Revista ARACÊ
ISSN: 2358-2472

ALGORITHMIC SOCIETY AND THE SEMIOTICS OF INITIAL COIN OFFERS (ICO): TRANSFORMATIONS IN THE (CRYPTO)MARKET

https://doi.org/10.56238/arev7n1-179

Submitted on: 12/22/2024 **Publication date:** 01/22/2025

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ABSTRACT

This study is based on the assumption that digital transformation and the advancement of (crypto)realities are (re)designing economic and social structures, generating a new semiotics in economic and financial dynamics, especially in the context of "Initial Coin Offerings" (ICOs). The analysis focuses on the transformations of the (crypto)market, highlighting how the meanings associated with economic tokenization and blockchain-based technologies reconfigure practices, values, and regulations. The general objective is to investigate how Brazil, through the Securities and Exchange Commission (CVM) and the Central Bank (BCB), adapts its guidelines to regulate the crypto asset market, balancing innovation, security and investor protection. As specific objectives, it seeks to: (i) identify the main national and international regulations related to cryptoassets; (ii) understand the impact of crypto-assets on the securities market; and (iii) explore the role of economic tokenization as a transformative force in the configuration of the digital market. The methodology used is qualitative and exploratory, based on the hypothetical-deductive method, allowing the formulation of hypotheses on how regulations impact the security of the digital market and the inclusion of investors. The problem-situation considers that the dematerialization of economic relations brings significant challenges to regulators, requiring an adaptable and effective normativity. The study points out that, given the complexity and risks of cryptoassets, the construction of regulatory policies needs to meet the demands for innovation, financial stability, and consumer protection, without ignoring the semiotic transformations of the market in the face of the algorithmic society.

Keywords: CTS(I). (Crypto)Market. Economic Tokenization. Algorithmic Society and Law. (Crypto)Securities and Regulation.

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ISSN: 2358-2472

INTRODUCTION

(Crypto)technological advances have been consolidated as protagonists in the transformations of the social web, encompassing social, economic and cultural dimensions. These innovations, especially in the context of (crypto)assets, reflect realities expanded by the dematerialization of human interrelationships, increasingly immersed in virtualization. In this scenario, (crypto)realities, driven by disruptive technologies such as blockchain, have not only changed the way economic interactions occur, but have also provoked a profound (re)definition of economic models, challenging analog and traditional classifications of financial markets (MF).

In a world where algorithms operate as mediators of economic relations, a tokenized and decentralized economy emerges, which introduces new concepts such as virtual currencies, digital currencies - "*Central bank digital currencies*" (CBDCs) and "*Initial Coin Offers*" (ICOs). These elements stand out as disruptive components of the digital age, requiring States and public-private institutions to develop a new (crypto)regulatory framework. Such structures seek not only to keep up with the complexity of the (crypto)market, but also to meet the demands of security, transparency, and innovation, which are fundamental for the confidence of economic agents.

In this context, the title of this study, "Algorithmic Society and the Semiotics of *Initial Coin Offers*: Transformations in the (Crypto)Market", reflects the intention to investigate the intersection between socioeconomic digitalization and the meanings attributed to new financial technologies. The expression "algorithmic society" highlights the role of algorithms as mediators of the (re)organization of social and economic dynamics, shaping everything from everyday interactions to complex financial structures. In turn, the "semiotics of *Initial Coin Offers*" emphasizes how the symbolic and practical values of ICOs transcend their instrumental function, promoting a reconfiguration of market relations and regulatory processes, while challenging traditional categories of analysis.

By exploring these elements, it seeks not only to understand the transformations of the (crypto)market, but also to analyze how virtualization and tokenization create new narratives and paradigms in the economic and financial field. These phenomena reveal a continuous process of resignification of economic interactions, where the symbolic and the functional converge, expanding the possibilities of innovation while requiring regulation adapted to the complexities of this scenario. Thus, the study contributes to the debate on the adequacy of normative guidelines to the demands of an expanding digital market.

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In Brazil, the adaptation of the regulations that govern the financial market has been conducted by the Brazilian Securities and Exchange Commission (CVM), through different guidance opinions, and by the Central Bank (BCB), through resolutions and ordinances that seek to establish guidelines capable of preserving the safety of investors without inhibiting technological innovation. Since the 1970s, with the creation of the CVM, the country already had a securities regulation structure, but the advent of digitalization and the emergence of cryptoassets highlighted the need to review and update the regulatory framework.

The enactment of Law No. 14,478/2022, known as the Cryptocurrency Framework, marks an important step in an attempt to regulate a constantly evolving market, establishing criteria for the operation of companies operating in the sector. At the same time, the introduction of PEC 115/2022, which ensures the protection of personal data as a fundamental right in article 5, LXXIX CF/88, reflects the concern to align digital governance with the requirements of a changing economic and technological environment. Both initiatives show an effort to modernize regulations, which seeks to balance the promotion of innovation with the need to establish clear limits to ensure the security and confidence of economic agents. In this scenario, digital governance not only plays a strategic role in protecting consumers, but also presents itself as a building block to strengthen the reliability of the (crypto)market on a national and international scale.

"*Initial Coin Offering*", in turn, represents an innovation in the field of fundraising, offering companies an alternative form of financing based on the issuance of digital tokens. Depending on the characteristics and rights assigned to these tokens, *ICOs* can be considered securities, and are therefore subject to CVM regulation. This context positions Brazil as an actor of responsibility and adaptability on the global stage, especially in the face of international trends that demand more dynamic and inclusive regulatory approaches. The need to protect consumers, promoting transparency and security in the digital market, goes beyond the national scope, connecting the country to global debates on digital governance and regulation of crypto assets.

Alongside the emergence of disruptive technologies, such as blockchain, which underpins the basis of a tokenized economy, the debate on the role of normativity in the era of socioeconomic virtualization is expanding. Normative instrumentalization is consolidated as an essential resource for the regulation of this new (crypto)scenario; regulatory bodies, such as the CVM and the BCB, seek to establish mechanisms that

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ensure legal (crypto)security. The adequacy of pressing normative parameters to the demands of a digital and algorithmic society is fundamental, especially with regard to the protection of the (crypto)market and (crypto)assets.

The transformative power of algorithms, in the context of (crypto)realities expanded by disruptive technologies, will be analyzed from a perspective that structures the formation of the (crypto)capital market. This algorithmic transformation requires the construction of new normative paradigms in the era of socioeconomic virtualization, especially in the context of the (crypto)market, where dematerialized relations challenge traditional approaches to regulation. In this scenario, the interconnection between these dynamics stands out, which drives the development of the tokenized securities market, in which ICOs emerge as protagonists and will be explored in detail throughout it.

