doi:10.1017/aju.2021.64

SYMPOSIUM ON THE GLOBAL GOVERNANCE IMPLICATIONS OF BLOCKCHAIN

BLOCKCHAIN FOR TRADE: WHEN CODE NEEDS LAW

*Emmanuelle Ganne**

In spite of decades of efforts to digitalize trade, it remains labor- and paper-intensive. Shipping a container from Mombasa to Rotterdam generates a pile of paper that is twenty-five cm. high. Around thirty actors and more than one hundred people are involved throughout the journey, with the number of interactions exceeding two hundred.[1] The unique characteristics of blockchain[2] make it a promising technology to remove the multiple frictions and inefficiencies that plague international trade today and that have been put into sharp focus during the COVID-19 pandemic. The potential is significant, but technology on its own can do little. Trade digitalization cannot happen in a legal and regulatory vacuum. While law and regulation are often seen as constraints or means to counter unintended consequences of technological developments, they also play a key enabling role. International legal instruments already provide useful guidance in some areas, but gaps remain to be filled and more proactive action is needed across the globe to transpose existing legal instruments into national legislation. International organizations have a key role to play to help coordinate action on these two fronts.

Blockchain for Trade: A Unique Opportunity to Digitalize Trade

In a blockchain, blocks or transactions are linked to one another using cryptography and are time stamped, making it possible to track the journey of a product or a document along the entire supply chain with a high level of security and immutability. Not only does this allow for greater transparency and traceability along supply chains that are still characterized today by a low level of visibility but it also prevents double spending, which is a common source of fraud in international trade.

The heavy reliance on paper for international trade operations is directly linked to the notion of possession: if someone holds a piece of paper, another person cannot own it at the same time, and if that paper document changes hands, ownership changes. With electronic documents that can be duplicated easily, keeping track of who possesses the original can become particularly complicated and lead to double-spending problems. Because of its immutability and traceability features, blockchain offers the guarantee that the electronic documents that one possesses are authentic and have not been already "spent." This asset—and ownership of this asset—can then be transferred to another person. These features open unique opportunities to digitize trade documents and

* *Senior Analyst, Economic Research and Statistics Division, World Trade Organization (WTO). The opinions expressed in this essay are those of the author. They are not intended to represent the positions or opinions of the WTO or its members and are without prejudice to members' rights and obligations under the WTO. Any errors are attributable to the author.*

[1] Ian Allison, *Shipping Giant Maersk Tests Blockchain-Powered Bill of Lading*, INT'L BUS. TIMES (Oct. 14, 2016).

[2] The term "blockchain" is used here to refer more broadly to distributed ledger technology.

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https://doi.org/10.1017/aju.2021.64 Published online by Cambridge University Press

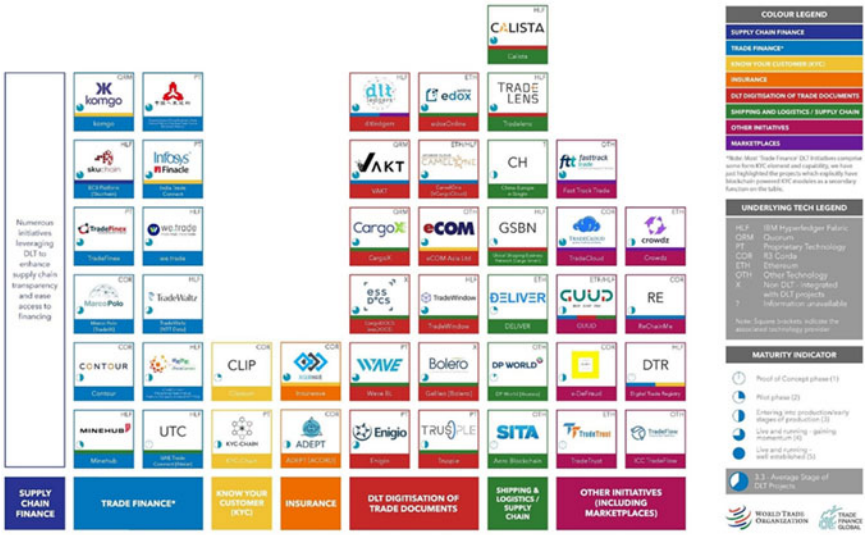


Figure 1: Blockchain project in trade and trade finance[3]

Source: Ganne and Patel (2020), DLT Projects in Trade: Where Do We Stand?, TFG-WTO publication.

