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ENHANCING THE EFFICIENCY OF INTERNATIONAL TRADE:
EXPLORING THE IMPACT OF BLOCKCHAIN TECHNOLOGY ON LETTER OF
CREDIT WITHIN EXISTING LEGAL FRAMEWORKS

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Abstract: A letter of credit is a crucial document widely employed in international trade, primarily for payment purposes, and consequently imposes rights and responsibilities on the involved parties. The payment and fulfillment of obligations are among the most significant aspects in any contract. Among the payment methods in international transactions, the letter of credit is the most reliable and significant method due to its distinctive characteristics. Through the involvement of banks, a letter of credit ensures the secure guarantee of interests for both the seller and the buyer, alleviating their concerns. However, in light of advancements in international trade, it becomes essential to consider the impact of emerging technologies on payment methods in international business relationships. This commentary aims to investigate recent research on the utilization of Blockchain-based letters of credit, offering a comprehensive perspective on regulatory frameworks within this domain. After a detailed description of Blockchain structure for letter of credit and examining the use cases of Smart LCs, the research suggests that existing legal frameworks, such as the UCP, eUCP, ISP98, and UN LC convention, can serve as a basis for managing Blockchain-based LCs with necessary amendments. By integrating Blockchain technology and leveraging these frameworks, trade finance can benefit from increased efficiency, transparency, and security.

Keywords: Letter of credit, Trade finance, Blockchain, Smart contract, International trade, UCP600



A nemzetközi kereskedelem hatékonyságának növelése: A Blockchain technológia akkreditívre gyakorolt hatásának vizsgálata a jelenlegi jogi keretek tükrében

Absztrakt: Az akkreditív egy fontos dokumentum az nemzetközi kereskedelemben, elsősorban fizetési célokra használják, és ennek következtében jogokat és felelőségeket ró az érintett felekre. A fizetés és az kötelezettségek teljesítése az összes szerződés legfontosabb szempontjai közé tartoznak. Nemzetközi tranzakciók esetén az érintett felek különböző kérdések miatt aggódnak, beleértve az egyéb országok jogi, politikai és gazdasági tényezőinek jobb megértésére irányuló igényt. Az nemzetközi tranzakciók fizetési módjai közül az akkreditív kiemelkedik, mint a legmegbízhatóbb és legjelentősebb módszer sajátos jellemzői miatt. Az akkreditív bevonásával a bankok biztosítják a vevő és az eladó érdekeinek biztonságos garantálását, csökkentve aggodalmaikat. Azonban az nemzetközi kereskedelem fejlődése fényében fontos figyelembe venni az újonnan megjelenő technológiák hatását a nemzetközi üzleti kapcsolatok fizetési módjaira. Jelen kommentár célja, hogy feltárja a Blokklánc-alapú akkreditívok felhasználására vonatkozó legújabb kutatásokat, és átfogó nézőpontot nyújtson a szabályozási keretéről ezen a területen. Az akkreditív Blokklánc-szerkezetének részletes leírása és az Okos LC-k felhasználási eseteinek vizsgálata után a kutatás azt javasolja, hogy a meglévő jogi keretek, például az UCP, az eUCP, az ISP98 és az ENSZ LC egyezmény, azok szükséges módosításaival együtt, szolgálhatnak a Blokklánc-alapú LC-k kezelésének alapjául. A Blokklánc technológia integrálásával és ezeknek a kereteknek a kihasználásával a kereskedelmi finanszírozás javíthatja hatékonyságát, átláthatóságát és biztonságát.