In this way, the general objective of this study compares (crypto)realities and analyzes how Brazil, through its Securities and Exchange Commission (CVM) and Central Bank (BCB), adapt, or create regulations for regulation; The specific objective seeks to identify the main domestic regulations related to cryptoassets, in order to ponder on the dematerialization of economic relations that demonstrate significant challenges for regulators, requiring an "adaptable normativity" and

METHODOLOGY

The methodological procedure will meet the qualitative exploratory methodology, based on the hypothetical-deductive method, with a procedure that transitions from the general to the particular, will be used as a basis for structure and aligns the discussions proposed in the items presented throughout the study, allowing an in-depth and interdisciplinary analysis of the concepts, connecting economic, technological and regulatory aspects, to understand the impact of (crypto)realities on the dynamics and in the development of the (crypto)market. In this context, the methodology will seek to achieve the outlined objectives. For the general objectives, general and auxiliary approach methods will be used, such as bibliographic research and documentary analysis. These methods will guide reflection on digital transformation and its intersection with regulatory paradigms. The analysis will focus on understanding the role of algorithms and *blockchain* technologies in the reconfiguration of economic relations and the creation of new meanings attributed to cryptoassets and *Initial Coin Offerings* (ICOs). The specific objectives will address the regulatory adaptation in Brazil, focusing on the guidelines of the Brazilian Securities and

Exchange Commission (CVM) and the Central Bank (BCB). These perspectives will allow us to observe how the regulatory scenario seeks to balance innovation and security in the digital financial market, while facing the challenges imposed by the dematerialization of economic relations. Finally, methodology and methods combined in the general and specific objectives will allow us to examine the implications of economic tokenization and ICOs in the configuration of the digital market, with emphasis on the semiotics of disruptive technologies.

THE "TRANSFORMATIVE" POWER OF THE ALGORITHM: (CRYPTO)REALITIES EXPANDED BY DISRUPTIVE TECHNOLOGIES

It is not an objective to attempt the story already told; nor is it an objective to (re)discuss *the internet*, the digital age, the information society, etc., which, in turn, are expressions widely disseminated in different epistemes that enabled the social appropriation of knowledge by the (post)modern; however, to ponder on a networked society where information, economy and culture are rethought and the power of identity in this era is resignified in the face of new economic criteria, social and cultural (Castells: 2000; 2002; 2010) is necessary.

By observing the different epistemological contributions in the technological and techno-scientific scenario, it becomes evident how the so-called dematerialization of social, political, economic, and cultural relations profoundly impacts human realities and the social network – in fact, an *expanded* reality. The literature reveals a diversity of interpretations of these effects, introducing concepts such as "Data colonialism and technopolitical algorithmic modulation, subjection and neoliberal war" (Da Silveira, 2020); the idea of "Citizens replaced by algorithms" (Canclini, 2021); the concept of "Liquid Surveillance" (Bauman, 2014); approaches on "Multidoor technology and justice" (Fux *et al.,* 2021); "Digital colonialism as a new form of imperialism in the network society" (Da Silveira, 2021); the phenomenon of "Algorithms of oppression" (Noble, 2022); the implications between "Democracy and the invisible codes" (Da Silveira, 2019); the power of "Big Tech" (Morozov, 2018); "Technopolitics of surveillance" (Bruno *et al.,* 2019); and the "Algorithms of mass destruction" (O'Neal, 2016). These studies unveil the social transformations and the new dynamics of power and control imposed by digitalization, offering a critical overview of the influence of technologies on social, political, and economic life.

There is an intertwined relationship between the human and technological artifacts in such a way that repercussions can be observed in different approaches: (i) "Will we all work for an intelligent machine or will we have intelligent people around the machine?" (Zuboff, 2021, p. 17) – a critical view of what would be, more than a home, exile in the digital future under the yoke of surveillance capitalism; (ii) the transcendence of an analogical and disciplinary society to a society of control "(...), which no longer function by confinement, but by continuous control and instantaneous communication, (...) It is the societies of control that are replacing the disciplinary societies. (Deleuze, 2013, p. 220).

But why enter into the reflections above if the assumption of this manuscript is to compare the influences of algorithmic society on the economic-financial dynamics and foster a (crypto)market of securities and "*Initial Coin Offer*"? The power of algorithms would be an answer to be considered; In addition, new technologies have created (crypto)realities and, in this context, the prefix "crypto" is now conjugated with: market, assets, economy, etc. However, the need for a critical view of and, in this aspect,

> “(...)It is understood that the critical theory of technology was developed as a way to present a technological dialectic about the contemporary society rooted in values and efficiencies that differentiates it from other models that believe in hierarchical, controlling and dominant discourse. From this practice, it is seen that technology is not just a tool that sucks the goods of nature. On the contrary, technology should collectively influence the development of social relations, since the critical theory of technology weakens instrumentalist discourses of other currents of thought." (Rocha; Nakamoto, 2023, p. 357)

The promotion of digital technologies has been widely discussed, as noted above, in reflections on the role of "digital information and communication technologies in contemporary society" (Rocha; Nakamoto, 2023). The analysis brought by the study reveals how these technologies profoundly shape social relations, including (crypto)economic ones, evidencing their disruptive character by breaking with previously established paradigms in socioeconomic interactions.

Technology, by changing these dynamics, introduces a transformative power that, when it comes to algorithms, is programmed by humans under specific parameters. But what are the ideological and political beacons that guide the "programmer"? This fertile soil raises questions about the ethical and ideopolitical foundations that configure algorithmic development, while its implications are already manifested in (crypto)technological realities.

These transformations are reflected in everyday practices such as frequent flyer programs and virtual currencies in games, which paved the way for the popularization of

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ISSN: 2358-2472

technologies based on value-added "tokens". In this context, the "*Crypto Market Currency*" (2023) illustrates the growing adoption *of Blockchain* as a self-regulated basis for the crypto market, consolidating itself as a dynamic and decentralized market parameter. This new reality not only endorses *Blockchain* as a reference technology, but also reinforces the rupture with conventional models of economic control, by allowing transactions and values to be managed independently of traditional mechanisms; in this way, the (crypto)market fosters (crypto)capital.

Semiotics is essential to interpret the impact of (crypto)technologies and algorithms on the economic-financial market. ICOs and crypto assets go beyond technical functionality, incorporating symbols of trust, innovation, and decentralization that underpin their legitimacy. Algorithms programmed with ideological values shape economic narratives, resignifying practices and creating paradigms in the (crypto)market. Understanding this semiotics provides a worldview, and helps to decipher the social, ethical, and financial meanings and implications of these disruptive technologies. In this way, contextualizing parameters on the social studies of science and technology, under the focus of STS(I) innovations, demands an interdisciplinary worldview to analyze (dis)fits in the spatio-temporal web of socioeconomic relations involved in realities expanded by virtualization,

> "But the problems that the Semiotics of Law faces today are different from those found at the time of its birth and the affirmation of the scientific method. Not only the epistemic attitude of investigation — consisting of linking the research to the dimension of the text (texte) (Greimas, 1974, p. 25)10 — it has been unfolding on new scales, as well as the contemporary methodological transformations operated by the post-Greimasian tendencies of the École de Paris. It is a fact that Semiotics is modified (between continuities and discontinuities). (...)". (Bittar, *apud* Greimas (1974), 2021, p. *ii*).

