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### Blockchain for Revitalizing Trade Finance: Enhancing Governance and Minimizing Risks

Maryam Hina

*Lappeenranta University of Technology*, maryam.hina@lut.fi

Amandeep Dhir

*University of Agder*, amandeep.dhir@uia.no

Najmul Islam

*University of Turku*, najmul.islam@lut.fi

Anushree Luukela-Tandon

*University of Eastern Finland*, antand@utu.fi

Shalini Talwar

*S P Jain Institute of Management and Research*, shalini.talwar@spjimr.org

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# Blockchain for Revitalizing Trade Finance: Enhancing Governance and Minimizing Risks

*Short Paper*

**Maryam Hina**

Lappeenranta University of  
Technology, Finland  
Yliopistonkatu 34, 53850  
Lappeenranta, Finland  
maryam.hina@lut.fi

**Amandeep Dhir**

University of Agder, Norway  
Campus Kristiansand,  
Universitetsveien 25, 4630  
Kristiansand, Norway  
amandeeep.dhir@uia.no

**A.K.M. Najmul Islam**

Lappeenranta University of  
Technology, Finland  
Yliopistonkatu 34, 53850  
Lappeenranta, Finland  
najmul.islam@lut.fi

**Dr. Anushree Luukela-Tandon**

University of Eastern Finland  
Yliopistonranta 8, 70210 Kuopio  
European Forest institute  
Yliopistokatu 6B  
80100 Joensuu  
Finland  
anushree.luukela-tandon@uef.fi

**Shalini Talwar**

S. P. Jain Institute of Management and  
Research, India  
Bhavan's College Campus, Munshi  
Nagar | Dadabhai Road, Andheri West  
| Mumbai - 400 058, India  
shalini.talwar@spjimr.org

## Abstract

*International trade thrives on the unimpeded flow of trade finance. However, trade finance in its traditional form is itself hindered by several factors, such as heavy reliance on the network of financial institutions, including trade finance organizations, banks, and syndicates of different trading nations. This makes the trade financing process complex, inefficient, unsafe, and unreliable. Against this backdrop, the present study aims to examine how blockchain-based governance can improve trade finance operations by making them not only transparent and accountable but also less risky. This study draws upon institutional theory to delve into pertinent aspects of the use of blockchain-based governance for managing trade finance. The findings are expected to reveal how inherent affordances of blockchain such as transparency can mitigate the systemic issues in the traditional approach to make trade finance more sustainable. The study's findings are further expected to offer actionable insights for advancing theory and practice in the area.*

**Keywords:** *Blockchain, governance, transparency, trade finance*

## **Introduction**

As a global economic activity, international trade significantly impacts well-being and sustainability (Xu et al., 2020). Scholars acknowledge its key role in fostering economic growth, enabling the efficient utilization of global resources, and reducing regional resource scarcity while enhancing social welfare (Petchko, 2018; Steen-Olsen et al., 2012). Since international trade involves the exchange of goods and services, it is crucial to satisfying local demand and preserving local resources for production (Dalin et al., 2012). However, international trade is not a simple process. It entails multiple transactions and the flow of funds across borders. At the same time, the parties engaged in international trade require funding to support their operations. For instance, sellers might require short-term working capital to execute orders or to buy credit insurance against counterparty defaults (Ahn, 2020). Such funding needs are fulfilled by companies through a variety of financial products and instruments constituting the practice of trade finance. Trade finance is indispensable for international trade since it makes trade transactions feasible. To explain further, trade finance enables exporters to obtain credit default insurance based on international purchase orders, discounted prepayments, working capital loans, or credit guarantees provided by the importer's bank and other financial intermediaries (Ahn et al., 2011). According to the World Trade Organization (WTO) estimates, nearly 90% of international trade uses trade finance in some form or another.

International trade always carries substantial risk due to its cross-border nature, which mandates dealing with regulatory, cultural, and financial disparities. Its riskiness is further increased by its vulnerability to unfolding global events. For instance, in the aftermath of the global financial crisis of 2008-2009, international trade shrank by 30% (Baldwin, 2009). The vagaries and tensions characterizing international trade also make trade finance fragile and fraught with challenges. The risky nature of trade finance and its susceptibility to global events was witnessed more recently when the COVID-19 pandemic increased the risk of non-delivery and nonpayment (Demir & Javorcik, 2020). The risky nature of trade finance along with low visibility and information asymmetry make its underlying processes complex and time-consuming as several activities are involved, such as information dissemination among the related parties, the transfer of funds, document collection, issuance of a letter of credit, and so on (Gaur & Gaiha, 2020). Past studies have highlighted several issues that impede smooth operations in the traditional trade finance industry. Particularly, governance is considered to be a significant challenge in trade finance.