Kulcsszavak: akkreditív, kereskedelmi finanszírozás, blockchain, smart szerződés, nemzetközi kereskedelem, UCP600

Steigerung der Effizienz des internationalen Handels: Erforschung der Auswirkungen von Blockchain-Technologie auf Akkreditive innerhalb bestehender rechtlicher Rahmenbedingungen

Ein Akkreditiv ist ein wichtiges Dokument, das im internationalen Handel häufig verwendet wird, vor allem zu Zahlungszwecken, und den beteiligten Parteien

daher Rechte und Pflichten auferlegt. Die Zahlung und Erfüllung von Verpflichtungen gehören zu den wichtigsten Aspekten eines jeden Vertrags. Unter den Zahlungsarten im internationalen Zahlungsverkehr ist das Akkreditiv aufgrund seiner Besonderheiten das zuverlässigste und bedeutendste Zahlungsmittel. Durch die Einbindung von Banken gewährleistet ein Akkreditiv sowohl für den Verkäufer als auch für den Käufer eine sichere Interessensicherung und lindert so deren Bedenken. Angesichts der Fortschritte im internationalen Handel wird es jedoch unerlässlich, die Auswirkungen neuer Technologien auf Zahlungsmethoden in internationalen Geschäftsbeziehungen zu berücksichtigen. Dieser Kommentar zielt darauf ab, aktuelle Forschungsergebnisse zur Nutzung von Blockchain-basierten Akkreditiven zu untersuchen und einen umfassenden Überblick über die regulatorischen Rahmenbedingungen in diesem Bereich zu bieten. Nach einer detaillierten Beschreibung der Blockchain-Struktur für Akkreditive und der Untersuchung der Anwendungsfälle von Smart LCs legt die Untersuchung nahe, dass bestehende Rechtsrahmen wie UCP, eUCP, ISP98 und UN LC-Übereinkommen als Grundlage für die Verwaltung Blockchain-basierter LCs mit notwendigen Änderungen dienen können. Durch die Integration der Blockchain-Technologie und die Nutzung dieser Frameworks kann die Handelsfinanzierung von mehr Effizienz, Transparenz und Sicherheit profitieren.

Schlagworte: Akkreditiv, Handelsfinanzierung, Blockchain, intelligenter Vertrag, internationale Handel, UCP600

Introduction

The Letter of Credit serves as a means to facilitate international payments, providing a secure assurance and contingent commitment to payment, issued by the bank of the buyer. (Mead, 1922, p. 298) The letter of credit, as the most common and preferable payment method for the price of goods in international trade, is based on documents that represent the transaction by the beneficiary and is a mechanism of receiving foreign exchange from exports or paying for imported foreign exchange from commercial trade. (Faruk Tutuncuoglu, 2010) Letter of credit has a good variety and is a well-established and safe method with the least risk for the seller and the buyer. It is essential to identify and demonstrate the implementation of this method in international settlements. We should pay particular attention to the potential of this method in trade facilitation

as the main aim of international uniform regulations. Suppose the exporter prepares the goods and sends the relevant documents at the agreed time. In that case, he can request the money for his export from the issuing bank and the importer by receiving the documents and matching them with the contract and clearance of goods and notifying the issuing bank, can ask the issuing bank to transfer the price to the seller bank. (Mead, 1922, p. 300) By incorporating an intermediary in trade finance via documentary credit, the credit risk of the buyer (importer) is replaced with the credit risk of the buyer's bank (issuing bank). (Bergami, 2009) It is clear that a letter of credit is a positive step in mitigating risk in international trade, but some aspects of LCs may raise risks in different steps of trade finance. This important issue requires risk management attempts by stockholders in international business. Many researchers have considered the question of risk mitigation in trade finance in recent years. The high volume of trade relations involves many actors, firms, and intermediaries in trade procedures. Therefore, it results in risks and inefficiencies in commercial relations that must be addressed and mitigated.

Many studies argued about the different kinds of risks in using letters of credit in trade finance. There are various risks regarding the financial position of the intermediary banks in an LC and their defective procedure of verifying customer creditability. (Ahn, 2011, pp. 5-6) The risks concerning the customer's ability to perform their contractual obligation in contracts financed with a letter of credit are the primary set of issues in this field. The credit risk imposed by the exporter to the importer is another negative point in LC application in trade relations. (Flint, 2019, p. 357) The mutual trust between the parties to a contract increases by using LCs to fulfill their obligations and mitigate the risk of fraud. However, the international nature of the trade contract and the lack of trustworthiness of business instruments may bring the risk of fraud to a letter of credit. The principle of independence of documentary credits separating the financial transaction from the underlying sales transaction is a fundamental principle that guarantees the payment of the consideration on the presentation of conforming documents. (Monteiro, 2007, pp. 147-148) This principle makes the letter of credit a practical and helpful instrument for business relations. Nevertheless, certain scholars contend that reliance on this principle may increase the susceptibility to fraudulent activities within trade finance (Alavi, 2016, p. 141), despite the fact that the risk of fraud is the primary exception to the principle of autonomy. (Monteiro, 2007, p. 144) The forged nature of the documents presented by the