Disruptive technologies and the expansion of (crypto)realities have (re)configured the capital market on new scales with the blockchain, consolidating itself as a decentralized base. In this context, (dis)fits are observed through the modification of semiotics, between continuities and discontinuities (Bittar, *op. cit.*). Innovations challenge traditional regulatory systems and create a tokenized economy, highlighting ICOs as protagonists. The next item will analyze the functioning of the (crypto)capital market in this technological environment and its impacts on the global financial space.

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CAPITAL MARKETS

To begin the analysis of (crypto)capital, it is relevant to note that the financial market includes both the securities and capital markets, including funding and investment instruments. Historically, the concept of securities included a range of securities, such as "(...) shares, debentures, subscription bonuses, coupons, rights, subscription receipts and split certificates arising from such securities" (Tomazette, 2014, p. 415). In the 1970s, in a still analog context, this definition reflected article 2 of Law 6,385/1976, which created the Securities and Exchange Commission (CVM) to regulate the sector.

In 2001, already in the digital age, Law 10,303/2001 modified Law 6,385/1976 to modernize the regulation of the securities market in Brazil. Among the main objectives, the adaptation to globalization and technological innovation stood out, which pressured the market to expand its reach and align with international standards, in addition to strengthening the CVM's inspection and regulatory power. In this context, the redefinition of the concept of "securities" has become essential, as digital advancement has introduced new assets, such as cryptoassets, that defy traditional classifications and require regulatory updating.

Law 10.303/2001, therefore, represented a response to the immediate changes and a milestone to anticipate future challenges brought about by economic digitalization. With the emergence of cryptocurrencies and other cryptoassets, there is a need to reassess the scope of the concept of securities, evidencing a transformation in the scope of the capital market and requiring a continuous review of legal and financial understanding to keep up with new digital transactions.

The fact is that the real estate securities, highlighted above, are regulated by Normative Instructions of the Brazilian Securities and Exchange Commission (IN-CVM); in this way, the regulation, previously observed, orbited, among other scenarios, the Initial Public Offering (*IPO*); however, the immersion of society in relationships dematerialized by the "power of https://www *."* established new socioeconomic, political, cultural paradigms, etc., and in this context

> "For Bacen (2016), innovations have the ability to change the state of equilibrium of the markets. In addition, the development of new technologies, combined with the increase in the use of electronic means by citizens, has led to several transformations in the financial system. Thus, the incentive of the Central Bank is evident (...)." (Bertolla *et al*. 2023, p. 06).

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If innovations have the potential to (un)balance the market, the tokenization of economic relations has further boosted the dematerialization of securities, given the natural increase in the use of electronic means by citizens who, from the outset, could be recognized as a (crypto)technospheric human. From Bauman's point of view, liquid modernity is characterized by fluidity and constant adaptation (Bauman, 2001), and the market follows these changes, adjusting to include phenomena such as cryptocurrencies. While in the analog era fiat currencies circulated under the regulation of Central Banks, in the digital and algorithmic society (crypto)currencies and (crypto)assets, supported by a system of self-regulation, offer a new perspective for liquidity described by Bauman. This view is interconnected with Manuel Castells' (2000) conception of the network society, where economic relations, now tokenized, reflect the interconnection and adaptability that characterize technological modernities and, in this aspect,

> "Tokenizing" economic relations implies the perception that there is a technological construct, guaranteeing the necessary legal certainty, to support the glimpse of a cryptoeconomy and a cryptomarket. *Blockchain*, understood here as a disruptive technological innovation, is one of the pillars for the immersion of the algorithmic society in cryptoreality (Montefusco; Calissi; Silva, p. 15).

The human inserted in the technosphere, immersed in expanded realities and in the gradual dematerialization of socioeconomic, political, and cultural relations, is impacted by cryptotechnological advances, which bring new meanings to these spheres. The "token" today holds a significant role, and the tokenization of the economy has a transformative effect, challenging and profoundly reshaping the structure of various socioeconomic sectors. This power conferred on tokens is carefully assigned, constructed, enhanced, and implemented in virtual (sub)routines, which in turn drive a range of interrelationships — including the tokenized cryptoeconomic ecosystem. From this perspective, "Technically, "token" is just another name for "cryptocurrency" or "cryptoasset". However, the word has been taking on increasingly specific meanings depending on the context (...)" (COINBASE, 2024). The issue of language and the way it orbits technospheric man expresses the impacts of new technologies, and, in the face of techno-scientific advances,

> "Jurists are sensitive to the problem of language, in the universe of Law. And this is because, currently, for jurists, the relationship between Law and Language – there, implied the word, the language, the text – is no longer merely instrumental, or even, what would be worse, merely accidental. The word, the language, the text are today considered as constitutive dimensions of the practices of Law, (...)". (Bittar, *apud* Bertrand (1999), 2021, p. *iii*).

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If jurists are sensitive, the conformation of ideopolitics that guarantee rights feeds back into conceptions for the construction of normative parameters, guidelines, guidance opinions, normative instructions, etc., observed below.

NORMATIVITY IN THE ERA OF SOCIOECONOMIC VIRTUALIZATION AND THE (CRYPTO)MARKET

In the context of Normativity in the Age of Socioeconomic Virtualization and the (crypto)market, the regulation of digital monetization and normative instrumentalization emerge as a pressing need for nation-states. While monetized economies have been recurring practices throughout history, the emergence of virtual currencies, economic tokenization, and crypto asset markets represent new and disruptive phenomena. With the advantages brought by the Digital Age, ideopolitics also emerge that seek to stabilize the relationships impacted by these cryptotechnological paradigms.

The absence of historical parameters to guide the regulation of cryptoassets creates an unprecedented scenario, in which the three-dimensionality of fact-value-norm still applies as a fundamental structure for political-social constructions in the face of innovations and new technologies. In this three-dimensional model, the fact refers to the virtualization of economic relations, encompassing the growing digitalization and dematerialization of transactions. The value reflects the hybridization of the monetary economy, now converted into data and digital tokens, idealizing a scenario of cryptoeconomy and tokenized markets. And as for the rule, the legislation is in the process of maturing, evolving and adapting to keep up with the transformations of the digital market, seeking to effectively regulate new economic flows.

It is relevant to highlight that, in the constitutional sphere, PEC 115 of 02/10/2022 introduced item LXXIX in article 5 into Brazilian law, ensuring that "the right to the protection of personal data is ensured, under the terms of the law, including in digital media" (BRASIL, 1988, emphasis added). This recognition, reflected infra-constitutionally by the General Data Protection Law (LGPD) - Law No. 13,709/18, evidences an adaptation of the law to the new digital and virtualized realities. This regulatory expansion follows the development of new technologies and brings with it the need for adequate legal frameworks, such as Bill No. 21/2020, which seeks to establish a regulatory framework for the development and use of Artificial Intelligence (AI). Normativity, therefore, adjusts to the

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demands of the digital age, establishing legal bases for the protection and governance of personal data in a scenario of constant innovation.