Governance issues are usually related to transparency, lack of standardization, information asymmetry, and the efficiency of trade finance activities. For example, there is a significant issue of trust in international trade transactions due to the involvement of numerous intermediaries and trading partners, and the applicability of different national laws and regulations, which hamper its effectiveness (Commerce, 2018). To explain further, due to a lack of standardization, trade finance processes call for frequent inspections, confirmations, and verifications of paper documents (Commerce, 2018). The challenge is that any inspections and verifications notwithstanding, trade finance remains prone to financial fraud (Ho, 2018), primarily due to a lack of transparency (V. Chang et al., 2020). Issues can also arise if a product batch is funded by several banks, or trade paperwork might be falsified to secure financing (Kowalski et al., 2021). The situation is further compounded by a complex framework of international trade regulations and sanctions within which trade finance functions.

With the increase in volume and value of international trade, companies are seeking digital technology-based solutions to navigate the associated complexities. They are digitizing their processes by employing systems such as Bolero's electronic trade document system to minimize paperwork and improve transparency and security (Bhat et al., 2023) and using software (e.g., Tradelens, a shipping service powered by blockchain) to increase the effectiveness and security of their international trade operations (IBM, 2018). However, most of these systems are for specific purposes; hence, they do not offer a blanket solution for all governance challenges faced in international trade.

Recently, blockchain has emerged as a potential solution, revitalizing the trade finance industry (Deloitte, 2020). Through auditability and transparency, blockchain-based governance assures compliance with regulations (Goldsby & Hanisch, 2023). Moreover, by eliminating the need for intermediaries and establishing trust, this technology transforms the way financial services are provided (Cai, 2018; Fanning

& Centers, 2016). The technological design of blockchain fosters trust both within and outside its ecosystem, which eliminates the need for interpersonal trust and institutional governance (Notheisen et al., 2017). Specifically, blockchain governance is built on a set of protocols and code-based regulations, in contrast to the traditional governance model, which depends on the value of potential future relationships (relational governance) and legal enforcement (contractual governance; Lumineau et al., 2021). It is not surprising that blockchain governance—a self-contained, autonomous system controlled by formal rules—is emerging as a viable solution for governance issues in international trade. The growing interest notwithstanding, academic research on the application of blockchain in trade finance has not gained the desired momentum. A review of prior literature shows that it falls short of systematically examining blockchain-based solutions to deal with trade finance intricacies, with only a few working papers or perspective reports available for reference (Cognizant, 2020; Deloitte, 2020). The lack of evidence-based findings indicates an exigent need to explore different aspects of blockchain-based governance in trade finance. Taking cognizance of this imperative, this study aims to answer the following research question (RQ):

RQ: How does blockchain technology revitalize the governance mechanism of trade finance by ensuring its transparency and accountability?

This question is addressed by conducting a qualitative study of data collected from companies that have successfully transitioned to a blockchain-based system for managing trade processes. Given that the orientation of the study is to examine the governance aspect, the theoretical lens of institutional theory is used as a guiding principle. Institutional theory offers a comprehensive perspective to analyze how structures, such as rules, routines, schemas, and norms, are recognized as authoritative standards for social conduct (Puffer & McCarthy, 2015). Since blockchain, as an institutional technology, promotes institutional entrepreneurship over novel forms of governance and economic coordination (Allen et al., 2020), institutional theory is well suited for examining blockchain-based governance mechanisms for trade finance.

The study contributes by advancing a discussion on the application of blockchain in trade finance. The study's results are expected to demonstrate how blockchain can be a potent tool for limiting the fraudulent behavior of counterparties by enabling transparent data sharing among all participants. The findings of the study are further expected to shed light on how blockchain accelerates standardization, allowing for frictionless and symmetric cooperation amongst connected companies. Finally, the study contributes by offering a broader comprehension of how blockchain applications can make trade finance sustainable by lowering the risk of fraud in addition to yielding immediate practical advantages. As a result, the findings of the present study can guide prospective scholars in their efforts to augment evidence establishing the legitimacy of blockchain as a trusted technology for trade finance governance.