beneficiary to the bank, in addition to forged documents of title presented by the beneficiary to the issuing bank, and defrauding the applicant buyer by submission of documents to the bank without fulfilling the obligations put the international trade at risk. (Alavi, 2016, pp. 143-144) Given the complexities of global trade, dealing with these complex risks will be a challenging issue. Furthermore, it is critical to explore and implement emerging technologies that might improve the security and transparency of letter of credit operations. By adopting technological improvements such as blockchain and artificial intelligence, the trade finance sector specially letter of credit can potentially revolutionize its risk management procedures, offering more effective solutions for coping with the complexities of international trade while reducing the vulnerabilities associated with traditional methods and the fraudulent activities concerning such methods. New developments in international trade seek To decrease the risks mentioned above, especially the risk of fraud in trade finance.

According to the ICC global survey on trade finance, traditional trade finance is the priority area of development and strategic focus for participant banks. Emerging technology, digital trade, and online platforms are the second most important concern of the trade finance sector. The ICC's survey shows that the stockholders accept the transformative potential of technological developments, such as digital trade finance, to increase efficiency and transparency in this sector. (ICC Banking Commission, 2020, p. 15) Blockchain technology, a decentralized ledger comprised of blocks of records, facilitates the sharing of data among participants. Within the Blockchain platform, a “distributed consensus” (Crosby et al., 2016, p. 8) mechanism verifies transactions and data across the blocks of records, ensuring their accuracy and validity. Utilizing cryptographic proof, smart contracts, which are coded sets of instructions, operate on the Blockchain platform. The platform employs digital signatures to authenticate users' public and private keys, thereby establishing user identities and ensuring data integrity. Furthermore, the chain of blocks guarantees transparency and immutability, minimizing the potential for fraud and data duplication. Furthermore, the electronic environment of the Blockchain makes transactions easier for all users from all over the world without using Banks and financial intermediaries to secure their activities that charge a fee for opening, amending, or renewing and depositing documents. (Crosby et al, 2016, pp. 9-15) The particular features of blockchain have an important impact on the efficiency of letter of credit processes at all phases. The usage of digital signatures, a major aspect of

blockchain, is mainly useful in resolving issues associated with verifying the identities of parties to letters of credit. Digital signatures help to create trust in the smart letter of credit transactions by providing safe and transparent means of confirming the credibility of the parties involved. This feature builds trust in the procedure of using a letter of credit while facilitating the entire letter of credit lifecycle, from initiation to execution. building trust in this process enhances the efficiency and security in the global trade.

From the foregoing, the trade finance sector, especially the fields using the letter of credit, is facing many problems regarding forged documents in this procedure and inefficiencies of paper-based transactions. Therefore, this paper aims to justify the use of Blockchain technology in trade finance by considering the recent use cases of Blockchain technology in classic financial documents, specifically the letter of credit. This paper follows the main question about the role of Blockchain technology in increasing the efficiency of the LCs while trying to answer other questions about the regulatory basis of Blockchain-based LCs and their legal status. An information-gathering method was taken by exploring the online articles, papers, websites, and whitepapers relevant to Blockchain-based legal instruments, as well as a secondary analysis of the results of global studies of experts in international trade financing. The first part of this study introduces a Blockchain-based structure for the letter of credit to find a general view of the smart letter of credit. A qualitative research methodology was taken to analyze the case studies while using a descriptive method to introduce the existing efforts in using Blockchain technology in trade finance. In the second part, this paper seeks to find the regulatory framework for emerging technologies, focusing on the existing regulatory frameworks concerning the letter of credit.

