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3.1.2 Central Banks Issue Their Tokens

The proliferation of private crypto currencies, in a digital world where the free choice of one's currency would become the norm, encourages central banks (and States in terms of regulation) to enter the game so as not to get caught in the trap. Many central banks were considering creating their digital currencies known as CBDC (Central Bank Digital Currency). The reduction in cash exchanges and the multiplication of exchanges in private currencies are pushing institutions like the Central Bank to launch their tokens.

3.1.3 How to Profit from the Multiplication of Virtual Currencies?

The increase in users leads to an increase in the price of crypto currency, indeed, the democratization of crypto-currencies is a factor in the rise of the prices of currencies like Bitcoin. Another effect of the democratization of cryptocurrencies is the development of real industry in this area: the emergence of Decentralized Finance (DeFi) of which ChainLink, Wrapped Bitcoin, Dai or Aave are the main players. In addition, there are also positive effects for all platforms that allow crypto investments.

The fact that cryptos become widespread at the transaction level should systematically translate into democratization at the level of savings. We will mention platforms like Binance, CoinBase, which are seeing their number of users, grow. So, just like traditional currencies that are linked to the banking industry, virtual currencies are linked to the crypto industry. It is therefore particularly appropriate to focus on companies with the greatest potential to become in the face of the massification of cryptos. Crypto-currencies have the advantage of being able to develop a fast payment system that can be used in a very large part of the countries of the world, which does not allow a traditional national currency which remains, in comparison, a brake on world trade.

3.2 The Covid-19 Crisis: A Major Factor in the Democratization of Cryptocurrencies?

The Covid-19 crisis would have been a real opportunity for crypto currencies. The spectacular development of this type of currency in recent years has convinced many institutions and companies like Facebook, certain central banks, and more recently PayPal to take the plunge to enter the game and create their crypto currencies. So, for the next few years, the use of these virtual currencies will certainly be higher than it has been in recent years. Crypto-currencies, after having established themselves in the financial landscape in recent years, is now expected to enter the economic landscape. Cryptos, therefore, appear as an everyday means of payment (or even

investment/savings). The pandemic has accelerated the development of monetary solutions responding to the digitalization of the economy.

Overall, crypto-currencies fell sharply at the start of the global phase of the pandemic, from February to March, and then experienced a phenomenal rebound. Bitcoin has seen dramatic swings and volatility, already approaching $20,000 in 2018 before collapsing to around $3,000, to more than quadruple after the pandemic. These uncontrollable variations are the typical characteristics of these crypto-currencies. The phenomenon of rising to these spectacular levels is fueled by the pace of creation (or "mining").On the demand side, global investor demand has been greatly bolstered in recent months by support from PayPal, which has announced that it is integrating several crypto currencies into its payment solutions. The idea of decentralized data architecture has many advantages, first of all when no centralized instance can manage it or when there is a problem of trust between participants in the system.

But, in monetary and financial terms, many considered bitcoin as the new "digital gold", but the fundamental elements of its architecture were often ignored. Crypto-currencies of this type have no real backing, and their risks, such as the risk of a crypto breach, cannot be ignored. For their part, "stable coins" type crypto-currencies, which promise a stable value against benchmark currencies, avoid certain obvious pitfalls. However, apart from central bank digital currency projects, which should be equivalent to cash, stable coins are the subject of financial engineering that returns them to the status of the synthetic financial product rather than currency, this is notably the case with Facebook's libra project.

3.3 The Acceleration of the Economic Digitization by the Pandemic, Changed the Cryptocurrency Market and Public Digital Currency Projects?

The covid19 pandemic has accelerated digitization with phenomena as diverse as teleworking or e-commerce. We are therefore observing the development of solutions based on adaptation to digital life, particularly in monetary terms. Crypto currencies have an important aspect and their integration into real life as a means of payment gives them more credibility and practicality. In addition, the accumulation of public debts following the pandemic and the resulting financing by central banks translates into additional amounts of liquidity to finance sectors in distress (Cioroianu et al. 2021).