In the process of evolving the normative guidelines that aim to regulate virtualization and the new expanded realities, Law No. 14,478, of December 21, 2022, stands out as a regulatory framework, establishing guidelines for the provision of virtual asset services and for the supervision of companies that operate with these assets. In this context, it is observed that

> Article 3 For the purposes of this Law, a virtual asset is considered to be a digital representation of value that can be traded or transferred by electronic means and used to make payments or for investment purposes, not including:
> I - national currency and foreign currencies;
> II - electronic money, under the terms of Law No. 12,865, of October 9, 2013;
> III - instruments that provide their holder with access to specified products or services or to benefits arising from these products or services, such as points and rewards from loyalty programs; e (...) (BRAZIL, 2022, emphasis added).

(Crypto)economy, (crypto)market, virtual asset, electronic currency, digital currency, virtual currency, whether national or foreign, what is intended, after all, to regulate, standardize and protect? More than an issue, it is a provocation for reflection, because the dematerialization of relationships, already highlighted in this study, is a consolidated fact. Would the value here be represented by the emergence of *tokenized* coins? And the norm, then, the protection of virtual assets? But, which assets exactly? The regulation of these new elements has been the subject of extensive debate in several countries, and Brazil is no different. Some governments have opted for a more open approach, developing regulations that encourage market growth while ensuring consumer protection and combating illicit activities. In contrast, other countries have adopted restrictive measures, imposing prohibitions or strict regulations on the use and trading of cryptocurrencies. In this scenario,

> “(...) nine new jurisdictions with an absolute ban are Egypt, Iraq, Qatar, Oman, Morocco, Algeria, Tunisia, Bangladesh and China. The dramatic increase in jurisdictions banning or regulating cryptocurrency over the past three years is showing no signs of slowing down, as several governments are currently reviewing their options. In addition to the 51 jurisdictions with a ban on crypto assets, 103 have enforced anti-money laundering and countering the financing of terrorism (AML/CFT) laws, a threefold increase from the 33 jurisdictions with such laws in place in 2018." (COINTELEGRAPH, 2022).

Many nations, such as India, Estonia, Canada, the United States and the United Kingdom, have been dedicated to developing sophisticated regulations for the crypto

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market (COINTELEGRAPH, 2022). In addition to cryptocurrencies, the digital market in general faces regulatory changes in areas such as privacy, data protection, e-commerce, and taxation. In Brazil, for example, the discussion about taxing digital commerce reflects the interest in regulating the domestic money flow, considering the impact on the cryptoeconomy. However, the complexity of digital monetary traffic requires continuous and adaptable regulation, seeking a balance between innovation and consumer protection. Innovative legislation is being proposed to address cybersecurity, consumer protection, and competition in the digital environment. Regulations such as the GDPR in the European Union have set new standards for data protection, underscoring the need to balance technological innovation and consumer protection. The transnationality of these markets increases regulatory complexity, but there is a growing trend for international cooperation to create standards that meet the challenges of the digital market and virtual currencies, which are still mostly self-regulated.

In search of adaptation and justification, Brazilian legislation has followed the advancement of virtualized contexts of the cryptoeconomy, creating regulations to encourage technological innovation in this way

> COMMUNIQUÉ NO. 31,379, OF NOVEMBER 16, 2017
> Warning about the risks arising from safekeeping and trading operations of the so-called virtual currencies. "Considering the growing interest of economic agents (society and institutions) in the so-called virtual currencies, the Central Bank of Brazil warns that these are not issued or guaranteed by any monetary authority, (...)." (BCB, 2017, emphasis added)

Communiqué No. 31,379, of November 16, 2017, of the Central Bank of Brazil, warned about the risks of virtual currencies, emphasizing that these digital assets, although popular, are neither issued nor guaranteed by a monetary authority. Given the growing interest of economic agents, the Central Bank highlighted the lack of institutional guarantees and recommended caution in custody and trading operations, anticipating the need for regulation to protect consumers and ensure stability in the digital market; In time, the Brazilian Securities and Exchange Commission, adapting to the expanded realities arising from the expanded (crypto)realities of the algorithmic society, established:

> CVM. INITIAL COIN OFFERING
> Considering the advance of operations known as Initial Coin Offerings (ICOs), the CVM clarifies that it is attentive to recent technological innovations in the global and Brazilian financial markets. The Authority released a note in which it explained that it has been monitoring such operations and seeking to understand associated benefits and risks, either through internal forums, such as the Risk Management

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> Committee – CGR and the Fintech Hub, or discussions at the international level, such as in works developed by IOSCO. [...] ICOs can be understood as public fundraising, with the issuance of virtual assets, also known as tokens or coins, in favor of the investing public as a counterpart. Such virtual assets, in turn, depending on the economic context of their issuance and the rights granted to investors, may represent securities, under the terms of article 2 of Law 6,385/76. (CVM, 2017, emphasis added).

In view of the growth of operations known as *Initial Coin Offerings (ICOs),* the Brazilian Securities and Exchange Commission (CVM) has shown its attention to technological innovations in the financial markets, both global and Brazil. In an official note, the CVM informed that it monitors these operations to assess their benefits and risks. This monitoring takes place through internal committees, such as the Risk Management Committee and the *Fintech Hub*, and international discussions with the International Organization of Securities Commissions (IOSCO). ICOs are public fundraising, issuing virtual assets (tokens or *coins*) that, depending on the context and the rights granted, can be considered securities by Law 6.385/76.

A "*Fintech Hub*"*?* now, in addition to the question of language (Bittar, *op. cit.*, p. *iii*), such a context has already been the subject of reflections where "Fintechs are deeply associated with innovative business models, (...)" (Köche *et al.,* 2024, p. 406); of refined pertinence to the context under discussion on the influence of the algorithmic society and economic-financial dynamics, Köche's study (*op. cit.*), because the social-economic conformation or (re)adjustment in the assimilation of a (crypto)economy and (crypto)market of securities lacks new *expertise,* in the face of professional (crypto)techno-scientific postures that can provide paths, not only for (crypto)business, but also due legal certainty for investors or anyone immersed in (crypto)realities.

In this way, borrowing from the study "Business model innovation strategies in fintechs" (Köche *op. cit.*), relevant learnings are observed in the vivid and experienced (crypto)social context of contemporary times:

> "Data monetization comprises the use of data to improve the value proposition of the business model, in addition to influencing the other components of the model (CARIA, 2017). For the authors, the data can also be used to implement improvements in the products offered, or to create new offers (CARIA, 2017) [...] The customer-centric focus indicates that fintechs concentrate the business model around a specific consumer segment (CARIA, 2017). [...] Ecosystems involves the formation of strategic network partnerships in order to generate value (ADNER; KAPOOR, 2010; CARIA 2017). (p. 407)" (Köche *et al.,* 2024, p. 406-407).