1. Blockchain-based Letters of credit in international trade

1.1. Digitalizing Letters of Credit

Digitalizing the structure of a letter of credit requires creating a Blockchain platform through which smart contracts help the parties to directly transfer and validate the transactions without any banking intermediary and SWIFT systems. (Chang et al., 2020, p. 12) The smart LCs perform transactions automatically upon fulfilling specified conditions in a digital Letter of Credit between the buyer

and the seller. (Fin extra Research, 2019) A Blockchain-based smart contract will be concluded between the buyer and seller; The buyer may provide a conditional code corresponding to the transaction value, and its execution depends on the seller's obligations. The indicated amount will be provided to the exporter once their obligations have been properly fulfilled. The bank will then authorize the transfer of asset ownership and execute payment to the seller if the preset conditions have been met and all papers are in full compliance with the law. By contrast, default payment rules will automatically secure payment to the seller, as agreed by the bank, in the event that the requirements are not fulfilled. By lowering the number of parties involved and limiting the possibility of fraud, this technology improves the speed and effectiveness of Letters of Credit (LCs). (Collet, 2018, pp. 58-60)

Some scholars discussed the difference between the classic LCs and the smart types of LCs regarding the positive points added to the latter by the Blockchain platform. As Larsons states, a letter of credit defined in a Blockchain ledger has two main differences from the classic form of the LCs. In the Smart LC, the applicant can receive a standard template from the bank, define a letter of credit in this template, and enter it as a code into the Blockchain platform. Using this template, the issuer does not need the preliminary steps to draft a letter of credit, decreasing errors, and defects in LCs. On the other hand, the standard template may contain all the information about the contract of sale and payment methods argued between the parties. For this opportunity, Larson brings some examples of the external data out of the Blockchain platform that must be addressed because they are important in identifying the parties' rights and obligations. For example, the applicant can enter special terms using oracles into the platform. These terms are derived from external sources. The Blockchain-based LC may include all the terms and conditions mentioned in a contract, such as INCOTERM. Introducing the applicant as the leading operator of the smart LCs instead of banks and other intermediaries is an advantage because the applicant is the only person with more information about the whole structure of the contract and its terms and conditions. (Larson, 2018, pp. 971-972) While justifying the positive aspects of Blockchain technology in various stages of the letter of credit process, such as eliminating intermediaries and reducing errors, it is important to emphasize that the digitization of letters of credit is not without concerns. One important challenge is the potential cybersecurity threats. As we transform into a digital environment, the risk of unauthorized access and data

breaches is unavoidable. therefore Protecting financial information and ensuring transaction integrity becomes critical. Additionally, the entire reliance on oracles brings a further level of complexity. Sometimes the External data sources may be unreliable. Ensuring the security and reliability of external inputs is critical for maintaining the credibility of Blockchain-based LCs. Addressing these difficulties becomes essential as we try to digitize the Letter of credit using the potential of Blockchain technology in revolutionizing the letter of credit process.

The model of Blockchain-based LC proposed by Collet could be challenged by the idea of Ceran about the decision-making authority of LC. Ceran argued that if the letter of credit transactions gets translated into codes based on Blockchain, only the banks have the authority to “make transactions and write data on the system.” (Ceran, 2019, p. 32) a private Furthermore, a closed Blockchain platform is best to ensure risk management and data protection in Smart LCs. Private Blockchains, under the permission of authorized banks, manage the participants and ensure their authenticity of the participants.ⁱ

1.2. Emerging Blockchain Platforms Transforming letters of credit: Case Studies and Innovations

Looking over the experiences in using Blockchain technology in LCs, shows that in recent years business partnerships have been willing to form their trade finance methods on this platform.

