrates how industry specialization and operational exposure drive disclosure intensity in SEC Form 10-K filings, primarily through Risk Factors (Item 105) and MD&A (Item 303). Treasury crypto holdings (contextualized by ASU 2023-08 fair value requirements) interact with disclosure choices and influence investor attention and capital market outcomes.

METHODOLOGY

Figure 2 provides a graphical depiction of the methodology employed in this analysis from data collection to the final outputs.

Figure 2: Methodology Graphical Depiction

Flowchart: Crypto Disclosure Methodology (SEC 10-K)



1

Data Collection and Sample Construction

The empirical analysis relies on a dataset constructed from SEC Form 10-K filings submitted by publicly traded firms with U.S. reporting obligations. Using the SEC EDGAR API, we retrieved the most recent annual filings available for a targeted set of thirty-one firms. The sample primarily reflects fiscal year 2025 filings, aligning the analysis with the adoption period of FASB ASU 2023-08, which introduced fair-value measurement and enhanced disclosure requirements for qualifying crypto assets.

Automated data retrieval ensured completeness of key metadata, including Central Index Key (CIK), filing date, and direct SEC filing links. After collection, all filings were converted into uniform, machine-readable text files. Standard preprocessing procedures were applied, including case normalization and the removal of boilerplate or formatting artifacts, to facilitate accurate text parsing and keyword detection. Filing-level

identifiers, such as reporting year and submission date, were preserved to maintain temporal comparability.

Identification of Crypto-Related Disclosures

To capture crypto-asset-related reporting, we developed a targeted keyword dictionary designed to reflect the breadth of terminology used in digital-asset discourse. Keywords included terms such as Bitcoin, Ethereum, digital assets, blockchain, stablecoins, virtual currencies, and distributed ledger technology. This dictionary served as the basis for identifying relevant references within each filing.

Regex-based pattern searches were used to detect occurrences of each keyword across full-text filings. For each firm, we computed keyword-specific counts and aggregated these values to form a measure of overall disclosure intensity. To support qualitative validation, we extracted the first contextual snippet in which each crypto-related term appeared, enabling us to verify that detected mentions reflected substantive references rather than unrelated text.

Measures of Crypto Exposure

Two primary indicators of crypto exposure were constructed:

Binary Exposure Indicator (crypto_flag):

A firm was assigned a value of 1 if its 10-K contained at least one crypto-related keyword, and 0 otherwise.

Disclosure Intensity (total_crypto_mentions):

This continuous measure represents the total frequency of all crypto-related keywords within a firm's filing.

These indicators capture both the presence and the magnitude of disclosure activity and support analysis of variation across firms with different operational profiles.

Classification of Firms by Exposure Level

To facilitate comparative analyses, firms were grouped into three exposure categories based on their observed disclosure intensity:

High exposure: More than 1,000 mentions, typically crypto miners and infrastructure providers with direct operational reliance on digital assets.

Moderate exposure: Approximately 100–900 mentions, generally exchanges, trading platforms, or payment-facilitation firms with meaningful but non-core crypto involvement.

Minimal or no exposure: Firms with a `crypto_flag` of 0 or negligible mention counts.

This classification reflects meaningful differences in business models and reporting incentives and allows for structured evaluation of disclosure heterogeneity.

Data Integrity and Limitations

To avoid survivorship or selection bias, firms lacking valid or retrievable 10-K filings including those with missing CIK identifiers or foreign reporting requirements were retained in the dataset with default exposure values of zero. Although this approach ensures a complete sample, there are limitations. Keyword-based detection may fail to capture nuanced references if firms use nonstandard terminology, and mention counts alone may not reflect the depth or significance of underlying activities.

Nonetheless, the combination of binary indicators, intensity measures, contextual snippets, and detailed metadata provides a robust foundation for analyzing patterns in corporate crypto-asset disclosures and their relationship to broader reporting and treasury practices.

RESULTS

Descriptive Statistics

The final sample consists of thirty-one firms, of which twenty-one had accessible and valid SEC Form 10-K filings retrieved through the EDGAR API. Among these firms, twenty included at least one crypto-related reference, while eleven showed no evidence

of crypto disclosure. The filings largely reflect fiscal year 2025 reporting, aligning the dataset with the post-implementation period of FASB ASU 2023-08, when firms were required to apply fair-value measurement and provide expanded disclosures for eligible crypto assets.

Table 1 summarizes key features of the sample:

Table 1: Sample Overview

Me tric	Va lue
Total firms	3
analyzed	1
Firms with valid SEC - K	2
10 filing	1
Firms with - related s	2
crypto mentions	0
Firms with cry - related	1
no pto mentions	1
Filing years covered	FY 2025

This distribution indicates that crypto-asset reporting is becoming increasingly common among publicly traded U.S. firms, though emphasis varies widely across industries and business models.

