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Cryptocurrencies in the international context: an interdisciplinary approach

Criptomonedas en el contexto internacional: un enfoque interdisciplinario

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Abstract:

This article offers a multidisciplinary approach to the study of cryptocurrencies through the analysis of different academic documents. Analysis is an effort to address the issue of such digital assets from an overview rather than a particular one. The objective is that cryptocurrencies are understood in their concept, origin and operation by those interested in the subject who are not immersed in it. Therefore, two theories that are the monetary theory and the economic theory of the law are considered to support the research in its several aspects such as the economic, legal, social, among others. The analysis makes it possible to identify common trends in the authors without departing from their own opinion of cryptocurrencies considering their discipline.

Keywords:

Cryptocurrency, Blockchain, regulation

Resumen:

El presente artículo ofrece un acercamiento multidisciplinario al estudio de las criptomonedas por medio del análisis de diferentes documentos académicos. El análisis es un esfuerzo por tratar el tema de tales activos digitales sobre una perspectiva general y no una en especial. El objetivo es que las criptomonedas sean entendidas en su concepto, origen y funcionamiento por los interesados en el tema que no están inmersos en él. Por lo tanto, se toman en cuenta dos teorías que son la teoría monetaria y la teoría económica del derecho para dar sustento a la investigación en sus diferentes aspectos como son el económico, jurídico, social, entre otros. El análisis permite identificar tendencias comunes en los autores sin apartarse de su propia opinión de las criptomonedas a la luz de su disciplina.

***Palabras Clave*:**

Criptomoneda, Blockchain, regulación

Introduction

Over the past decade, cryptocurrencies have become increasingly relevant in international economic, legal and technological debates. What started as a disruptive proposal after the financial crisis of 2008, is consolidated as a new digital financial ecosystem that challenges the traditional structures of emission and monetary control. It is decentralized operation based on Blockchain technology and cryptography poses opportunities for financial inclusion and efficiency in international transactions, but it also raises questions about its safety and stability regulation.

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Methodology

The present work is developed through a qualitative approach of documentary and exploratory type, oriented to understand the phenomenon of cryptocurrencies from a multidisciplinary perspective. The research focuses on the analysis of academic sources that address the functioning, uses, background, risks, and theoretical frameworks linked to cryptocurrencies in different contexts. The selection of sources was made on the basis of thematic relevance, topicality, disciplinary diversity and complete accessibility of the content. The analysis of the information was done through critical and comparative reading, respecting the authorship of each approach.

Background

The origin of cryptocurrencies could not be understood without considering economic, technological, political and even social factors that influenced their current conceptualization. For this reason, we consider the different contexts that are addressed in the analyzed literature as are the historical, ideological and technical ones, since these laid the foundations for their appearance and global expansion.

Although its first steps are in the nineties, as will be seen below, that the boom of cryptocurrencies is situated in the financial collapse of 2008, where, derived from this crisis, a large part of the confidence placed in traditional banking institutions and in the central banks of the countries was lost. This global economic problem hastens the need to look for other money alternatives, which were not so prone to the movements of the international financial system. Somehow, they sought an escape from the controls of traditional financial intermediaries. **[3]** In addition, these new forms of money had another attribute: they are not easy to regulate due to anonymity, and they were not subscribed to any judicial authority.

As a social precedent, the statement by Aranguren **[2]** draws attention, explaining that cryptocurrencies are promoted by ideas developed by the cyberpunk movements of the nineties. Such groups promoted the use of cryptography to promote online privacy and support decentralized organizational structures. In the same way, they thought of a more transparent and fair society that functions as a counterweight to what they thought would come as an economic ruin. It is therefore a movement of digital resistance against the centralized power of the State and the business sector, which is interesting since it gives cryptocurrencies an origin in the social thought of the time. Technologically, there is its maximum development in blockchain technology, which is based on previous investigations of cryptography and distributed networks, and which can be conceptualized as a decentralized online accounting record for internet commerce where financial intermediation was supposed to be eliminated traditional institutions. It is said that the Blockchain becomes the technological base on which current cryptocurrencies are built. **[11]** In this same scenario of the blockchain technology, the appearance of Bitcoin in 2009 is highlighted under the creativity of Satoshi Nakamoto, which is the first successful experiment of a digital monetary system and founds the foundations of many digital currencies that appear later. Therefore, Bitcoin emerges as the first cryptocurrency in the world.

