World Customs Organization

Future of Customs: The Study Report on Disruptive Technologies

Bangladesh: National Workshop on Cross-border Paperless Trade Facilitation and Emerging Technologies

Session 1 State of play: emerging technologies for trade facilitation

28 February 2023

Future of Customs

- Virtual Working Group on the Future of Customs under the WCO Permanent Technical Committee established in 2015; brings together representatives of over 40 stakeholders (Customs, private sector associations and members of the Private Sector Consultative Group, academia, international organizations)
- Latest trends, technological developments, occurrences influencing the Customs and border management environment
- In 2017 focus placed on: Disruptive technologies

Study Report on Disruptive Technologies – background and objectives

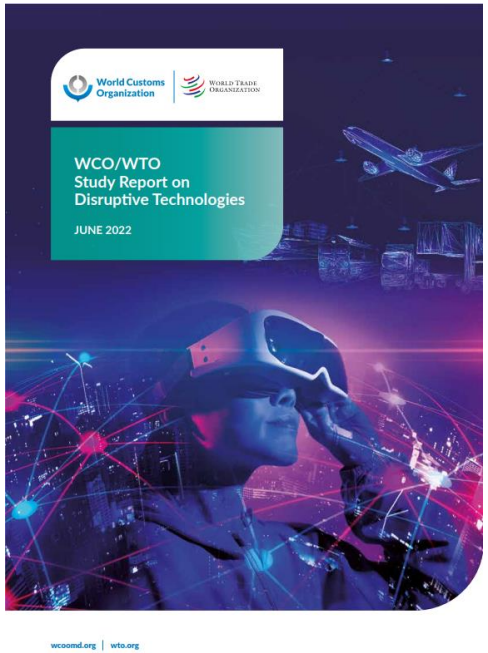
- Acknowledges the importance of exploring new and emerging trends for successful policy making
- Addresses the enhanced interest of the Membership in what we commonly call disruptive technologies
- Brings together outcomes of the discussions in the WCO working bodies and events
- Objective: Raise awareness of the latest technologies and their potentials, provide practical examples and uses cases
- Published in June 2019

Study Report on Disruptive Technologies - contents

- Focuses on 7 technologies: blockchain; IoT; AI and ML; biometrics; drones; virtual, augmented and mixed reality; 3D printing
  - What is it and how is it broadly used?
  - How is it used in Customs and border management today? And in the future?
  - What are the benefits and risks?
- Strategy behind technology
- Recommendations
- 20 use cases