avoid the double spending problem, and through the transfer of assets to digitalize trade processes.[4] Recent fraud scandals in Asia involving multiple financing show the importance of ensuring that digital trade documents cannot be used multiple times as collateral to secure financing.[5]

The decentralized and distributed nature of blockchain also means that participants in a platform (i.e., those connected to the platform, be it permissioned or permissionless)[6] can interact on a peer-to-peer basis, without any intermediary, in a highly secure environment and in quasi real-time. This allows for immediate synchronization and reconciliation among those participants, thereby creating trust: what you see is what I see. Given the number of stakeholders involved in international trade, the opportunities that blockchain opens to facilitate interaction and reconciliation across the supply chain and the trust it creates among the parties involved can generate substantial benefits. Combined with the possibility to transfer assets and to automate transactions via the use of smart contracts,[7] blockchain can bring trade digitalization to another level.

The unique characteristics of blockchain mentioned above have led numerous companies to develop blockchain-based solutions for the digitalization of trade processes (see figure 1). A wide range of companies are leveraging blockchain to digitize trade documents (in red above), while others are developing broader solutions aimed at digitalizing processes related to trade finance, insurance, or transportation and logistics, among others. Many of these companies are based in the developed world or in developing Asia. Another common use in trade (not

[3] The figure does not list blockchain projects related to product traceability along the supply chain. It focuses on projects related to the digitization of trade documents and the digitalization of trade processes.

[4] Digitization is the process of converting information from analogue to digital form while digitalization is the use of digital technologies to change a process or business model and provide new revenue and value-producing opportunities.

[5] *See* John Basquill, *Analysis: Bank Seeks Damages from BP in Landmark Singapore Fraud Claim*, Glob. Trade Rev. (Dec. 21, 2020).

[6] Many blockchain projects related to international trade are permissioned platforms, i.e., only those with "permission" can participate in the platform.

[7] Smart contracts are computer programs that self-execute when certain conditions are met.

https://doi.org/10.1017/aju.2021.64 Published online by Cambridge University Press

reflected in the periodic table above) is product traceability along the supply chain ("track-and-trace") to increase transparency into how goods are being processed, with a view to building consumers' trust and helping them make informed decisions; prove the authenticity of products and fight counterfeits; or quickly track tainted products.

While blockchain affords trade participants the opportunity to remove friction and inefficiencies from international trade processes, there are significant challenges that actors in the field face in deploying blockchain solutions. A survey of firms involved in the various blockchain projects mentioned in figure 1 revealed that legal challenges were rated as posing a more pressing challenge than any of the other challenges, ahead of a lack of standards, which is often presented as a key impediment to trade digitalization. While standardization and technical interoperability have been the main focus of attention, the lack of legal clarity and an enabling regulatory framework are seen by practitioners in the field as the largest current challenge facing the deployment of blockchain solutions in trade. To unleash the potential of blockchain for trade, legal developments need to keep pace with technological advancement. Indeed, digital technologies only provide a tool to move toward digitalization and can only be used as far as the legal framework allows them.

Technology Is Only a Tool: Code Needs Law

While blockchain opens unique opportunities to digitalize trade, existing laws and regulations still too often require the submission of paper documents and ink signatures for the processing of the shipment of goods. This heavy reliance on paper has proven particularly problematic during the COVID-19 pandemic. To help combat the hurdles introduced by the pandemic (e.g., lack of staff, inability to print, and delays in/inability to deliver) and ensure that goods continue flowing, many banks involved in trade finance adopted their own measures to relax internal rules on original documentation. They expanded existing digital channels and the use of electronic documents and e-signatures and put in place new business processes and controls. Some regulators stepped in to loosen requirements, although not many.[8] To reduce the reliance of trade on paper, government authorities and policymakers need to take action to update antiquated laws crafted for a world based on paper. Code needs law.

Legal action is required on several fronts to support the wide-scale deployment of blockchain for trade and trade digitalization. Beyond general legal issues such as data flow regulations which potentially affect all types of blockchain applications, three specific developments need to happen on a global scale to provide the legal framework necessary for trade digitalization. First, trade digitalization can only become a reality if legislation provides for the recognition of e-signatures. An electronic signature is intended to provide a secure and accurate identification method for the signatory of a data message and to indicate the signatory's approval of the information contained in the data message. It guarantees the origin and integrity of the data message and hence plays a key role in digital processes, including trade processes.