- Barclays and Wave has developed a Blockchain-based application used for facilitating trade finance processes, including the use of letters of credit (LCs) (Kelly, 2016) and its operation shows that the Blockchain platform reduces the time-consuming operations during trade finance. Barclays is a British financial services provider that aims at integrating Blockchain technology into trade finance. Wave is a technology company that creates digital platforms to developed by Blockchain to improve security, transparency and efficiency of trade transactions. This application transforms the classic paper-based LCs into smart contracts and defines all terms and conditions of the LC. The execution process of LCs on this platform is automated and when all predefined terms and conditions are met it initiates payment instructions. This platform seeks to facilitate the workflow process of trade finance using smart letter of

credit (Koskas, 2023, p. 8)

- The Digital Trade Chain Consortium (WE. Trade) is among the first platforms used by EU countries to register all the trade data and operate the business contracts' terms and conditions. WE. Trade seeks to “connect the parties involved in a trade transaction, i.e., the buyer, buyer's bank, seller, seller's bank and transporter” (Kbc Newsroom, 2022) to facilitate trade finance in a secure and trustworthy environment. This platform enables the participants to determine and validate their identities and obligations.
- Voltron enabled by Corda Blockchain platform, is a ledger specially for managing letter of credit transactions. This platform gives the opportunity to users to create smart letter of credit in compliance with regulations and contractual obligations. All steps of the letter of credit from the issuance to triggering payment is automated by smart contracts and this feature improves the speed and security of workflow. Voltron is now rebranded to Contour by becoming a legal entity to support the formation, execution and termination of smart LCs. (Patel and Ganne, 2020, pp. 9, 24)

To sum up, Berkeley's and Wave Platform, We.trade, and Voltron all aim to use Blockchain technology in trade finance, but they differ in their area of coverage, consortium involvement, underlying technology platforms, and features offered. Each platform has its own approach and features to tackle the challenges of trade finance. Comparing these platforms highlight all of the approaches they take to digitize classic LCs, providing a range of benefits as well as drawbacks. While Barclays and Wave give priority to efficiency by automating the entire LC process, WE. Trade focuses on building an integrated network for secure trade financing. Voltron (Contour), on the other hand, provides a specific platform for the letter of credit operations assuring maximum compliance and security. These projects all together contribute to the implementation of smart LCs in international trade. However, it is necessary to recognize that problems remain, such as issues related to setting unified standards among the platforms.

2. Regulatory framework: what does the regulation say about Blockchain-based LCs?

2.1. *The Uniform Customs and Practice for Documentary Credits*ⁱⁱ

In 1933, the ICC insisting on the central role of self-regulation in business practice, created a set of rules regulating letter of credit to eliminate the conflicts raised from national regulations in this field as an obstacle to the flow of international trade, as the main aim of ICC establishment. (UCP 600 Foreword, 2007). While the UCP 600 does not explicitly refer to the application of Blockchain technology in the context of letter of credit (LC) transactions, some articles within the UCP 600 indicate its relevance and suitability for technology-related platforms utilized in LC transactions.

Article 1 of UCP 600 on the scope of application provides:

The Uniform Customs and Practice for Documentary Credits, 2007 Revision, ICC Publication no. 600 (“UCP”) are rules that apply to any documentary credit (“credit”) (including, to the extent to which they may be applicable, any standby letter of credit) when the text of the credit expressly indicates that it is subject to these rules. They are binding on all parties thereto unless expressly modified or excluded by the credit.

The policy intention behind the UCP 600 rules is to provide clarity, predictability, and certainty in international trade transactions. By setting out clear guidelines and procedures, the legislator intended to facilitate smooth and efficient trade, reduce disputes, and promote trust and confidence among parties involved in such transactions. (Ulph, 2007. p. 357) The UCP 500 was replaced with UCP 600 as the challenges increased in the international trade by emerging issues relating to e-commerce. The legislator sought to address upcoming challenges in trade finance in addition to update the technological friendly aspects of the practices. the tendency to incorporate electronic means in LC operations originates from the positive results of their application in increasing the security and efficiency of LCs.(Rodrigo, 2011) The purpose of UCP 600 is to handle operations in international trade finance by establishing general guidelines and standards for documentary credits. This objective can be accomplished by applying UCP 600 provisions to Blockchain-based letters of credit; thus, an interpretive assessment of the UCP 600's purpose may justify the implementation of the UCP to smart LCs. Article 1 of the UCP 600 specifies the scope of application to “any

documentary credit” including standby letter of credit, when the text of the credit expressly indicates that it is subject to these rules. According to this article and the purposivism interpretation rules, if the text of the smart letter of credit expressly indicates that it is subject to the UCP 600 rules, then these rules would apply to its procedure.