That's why. Crypto-currency prices benefit greatly from this situation. The massive use of crypto-currencies and the digital currency projects of private companies have also encouraged the digital currency projects of central banks, which have the potential to revolutionize the relationship between economic agents and the new currency that will be at stake. Both digital and backed by the central bank. Regardless of the interest in blockchain and its less decentralized derivatives, it is difficult to

see a stable and beneficial role in the potentially widespread use of digital currencies globally. The danger can arise when the use of almost all currencies does not rely on the real economy and its use without geographical limits can have disastrous consequences if that currency is used for money laundering and financing terrorism.

4 Is Cryptocurrencies a Threat to Traditional Financial Institutions?

Financial institutions around the world are worried about the growing success of crypto-currencies. These financial institutions are trying to regulate them or create their national digital crypto-currencies. There are hundreds of digital currencies (Ether, Ripple, LiteCoin, etc.).The most famous of these, Bitcoin, has become the main and booming crypto-currency with both individuals and large private investors.

4.1 There Are Two Categories of Digital Currencies

The first is made up of Bitcoin-type currencies which can be private or even public if they emerge from central banks. Monetary and Financial Control in France defines blockchain in its article (CMF 2021) as any digital representation of a value that is not issued or guaranteed by a central bank or by a public authority that is not necessarily attached to a currency which is legal tender, but which is accepted by natural or legal persons as a medium of exchange and which can be transferred, stored or exchanged electronically. The second category of digital currency consists of tokens that are assimilated into financial instruments. (CMF 2021) defines this second category as a token, any intangible asset representing, in digital form, one or more rights, which can be issued, registered, stored, or transferred using a recording device. A shared electronic system allowing the identification, directly or indirectly, of the owner of the said property.

The crisis of confidence is particularly affecting the banking sector and it is little wonder that Bitcoin and Ethereum, which are crypto currencies based on Blockchain technology, are giving rise to true monetary systems that are independent and parallel to each other. to state monetary and banking systems (Hu et al. 2021). In addition, crypto-currencies are no longer objects of mere speculation but are increasingly becoming real currencies and long-term investments. This situation seems to worry high financial circles such as central banks and multinationals.

5 Crypto-currencies Risks and the Regulation

Because of the anonymity of transactions, bitcoin is considered one of the preferred means of payment for acquiring illegal goods and services (drugs, identity papers, arms trafficking, murder, prostitution, etc.), but also as a means to promote the financing of terrorism, tax evasion or money laundering. These problems were particularly revealed during the closure of the Silk Road site by the American authorities (Christin and Moore 2013). The Cypriot and Greek crises also showed that bitcoin made it possible to bypass regulations on the movement of capital. In the Cypriot case, in 2013, holders of a deposit account over 100,000 euro, especially Russians, turned to bitcoin to avoid participating in the rescue. In Greece, in July 2015, bitcoin transactions increased by 300% to bypass bank withdrawal regulations. Bitcoin can thus appear as a haven to the point of making it a kind of digital gold (Shanaev et al. 2020).

However, many states warn of the dangers of using virtual currencies (Hu et al. 2021). This is the case of France (Revue de l'ACPR 2014) or China. For the European Central Bank (ECB 2015), bitcoin is not legal money and does not plan to regulate it at this time. Countries such as Germany treat it as a private currency, which helps to tax transactions. The United States and Japan regard it as a commodity to tax capital gains.

In addition to the benefits of using blockchains for financial transactions, there are several obstacles, technical and legal; (Sharma 2021). We start with operational risks. They manifest themselves in the first place by the risk of blocking transactions. Currently, the number of transactions that the blockchain can validate is limited to seven per second. But this technical characteristic is incompatible with the financial markets where saturation effects could lead to a blockage. But solutions are proposed and tested to allow the blockchain to process the volumes of the financial markets. The status of minors could be problematic if they operated in the financial markets. Currently, there are no regulations or oversight imposed on them, as is the case with financial intermediaries (Siu 2021).

Therefore, there is no guarantee that investors will trust the miners in the settlement of transactions. The governance of the blockchain should also be a matter of concern. Indeed, it has no owner or regulatory authority, since the founding principle of the blockchain is: "Code is the law." It is considered a decentralized organization, its openness and flexible governance mean that future problems may not be properly anticipated; (CPMI 2015). Conflict resolution is a central problem in the absence of regulatory authority, laws, and jurisdiction. One solution, currently being tested by financial institutions (R3 project), consists of setting up their blockchains, and minors are then approved beforehand. Thus, the validation of transactions is the responsibility of a set of nodes and not of all certifiers, which should contribute to a greater fluidity of transactions compared to a public blockchain.