Second, trade digitalization requires legislation that recognizes electronic documents and allows for the transfer of such documents. Transferable documents or instruments such as bills of exchange, bills of lading, promissory notes, and warehouse receipts play a critical role in international trade where they are used extensively in industries like shipping, logistics, and finance. Transferable documents or instruments entitle the holder to claim the performance of the obligation indicated therein and allow the transfer of the claim to that performance by transferring possession of the document or instrument.[9] In spite of technological advances and decades of efforts to digitize these trade documents, they continue to be almost exclusively paper-based, in part due to the lack of legal recognition of electronic transferable documents. Such recognition can, however, be complex due to the notion of

[8] *See* Int'l Chamber Com. Digitalisation Working Group, *Digital Rapid Response Measures Taken by Banks Under COVID-19* (Apr. 24, 2020).

[9] *See* UN Comm'n Int'l Trade L., UNCITRAL Model Law on Electronic Transferable Records (July 13, 2017).

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possession that is attached to tangible things in certain jurisdictions. Under English law, for example, which is often used for trade contracts, intangible things, like e-documents, cannot be possessed. In other words, they cannot give rights simply by virtue of the holding.

Finally, some uncertainty remains around liability issues linked to the use of blockchain. Liability issues are minimized in trade-related blockchain applications by the fact that many of the blockchain projects in development are permissioned platforms whose participants are known and whose governing rules in terms of functioning of the platform, liability, and dispute resolution can be determined as part of the governance structure of the platform. However, this creates another problem as these various rulebooks may not be aligned, thereby contributing to a detrimental fragmentation of approaches that undermines trade digitalization on a global scale.

Specific liability frameworks may also have to be developed to address needs specific to certain types of transactions and blockchain applications. Information required for customs clearance, for example, usually has to be submitted by a single declarant, who is liable. However, in a blockchain system, information can be added by various stakeholders making it difficult to pin down a single declarant—unless the regulatory framework is adjusted to clarify liability issues.[10]

The Need for Global Coordinated Action: The Role of International Law

End-to-end trade digitalization can only happen if these issues are addressed in a coordinated manner at a global level to limit potentially conflicting individual approaches that would result in further silos and barriers to trade. International guidance already exists in some areas. The United Nations Commission on International Trade Law (UNCITRAL) has been spearheading work on e-signatures and electronic transferable records in an effort to align approaches across jurisdictions and promote national action. Its 2001 Model Law on Electronic Signatures aims to enable and facilitate the use of electronic signatures by establishing criteria of technical reliability for the equivalence between electronic and hand-written signatures. On July 13, 2017, it adopted the Model Law on Electronic Transferable Records,[11] which enables the use of electronic transferable records and sets out the conditions that must be met if an electronic record is to be treated as a transferable document. According to the Model Law, an electronic transferable record is functionally equivalent to a transferable document or instrument if that record contains the information required to be comprised in a transferable document or instrument, and a reliable method is used to: (1) identify that electronic record as the electronic transferable record (singularity principle); (2) render that electronic record capable of being subject to control from its creation until it ceases to have any effect or validity (principle of control); and (3) retain the integrity of that electronic record (integrity principle).[12]

However, when it comes to liability issues either in relation to the functioning of the platform (platform rulebooks) or to the notion of a declarant, international guidance is still missing. Work was recently initiated in the context of the International Chamber of Commerce's Digital Standards Initiative to help align rulebook approaches. As to issues related to the notion of declarant and related liability, discussions are yet to commence. Such discussions would be best housed in the World Customs Organization, which is the international organization in charge of developing, promoting, and supporting the implementation of customs standards, procedures and systems. Consideration could also be given to putting in place a multi-agency forum to coordinate action on all these fronts and ensure that all necessary aspects are dealt with in a global, coordinated manner to support the deployment of blockchain in trade and end-to-end trade digitalization.

[10] Emmanuelle Ganne, Can Blockchain Revolutionize International Trade? (2018).

[11] UN Info. Serv. Press Release, UN Commission on International Trade Law Adopts the UNCITRAL Model Law on Electronic Transferable Records (July 17, 2017).

[12] *See* UNCITRAL Model Law on Electronic Transferable Records, *supra* note 9.