To compare traditional money and cryptocurrencies, the first must have six characteristics: it must be scarce, difficult to copy, portable, durable, divisible and accepted and coveted by users. [5] If cryptocurrencies contain these elements that the money that moves in the world has, then it is when there is the accelerated acceptance that has had. In addition to the above, the Fintech ecosystem has favored the acceptance and adaptability of people to cryptocurrencies. The acceleration of the digitization of financial services by this ecosystem increased people's interest in having decentralized instruments such as cryptocurrencies. This is why technological innovations applied to the financial world created the conditions for digital assets to have rapid development and expansion in the world. [5]

On the legal side, it cannot be overlooked that the lack of regulation of cryptocurrencies generated gaps in international laws and norms, which, while allowing them to grow rapidly, also left a gap that was used for illegal activities such as money laundering or tax evasion. **[6]** Without entering into the debate about the ethics of cryptocurrencies or their users, such legal loopholes encouraged the use of digital assets. When the impact of cryptocurrencies became evident in the legal arena, monetary policy and the global economy, it was when interest began to be generated not only financially but also, political, legal and social to mention some of the stakeholders or, if any, affected by the advance of cryptocurrencies. **[12]**

Derived from this background, it is noted that the emergence of cryptocurrencies does not have its origin in a purely technological issue but in the intersection of several factors such as economic crises, advances in cryptography, loss of confidence in traditional financial institutions and even in ideological movements that seem to go unnoticed. It highlights the fact that the development of digital assets stems from the need for financial innovation as a response to traditional economic models. However, with its growth and progress, it makes clear that the challenges to face them are not simple, since, only in the arena of normativity even today there is much to do with the issue of legal gaps that have been generated. Therefore, it is important to consider the background of cryptocurrencies, not only to understand how they emerged but to explain why they continue to gain ground in different socioeconomic contexts.

Concepts

The concept of cryptocurrencies has evolved in recent years, and the different authors conceptualize it according to their discipline. Although there is a difference between their opinions, the truth is that they have common points like the one that cryptocurrencies are a form of digital money decentralized, created and managed by cryptographic algorithms without the need for a financial intermediary or a central issuing authority.

They are defined as digital assets that allow the transfer of value between users through decentralized networks, using cryptography to validate and secure transactions, which gives security and increases acceptance. So, it is noted that they have an independence from the common banking system. **[11]**

In the legal aspect, they have a definition that indicates that they are digital representations of value that do not have a legal status as currency, but can be used as a means of exchange, unit of account or reserve value in certain circumstances. Then, legally, it analyzes its implications not only in the legal field of countries but in the economic system. **[6]** In other words, in legal terms they are recognized as digital or virtual currencies that are not issued by any central authority and that function as a means of exchange. Which is useful for the discipline of law, but more research is still needed to define it clearly.

In other aspects of cryptocurrencies, they are technological manifestations of the advance of financial capitalism, for them it is not a purely monetary phenomenon, but it has its roots in the current processes of economic concentration. In a way, they say that cryptocurrencies are discriminatory since not everyone can use them so the monetary system with them is not democratic. [**3]**

In the topic of international trade, the analyzed authors comment that cryptocurrencies are digital exchange instruments that allow international payments, eliminating intermediaries and, in turn, make logistics processes more agile. This means that in the international trade arena it has a practical and security utility that is convenient for entities that carry out operations of this nature. **[7]** However, the lack of regulation and volatility of some cryptocurrencies means that, although it is already used in international transactions, they are not yet widely accepted as a frequent means of payment.