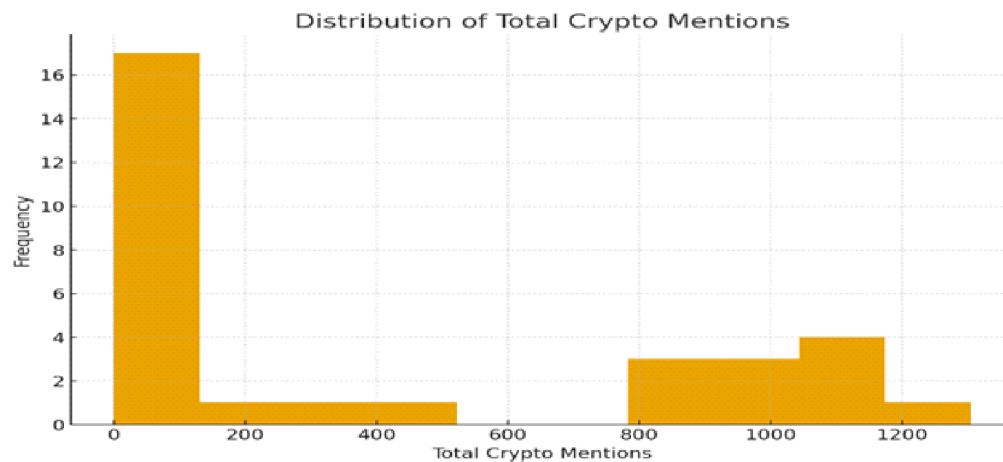
Crypto Disclosure Intensity

Disclosure intensity, measured as the total number of crypto-related keywords identified in each filing, shows substantial heterogeneity across firms. A small subset of companies, primarily those whose business models are centered on mining, blockchain infrastructure, or digital-asset services, reported exceptionally high mention frequencies (exceeding 1,000). This group includes firms such as IREN, CORZ, MSTR, CLSK, and CIFR.

A second tier of firms, generally exchanges, trading platforms, and payment-service providers (e.g., RIOT, BTBT, HOOD, COIN, BKKT, MELI), exhibited moderate disclosure intensity, with keyword counts ranging between approximately 100

and 900. These firms have meaningful operational or revenue-linked exposure to digital assets but do not operate solely within the crypto ecosystem.

Figure 3: Keyword Counts



In contrast, several firms, most notably Tesla, reported zero crypto-related mentions in their 2025 filings despite prior involvement in digital-asset markets. This absence suggests either a strategic de-emphasis of crypto activities or the lack of material exposure during the reporting period.

Interpretation of Observed Patterns

The distribution of disclosure intensity across the sample aligns with expectations from Signaling Theory and supports the directional predictions of the hypotheses.

Industry-integrated firms appear to use disclosure as a mechanism to convey legitimacy, risk awareness, and technological competence.

Operationally exposed firms disclose at levels consistent with the need to address accounting complexity, valuation uncertainty, and compliance considerations associated with digital-asset transactions.

Moderately exposed firms may employ disclosure strategically, using crypto-related language to position themselves as innovative or technologically progressive, even when crypto activities represent a small portion of their operations.

Firms with zero exposure demonstrate that crypto-related disclosure remains discretionary and context-dependent, reinforcing the principle-based nature of Regulation S-K Items 105 and 303.

Taken together, these patterns illustrate a tiered structure of disclosure behavior that reflects differences in business strategy, operational involvement, and perceived signaling benefits.

DISCUSSION

Synthesis of Findings and Links to Hypotheses

The results of the text-mining analysis reveal substantial variation in the intensity of crypto-related disclosures across firms, highlighting the differentiated environments in which firms operate and the strategic incentives shaping disclosure practices. These patterns broadly align with the theoretical expectations derived from Signaling Theory.

Firms positioned at the core of the crypto ecosystem, including miners, blockchain infrastructure providers, and other crypto-native entities, produce the most extensive disclosures. These organizations operate in high-uncertainty environments characterized by volatile asset prices, elevated regulatory attention, and evolving technological risks. Consequently, the cost of nondisclosure is higher, making robust reporting a credible mechanism for reducing information gaps. This finding directly supports **H₁**, which predicts that firms in crypto-centric industries exhibit greater disclosure intensity due to heightened signaling incentives.

Similarly, firms with direct operational involvement in crypto-asset activities such as exchanges, custodial services, or payment-integrated platforms, provide detailed narrative disclosures that reflect the complexity of their underlying transactions and risk environments. Their elevated but more moderate mention counts corroborate **H₂**, which anticipates that operational exposure increases the need for transparency and reduces the

cost of providing granular disclosures. These findings are consistent with models of discretionary disclosure under information asymmetry, which suggest that firms are more likely to disclose voluntarily when doing so improves investor understanding and helps mitigate perceived risk.

Finally, firms with moderate exposure, organizations that interact with digital assets peripherally or strategically rather than as a core operational component, appear to use crypto-related disclosures in a more selective and strategic manner. Their disclosure patterns suggest an intent to signal adaptability, technological sophistication, or alignment with evolving market trends. This behavior is consistent with **H₃**, which posits that firms with moderate exposure employ narrative disclosures as low-cost signals of innovation and relevance, even when crypto activities do not constitute a significant portion of their operations.