When the blockchain is private, only approved members can carry out transactions on it for their account and/or for that of third parties. It can be semi-private if operations can be started by any agent, but certified by certified members. Regulators

will need to monitor the authenticity of the channels. According to Rennick (2015), the generalization of chains would save banks up to 20 billion $ per year.

5.1 Cryptocurrencies Regulation

Among the unique characteristics of these crypto-currencies are the decentralized aspect, and the lack of regulation and control. Several supporters and users of virtual currency see the regulation of cryptocurrencies as a threat to the freedom and independence of this medium of transaction type of crypto-currencies Albayati et al. (2020). But the advantage of regulation is an advantage for crypto-currencies that must be well regulated so that the new means of transactions are robust in the event of shocks or financial crisis. The regulation aims at protecting transactions, ensuring security, and also protecting personal data, and especially regulation acts to fight against money laundering (Yadav et al. 2020).

The supervision of crypto-currencies is essential since it is a speculative asset and is used in business and money laundering activities as well. It must therefore have regulations. And it has to be applied globally because if there are loopholes or weaknesses in the system, it will be used fraudulently. This new highly innovative market has currently absent or poorly designed regulation, which risks harming the innovation. According to Ferrari (2020) in Europe, the Monetary and Financial Code indicates that the only legal tender currency in France is the Euro. As a result, crypto-currencies cannot be used in payments and it is possible to refuse them without violating Article R162-2 of the Monetary and Financial Code. Crypto currency is used to purchase goods and services from professionals who accept it. One of the outstanding features of crypto currencies is that they allow transactions to be carried out anonymously. With a traditional currency, transactions must go through a bank that knows the name and contact details of its customers as well as the people and organizations with which they carry out transactions. On the contrary, crypto currencies work according to a decentralized system thanks to encryption keys (blockchain principle) which do not require any identification. It is therefore impossible today to regulate its emission. Thus, the use of crypto currency like Bitcoin currently poses a challenge for legislators and other regulatory authorities, which fought against money laundering and tax evasion.

On the other hand, banking and financial regulations have clearly defined all the traditional means of payment, and even the category of financial instruments is grouped in assets related to personal rights such as equity securities, debt securities, and financial contracts. While crypto-currencies and their related activities are neither regulated nor well understood. Like, for example, Bitcoin, which does not correspond to any of these classic notions of finance. This is because it is generated by a computer program and does not give rights to anyone in particular. As a result, the lack of regulation allows the different parties to the contract to accept or refuse to be remunerated by crypto-currency. Indeed, since the latter is not a currency like other regulated currencies such as the euro or the dollar, a party to the contract cannot

require the other party to accept payment by crypto-currency. This lack of regulation could be a danger to contractual relations (Kher et al. 2020).

Several central banks presented the different dangers associated with the use of crypto-currencies, because it is a virtual value, and it is not backed by any real activity. Characterized by high volatility, long transaction times, and above all a legal risk linked to the status of an unregulated currency resulting in the fact that it presented no legal guarantee of repayment at any time and face value. Another danger arising from the use of crypto currency is that no authority ensures the security of electronic safes, the guarantor of the security of holders, and which has no guarantee in the event of theft following hacking operations. Finally, another danger arises from the random nature of the convertibility of crypto currencies into legal tender because based on the principle of supply and demand and therefore the risk of blockage and collapse of the system in the event of absence or insufficiency of buyers to redeem crypto currencies against currencies. Currently, it is impossible to regulate the issuance, and the challenge for lawmakers and other regulators for crypto-currencies is the fight against money laundering and tax evasion.

This is due to the use of this innovation which does not identify the different parties of the transaction. However, several platforms for the use of crypto-currency, have expressed their dissatisfaction with the plans to regulate these crypto-currencies, and find that these regulations are an infringement of the freedom to conduct online transactions privately and an attempt to extend the scope of financial supervision of banking institutions to crypto-currencies. And the financial records that will now have to be revealed contain a lot of sensitive information about people's lives, their beliefs, and affiliations.