Therefore, it can be mentioned that the common denominator among the different conceptualizations of cryptocurrencies is that they are digital assets that serve as a medium of exchange. The technological aspect is addressed by all pointing out that it is a decentralized technology that provides certainty and security in transactions. In the same way, autonomy with respect to the central banks or traditional financial institutions is an aspect that stands out in common the concepts analyzed in the present work. The foregoing indicates that cryptocurrencies must be approached for study, under the perspective of different disciplines, for greater clarity when establishing a concept.

Theoretical approach

The broad spectrum generated by cryptocurrencies is studied in the light of different disciplines and theoretical frameworks, which highlights its multidimensional character. Each author analyzes these digital assets from different perspectives, whether legal, economic, technological or social, which strengthens the academic debate. On the theoretical side regarding cryptocurrencies, it becomes clear that the authors do not handle a plain and simple theory about cryptocurrencies. However, they use different theoretical approaches that academically support this paper. For cryptocurrencies, the monetary theory and the economic theory of law will be used, because it is not *per se,* a theoretical analysis of cryptocurrencies but an approach to the study of them. Both theories support the economic issue, but they also make clear the need to establish wider theoretical frameworks that allow combining classical economic aspects with technological advancement and other disciplines that involve the study of cryptocurrencies.

Monetary theory is a platform of analysis to explain cryptocurrencies. They challenge the hegemony of money issued by different countries. The very nature of these electronic coins generates gaps that cannot be explained by classical theory. For example, monetary theory has three important themes, the first being the control of inflation, the management of interest rates and the issuance of money as essential principles to ensure macroeconomic stability. But the emergence of cryptocurrencies, which are not issued by the different central banks, means that the state has less control over monetary policy. This leads to a break in the paradigms of classical monetary theory and different monetary policies. This electronic form of money generates the challenge of working in regulatory frameworks that achieve the coexistence of cryptocurrencies with current monetary policy. **[14]**

Thus, cryptocurrencies operating outside the centralized banking system diminish the effectiveness of conventional monetary policy instruments such as, for example, the short-term interest rate and the purchase and sale of government securities on the open market. This is explained by the fact that they reduce the demand for national money, in some way altering the circulation of money, which, among others, are fundamental aspects of monetary theory. In other words, the use of cryptocurrencies seriously affects the state's control over the monetary economy. This is a problem that is far from being explained only by the economy but is supported by other disciplines such as law.

It is precisely in the normative aspect, where it is based on the economic theory of law. According to this theory it is intended to evaluate the efficiency of the standards from an economic perspective. Thus, the laws have an economic impact on the society that establishes them; therefore, they have to be directed for social welfare. In the same way, an important factor in the protection of regulated agents. **[10]** In cryptocurrencies, it is essential to regulate their use and operation so that the population of the State that issues laws or regulations is not affected. This analysis is complicated by the global nature of cryptocurrencies, so the regulatory scope must have national and even more global approaches. It is of the utmost importance, according to this theory, that cryptocurrencies be regulated so that the states can control them and that their effects do not reach their countries or even their citizens.

There are many theories that can add to the construction of a more solid theoretical framework such as, for example, the theory of globalization since it is at the global level where operations with these digital assets can be developed. However, it should be clarified that, as the present work is an approach to the study of these digital assets, the theories mentioned above are those that deal with the subject in a way that facilitates its understanding. Therefore, once established a theoretical reference for cryptocurrencies, some of the uses that are given in a current panorama.

Operation

The operation of cryptocurrencies has its basement in a decentralized digital system that uses cryptographic technologies and consensus algorithms to validate, record and protect financial transactions without intervention of a central authority or a banking institution. The technical nucleus of all this process is Blockchain technology, thus, all the operation of cryptocurrencies is based in this system. For the purposes of this paper cryptocurrencies will be conceptualized and their operation will be explained according to several papers.