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Data monetization represents a crucial axis in the development of modern business models, where the data collected is used to generate value and optimize product and service offerings. This process not only enhances the value proposition to the consumer, but also extends the company's ability to adapt quickly to market demands. In the context of "*fintechs*", this focus on data monetization allows for an in-depth understanding of customers, with the aim of creating personalized and innovative solutions; On the other hand, strategic partnership ecosystems are key to enhancing the value of the services offered. Through collaboration networks and partnerships with other companies, *fintechs* and other technology organizations create an environment of synergy, where resources and knowledge are shared to promote innovations and expand the scope of their services. These partnerships strengthen the ability to respond quickly to market changes and add significant value to the consumer experience.

On the other hand, as well observed by Corrêa (*et al.,* 2024, p. 7242): "the proliferation of "internet bills of rights", which can be used as self-regulation instruments by these companies, raises the question of the legitimacy and effectiveness of non-state mechanisms for the protection of rights (...)"; although the mention does not directly address the "Algorithmic Society and the Semiotics of Initial Coin Offers (ICO)", It flanks reflections on the escalation of data monetization, the dematerialization of socioeconomic relations, and the clash over state regulation and market self-regulation. The legitimacy and effectiveness of self-regulation instruments can be understood as affronts to the protection of rights, because (crypto)technological disruptions are inserted in the context of the promotion of "a new market" which, in turn, is developed here in the scenario of: "Transformations in the (Crypto)Market".

Market change? Now, ICOs are a paradigmatic disruption to those humans set in analog relationships; Bringing up *the analog* is pertinent from an angled perspective in this study: there are digital islands that, even in the face of an informational scenario, do not follow the (crypto)development;

> Neologisms and Anglicisms erupt in the everyday language of Man and become common; In this context, "zipar", "upar", "atachar", "streaming", "meeting", "startup", "blog", "chat", "hashtag", "forward", "key account" are examples. And why not the prefix "crypto"? This has taken shape and has become an avant-garde disruption of "yesterday" that, in turn, adduces new exploratory fields for different socioeconomic and political activities. (Montefusco; Shah; Calissi, 2024, 308).

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If knowledge dominates ignorance, it is reasonable to say that society, as a whole, has tools, or at least a sufficient cognitive structure, to assimilate and interpret information in the digital age; then, it is feasible to naturally accept the existence of "*chailets, airdrops,* SAGA token, a software development kit (SDK) of the Cosmos blockchain, *traders,* Atoms, *stackings*" (UOL, 2024) as a popular and usual language.

Is Initial Coin Offer part of this informational myriad? Undoubtedly, not for those who orbit the *Fintech Hub*. The above exposition is purposeful to bring elements that corroborate the necessary (crypto)financial education; But for whom? Can analog choose to remain an islander? An issue to be addressed in future studies; however, a necessary methodological cut is made, anguishing reflections on ICOs.

Again, the issue of semiotics; it plays an essential role in understanding the transformative impact of tokenization and *blockchain* on the capital market. Tokenization not only redefines the functionality of financial assets but also introduces new cultural and economic meanings associated with trust, innovation, and decentralization. Tokens, as units of symbolic value, transcend their technical utility and become vehicles for narratives that shape the perceptions of investors and economic agents. In this context, the prefix "crypto" carries a semantic weight that reflects the disruptive potential of these technologies, challenging traditional notions of control and ownership. The semiotics of these innovations is therefore an indispensable tool for interpreting new parameters of the digital market, helping to decipher the messages underlying the practices and policies that are (re)shaping the global economy. According to Fontanille (2016, p. 02), "Most of the great questions of our time imply an initial approach from the Human and Social Sciences (...)" and, under this premise, it is feasible to reflect on (crypto)innovations.

In the face of the advance of tokenization and the transformations promoted by disruptive technologies, the capital market is going through a phase of profound resignification. The emergence of cryptoassets and ICOs represents a paradigmatic shift, expanding the reach of the financial market beyond analog borders. These new elements challenge nation-states, investors, and institutions to rethink the foundations of legal certainty, transparency, and innovation in the digital market. Next, the analysis of the (crypto)securities market, focusing on ICOs as protagonists of this transformation that shape the future of economic and regulatory interactions, will be compared.

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(CRYPTO)SECURITIES MARKET AND INITIAL COIN OFFER

The crypto market and the phenomenon of *Initial Coin Offerings* (ICOs) have aroused the interest of investors and regulators globally, especially due to the possibility of new assets and fundraising methods. In Brazil, the Brazilian Securities and Exchange Commission (CVM) and the Central Bank of Brazil (BCB) have adopted measures to regulate and clarify the legal treatment of these assets, in order to protect investors and ensure the stability of the financial market.

It is necessary to observe that (crypto) expanded realities, whether these are crypto-economy, technology, currencies, orbit initiatives fostered by (crypto) entrepreneurs. Perhaps it is redundant to use the prefix above to circumstantiate the cryptomarket of securities and ICOs, however, a semiotic glimpse about cryptocurrency is valid, as the initiative itself is not automatically a company and there are nuances to be considered: (i) cryptocurrencies is a digital asset based on "*blockchain*" technology", which can be decentralized (Bitcoin) or managed by a centralized entity (Stablecoins); In this way, they are not constituted as a company, but rather an instrument that can have market value based on factors such as supply, demand, utility and speculation; Conversely, (ii) platforms or organizations that create and maintain cryptocurrencies may be linked to a legal entity (a company, a foundation, etc.). What is certain is that this entity can develop the protocol, manage the initial launch (ICO), or even promote the use of the currency. In this context, for example, the "*Etherium Foundation*" that supports the development of the "*Etherium*" ecosystem, or "*Ripple*" (XRP), associated with companies such as "*Ripple Labs*", which have a corporate structure.

The (crypto)market value of a cryptocurrency is calculated by multiplying the market price by its circulating supply, which does not reflect the value of any company or organization behind it. "*Bitcoin*" does not have a company "behind it", but it does have a market cap;*Ripple Labs*" has a different market cap than "*XRP*" in that the company can generate revenues through services that go beyond the currency. So, how to define the values for (Crypto)securities market and ICOs? This is a concern that was clearly exposed by Fully (*et al.,* 2024, p. 9438) in his study on "Effect of Regulation on Analysts' Forecast Error in the Brazilian Capital Market", stating that: "Enterprise value is a relevant measure that can influence analysts in their forecasts and direct how this affects future stock prices." Although Fully's study (*op. cit*.) orbits market analysis for "stocks" and possibly initial public offerings (IPO), these are regulated by the CVM, just like ICOs.

In this way, it remains necessary to observe brief conceptual elements about *ICOs*, as they are public fundraising mechanisms, usually used by technology companies and startups, to finance new projects through the issuance of digital assets, known as *tokens* or *coins*. Depending on the economic context and the rights associated with the tokens, these assets may be classified as securities, under the terms of article 2 of Law 6,385/76. This places some *ICOs* under the competence of the CVM, and it is necessary, in certain cases, to comply with securities rules, in this way the CVM Guidance Opinion 40 that started to protect cryptoassets and the securities market, namely:

> Cryptoassets are digitally represented assets, protected by cryptography, that can be the subject of transactions executed and stored through distributed ledger technologies *(DLTs).* Usually, cryptoassets (or their ownership) are represented by *tokens*, which are intangible digital securities. (CVM, 2022a).

