

Blockchain for supply chains and international trade

Blockchain combines several techniques – including encryption, consensus methods and distributed storage – to record transactions. It is particularly useful in situations where it is necessary to maintain ownership histories and cooperate with other actors. It has been suggested that its use could benefit supply chain management and international trade processes. In this context, STOA launched a study of potential use cases and their impacts.

The [full report](#) sets out the key features of blockchain technology and how it could be used to support various aspects of supply chains and international trade, before examining the potential impacts of eight specific use cases. It then sets out some key challenges and 20 policy options organised into six themes. This briefing presents an overview of the findings and the complete set of policy options.



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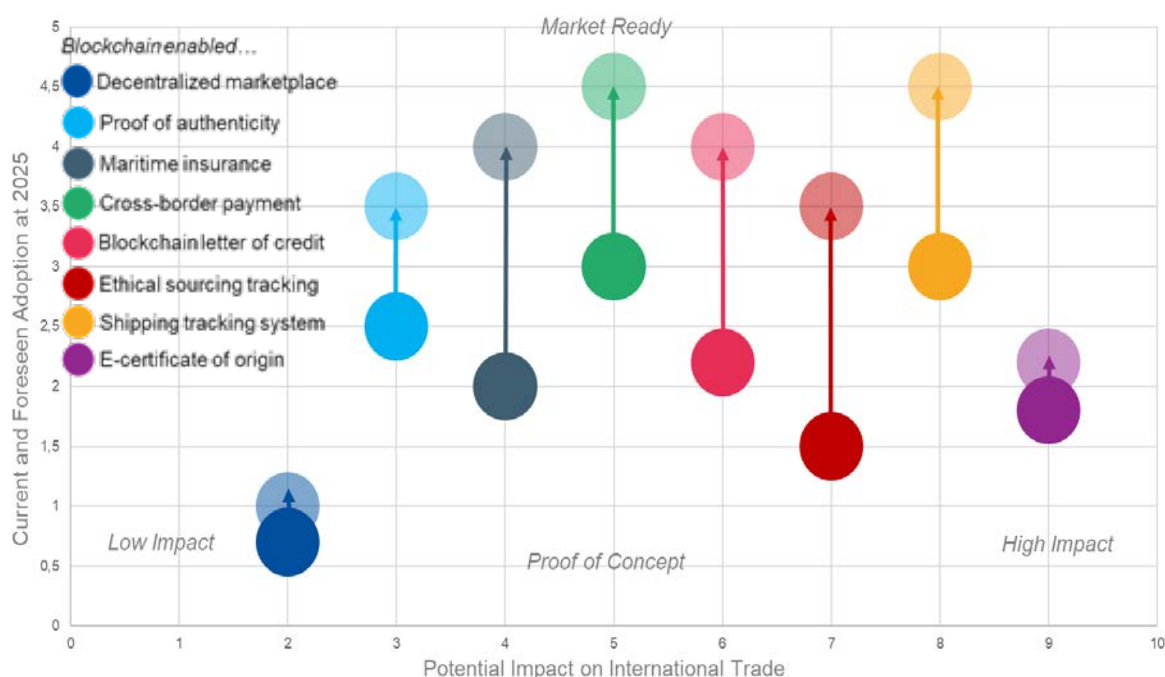
Blockchain technology offers secure, robust, authenticated storage that is resistant to modification. Its most distinctive feature is its decentralised structure. No single actor has full control of the system. Instead, control is distributed by consensus rules that apply across an ecosystem of actors. This allows participants to cooperate while retaining potentially conflicting or competing interests. This feature could be particularly valuable for supply chain management and international trade processes that require cooperation and trust between several actors arranged in complex relationships across differing regulatory frameworks.

The study examined the market readiness and potential impacts of eight promising use cases for blockchain technology in supply chains and international trade: decentralised marketplaces, letters of credit, cross-border payment systems, maritime insurance, supply chain management, e-certificates of origin, proof of authenticity for luxury products and ethical sourcing for the food industry. The potential impacts of the use cases were considered from trade, economic, transparency, security, data protection, social and environmental perspectives. Overall, they are expected to contribute to the facilitation of trade through a combination of digitalisation, information exchange and automation. This could result in cost reductions and increased transparency. Security is considered strong overall, although standards, certification and audit procedures would help to ensure quality and compliance. The use of blockchain technology might also make it easier for small and medium-sized enterprises (SMEs) to access trade and trade finance and help consumers to access product information, potentially enabling more ethical and environmentally responsible choices.

Regarding readiness for market, each use case has achieved a minimum level of credibility in the form of a technical proof of concept, a larger pilot study or, in some cases, early commercial solutions. There are no major technical barriers to the use of some types of blockchain solution for some elements of trade.

The level of maturity and impact varies across applications. The figure below presents a graphical representation of the relative impact and market readiness of blockchain applications for each use case.