Cryptocurrencies are digital assets based on cryptography and validated and distributed node networks, where transactions are confirmed through computational processes known as mining. This structure ensures security, transparency, and resistance to external manipulation. **[8]** However, it is explained that Blockchain functions as a digital ledger composed of linked blocks, where each transaction is cryptographically verified and irreversibly added to the chain, ensuring the integrity of the entire system.

In more general terms, cryptocurrencies operate through mathematical algorithms that generate new cryptocurrency units and validate transactions without the need for state intervention. The value of these assets does not stem from physical backing but from market supply and demand. **[9]** Therefore, digital trust is a core element of this system. This digital trust compensates for the lack of backing by central banks through open-source transparency and users' consensus **[5]** In the field of international trade, cryptocurrencies are a part of a system where each user has control over private keys that allow them to carry out transactions. It is emphasized that validation is achieved through protocols agreed upon by participants without the need for central entities. This process brings with it regulatory and security risks if it is not accompanied by appropriate legal framework, as we remark in the analyzed theories in this paper. **[12]** For the International Monetary Fund, the environment of the cryptocurrencies for 2021 has grown rapidly amidst major episodes of volatility. Thus, the cryptocurrencies and their own characteristics of cryptography eliminate the financial third party and there is part of an articulated community based on cryptographic systems materialize consequences of these chains of signatures. **[13]** In the other hand, technology of cryptocurrencies and Blockchains applications have constant increase of activities. For example, in Latin America between 2017 and 2020 cryptocurrencies have 6% of the total of bitcoins worldwide. For 2021 it experiences an increment up to 15 %, it increases in more than 9 %. So, this region has a good acceptance of these crypto assets. Maybe this increase is due to the advantages that twenty-four hours per day cryptocurrencies changes can be recorded, in other words the cryptocurrencies markets never close operations so it is better than stock market that have a schedule to do operations. **[4]**

Uses

The potential of cryptocurrencies as a means of payment in international trade is very important. International trade has been marked by issues such as globalization, regionalization, digital transformation and a certain distrust of decentralized financial systems. Cryptocurrencies are born to remove pressure on the loss of credibility in the traditional financial system. **[7]**

One of the main uses is the means of payment in cross-border transactions where cryptocurrencies offer advantages such as speed, lower costs and the elimination of financial intermediaries. Unlike traditional bank transfers that can take days, crypto transfers can be made in seconds. This translates into a very attractive option for international trade, especially in sectors where speed and low cost are required in the execution of payments.

In the same way its use in e-commerce and social commerce are identified where social networks have facilitated the adoption of cryptocurrencies as a means of payment among users and digital entrepreneurs. The rise of digital e-commerce powered by global connectivity has created an enabling environment for cryptocurrencies to function as a tool for direct exchange without bank intervention.

Another use is as a digital asset with investment projection, people find in this digital asset a way to safeguard value, however, its high volatility remains a major obstacle to its consolidation as a stable reserve. **[11]** Cryptocurrencies do not work as a bank investment where people deposit a certain amount of money in an institution and receive a certain interest previously agreed between the parties. In the case of cryptocurrencies, as they are not regulated by the traditional financial system, their value is subordinated to themselves so that growth or a reserve in their value cannot be guaranteed.

It can also be used as a digital payment method, as it allows you to make payments and transfers without the need for intermediaries, which makes them useful in online purchases sending remittances and international payments. These transactions are faster and cheaper than traditional banks. As an investment instrument they are used as speculative financial assets because of their high volatility in value. Many people buy cryptocurrencies as a form of investment expecting that their value will increase, even if this involves risks due to market fluctuations. Some others turn to cryptocurrencies to protect their money from inflation in unstable financial systems in countries with economic crisis. **[11]**

We can say that cryptocurrencies, in the first place, are presented as currencies, so their use is mainly of speculative financial assets. Many buy them in the hope that their value will increase to obtain economic benefits as a reserve of speculative value. But, because of the volatility, its main use is as a means of exchange. **[3]**