Article 3(3) of UCP 600 in interpretations regarding the signatures provides:

A document may be signed by handwriting, facsimile signature, perforated signature, stamp, symbol or any other mechanical or electronic method of authentication.

The risk of presenting forged documents, duplicate data and falsified identity of parties in LCs makes the regulators to consider measures regarding the verification of data entered into letter of credit. Use of electronic methods of issuing and presentation of LCs may require recognizing the electronic methods of authentication. UCP 600 highlights the role of technology in improving LCs in this field and set about this article to benefit from the efficiencies electronic methods brings to them. (Meral, 2019, p. 149) In theory the Article 3(3) of UCP 600 aligns with the applicability of these sets of rules to Smart Blockchain-based LCs, because it refers to the electronic signatures and a e-forms of authentication in LCs. From a positive perspective, the implementation of Blockchain technology reflects Article 3(3) objectives by providing measures for eliminating fraud and errors in traditional LC procedures. The potential features of Blockchain, such as decentralization, transparency, and immutability, are key tools to offer a secure and immutable platform in which every transaction is executed through validated means of authentication. Furthermore, cryptographic signatures as a form of electronic authentication in Blockchain explicitly address the UCP 600's goal to embrace digital methods of signature. This permits each party associated with an LC transaction to be accurately identified while preserving the transaction from any possible security breaches. However, while Blockchain technology significantly improves the security and effectiveness of LCs, it has some drawbacks. Although Blockchain can secure the data entered into it, it cannot independently assess the reliability of data before entry. This means that the first set of data fed into the blockchain system still needs to go through multiple verification steps to confirm their authenticity. A pragmatic strategy, reflecting both Blockchain's practical aspects and its limitations, is needed to fully embrace the benefits of smart LCs in the global trade finance.

Article 11(a) of UCP 600 provides:

An authenticated teletransmission of a credit or amendment will be deemed to be the operative credit or amendment, and any subsequent mail confirmation shall be disregarded.

The “Teletransmission of a credit” refers to incorporation of electronic methods in transmission of data related to letter of credit. The smart LCs are enabled by Blockchain using electronic means to share, process and authenticate data; therefore, they are likely to fall under scope of Article 11(a) of UCP 600. (Redzhepoghlu, 2020, pp. 37-38) in addition to the operation procedure of smart LCs, they conform to the objectives of Article 11(a) because they use Blockchain technology to operate securely and properly, using electronic signatures and data authentication method. This article addresses a key aspect of modern finance: how technological developments have been implemented in all aspects of letter of credit. An authenticated teletransmission of credit points to the verified digital transfer of data. Authentication assures that the data is generated genuinely from the intended sender and its contents remain tamperproof. the encryption methods in Blockchain which assure the sender's identity and the message's integrity, are the examples of authenticated teletransmission of data. From the textual perspective, Article 11(a) states explicitly that an authenticated teletransmission represents an operational credit or amendment. This explicit statement sets up authenticated electronic documents on the same legal basis as their paper equivalents. The article emphasizes the concept that the content and authenticity of LCs are more valuable than the means through which they are communicated. Although from the foregoing articles one can understand that UCP 600 offers an approach for the use of electronic methods data transmission, the practice is not in line with the implementation of these technologies within LCs and this requires explicit regulations for adopting Blockchain to letter of credit. The general rules may provide a framework that is open to electronic methods but because of the special features of Blockchain platform we need rules specific to Blockchain in trade finance.

2.2. The Uniform Customs and Practice for Documentary Credits Supplement for Electronic Presentations

To supplement UCP, the ICC adopted the eUCP rules to recognize the impact of technology and digitization on trade finance. The eUCP is a set of rules

synchronized with future technological developments and trends emerging in trade finance in conjunction with UN Model Laws. (Benson Jr, 2018. pp. 492-493) According to the eUCP sub-article e1(b), the eUCP acts as a supplement to UCP 600; therefore, the eUCP rules are applicable by reference to UCP 600, and the UCP is assumed a comprehensive set of rules that affect the eUCP. Therefore, it is necessary to determine the applicability of the UCP to such types of LCs to apply the eUCP to Blockchain-based LCs. (Meynell, 2019, pp. 19, 21) It is clear from an in-depth analysis of the articles in the eUCP that there are persuasive reasons in favour of a theory about the applicability of Blockchain technology and smart contracts to LCs. This evaluation is conducted from two different aspects. The first highlights the flexibility of the eUCP to the use of technology in the creation and implementation of LCs.