5.2 The Creation of Competing for Virtual Currencies

This situation leads national financial institutions to set up projects to create virtual currencies as a response. And in many countries, their financial bodies are working on launching their public digital currencies, like the digital euro project. Crypto-currency is a form of virtual and digital currency that does not need to exist physically to be of value. Cryptocurrencies have become increasingly popular thanks to the decentralized peer-to-peer exchanges that have developed. In January 2021, India paved the way for cryptocurrency regulation, which could go as far as a ban on private crypto-currencies. A decision that would be taken in parallel with the establishment of national electronic money, backed and managed by the Central Bank of India. The E-euro would be issued by the ECB, would trade at 1 to 1 parity with the Euro, and would complement or even substitute for cash. A public crypto-currency, regulated by a central bank, backed by a currency, is of course more secure than a private crypto-currency. Moreover, the digitization of central bank money will, in countries where cash is in decline, guarantee citizens' access to central bank money. Thus, having a Central Bank Digital Currency would allow preserving confidence in the financial system which results in part from the possibility of exchanging one's assets

for legal tender. In Russia, the Central Bank announced in October 2020 that it was evaluating the possibility of creating a digital version of the Ruble. China embarked on the creation of a national crypto-currency in 2014. A project that would be very ambitious, to ban Bitcoin on its territory. Finally, it must be said that crypto-currencies are a major issue for the financial system facing public authorities, central banks, regulatory authorities, credit institutions, and citizens. However, regulation is the majority proposition. We note that the majority of authorities have warned and are proposing framework conditions to protect the market and investors.

6 Conclusion

Crypto currency can only perform perfectly the classic functions of a real currency. But currently, everyone uses them as a medium of exchange despite the risk of their true nature. To minimize the risk relating to this category of currencies, other crypto currencies have emerged, called stablecoins, which have the particularity of being backed by baskets of safe assets, and unlike first-generation crypto-currencies, they have intrinsic value, which will help make their prices less volatile. Thus, backing to official currencies moves stablecoins away from the free and volatile side that characterizes the first generation of crypto-currencies. Thoughts in favor of the creation of digital central bank currencies called stablecoins have been fostered by the perception of a threat to the monetary sovereignty of each conventional currency. The new stablecoins are not simple official alternatives to crypto "currencies" from private networks, but they also allow access to stable private or individual corners called retail CBDC (Central Bank Digital Currency), in the form of accounts, or to open access to non-bank intermediaries (wholesale CBDC). These new private or wholesale creations will certainly structurally modify the process of monetary creation (in the true sense and not of crypto-currency) and even the channels of transmission of monetary policy. Importantly, a retail CDBC introduces "digital" banking risk, the effect of which can be significant financial stability. These reasons alone justify slowly deepening the reflection on the creation of this type of crypto-currency. This race for power is, according to Dupré et al. (2015), a common destructive element from an ecological point of view, because it is terrible in consuming energy. The question that arises is, what ecological cost will be paid for the proliferation of this type of crypto currency which is based on blockchain technology?

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Supply Chain Sustainability Management Through Blockchain Technology in Maritime Industry

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Abstract Nowadays, integrating new technology into all management processes leads to significant evolution, particularly in the logistics business, which is one of the fourth industrial of Industry 4.0. Blockchain, an emerging idea, provides for the decentralized and unchangeable storing of verified data as integrated technology. The shipping industry has had to look for innovative ways to keep the accelerated growth of the planet on track, in the face of development threats and vulnerabilities from the mild development of foreign markets, expanding protectionism, correcting natural guidance, the current episode of COVID-19 pandemics. One of the successful innovations in blockchain technologies was to promote a computerized market change. It is also making the utilization of blockchain innovation in the maritime industry will empower quicker, more secure and more productive businesses. The objective of this study is to review sustainable in supply chain management through blockchain technology in the maritime industry. This work was done by discussion of literature by classifying the application according to the operation in the shipping process.

Keywords Blockchain · Supply chain management · Logistic · Maritime industry

1 Introduction

Beginning with product design and development and continuing through material selection (including stuff extraction or agricultural production), manufacturing, packaging, transportation, warehousing, distribution, consumption, return, and diversion, that is Sustainable supply chain management (SSCM) includes the incorporation throughout the whole life cycle of the supplier chain of ecologically and financially feasible methods. Environmentally sustainable management of the supply chain and

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practice may help businesses not only reduce their overall carbon footprint but also optimize end-to-end operations due to avoid wasting money and generate additional revenue. All supply chains can benefit from using sustainable practices.

