World Customs Organization

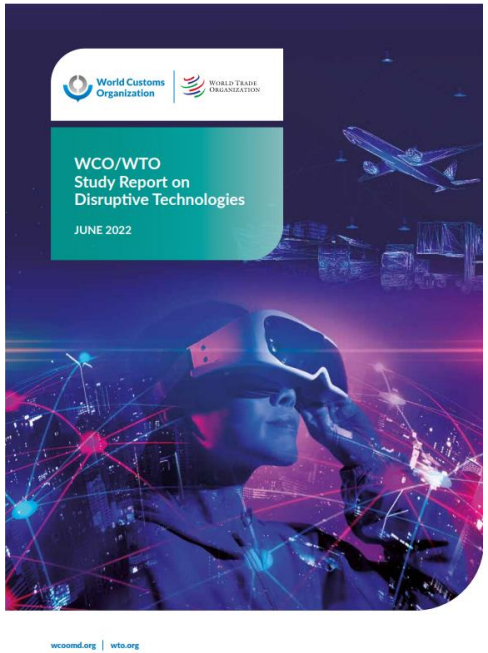
# Challenges and opportunities: emerging technologies for trade facilitation

**Capacity Building Workshop – Implementing Cross-border Paperless Trade and Emerging Technologies**

*12 December 2022*

# Update of the Study Report on Disruptive Technologies

- Three years since the first version of the Study Report with many new developments having taken place
- To be done jointly with the WTO to include the broader international trade component
- Updates:
  - 2021 Annual Consolidated Survey - current state of play regarding implementation of three groups of technologies (blockchain, Big Data/Artificial Intelligence and IoT)
  - Recommendations and lessons learnt stemming from WCO's regional workshops
  - New chapter on legal and technical standards
  - Use cases on latest projects