There was already a domestic normative apparatus, as Law No. 6,385/76 in article 2 defines what constitutes a security, a relevant criterion to determine whether *or not a token* offered in an ICO is regulated by the CVM; in addition, Law No. 14,478/2022 (Cryptocurrency Framework) – established a regulatory framework for the provision of virtual asset services that, in turn, it regulates operations involving cryptoassets; although it does not specifically deal with *ICOs*, it creates a regulatory environment for operations with digital assets and defines criteria for their trading in the country.

In time, CVM Normative Instruction No. 588/2017, revoked by CVM Resolution No. 88, of April 27, 2022, which in turn was prepared to update and regulate public offerings for the distribution of securities issued by small companies, in an approach known as "*equity crowdfunding*" (CVM 88/2022). This rule replaces CVM Instruction No. 588 and aims to facilitate the access of small investors to investment opportunities, while increasing the protection and transparency of operations. Among the main points of Resolution No. 88/2022, the following stand out:

> Funding Limits: Establishes funding limits for small businesses in simplified public offerings.
> Investor Protection: It requires the provision of detailed information about the risks, the project and the rights involved in the operation, increasing transparency.
> Crowdfunding Platforms: Regulates the operation of crowdfunding platforms, imposing requirements for their registration and operation. (CVM n. 88, 2022, emphasis added)

Investment crowdfunding, another of those anglicisms, according to article 2 of CVM Resolution No. 88/2022, allows small companies to raise capital from several investors,

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using digital platforms, without the need to go through the full CVM registration process, promoting more democratic and simplified access to financing. Now, the *fintechs* exposed by Köche (*et al.,* 2024) are inserted in this context. In addition, with CVM Resolution No. 158/2022, it brought up some innovative aspects, including the improvement of rules to make the investment process safer and more inclusive, in addition to ensuring that platforms adopt appropriate security practices, favoring fundraising through digital platforms; in this way, paragraph *b,* article 16 of CVM Resolution No. 88/2022 was amended, because where it read "b) potential buyers are active investors, under the terms of article 2, II" (CVM, 2022a), it reads: "b) potential buyers are active investors, under the terms of article 2, II, subject to the provisions of paragraph 3;" (CVM, 2022b); Paragraph 3 states:

> Paragraph 3 - The small business company is allowed to limit the potential buyers mentioned in item "b" of item I only to the current investors of the small business company, in which case the conditions and obligations related to active investors must be read as referring to this smaller universe of investors, observing paragraph 3 of article 15." (NR) (CVM, 2022b).

The rule allows the small business to choose to restrict an investment offer only to investors who are already part of the company, applying to them the conditions as if they were the only group involved, provided that the provisions of paragraph 3 of article 15 are respected. What is certain is that Brazil, like other jurisdictions, is moving forward to regulate the crypto asset market and, especially, *ICOs*. Recent legislation and normative instructions show a movement of adaptation to technological innovations in the financial sector. The authorities seek to balance investor protection with the promotion of innovation, establishing rules that allow the safe development of the digital market.

What is certain is that the current legislation still evolves to keep up with the complexity of cryptoassets and *ICOs*, and the interaction between internal regulatory frameworks and international guidelines, such as those of the International Organization of Securities Commissions (IOSCO), is increasingly relevant to maintain coherence and security in the securities market; it is certain that, *ICOs* and the crypto market represent a significant evolution in financial markets, promoting new investment and financing opportunities, but also requiring careful regulation to protect investors and maintain economic stability. The CVM and the Central Bank have played key roles in this regulatory process, seeking to adapt the legal framework to the new demands of the digital market.

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Standardization is still ongoing, and the aforementioned legislation points to a future of integration and more comprehensive regulation for the crypto sector in Brazil.

ICOs are an innovative form of public fundraising based on the issuance of tokens through blockchain technology; Tokens can represent access rights, profit sharing, or be used as virtual currency. The Brazilian Securities and Exchange Commission (CVM), through normative instructions such as CVM guidance opinions 40 and 88 and normative instruction IN-CVM 588, in line with Law 14,478/2022, seeks to classify such currencies when they constitute securities.

The process of an ICO involves the publication of (i) a "*whitepaper*": a document that details the purpose of the project and benefits, (ii) the technology involved – based on "*blockchain*", (iii) the total tokens issued and how the funds raised will be used, (iv) the creation and distribution of tokens, created, for example, on platforms such as "Etherium" – using smart contracts, based on the ERC-20 standard – a technical standard used to create and issue tokens on the blockchain.

In this context, ERC-20 tokens widely known as "*USDT*" (Tether), *"Link*" (Chainlink) and "*UNI"* (Uniswap) stand out, which follow the ERC-20 technical standard. This standard defines basic functions essential for the interoperability and security of tokens, namely: a) "*total supply*", which determines the total number of tokens issued; b) "*balance of*", which presents the balance of tokens at a specific address; c) "*transfer*", which enables the direct transfer of tokens between addresses – understood, in the algorithmic society, as "IP address", unique numbers assigned to devices connected to the internet or local networks; and d) "*approve*", which allows you to authorize another address (IP) to use a specific amount of tokens (ETHEREUM, 2024). In addition, these tokens are traded on *exchange platforms*, enabling the exchange of (crypto)assets, which introduces regulatory challenges to digital governance. In this scenario, the normative instructions of the Brazilian Securities and Exchange Commission (CVM) seek to balance technological innovation with the security of the technospheric human, monitoring operations to prevent and curb fraud. At the same time, the Cryptocurrency Framework (Law 14,478/22) establishes comprehensive guidelines for the crypto asset market in Brazil, reinforcing the need for adaptive regulation to new digital dynamics.

The advancement of ICOs and the integration of cryptoassets into the economic-financial market not only transform the dynamics of fundraising, but also reconfigure the meanings and values attributed to these new instruments. In this scenario, semiotics plays

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a crucial role in decoding the new symbols and narratives built around tokens, smart contracts, and blockchain platforms, expanding the understanding of the interactions between technology, economy, and society. The standardization of these assets by the CVM and Law 14,478/2022 highlights the attempt to balance innovations and legal protection, but also reflects the need to interpret the meanings attributed to cryptoassets in the context of a digital and algorithmic society. Thus, ICOs are not just financial instruments; they are also representations of a new expanding economic reality that connects technical concepts, such as the ERC-20 standard, to regulatory and cultural challenges.