Other than that, environmental management, conservation of resources, carbon footprint reduction, financial and sustainable savings and also social responsibility all fall under the scope of sustainability in the supply chain. To succeed, supply chain sustainability practices must deliver improved environmental performance within a financially viable operating construct.

Supply chains (SCs) are becoming increasingly complicated according to the result of the current economic situation and globalization (Varma et al. 2006) and according to Gold et al. (2010) creating, coordinating, and engaging within the SC has become a difficult undertaking task. Due to the growing social and environmental issues, it is necessary to change the focus from organizational level to SC, and also to match organizational objectives with sustainability goals Gold et al. (2010). To achieve the sustainability goals, all stakeholders in the SC must work together. Organizations will continue to be hesitant to adhere to sustainable standards unless explicit regulations are enacted. The success of sustainable initiatives is measured differently from one company to the next (Searcy et al. 2009).

The supply chain also provides an integrated process of planning and execution which includes the flow of information material and capital. Supply chain management can be defined as the process of managing the flow of resources, goods and services in the context of their storage and transportation. Globalization, diverse regulatory policies, and varying cultural and human actions in supply chain networks make it difficult to evaluate the knowledge and risk management capabilities in the dynamic field. There is a need for better information exchange systems considering the factors such as uneconomical transactions, bribery, and week supply chains as they lead to a lack of trust.

Other than that, supply chain businesses need consideration trust to rely on a single or broker to store their critical and confidential information. Single-point failure is another considerable of centralized information systems that leave the entire system exposed to distortion, hacking, corruption, and attack making them vulnerable. Such drawbacks raise concerns as to whether existing supply chain information systems are capable of supporting the information required for the timely provenance of products and services in a way that is transparent and secured sufficiently. The approach to these complicated problems is to increases the reliability of the supply chain, protection, durability, and quality of the processes. This, using blockchain technology is a potent solution to supply chain problems and drawbacks.

The functions of SC make a significant contribution to the field of sustainability and initiatives would not be possible without the involvement of the SC management function when viewed from a life cycle perspective. All structural components which affect the behavior in accordance with Supply Chain Management (SCM) literature include planning, monitoring, workflow design, organizational structure, and knowledge management and communication structure. On the other hand, the SCs can be less defined and more complex to coordinate with practices, leadership, risk control, incentives and recognition, culture and attitude, and trust and engagement (Winter

and Knemeyer 2013). Sustainability ideas have emerged in recent literature as one of the main breakthroughs in SCM. The current literature review provides an evaluation of SCM policy in three main areas.

With the emergence of blockchain technology, new technical innovations and implementations make these progress initiatives more organizationally, technically, and cost-effective. Blockchain is essentials an innovative technology for supply chain architecture, development, processes, and general management. The ability of blockchain to guarantee the transparency, traceability, and authenticity of the information, together with intelligent contractual relationships for the trustless world, all suggest a substantial reshaping of supply chain management.

Hence, four major entities are responsible in supply chains based on blockchain which is not seen in conventional supply chains. The first entities are registers, which provide actors in the network with specific capabilities; the second are standards organizations, which establish frameworks for values such as fair-trade for sustainable supply chain or blockchain policies and technical needs; the third is suppliers, which grant actors certifications for network participation in the supply chain; and the last are actors, which include suppliers, distributors, and consumers. The purpose of this research is to look into the interaction between supply chain management and blockchain technologies in the maritime industry.

There are also several existing initiatives in the maritime industry that use blockchain technology and recently examined to use a case to show. However, generally, these activities are at the primer stage and include the utilization of a private, permission stage among a select or restricted gathering of members. Before huge opportunities usage of blockchain, some various barriers and challenges should be tended to. A few of these boundaries and difficulties were presented in the company groundwork record (Green et al. 2020).