Article e1(a) of eUCP indicates that:

The eUCP supplements the Uniform Customs and Practice for Documentary Credits (2007 Revision, ICC Publication No. 600) (“UCP”) in order to accommodate presentation of electronic records alone or in combination with paper documents.

Although the *Article e1(a) focuses on the presentation of electronic records* it is still applicable to procedure of issuing a documentary credit through electronic records or in combination with paper documents. (Meynell, 2021, p. 20) This provision indicates that the LC process is open to embrace new technology and incorporating it into its operations. Article e3(b) of eUCP defines *Data processing system, Electronic record, Electronic signature and Electronic transferable record* that are the main components of Blockchain based LCs. Since the Blockchain based LCs are made of electronic transferable records that are “created, generated, sent, communicated, received or stored by electronic means” (eUCP, Article e3 (b) (iii)) the rules of eUCP are applicable to such LCs. Blockchain serves as a storage platform for smart contracts data that are created through encryption and predetermined protocols and parties can share and validate such data by network nodes. (Davidson, 2021, pp. 222-223)

The second perspective addresses potentials of Blockchain-based and smart LCs to meet the component standards of LC process, outlined in specific articles of the eUCP. Article e3(iii)(b), provide for different steps of an electronic record that must be “*capable of being authenticated as to the apparent identity of a sender and the apparent source of the data contained in it, and as to whether it has remained complete and unaltered*”. These requirements are the main feature of an electronic Letter of

Credit that eliminates the risk of fraud in presenting the relevant document, which could be satisfied by Blockchain technology to a great extent.(Frosinini, 2020) As mentioned in the introduction part, the special features of Blockchain such as decentralization and immutability ensures the integrity and security of electronic records, reducing the risk of data corruption. The so-called features prohibit record tampering and none permissioned interference in the LC process. The private cryptographic codes dedicated to each party authenticate the identity of users, that is in compliance with Article e12's requirements in the eUCP.ⁱⁱⁱ

2.3. International Standby Practices (ISP98)

The International Chamber of Commerce (ICC) initiated International Standby Practices (ISP98), to provide for a set of rules governing the form of issuing a standby letter of credit, presentation and its terms and conditions, while stating terminology and general provision regarding the standby credits and parties involved. As previously discussed regarding the utilization of Blockchain in the formulation, presentation, and payment initiation of letters of credit, it is evident that, transparency, immutability, and security in Blockchain technology, make it a solution for standby letters of credit (SBLCs). The existing use cases demonstrate the potential suitability of blockchain in facilitating SBLC transactions.^{iv} According to Byrne, ISP98 is “The first serious attempt to provide rules for electronic presentation” (Byrne, 2011, p. 262). Article 1.09(c) of ISP98, which provides definitions for electronic records, support standbys that allow for electronic presentation. Additionally, Article 3.06(b)(i) of ISP98 permits the use of “other similar authenticated means” for the presentation of SBLCs. Furthermore, subparagraph (d) of the same article accommodates the authenticated electronic methods for presentation. These provisions indicate the potential applicability of ISP98 to SBLCs presented through electronic means such as Blockchain. The ISP98s rules authorize the use of “other similar authenticated means” enabling new technologies in presentation as well as supervision of SBLC.

2.4. United Nations Convention on Independent Guarantees and Stand-by Letters of Credit (New York, 1995)

The UN LC convention, adopted by the United Nations General Assembly, aims to unify international commercial law by gathering the differences between European and American practices regarding bank guarantees and stand-by letters of credit and harmonizing both international and domestic laws in this area. (Byrne and Burman, 1996, p. 735) UN LC convention contains articles that address the means of presentation and forms and contents of undertaking.

Article 6(g) of the convention provides for definition:

For the purposes of this Convention and unless otherwise indicated in a provision of this Convention or required by the context: (g) "Document" means a communication made in a form that provides a complete record thereof.