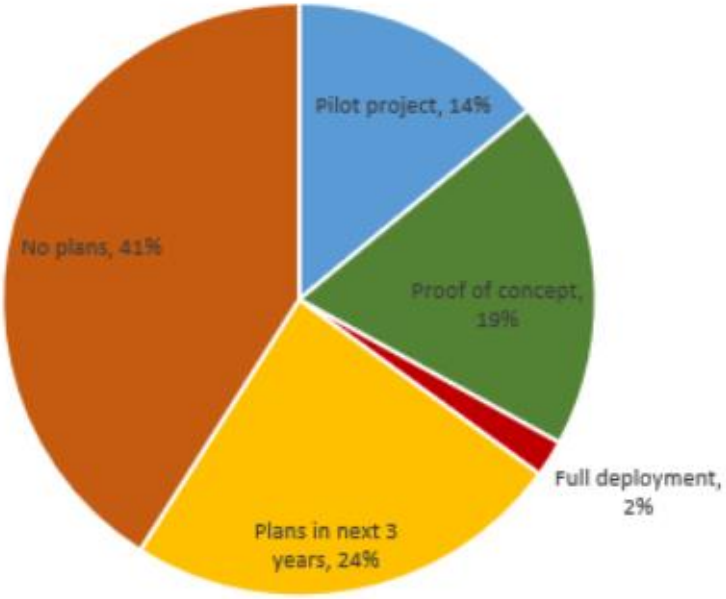


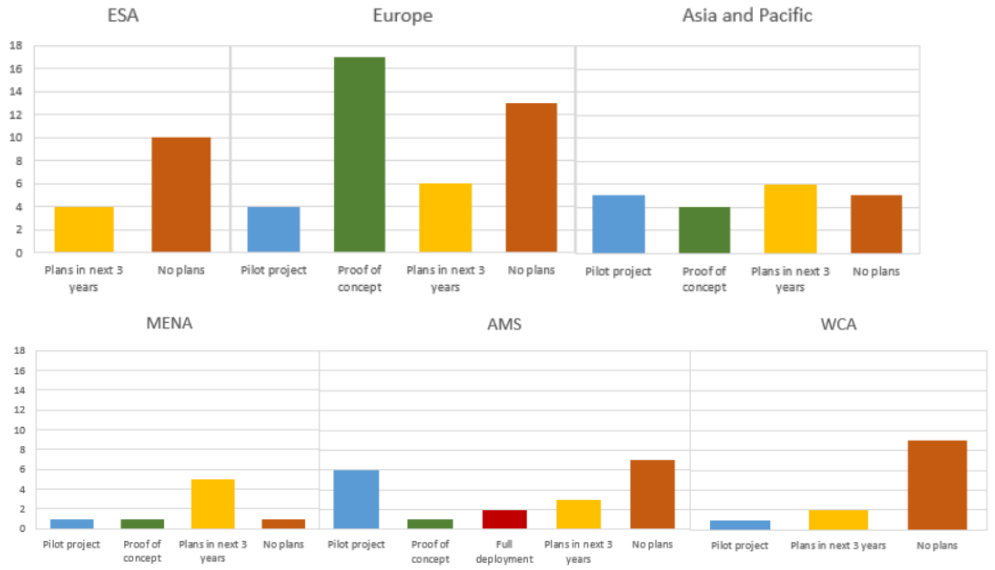
# Blockchain technology

*The blockchain is a type of sophisticated cryptographic distributed ledger architecture, a continuously growing list of records called blocks. It has the capability to move any kind of data swiftly and securely and, at the same time, make a record of that change, movement, or transaction available instantly, in a trusted and immutable manner, to the participants in a blockchain network, called validators or nodes.*

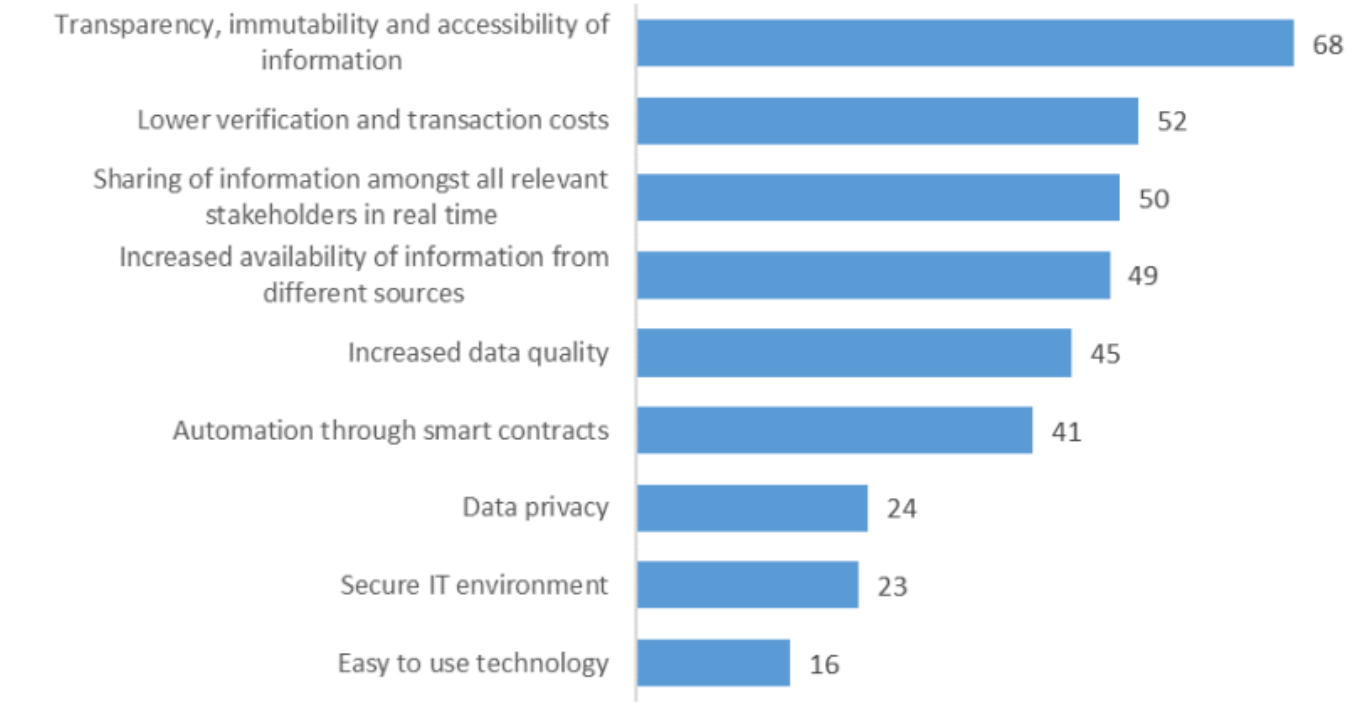
- In Customs regulatory processes for improving Customs compliance, trade facilitation and fraud detection
- Reduction of intermediaries and paper/manual tasks
- Improving certainty and predictability based on reliable real-time data
- Allows for traceability and end-to-end visibility thus enhancing supply chain security and facilitation
- Pilot projects and PoC