The costs of developing, utilizing, and managing a blockchain-based system are extremely complex and rely on the type of network, the data, and storage requirements, the number of users, and some other variables that will depend on the implementation and use of the platform. Although they cannot be calculated on a large, general basis, these costs are necessary to consider. In sense, for each program and case of use. The maritime sector's security issues and vulnerabilities have called for ways to safe and secure data. Blockchain is also identified as enhancing data protection and reliability over the conventional centralized databases until security and reliability problems are completely resolved or avoided (as example blockchain is presented as "trustless" and "unchangeable").

According to Ytterstrom and Lengerg (2019), there is also a separate geographic area with technical resources required for the use of blockchain technology. Further obstacles related to inclusion in maritime includes questions over high implementing costs, and the low levels of use of other players in the market, where stakeholders conclude that if such leaders take action or vital masses, others will be effective (Gausdal et al. 2018; Ytterstrom and Lengerg 2019). Therefore, the question that arise is does the blockchain technology in the maritime industry is ready to use in the maritime industry. Thus, the objective of this study is to review sustainable supply chain management through blockchain technology in the maritime industry.

The structure of this study is followed by literature review by all the factors of sustainable supply chain, and conclusion and recommendation.

2 Sustainable Supply Chain Management

According to Genovese et al. (2017), there have been several research articles published in both qualitative and quantitative domains that have focused on sustainable supply chain management (SSCM). As a result, sustainability concerns must be included in the SC's core activities, including sourcing, manufacturing, distribution, storage, warehousing, consumption, and recycling. Due to current trends of industrialization, market fluctuations, the uncertainty of demand, and economic challenges, commercial businesses have been under tremendous pressure to preserve the current SC. Focusing just on SC's internal efficiency will not provide a competitive advantage. When sustainability concepts are incorporated into a company's core operations, it achieves a strong market position in the global market (Khodakarami et al. 2015). Therefore, firms are under huge pressure to modify their existing SC to meet the new sustainability needs, as the conventional SCM becomes the SSCM (Busse et al. 2017). The SSCM management approach incorporates environmental considerations, social performance, and economic contribution. Customer demand was diverse, and product components were complex, resulting in severe inside company competition as well as global competition (Raut et al. 2015). SSCM also develops the necessary skill set for businesses to differentiate themselves from their competition (Khodakarami et al. 2015).

Moreover, certain firms have pledged to take sustainability initiatives to make their SCs more sustainable. Sustainable development enhances the use of ecologically friendly products and production processes that are free of pollution (Xie 2016). The sustainability theory encourages firms to adopt practices such as returning products to manufacturers at the end of their life cycles and managing returns in an environmentally friendly manner (Zhu et al. 2005), while also integrating green strategies at all levels of the supply chain, maintaining healthy working conditions, fair compensation practices, equal human rights, and cultural diversity (Zhu et al. 2005).

SSCM is such a strong tool in today's difficult and competitive world that it has the potential to transform company effectiveness regarding social and environmental performance while also improving profitability (Seuring and Muller 2008; Tseng et al. 2015; Fahimnia et al. 2017). Academic study on SSCM has received a lot of interest in recent years. However, a comprehensive academic investigation is required to assist SC management in their decision-making process without compromising the value of sustainability.

A socially sustainable supply chain can be developed with the help of blockchain technology. Since information cannot the charged without permission from approved actors, blockchain prevents corrupt individuals, governments, or organizations from unlawful seizing people's properties. Blockchain technology can also block sinister

agents and keep corrupt to account for social as well as individual misdeeds. Traceability of blockchain involves sustainability through greater human rights security and equal safe work standards.

3 Blockchain Technology

With blockchain technology, the scam can be avoided due to the integrity and transparency of blockchain. They established a reputation-based mechanism that addresses the inefficiency of ETS and encourages at participants to find a long-term solution to the reduction of emissions. Effective employment of blockchain technology to manage supply chain processes and products begins with effective participation and investments in sustainable practices. Therefore, the incorporation of blockchain technology can lead to the development of sustainable supply chain practices regardless of the business sectors. Inside the range of maritime industry, inter-firm information about the sharing systems is obsolete and manual cycles that win most of its supply chain. These outcomes make less coordination among industry players, raise a security risk and an expanded outstanding burden for specialists, diminish trust between the parties who collaborate in the maritime industry and eventually lessen the general the effectiveness of the business measures (Jensen and Govindan 2014). Besides, within the several of collaboration and connection, several guidelines and also the expense of the data, which is can make a decline or obstruct the worldwide exchange (World Economic Forum 2016).