FINAL CONSIDERATIONS

The advancement of disruptive technologies, represented mainly by algorithms and economic tokenization, reveals the transformative power of (crypto)realities. In a scenario where the dematerialization of relationships directly affects the economy, politics, and culture, algorithms shape new paradigms that increasingly influence the daily lives of contemporary societies. This virtualization movement, intensified by the popularization of assets such as tokens and the adoption of Blockchain technology, questions and redefines traditional models of economic control, proposing a decentralized and self-regulated dynamic, capable of reshaping the foundations of global financial markets.

The advancement of (crypto)markets and the transformation of securities through technological innovations such as tokenization reflect a society that migrates from analog relationships to expanded digital realities. With the emergence of *Initial Coin Offerings* (ICOs) and the integration of cryptoassets into economic systems, there has been a reformulation of regulatory paradigms, challenging traditional notions of securities. In Brazil, for example, the legal framework has adapted to encompass these new assets, highlighting the need for continuous regulatory updating to respond to rapid digitalization and the emergence of new financial products.

The regulatory framework around cryptoassets shows that the virtualization of the economy brings with it the urgency of a legal framework that keeps up with the complexities of the digital market. Data monetization and the formation of strategic partnership ecosystems, common in fintechs, become central to the personalization and innovation of business models. However, this dynamic requires nation-states like Brazil to establish guidelines that protect consumers and ensure economic stability, without losing

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sight of encouraging innovation. In this scenario, the Central Bank and the CVM play key roles in monitoring operations with cryptoassets and offering guidance on safe and regulated practices.

Finally, the transition to a digital age has profound implications for (crypto)financial education, which becomes a necessity for both the public and financial institutions. In an algorithmic society, where terms such as "token", "airdrop" and "blockchain" are part of the common vocabulary, understanding the tools and risks of the crypto asset market is vital. The challenge is to balance digital inclusion and the democratization of information with legal and financial security, promoting an environment where knowledge is able to overcome ignorance and where "crypto" becomes an integral and transformative part of economic and social daily life.

The increasing complexity of (crypto)markets Brazil, in line with other jurisdictions, seeks to develop a regulatory framework that allows for a balance between innovation and investor security, keeping up with the rapid evolution of the digital market. Rules such as Law No. 6,385/76 and the recent Law No. 14,478/2022 reflect the State's commitment to adjusting regulatory frameworks to the demands of the crypto asset market, promoting a framework that favors transparency and security.

The development of regulations, such as CVM Resolution No. 88/2022 and CVM Resolution No. 158/2022, highlights the need to relax funding rules and create adequate conditions for small investors. The standardization of investment *crowdfunding*, for example, provides small companies with a more democratic financing alternative, facilitated by the use of digital platforms. These standards also meet the demand for safe practices in the digital environment, ensuring that participants have access to detailed information about risks and rights, as well as protection against possible fraud.

In view of the innovations that emerge globally, Brazil adopts a strategic posture to align itself with international guidelines, especially with the International Organization of Securities Commissions (IOSCO), to maintain consistency and integrity in the securities market. The adaptation of regulations to new digital contexts demonstrates a continuous movement to strengthen financial governance, allowing the country to position itself competitively and safely in the crypto asset and ICO scenario, reinforcing the commitment to investor safety and the development of the digital market in a sustainable way.

The reflexes of the algorithmic society and the semiotics of ICOs lay bare transformations in the (crypto)market, transcending the regulatory technical aspects and

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demanding a deep semiotic understanding, as evidenced throughout this study. According to Fontanille (2016), current issues in the space-time plot imply an approach from the human and social sciences, which reinforces the need to interpret ICOs not only as financial instruments, but as digital signs that resignify traditional economic practices and introduce new narratives to the financial market. In this context, tokenization emerges not only as a technological tool, but also as a symbol of transition to a decentralized and dematerialized digital economy, in an environment of expanded realities.

In addition, as highlighted by Bittar (*apud* Bertrand), language must be considered in constitutive dimensions for the construction of Law, showing that digital assets, as signs, are inserted in a semiotic field that requires new normative and epistemological interpretations. The semiotics of Law also faces new challenges, which go beyond traditional textual analysis to encompass transformations. Thus, tokenization not only (re)constructs values and socioeconomic relations in a virtual environment, but also (re)defines the normative and symbolic foundations of the interaction between Law, economics, and (crypto)technologies.

As established, in Brazil, guidance opinions, normative instructions and legislation applied by the CVM and the Central Bank (BCB) not only regulate, but also create contours, forms and meanings to these new contexts, thus conferring legitimacy to practices that were previously unconventional. It is concluded that the semiotic understanding of these transformations is crucial for the balanced integration between technology, economy and society, allowing Brazil and other nations to develop a digital market that is at the same time inclusive, safe and capable of fostering innovations.

REFERENCES

1. Bauman, Z. (2001). Modernidade líquida. Rio de Janeiro, Brazil: Zahar.

2. Bertolla, T. T., Machado, N. S., Traverso, L. D., & Sperry, M. V. A. (2023). Como as transformações digitais afetam as cooperativas de crédito? O caso de uma cooperativa de crédito da região sul do Brasil. Boletim de Conjuntura (BOCA), 15(45), 1–25. https://doi.org/10.5281/zenodo.8320529. Available at https://tinyurl.com/44bp25nm. Retrieved on October 30, 2024.

3. Bittar, E. C. B. (2021). Semiótica, poder e intolerância: Populismo, direitos humanos e a crise do Estado Democrático de Direito. Estudos Semióticos, 17(1), 59–81. Available at https://www.revistas.usp.br/esse/article/view/227098/206617. Retrieved on January 19, 2025.

4. Brasil. Banco Central do Brasil. (2017). Comunicado nº 31.379, de 16 de novembro de 2017. Alerta sobre os riscos decorrentes de operações de guarda e negociação das denominadas moedas virtuais. Available at https://tinyurl.com/53a49jjj. Retrieved on November 9, 2024.

5. Brasil. Comissão de Valores Mobiliários. (2017). Initial Coin Offering [Nota]. Available at https://www.gov.br/cvm. Retrieved on November 9, 2024.

6. Brasil. Comissão de Valores Mobiliários. (n.d.). Parecer de Orientação CVM 40. Os criptoativos e o mercado de valores mobiliários. Available at https://conteudo.cvm.gov.br/legislacao/pareceres-orientacao/pare040.html. Retrieved on October 30, 2024.

7. Brasil. Comissão de Valores Mobiliários. (2022a). Resolução CVM nº 88, de 27 de abril de 2022. Dispõe sobre a regulamentação das ofertas públicas de distribuição de valores mobiliários por empresas de pequeno porte. Available at https://www.in.gov.br/en/web/dou/-/resolucao-cvm-n-88-de-27-de-abril-de-2022-396720214. Retrieved on November 9, 2024.

8. Brasil. Comissão de Valores Mobiliários. (2022b). Resolução CVM nº 158, de 28 de junho de 2022. Altera a Resolução CVM nº 88, de 27 de abril de 2022, que dispõe sobre a regulamentação das ofertas públicas de distribuição de valores mobiliários por empresas de pequeno porte. Available at https://www.in.gov.br/en/web/dou/-/resolucao-cvm-n-158-de-28-de-junho-de-2022-414537821. Retrieved on November 9, 2024.