# Blockchain technology: Stage of adoption



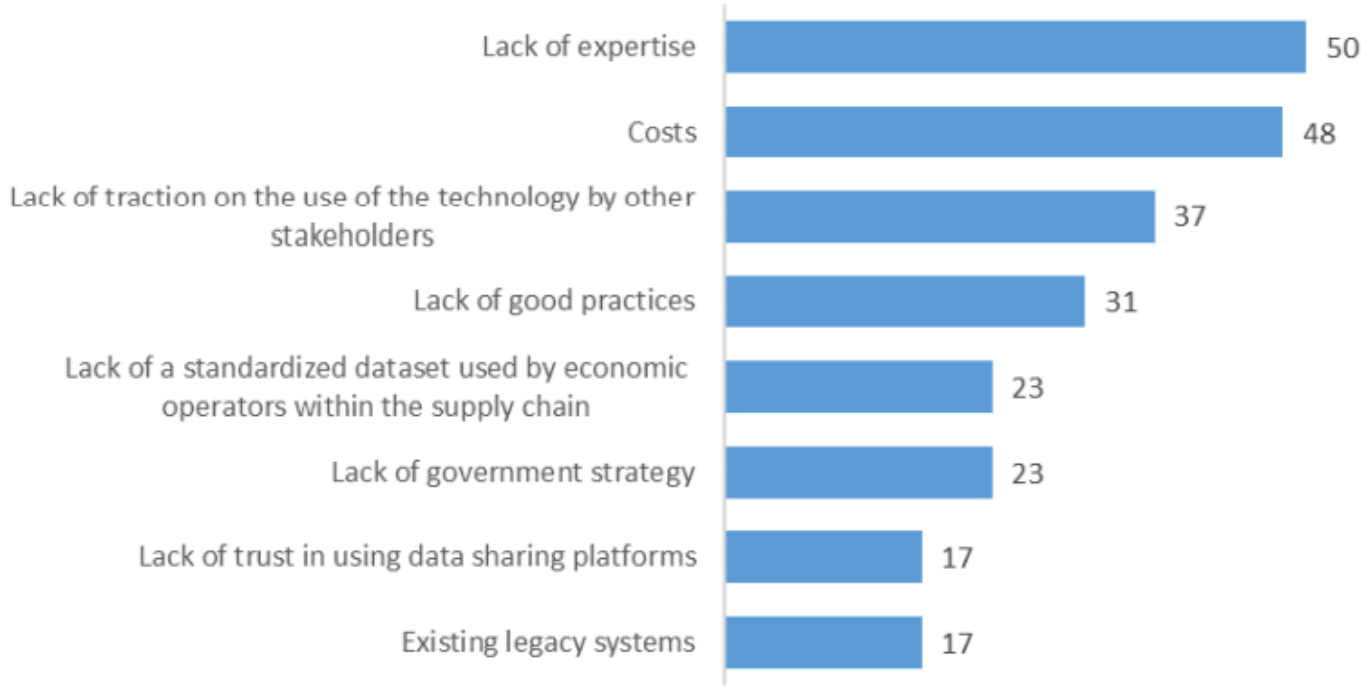



# Blockchain technology: Main Benefits



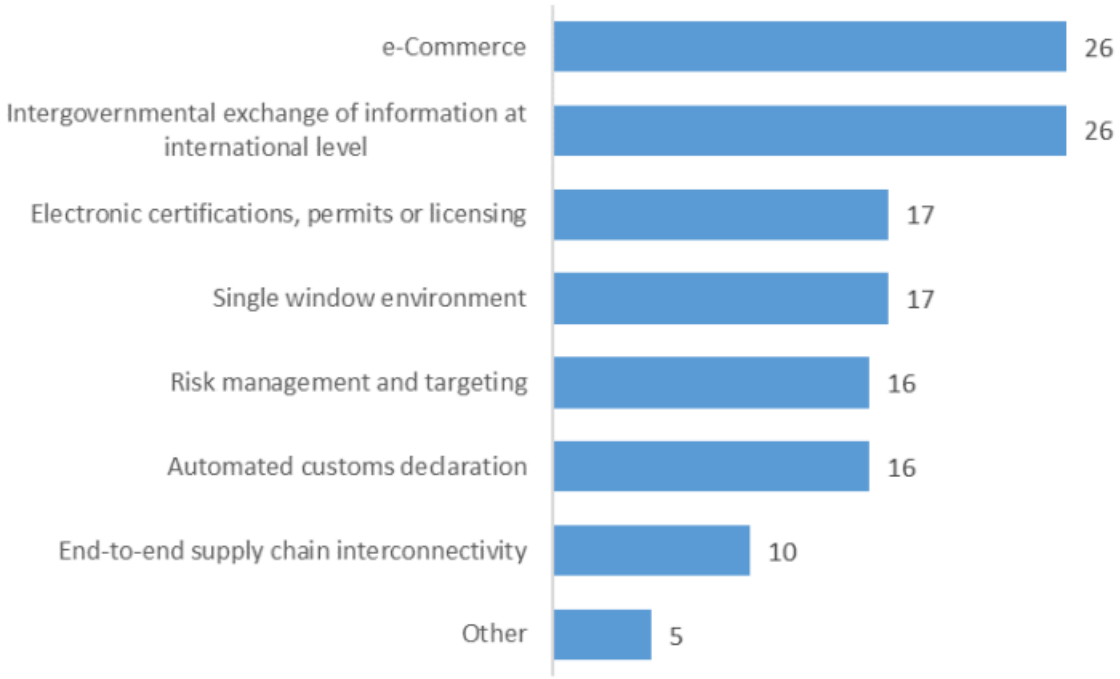

*Note:* Total respondents numbered 87.

# Blockchain technology: Main obstacles




*Note:* Total respondents numbered 95.

# Blockchain technology: Areas of implementation




*Note:* Total respondents numbered 44.

# Blockchain technology: Use cases


**Proving integrity and ensuring trust in IOSS VAT identifiers through a decentralized registry**

1. Taxation authorities will allocate an IOSS VAT identifier
2. A new block will with a Fingerprint of the IOSS Identifier will be created after verification
3. The Node will call other Nodes to obtain their endorsement of the proposed information