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Yet international guidance is only useful to the extent it is turned into concrete action at the national level (or in the case of platform rulebooks, by platform participants). Unfortunately, while UNCITRAL model laws are important in terms of legislative guidance, they do not, as such, have any legal bearing. They are only blueprints that countries can use as a basis to develop their own legislation. Adoption of legislation based on these instruments remains limited, impeding the move toward trade digitalization. Only a limited number of jurisdictions (about sixty) have established their own laws and standards regarding electronic signatures and digital transactions.[13] As for electronic transferable documents, only five jurisdictions (Abu Dhabi, Bahrain, Belize, Kiribati, and Singapore) had adopted legislation based on the Model Law on Electronic Transferable Records at the time of writing. Others are actively working on Model Law-compliant legislation, such as the United Kingdom. Conscious of the importance of international alignment on this issue, the UK Law Commission initiated work to propose adjustments to the law of England and Wales to bring it in line with the Model Law. It aims to decouple the notions of possession and tangibility so that a thing that is intangible can be possessed.[14]

While these are positive developments, more movement is needed to transpose existing model laws into national legislation to support trade digitalization. Governments need to step in and take action. As international trade transactions involve several jurisdictions, frontrunners' efforts will only pay off if their trading partners follow suit and adjust their legalization to allow for the recognition of e-signatures and e-documents and for the transfer of electronic transferable documents.

Another avenue that can help catalyze action are trade agreements. More than seventy jurisdictions have signed trade agreements that include at least one provision on e-signature.[15] For instance, when it comes to electronic transferable records, Singapore has been actively promoting the inclusion of related provisions in its most recent trade agreements in an effort to promote trade digitalization beyond its own borders. The Australia-Singapore Digital Economy Agreement and the Digital Economy Partnership Agreement between Singapore, Chile, and New Zealand include specific provisions on electronic transferable records whereby the parties endeavor to adopt[16] or to "take into account, as appropriate,"[17] relevant model legislative texts developed and adopted by international bodies, such as the UNCITRAL Model Law on Electronic Transferable Records. Although provisions included remain best endeavor language,[18] they can play an important role in raising awareness and fostering action. The issue of recognition of e-signatures is also being discussed at the World Trade Organization (WTO) in the context of the WTO Joint Statement on Electronic Commerce that was launched at the Buenos Aires Ministerial Conference in December 2017. The establishment of a multi-agency forum as proposed above would not only help ensure that all relevant legal aspects related to trade digitalization are being addressed in a comprehensive and coordinated manner, it could also help coordinate efforts to raise awareness and catalyze action at national and global levels.

[13] *See* Citrix, *Electronic Signature Laws Around the World*. Of those, thirty-six states have legislation based on or have been influenced by the 2001 UNCITRAL Model Law on Electronic Signatures.

[14] Their proposal defines three critical characteristics that are important for possession: the thing should have an existence independent of people, it should be amenable to exclusive control (nobody else should have access to it or be able to use it or transfer it), and it should be fully divestible on transfer (if the holder transfers it, he/she loses the possession of it). *See* Law Comm'n, *Electronic Trade Documents*.

[15] Data from Univ. Lucerne, *TAPED: A New Dataset on Data-Related Trade Provisions*.

[16] Article 2.3 of the Digital Economy Partnership Agreement between Singapore, Chile and New Zealand.

[17] Article 8.4 of the Australia-Singapore Digital Economy Agreement.

[18] The term "best endeavour language" is used to refer to provisions that place the onus on the parties involved to make best efforts to achieve the desired outcome.

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Conclusion

Blockchain opens a host of new opportunities when it comes to international trade and trade digitalization. By breaking existing siloes and making it possible to truly digitize trade documents and digitalize trade transactions, blockchain can bring international trade to a new level of efficiency and transparency. But technology is only a tool. To be deployed on a large scale, blockchain applications in trade need a conducive legal and regulatory framework. Code needs law. Because international trade spans several jurisdictions, aligning regulatory and legal approaches on a global scale is critical. UNCITRAL model laws and conventions provide useful guidance in some critical areas. In other areas, guidance still needs to be developed to support trade digitalization. Consideration should be given to putting in place a multi-agency forum to help ensure that comprehensive legal guidance is being developed and to help catalyze action at national and global levels. Because a digitalized trade process is only as strong as its least digitized link, governments around the globe need to step in and take action to adopt existing model laws or commit to do so in a not-too-distant future. Only then will we be able to bring trade fully into the digital era and get rid of the twenty-five cm. high pile of paper needed to ship a container from Mombasa to Rotterdam.

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