The others challenges are privacy, security, and safety. Privacy is a possible issue in all situations involving blockchain, since ledger documents are meant to be immutable, and what might be considered private or confidential data may be accessed and exchanged by all parties (Andoni et al. 2019). Privacy and security issues are of specific interest in the maritime industry, based on the knowledge and data exchanged and on which or if any confidential information can be accessible to others. In recent research involving an interview with maritime stakeholders, participants noted that data security is desirable and data sharing and transparency are discouraged, provided that "competition is fierce" and that a lot of market players are practically competing with the same commodity" and also because of lack transparency and desired to keep trade secrets (Ytterstrom and Lengerg 2019).

Meanwhile, according to Clift-Jennings (2019), the ability to tamper with data is an important drawback of blockchain-based applications until blockchain reporting. Blockchain usage does not ensure that the evidence reported in ledgers is accurate and does not preclude data from being altered until entering a blockchain ledger. This may have significant consequences if the data stored in the blockchain were used to validate compliance with protection or environmental regulations. In the case of IMO 2020, as an example, there could be a major financial opportunity to use non-compliant petroleum, based on the price difference between compliant and non-compliant fuel. The company Filament has a business that established a mechanism integrating hardware and software that can be used to indicate whether the computer

has been tampered with and if so, would no longer ‘sign’ or ‘attests’ the accuracy of the data or enables it to be released on the blockchain (Clift-Jennings 2019).

The Filament method shows the importance of understanding the opportunity for tempering and the need to reduce the likelihood of tampering to the degree practicable when relying on evidence to validate compliance- while also showing that attempts are being made and are likely to continue to resolve this issue (Green et al. 2020). Although there is no such technology for maritime industry application has been identified (in this work), attempts are being made in the maritime field. Create and implement an application that can, for example, check the document and verify and validate the data until it is released on a blockchain.

Blockchain can, minimize or eliminate transaction costs in the form of broker fees, time and procedure fees or other transaction costs consistent with the status quo. But blockchains and the equipment, computers and other system element needed to use the blockchain that comes at their own risk. These costs are quite complex and, in some cases, extremely high. Blockchains themselves are costly to develop: it should not be recognized if the reduction in processing costs offered by blockchain would not largely be offset-if not exceed by the cost of adopting blockchain in reality (Andoni et al. 2019). Blockchain infrastructure expenses included hardware, software, computers, and other facilities, training and services and fees such as smart contract fees, application/services fees, transaction fees for blockchain platforms, or blockchain-as-a services charges- where users pay for blockchain nodes, data writing, storage, and hourly charges on continuous basic (Green et al. 2020).

Theoretically, until authenticated and entered into an open-sources blockchain, data is permanent, prohibiting data from being tampered with the blockchain technologies, however cannot guarantee the data has not been tampered with or compromised before to being checked on the network. For example, if machined sensors or networked devices malfunction, are defective, or are tampered with, or if data is distorted or inaccurate for a variety of other reasons then this data is incorrect then, store it in the blockchain (Reyna et al. 2018). For the public authorization further blockchain, for practical reasons, the faulty data or documents will be immutable; secret, approved blockchains, data are not permanent and can thus be changed- errors can be resolved more quickly, albeit at the cost of confidence that most or all (correct data has not been altered). Blockchain networks are often more vulnerable to attack and security vulnerabilities than is usually expected. Blockchain was previously perceived to be “unhackable” but is now being hacked at an increasing pace (Orcutt 2019).

Stakeholders in the industry agree that standardization between platform and implementation is required and interoperability is needed. This is one of the most significant important barriers to the use of blockchain technologies in the maritime industry (Ytterstrom and Lengerg 2019; Wagner and Wisnicki 2019). For example, in the spring of 2019, the Digital Container Shipping Association was founded by major players in the field of container transport such as A.P. Moller-Maersk, Hapag Lloyd, not only for blockchain, is working towards fostering universal market standards in the container sector. Additional initiatives include the Transport Partnership Blockchain and the program of the World Economic Forum to allow blockchain

usage in an "interoperable, accountable and equitable manner", with members such as A.P. The City of Los Angeles, Moller-Maersk and Port of Rotterdam (Wagner and Wisnicki 2019).