## **Background Literature**

### ***Blockchain and Trade Finance***

Everyone agrees that digital technologies, from big data to blockchain, have tremendous potential to transform the global trade finance industry, which is still largely paper-based (International Chamber of Commerce, 2020). For instance, scholars contend that a blockchain mechanism based on transaction accounting rules produced by mutually distrusted nodes improves credit value and successfully reduces operational risk (e.g., risk of fraud, loss, and damaged or flawed products; Du et al., 2020; Wu & Zhang, 2022). Blockchain governance regulates the behavior of participants since blockchain-based transactions oblige them to operate under a collective agreement. Under such an arrangement, any deviation will not be confirmed or recognized by the other nodes or algorithms in the system (Lumineau et al., 2021). It also digitizes paperwork-dependent processes through a smart contract to increase corporate efficiency, lower operational risk, and promote due diligence (Krupa & Akhil, 2019). Moreover, the credit information of parties (i.e., the exporter and supplier), financial intermediaries, and other core businesses are documented within the blockchain, effectively minimizing the risk of nonpayment (Morkunas et al., 2019). Since the recorded information is extremely difficult to tamper with and easily traceable, it enables mutual participant monitoring (Lumineau et al., 2021). If an enterprise is found breaching a contract, the whole network broadcasting capabilities of blockchain will significantly damage an enterprise's reputation. Besides, blockchain provides solid evidence of new fund transfers, permanently securing the record in the

credit history of an enterprise (Deloitte, 2016; Demirkan et al., 2020). Hence, these findings highlight blockchain's tremendous potential and suitability for trade finance.

Despite the advantages that blockchain offers for trade finance processes, very few studies have empirically explored the practical aspects of blockchain application in trade finance. In one of the limited studies available on the topic, Kowalski et al. (2021) investigated blockchain-based trust relationships in trade finance. They found that this technology improved transaction security, quality of communication, data exchange, and predictability of trade partners. Similarly, based on case analysis, S. E. Chang, Luo, and Chen (2019) explored blockchain's feasibility through a blockchain-based letter of credit, a financial security instrument used to meet financing needs. Of the remaining studies, Toorajipour et al. (2022) reviewed the extant literature and proposed a blockchain technology-based letter of credit mechanism, and S. E. Chang, Chen, and Wu (2019) conceptually presented a trade process model based on blockchain, discussing letter of credit as a tool of trade finance.

On the flip side, although blockchain's potential to resolve the existing concerns in traditional trade finance has been recognized (S. E. Chang, Chen, & Wu, 2019; Kowalski et al., 2021), the underlying issue of how it improves the governance of trade finance has not yet been explored. As explained by scholars, trade finance governance comprises a set of guidelines, rules, and processes that supervise and control its interactions, activities, and exchanges (Accominotti & Ugolini, 2019). Effective governance can ensure a seamless flow of trade-related transactions, which reduces risks, improves stakeholder participation, and prevents fraud. Hence, limited academic discourse on the role of blockchain application in trade finance governance reflects a gap in the literature, which reduces its contribution to practice. The present study takes cognizance of the deficiency and proposes to explore blockchain-based governance.

### ***Institutional theory***

Institutional theory offers an explanation for how institutions influence organizations and, in turn, are influenced by those organizations. Three institutional forces—coercive, mimetic, and normative—shape how organizations behave (DiMaggio & Powell, 1983). Institutions include many components ranging from formal regulations and rules to the informal impact of cultural norms, which are all designed to govern human interactions (North, 1989; Puffer & McCarthy, 2015). The formal and informal components have been categorized into cultural cognitive, regulative, and normative (Scott, 2008). The cultural cognitive category includes accepted beliefs and values that individuals share through social interactions, serving as the basis of behavior. The regulative category includes formal rule systems such as regulations, laws, and enforcement mechanisms. In comparison, the normative category includes institutions that establish roles and expectations for professional groups. Amidst this, the emerging technological era has introduced institutional technologies that underpin the governance systems for economic transactions (Allen et al., 2020). The main impact of institutional technologies (e.g., blockchain) is the transaction cost associated with economic coordination and governance amongst various players (Langlois & Robertson, 1995). These institutional technologies enable organizations to construct and implement innovative governance structures focusing on the game's rules (Allen et al., 2020; Bylund & McCaffrey, 2017). In this vein, institutional theory can assist in illuminating the rationale for using blockchain-based governance for specific practices in trade finance, such as verification processes, standardization, etc. The theory supports the exploration of the emergence of such practices, how they are upheld, and why they could be resistant to change.

Drawing upon this theory, the study obtains a structural ground for exploring blockchain-based governance for trade finance sustainability. To better understand how blockchain, with its built-in characteristics, functions as a governance mechanism to target and minimize trade finance-related concerns effectively, this study digs into the normative factors related to risk reduction. For example, the technological improvements in accuracy, error reduction, and operational streamlining are consistent with institutional norms for effective operations and lowering risk exposure (Lin et al., 2023). Moreover, blockchain's cryptographic security and immutability immediately address fraud and security threats and reflect institutional expectations (Frolov, 2021) for reliable and safe trade finance procedures. This study further investigates how trade finance-compliance and regulatory concerns are reduced by blockchain's capacity to provide tamper-proof records. Thus, the consideration of institutional theory offers a systematic way to

examine how blockchain-based governance complies with accepted standards, expectations, and norms facilitating trade finance.