9. Brasil. Comissão de Valores Mobiliários. (2017). Instrução CVM nº 588, de 13 de julho de 2017. Dispõe sobre a oferta pública de distribuição de valores mobiliários por meio de plataformas eletrônicas de investimento participativo. Available at https://tinyurl.com/33hbr6zv. Retrieved on November 9, 2024.

10. Brasil. (1988). Constituição da República Federativa do Brasil de 1988. Available at https://www.planalto.gov.br/ccivil_03/constituicao/constituicaocompilado.htm. Retrieved on April 11, 2024.

11. Brasil. (2018). Lei nº 13.709, de 14 de agosto de 2018. Lei Geral de Proteção de Dados (LGPD). Available at https://tinyurl.com/bdh5hacj. Retrieved on April 11, 2024.

Revista ARACÊ
ISSN: 2358-2472

12. Brasil. (2022). Lei nº 14.478, de 21 de dezembro de 2022. Marco legal das criptomoedas. Available at https://tinyurl.com/3f8a787z. Retrieved on April 11, 2024.

13. Brasil. Senado Federal. (2023, December 12). Projeto de Lei 21/2020. Estabelece fundamentos, princípios e diretrizes para o desenvolvimento e a aplicação da inteligência artificial no Brasil. Available at https://www25.senado.leg.br/web/atividade/materias/-/materia/151547. Retrieved on June 18, 2024.

14. Bruno, F., et al. (Eds.). (2019). Tecnopolíticas da vigilância: Perspectivas da margem. São Paulo, Brazil: Boitempo Editorial.

15. Canclini, N. G. (2021). Cidadãos substituídos por algoritmos. São Paulo, Brazil: EDUSP.

16. Castells, M. (2000). Sociedade em rede. São Paulo, Brazil: Paz e Terra.

17. Castells, M. (2002). A era da informação: Economia, sociedade e cultura (Vol. 1). São Paulo, Brazil: Paz e Terra.

18. Castells, M. (2010). O poder da identidade – A era da informação: Economia, sociedade e cultura (Vol. 2). São Paulo, Brazil: Paz e Terra.

19. Coinbase. (2024). O que é token? Available at https://tinyurl.com/2ysrkdny. Retrieved on August 12, 2024.

20. Cointelegraph. (n.d.). Número de países que proíbem criptomoedas dobra em três anos. Available at https://tinyurl.com/bdfaut4b. Retrieved on August 15, 2024.

21. Corrêa, J. R. C. C., Falcão, M. A., Abreu, C. S., Bueno, R. D., Bahr Neto, H., Dantas, E. F., Motta Junior, C. S., & Mascarenhas, R. de C. A. G. (2024). Do feudalismo à era digital: Uma história do constitucionalismo tributário e a busca por justiça fiscal e direitos humanos. ARACÊ, 6(3), 7229–7253. https://doi.org/10.56238/arev6n3-173. Available at https://periodicos.newsciencepubl.com/arace/article/view/1381. Retrieved on January 21, 2025.

22. Crypto Currency Market. (n.d.). Overall cryptocurrency market capitalization per week from July 2010 to April 2023. Available at https://tinyurl.com/52w2hhwj. Retrieved on July 26, 2024.

23. Da Silveira, S. A. (2019). Democracia e os códigos invisíveis: Como os algoritmos estão modulando comportamentos e escolhas políticas. São Paulo, Brazil: Edições Sesc.

24. Ethereum Foundation. (n.d.). ERC-20 token standard. Available at https://ethereum.org/en/developers/docs/standards/tokens/erc-20/. Retrieved on January 14, 2025.

25. Fontanille, J. (2016). A semiótica hoje: Avanços e perspectivas. Estudos Semióticos, 12(2), 9–21. Available at https://www.revistas.usp.br/esse/article/view/127608/124672. Retrieved on January 13, 2025.

Revista ARACÊ
ISSN: 2358-2472

26. Fully, R. M. P., Oliveira, A. S., Locatelli, O., & Da Silva, O. L. (2024). Efeito da regulação sobre erro de previsão de analistas no mercado de capitais brasileiro. ARACÊ, 6(3), 9426–9447. https://doi.org/10.56238/arev6n3-303. Available at https://periodicos.newsciencepubl.com/arace/article/view/1592. Retrieved on January 21, 2025.

27. Köche, I. G., Marco, D. de, Bobsina, D., & Barbieri, G. (2023). Estratégias de inovação do modelo do negócio em fintechs. Boletim de Conjuntura (BOCA), 14(42), 403–423. https://doi.org/10.5281/zenodo.8072536. Available at https://tinyurl.com/mux3czd8. Retrieved on November 11, 2024.

28. Montefusco, R. Z., Sousa, C. M., & Calissi, J. G. (2024). Direitos (cripto)realidade: Labirinto tecnocientífico? Feudalismo digital e a (in)capacidade regulatória na sociedade algorítmica fundamental na era digital. In C. Giolo Jr. et al. (Eds.), Direitos fundamentais na era digital (pp. 307–331). Uberlândia, MG: LAECC.

29. Montefusco, R. Z., Calissi, J. G., & Silva, K. G. (2023). A tokenização das relações econômicas no criptomercado. In O direito na realidade exponencial - Descentralização e os desafios da regulação frente às novas tecnologias [Recurso eletrônico on-line]. IV Congresso Internacional de Direito e Inteligência Artificial (IV CIDIA), Skema Business School, Belo Horizonte.

30. Morozov, E. (2018). Big tech. São Paulo, Brazil: Ubu Editora LTDA-ME.

31. Noble, S. U. (2022). Algoritmos da opressão: Como os mecanismos de busca reforçam o racismo. São Paulo, Brazil: Editora Rua do Sabão.

32. O’Neil, C. (2016). Weapons of math destruction: How big data increases inequality and threatens democracy. New York, NY: Crown.

33. Rocha, R. S., & Nakamoto, P. T. (2023). Tecnologias digitais de informação e comunicação na sociedade contemporânea: Um estudo teórico-crítico sobre sua utilização na educação. Boletim de Conjuntura (BOCA), 14(40), 351–371. https://doi.org/10.5281/zenodo.7844144. Available at https://revista.ioles.com.br/boca/index.php/revista/article/view/1147. Retrieved on November 11, 2024.

34. Tomazetti, M. (2014). Curso de direito empresarial. Teoria geral e direito societário (Vol. 1, 6th ed.). São Paulo, Brazil: Atlas.

35. UOL. (2024, January 6). SAGA: Nova blockchain prepara airdrop para investidores; veja como participar. Portal do Bitcoin. Available at https://portaldobitcoin.uol.com.br/saga-nova-blockchain-prepara-airdrop-para-investidores-veja-como-participar/. Retrieved on April 11, 2024.

36. Zuboff, S. (2021). A era do capitalismo de vigilância. Rio de Janeiro, Brazil: Editora Intrínseca.