Firms with no exposure, meanwhile, adopt a silence strategy, offering no crypto-related disclosure—a reminder that disclosure under Regulation S-K Items 105 and 303 remains fundamentally judgment-based. Taken together, these patterns underscore the heterogeneous incentives that shape crypto-asset reporting across different categories of firms.

Implications for Accounting, Regulation, and Reporting Practice

The varied disclosure strategies observed across the sample provide important insights into how firms are responding to the emergence of ASU 2023-08 and the broader regulatory environment surrounding digital assets. The presence of expansive narrative disclosure among highly exposed firms suggests that fair-value measurement requirements may increase the credibility and verifiability of crypto-related reporting. Because audited financial statement notes now provide standardized recognition and measurement of crypto assets, narrative disclosures in Items 105 and 303 carry more weight by serving as complementary contextual explanations rather than standalone claims.

At the same time, the discretion embedded in principle-based disclosure requirements allows firms substantial flexibility in framing their risk narratives. This

discretion can enhance signal precision for firms seeking to differentiate themselves but may also lead to inconsistencies in disclosure depth or clarity across the market. Investors reviewing these filings must therefore interpret disclosures within the broader context of firm-specific business models, operational risk profiles, and treasury strategies.

The observed variability in disclosure intensity also has implications for regulators. As digital-asset adoption expands, regulators may consider whether the current principles-based approach adequately captures the risks posed by crypto holdings or whether more prescriptive guidance may enhance comparability and transparency. Differences in disclosure depth across firms with similar business models suggest that market practice has not yet converged on a standardized approach to crypto-asset reporting.

Capital-Market and Stakeholder Implications

Crypto-related disclosures are likely to influence how investors, analysts, and other stakeholders interpret firms' risk profiles, liquidity management strategies, and exposure to emerging technologies. Higher disclosure intensity may attract greater investor attention, potentially leading to increased analyst coverage or more frequent information downloads from EDGAR. Conversely, firms with limited or ambiguous disclosures may face higher uncertainty premiums or greater scrutiny in capital markets.

These effects mirror patterns documented across the broader disclosure literature, where detailed and firm-specific narrative reporting is associated with greater transparency and narrower information asymmetry. The unique risks associated with crypto assets—valuation uncertainty, operational failures, regulatory intervention, and cybersecurity vulnerabilities—heighten the importance of clear and credible reporting in this domain.

Limitations and Directions for Future Research

Although the study provides clear evidence of systematic variation in crypto-related disclosure practices, several methodological limitations should be acknowledged. Reliance on keyword frequencies may obscure qualitative distinctions

between boilerplate references and substantive, risk-focused narratives. Additionally, firms may use nonstandard terminology or embed crypto-related discussions in sections not captured by keyword-based parsing. Future research could address these issues by incorporating section-weighted analysis, context-aware natural language processing techniques, or supervised machine-learning models capable of distinguishing disclosure types.

Expanding the dataset across multiple fiscal years would also allow for investigation of temporal trends, especially given the relatively recent implementation of ASU 2023-08. Linking disclosure patterns to market outcomes, such as abnormal returns, bid-ask spreads, or changes in analyst sentiment, could help establish whether crypto-related disclosures have measurable effects on investor behavior. Finally, integrating earnings call transcripts or other voluntary disclosures could provide a more holistic view of firms' communication strategies surrounding digital-asset activities.

CONCLUSION

This study provides new evidence on how U.S. public firms disclose crypto-asset activities within SEC Form 10-K filings and how such disclosures relate to differences in industry positioning, operational exposure, and treasury strategy. By integrating text-mining methods with a signaling-theoretic framework, we show that disclosure practices surrounding digital assets are far from uniform. Instead, they follow a structured pattern shaped by firms' economic incentives, technological involvement, and the regulatory environment shaped by ASU 2023-08.

Crypto-centric firms, which face the greatest operational and regulatory complexity, produce the most extensive disclosures, using narrative reporting as a mechanism for demonstrating legitimacy and readiness in a high-uncertainty environment. Firms with direct operational involvement, such as exchanges and custodial platforms, also provide elevated levels of detail, consistent with transparency incentives associated with complex and evolving accounting requirements. Firms with moderate exposure, by contrast, appear to employ disclosure more selectively, using crypto-related narratives to communicate innovation and strategic positioning rather than direct risk

mitigation. These findings highlight the flexibility inherent in Regulation S-K's principle-based disclosure regime and the diverse signaling strategies firms employ within it.

Our results underscore the growing importance of digital-asset reporting in contemporary corporate communication and point to several implications. For regulators, the variability in disclosure depth raises questions about whether current standards provide sufficient comparability and investor protection as crypto adoption expands. For investors and analysts, the findings suggest that crypto-related disclosures convey meaningful information about firms' operational risk profiles, treasury practices, and strategic orientations. For researchers, the study illustrates the value of text-analytic approaches in examining emerging areas of financial reporting and offers a foundation for future work linking disclosure patterns to market outcomes and regulatory responses.

As the digital-asset landscape continues to evolve, so too will the reporting and oversight frameworks that govern it. This study contributes an early empirical lens on how firms navigate this transition and highlights the need for continued research on the intersection of technology, regulation, and financial reporting behavior.

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