4. Customs authorities of the Member State of Importation can then verify the integrity and validity of the shared IOSS VAT identifier on the blockchain

# Blockchain technology: Use cases


**Blockchain based e-commerce platform**

Connecting major e-commerce players like e-commerce companies, logistics companies, courier, government authorities and free zone

1. E-commerce / logistics Company will submit an E-Commerce Order with transport details to the platform;
2. The platform sends Declaration Creation Request to the Declaration system;
3. The Declaration system will send back a clearance message after risk assessment;
4. Last mile delivery company will provide delivery confirmation.

# Recent News

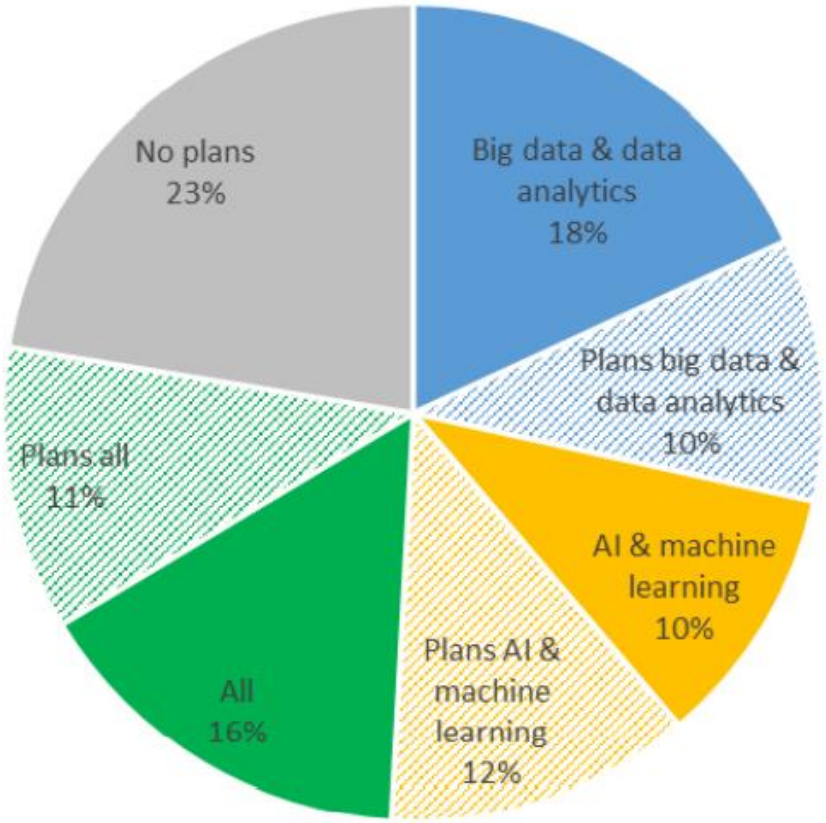

https://www.maersk.com/news/articles/2022/11/29/maersk-and-ibm-to-discontinue-tradelens -