4 Readiness of Blockchain Technology

Recently, the maritime industry has had to look for innovative ways to keep the accelerated growth of the planet on track, in the face of development threats and vulnerabilities from the mild development of foreign markets, expanding protectionism, correcting natural guidance, and the current episode of COVID-19 pandemics. The industry is witnessing the emergence of Industry Revolution (IR) 4.0 being attempted to trouble itself. One of the successful innovations in Blockchain technologies was to promote a computerized market change. It is also making the utilization of blockchain innovation in the maritime industry will empower quicker, more secure, and more productive business (Morabito 2017).

Blockchain, the underlying technology for Bitcoin, is one kind of Distributed Ledger Technology (DLT) known as a distributed, decentralized, cryptographic database that functions as a non-reversible and incorruptible centralized database (Wright 2015). The principle of blockchain therefore, is incredibly broad and thus the meaning has not yet been defined explicitly and generally accepted. Nevertheless, Seebacher and Schüritz (2017) could concisely and comprehensively describe blockchain as follows:

> A blockchain is a public database shared among the peer-to-peer network and decided upon. It consists of a connected series of blocks holding timed transactions which are cryptographically encrypted and validated by the network group. If a blockchain feature has been added, it cannot be reversed, making a blockchain into an unchangeable archive of past operation. (Seebacher and Schüritz 2017).

Hence, as the description states, a blockchain contains a database or a directory that sequences all the transactions. In addition, blockchain can be known as a "continual digital transaction register" (Condos et al. 2016). The sender, transaction information, and recipient constitute the transactions. Each transaction has a time stamping which is exchanged with the participants of a network of pairs to pairs.

In addition, in the shipping industry, it also plays an important role in further strengthening the security of users and data. The blockchain can change and optimize transport and benefits for everyone—importers, exporters, air carriers, ship owners and even governments—in the transport process. The reduction in administration is one of the key advantages to implementing blockchain in shipping (Jugovic et al. 2019). For shipping, although know the traditional model, has adapted effectively to all of the new technologies through much of history and has therefore quickly accepted all the benefits of information technology.

According to Swan (2015), the blockchain ensures the accuracy of all entries, decreasing the probability that shipments will be damaged or lost. The replacement

of the electronic communications system by the blockchain means that all parties involved have access to information that facilitates effective operations planning, saves and ensures integrity for all entries, and thus reduces the risk of shipments being damaged or disappeared.

Blockchain technology is still quite unreliable, no underlying specification is available: definitions are hard to master, and even in simplest modes of implementation programming interference is required (Tijan et al. 2019a). In addition, lack of enforcement causes insecurity, since such facades of intelligent contract technologies can only be overregulated or even unlawfully implemented by the logistics industries.

According to Tijan et al. (2019b), scalability and efficiency issues have struck blockchain technology: any node in the chain needs to handle all the transactions and this is a concern for massive and particular in global reels. "Technology is also extremely energy-intensive and evidence simulations spend a considerable amount of computing time. In comparison, user data can be reduced because all nodes contain a complete copy of the directory and there is no single communication authority in the event of a clear breach of security."

Appropriated trust and security and protection are at the center of blockchain advancements, and can either make them a triumph or cause them to fall flat (Karame and Capkun 2018). Personal data and confidential data in general, where they are vulnerable to threats and misusage, must not be relied on by third parties (Zyskind and Nathan 2015).

5 Factors of Influence Implementation Blockchain

5.1 Physical Resources

These resources are required to be the physical perception of the resources. Although physical capital resources are focused on technology, business facilities, location, and access to raw materials, human resources provide preparation, expertise, and insights for individual management and company staff, whereas organizational capital resources take into account both the company's structured reporting system and informal ties within the companies' classes (Barney 1991). The categorization exposes the scope of the resources-based view, as it is challenging to measure and highlight the resources which are more important and which can ultimately be a competitive advantage. Whether or not this can be achieved with the resources provided depends on the requirements whether the resources of the organization can be considered as valuables, uncommon, intimate, and replacement (Barney 1991; Dierickx and Cool 1989). A resource is viewed as useful if it can use environmental factors to achieve benefits for the business.

A critical resource is often needed to tackle threats from the world of the organization, including competitiveness measured (Barney 1991). However, considering