## **Methodology**

### ***Research design***

Given the under-explored nature of the topic at hand, we use a qualitative research design to achieve the study's objective. The goal of qualitative research design is to comprehend the experiences and viewpoints of the participants fully. Such exploration frequently uncovers new themes and supports unexpected discoveries, making it effective in evolving our comprehension of less understood topics.

The proposed qualitative approach will be executed by collecting data through open-ended essays. The open-ended essay approach is becoming increasingly popular among social science and management researchers (Chaudhary et al., 2022; Dhir et al., 2023). Open-ended essays collect data from respondents through a set of questions in written form, facilitating the capture of unexpected viewpoints and ideas that might not have been expressed otherwise. Having time to think and put their thoughts into text form allows respondents to express themselves freely and in a more articulate manner.

### ***Data collection and analysis***

The open-ended essay questions have been developed based on the available literature and ongoing discourse on trade finance and blockchain. The authors developed the preliminary set of questions, which were then presented to two professors having experience in trade finance and blockchain to seek their feedback. Minor modifications in language were made based on their inputs. The final data collection for the study will be conducted via an online research platform through which full-time employees of companies that have implemented blockchain for trade finance will be invited to respond. To ensure that the respondents are recruited from amongst employees who have relevant information, a screening survey will first be conducted to shortlist relevant respondents. The screening will inquire about their role in their company, experience, and blockchain use knowledge. The respondents thus shortlisted can be considered key informants.

The collected textual data will be analyzed using the Gioia method. This method is operationalized by first analyzing the data to categorize it as first-order concepts, which remain as close to the informants' voices as possible. Next, the first-order concepts are consolidated into second-order themes, which are further consolidated into aggregate dimensions (Gioia et al., 2013).

## **Expected Contribution**

The present study aims to develop a theoretical understanding of the blockchain-based governance mechanism for effective trade finance processes. The study proposes to deepen the understanding of the practical usefulness of blockchain-based systems in trade finance. In contrast to the conventional trade finance system, blockchain-based governance has the potential to act as a cornerstone for making trade finance processes sustainable. To explain further, the transparency and immutability of blockchain can increase the confidence of the concerned stakeholders in trade finance. Several affordances of blockchain, such as smart contracts, can assist in transaction verification, thereby lowering the risk of fraud and enhancing overall transparency. Furthermore, blockchain's real-time data sharing and verification capabilities can improve risk management in trade finance and ensure compliance with the set regulations. This can, in turn, facilitate a more accurate evaluation of creditworthiness and lower the default risk. Moreover, a decentralized blockchain network not only reduces the risk of information asymmetry, but it can also make the processes more transparent. In addition, the study findings will highlight blockchain technology's potential to reduce costs by increasing efficiency and optimization due to increased visibility of trade flows. The study findings are also expected to shed light on how the blockchain-based system can contribute to a significant reduction in the pervasive trade finance gap by allowing automatic contract execution and ensuring that the network is resistant to manipulation risks and resilient during downtime. Furthermore, by drawing upon institutional theory, the study findings will shed light on the cultural or normative factors that influence the adoption of blockchain-based governance. It is also expected to provide

insights into how stakeholders evaluate the efficacy of blockchain for trade finance governance in minimizing current issues.

## Conclusion

This study highlights how the blockchain-based system has ushered in a new era for international trade and trade finance. Its predecessor, the traditional paper-based trade finance system, was expensive and ineffective due to its requirement of extensive verifications and long-drawn-out processes. Overall, the system was riddled with friction and complexities. For quite some time, stakeholders in trade finance have felt the need to have a better system in place to overcome the existing inefficiencies, such as the lack of visibility, accountability, and standardization. As a solution to counter the tedious nature of the traditional system, companies are increasingly digitizing their processes and seeking more efficient approaches. Blockchain-based governance is one such system that has the potential to ensure real-time monitoring, thereby countering the existing governance inefficiencies to make trade finance more sustainable. However, for positive gains to accrue, more work is required to fully comprehend and resolve the underlying issues.

The present study contributes to this agenda by proposing to examine the lived experiences of companies that have already transitioned to blockchain-based systems for trade finance. The study findings will open the door for future scholarship to contemplate fine-grained aspects of blockchain-based governance for trade finance.

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