Figure 1 – Qualitative assessment of the potential impact and readiness of blockchain applications for trade in 2020 and 2025



Source: © IDATE Digiworld (Adapted from the full report).

It should be noted that many of the benefits described here derive not from blockchain per se, but from the digitalisation of trade processes that are currently conducted in large part offline. There are several barriers to this digitalisation and blockchain presents only a partial solution to some of them, notably the provision of a secure infrastructure for digital exchanges that embeds trust and collaboration. They do not provide a complete solution for all aspects of trade and its digitalisation. One substantial barrier to digitalisation remains in the willingness of the ensemble of trade actors to change. Blockchain itself also introduces some barriers including data localisation and privacy issues, identification of the applicable law, allocation of liability, legal recognition of blockchain-based information, and interoperability and standardisation across various economic operators and regulatory frameworks.

Despite efforts to digitalise supply chains and trade processes, the transition to electronic document exchange and data-processing remains incomplete. Blockchain technology may offer a partial solution to some of the barriers, and several actors at EU and international level as well as the private sector are exploring the opportunities. To take things further, policy-driven action may be needed, including adaptations to the legislative framework.

Policy options

The final stage of the study develops 20 policy options. These are organised into six themes, as set out below.

Customs facilitation through blockchain

1. The European Commission could act as a bridge between EU customs authorities interested in employing blockchain technology for the digitalisation of customs, with a view to jointly developing further proofs of concept.
2. EU Single Window working groups could run through the blockchain key questions to be addressed within the guidelines developed by the World Economic Forum by means of consultations with authorities, private sector groups and mixed focus groups, to explore whether there is a business case for its development.
3. The European Commission could look to its partners in mutual recognition agreements to explore the possibility of sharing Authorised Economic Operator information via blockchain.

Involvement of small and medium-sized enterprises in the blockchain sphere

4. The European Commission could be encouraged to help SMEs keep abreast of blockchain applications relevant for their particular role in the value chain.
5. Funds could be made available to support collaboration between SMEs as both suppliers of solutions and end-users of global value chains.

Sustainable trade through blockchain

6. The European Commission could be provided with the budget to scale up the solutions being developed under Blockchain for Social Good, particularly those relating to fair trade.
7. The European Commission could include blockchain technology solutions in the considerations for designing the practical aspects of an EU carbon border tax.

Leadership in standardisation of blockchain technology

8. The European Commission could continue to play a leading role in the standardisation process, continue its close collaboration with international partners and strive to provide a platform to enable the various actors working on pilots and standards to engage with each other in order to avoid fragmentation.
9. The European Commission could make use of the Multi-Stakeholder Platform on ICT Standardisation to further collaborate with various stakeholders on blockchain standardisation.
10. Beyond dialogue with third countries on standardisation, the EU could lead by example and set standards itself by introducing blockchain-based services for example in customs or financial transparency, based on which private actors, third countries, and international standardisation organisations could orient themselves.
11. Support could be given to the work of the European Blockchain Partnership, and collaboration encouraged with the International Association for Trusted Blockchain Applications, in order to work towards a comprehensive ecosystem of international supply chains using blockchain technology.

Evidence-based policymaking in the area of blockchain

12. Parliament could engage more actively in the work already going on at EU level with regard to blockchain technology and international trade by observing relevant organisations such as the European Blockchain Partnership or asking the European Commission for regular updates on their work.

13. Networks, such as the European Blockchain Partnership, the Observatory and others could be promoted. To this end the Parliament could also promote and fund further research in the area, including a mapping of regulatory readiness in the EU, its Member States and international partners.
14. The European Commission could be made aware that solutions should include reporting indicators and specific plans on how results will be measured, communicated and developed into lessons learned.
15. Progress of work already being done in piloting blockchain at EU level could be monitored closely and support given for setting up future use cases and pilots under the European Blockchain Services Infrastructure and the Connecting Europe Facility.
16. Use could be made of funding schemes for research and business to support the EU's efforts in the early stage development of blockchain-related projects in trade and supply chains.
17. In the context of the International Association for Trusted Blockchain Applications, the European Commission could be supported and encouraged to establish a public-private partnership in the area of blockchain for international trade and supply chains.

Awareness raising for the use of blockchain

18. Regarding blockchain's potential to improve efficiency and support EU values such as transparency, fair trade, and social and environmental responsibility, the EU could promote recognition of the technology and its use in trade and supply chains.
19. Successful proof of concepts, pilots and the available building blocks on the Connecting Europe Facility platform could be promoted among Member States, private stakeholders and citizens to increase familiarity among stakeholders with the technology and its uptake.
20. The European Commission and Member States could be encouraged to make use of their roles as members of international organisations such as the World Trade Organization, the World Customs Organization and the United Nations Centre for Trade Facilitation and Electronic Business to promote trade digitalisation and the use of blockchain technology.

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