Interpreting the applicability of this article to electronic means of data communication solely based on the text of the rule presents inherent complexities; however, an examination of discussions surrounding the contents of this article offers valuable insights into the underlying intent of the rule-maker in formulating these definitions. White, discuss the use of UCC or UN LC convention for standby letters of credit (SBLCs) in US law, and presents a hypothetical case to show the discordance between US courts and foreign courts regarding the presentation of digital documents. Setting aside the author's interpretation of the so-called article, he highlights:

The definition of "document" in both the UCC and the Convention, specifically focusing on Article 6(g) of the Convention, which defines a document as a communication capable of providing a complete record, potentially including digital messages. However, it is important to acknowledge that the acceptance of digital presentation may depend on the explicit authorization or agreement between the relevant parties. (White, 2010, pp. 6-8)

Article 7(2) of the convention provides that:

(2) An undertaking may be issued in any form which preserves a complete record of the text of the undertaking and provides authentication of its source by generally accepted means or by a procedure agreed upon by the guarantor/issuer and the beneficiary.

This article opts the electronic communications in issuing the undertaking by accommodating “any form” of issuance. The explanatory note provides insights into the interpretation of the convention, indicating that “the undertaking could be in physical or electronic format” insofar as it contains all the data of the undertaking and is authenticated using an approved technique. The issuer and beneficiary might agree on the authentication mechanism as long as it is generally accepted. The provision limits the broad approach of issuance form to the requirements of the applicable laws and regulations, as well as any contractual agreements between the parties involved.

Conclusions

Concerning what was mentioned above, Blockchain’s immutability, traceability, and transparency make it a very efficient tool for supporting security, trust, and risk mitigation in trade finance. It has the potential to become the new framework for global trade. The time and cost-consuming operations through classic trade finance methods make those involved in this field accept the Blockchain-based LCs as a reliable payment method. However, all actors, including nations, banks, and financial institutions, need to accept the new technology. While, the proposed model of the Blockchain-based LC conforms with the requirements of the classic LCs; it should be noted that since the LCs are engaged in a high volume of trade finances, stakeholders should use the private Blockchain platforms for issuing smart LCs. Studies show that it is possible to use the existing legal instruments in managing the new LCs. The existing legal framework provides fundamental basis for operating Blockchain-based LCs. With regard to the special features of Blockchain applications like automation and immutability, these frameworks can accommodate the use of distributed ledger technologies, such as Blockchain, in trade finance. In conclusion, it is possible to improve the effectiveness, transparency, and security of LC transactions by utilising Blockchain technology and current legal frameworks. This offers opportunities for the broad use of Blockchain-based LCs in international trade finance. However, it has to bear in mind that ICC must clearly define the “electronic” concept of the data registered through the Blockchain platform

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ⁱ See Ceran, O. O. (2019): Enhancing letters of credit with blockchain and smart contracts (Master thesis). Tilburg University, Tilburg. p. 29., Ceran summarizes definitions for public and private Blockchains as follows: “Blockchain has different types which can be divided by two main categories, which are public/private Blockchains and open/closed Blockchains. Public/private categorization answers to who can participate in the Blockchain network. In public Blockchains, anyone who has a device with an internet connection can join the network and read and write data on it. Public Blockchains have no supervisor or administrator to control the network, and data cannot be changed once other participants verify it. On the contrary, private Blockchains are where decision-making and writing are allowed by the network's decision-makers. Private Blockchains are also permissible and more suitable for using companies and financial entities.”

ⁱⁱ The Uniform Customs and Practice for Documentary Credits, effective 1 Jul 2007, hereinafter (UCP 600)

ⁱⁱⁱ Article e12(a) provides that: a. If an electronic record that has been received by a nominated bank acting on its nomination or not, confirming bank, if any, or the issuing bank, appears to have been affected by a data corruption, the bank may inform the presenter and may request it to be re-presented.

^{iv} To see the recent use case of Blockchain in Stand By Letter of Credit visit <https://7altcoins.com/academy/defining-the-standby-letter-of-credit-and-its-purpose/>.