# Big Data & Artificial Intelligence

*Artificial intelligence (AI) is an area of computer science that focuses on the creation of intelligent machines that work and react more like humans. AI refers to systems that change behaviors without being explicitly programmed, based upon data that is observed, collected and analyzed. It is a broad term that includes different technologies such as machine learning, deep learning, computer vision and natural language processing that, taken individually or in combination, add intelligence to applications.*

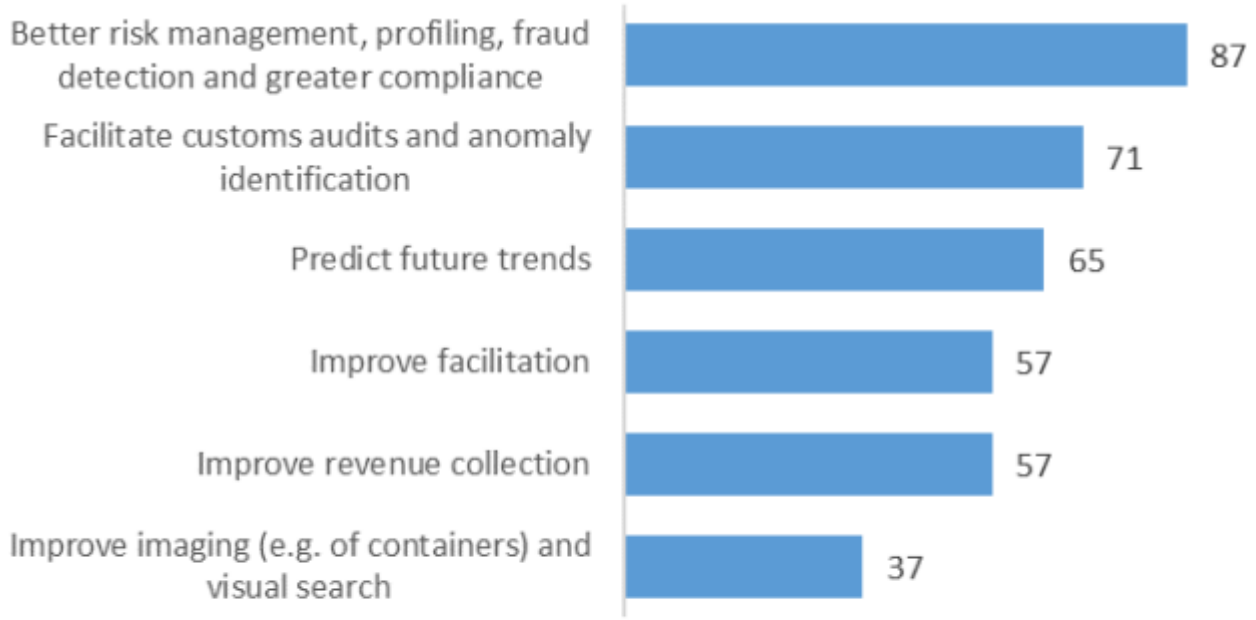
- Detect and predict patterns more accurately than humans can
- Revenue collection models, classification of products, Customs audits, risk-based targeting, analyzing container images from x-ray scanners, logistics monitoring, identifying high-risk passengers and vehicles
- Visual search and facial recognition, behavioral and predictive analytics can be tailored for use in Customs and Border Management

# Big Data & Artificial Intelligence: Stage of Adoption




Note: Total respondents numbered 94.

# Big Data & Artificial Intelligence: Main Benefits



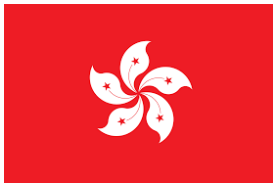

Note: Total respondents numbered 94.

# Big Data & Artificial Intelligence: Main Obstacles


Note: Total respondents numbered 94.

# Big Data & Artificial Intelligence: Use cases

PILOT



**Hong Kong: Cargo Big Data System (CBDS)**

Big data analytics and artificial intelligence (AI) on cargo clearance to analyze the ever-changing trade pattern and trend in order to effectively combat cross-border smuggling crimes.

- AI Text analytics to process the unstructured free-text cargo data (e.g. goods descriptions and company names).
- Analytical tools such as pattern analysis, network analysis, as well as data visualization.
- Web crawling to analyze the latest smuggling trends.

World Customs Organization

# Thank You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