Nevertheless, the dynamic of electronic commerce and the special conditions of international business, are giving a lot of opportunities for cryptocurrencies as a digital tool, but people must learn more about them. Nowadays transactions with digital coins require the acceptance of both parties to use cryptocurrencies in transactions. It is important to remark that international enterprises such as Burger King or Starbucks use cryptocurrencies as a pay method. **[1]**

Results

By the previous analysis, it is found that the emergence of cryptocurrencies has roots in ideological currents and in technological advances and economic crises that affected the global economy. So, in the ideological aspect there is the current of cyberpunks in the nineties. This current advocated the decentralization of power using cryptography. It was therefore a somewhat reactionary movement to the standards imposed at the time when centralized institutions dictated the rules. Through technology they began to design systems alternative to traditional ones, in this case the traditional financial system. The creation of Bitcoin in 2009 marks the beginning of the functional model of a decentralized digital currency. All this is supported by technological advances in computer security and distributed networks. After Bitcoin, other digital currencies emerged, all based mainly on Blockchain technology.

Some important elements were identified that must be taken into account to understand the phenomenon of cryptocurrencies from a broad and multidisciplinary approach. Several points can be highlighted among which stand out the fact that its technical operation is based on Blockchain technology, which can be explained as a cryptographically linked block structure that allows a transparent and secure recording of transactions outside the schemes of the traditional financial system. Operations are validated through consensus algorithms, so you don’t need more intermediaries. Among the biggest advantages that these digital assets have are that each user can make transactions anywhere in the world and each one is responsible for their keys or passwords.

To explain the current uses, the literature indicates that cryptocurrencies are used, mainly as an international means of payment facilitating cross-border transactions in a faster and more economical manner. They also use them as an inflationary haven or to avoid exchange rate restrictions, especially in economies that have problems with the economic and financial stability of their own currency. It should be noted that they are part of the Fintech ecosystem, generating new ways of doing business.

However, there are some risks associated with its use. Among them are the high volatility of prices, the lack of clear regulation, the potential use for illicit activities and the digital exclusion of those who do not have enough technological skills to interact with these platforms. The legal gaps that the rapid development of cryptocurrencies has had are an important part of the risks, so it is urgent to consider new legal mechanisms that regulate their use in both the national and the international arena. In the latter case, cooperation between countries and international organizations, as the main actors of international law, is crucial in determining a correct course for cryptocurrencies.

In the theoretical aspect analyzed, it allows us to interpret the reference phenomenon in greater depth. From the Economic Theory of Law, it was stated that cryptocurrencies modify the traditional incentives of the financial legal system and challenge the capacity of the State to establish efficient rules. On the other hand, from the Monetary Theory, it is explained that cryptocurrencies complicate the application of conventional monetary policies, operating outside the control of central banks and traditional financial institutions.

Conclusions

Cryptocurrencies constitute a legal fact of global scope that is changing financial dynamics, especially due to international financial problems and weakening traditional financial institutions and weakening state control in its monetary policy. Its decentralized operation, based on blockchain technology and consensus algorithms, has facilitated its cross-border expansion, allowing payments to be made or storing value in digital environments without intermediaries. This capacity has been harnessed by individuals and companies around the world. Cryptocurrencies offer functional alternatives to international scenarios of monetary instability and exchange rate restrictions.

However, the international impact of cryptocurrencies is not without risks. The little regularization harmonized globally makes legal gaps that are exploited to do illicit business, while it is a clear challenge to the monetary sovereignty of the States. Tensions between innovation and institutional control are most visible in countries where central banks have not yet developed special regulatory frameworks. Cryptocurrencies therefore require a rethink of traditional financial structures, pushing for international dialogue that combines legal certainty with the promotion of innovation. Understanding and management of this issue should be given from a comparative, critical and multidisciplinary perspective among global actors.

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