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

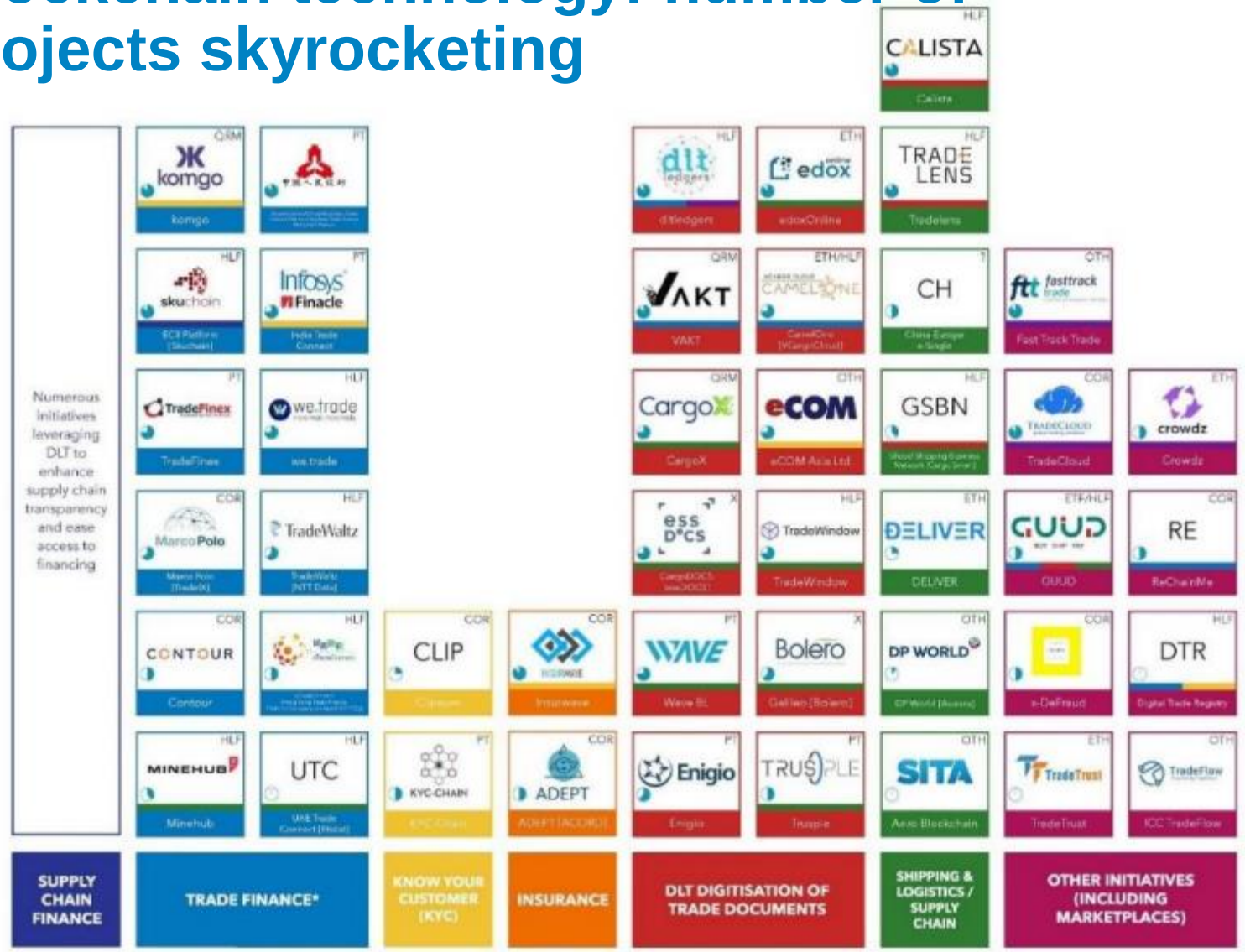


Blockchain technology

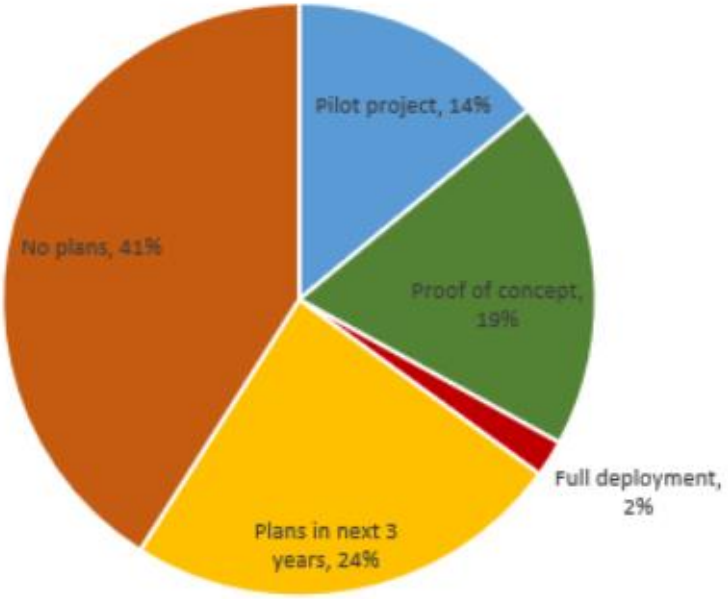
The blockchain is a type of sophisticated cryptographic distributed ledger architecture, a continuously growing list of records called blocks. It has the capability to move any kind of data swiftly and securely and, at the same time, make a record of that change, movement, or transaction available instantly,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

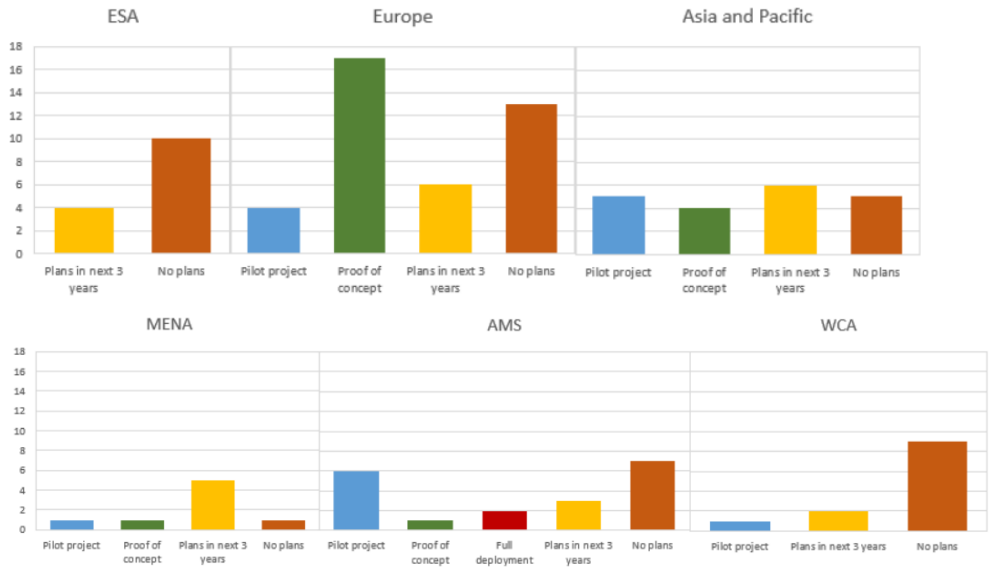
- In Customs regulatory processes for improving Customs compliance, trade facilitation and fraud detection
- Reduction of intermediaries and paper/manual tasks
- Improving certainty and predictability based on reliable real-time data
- Allows for traceability and end-to-end visibility thus enhancing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

Blockchain technology: number of projects skyrocketing

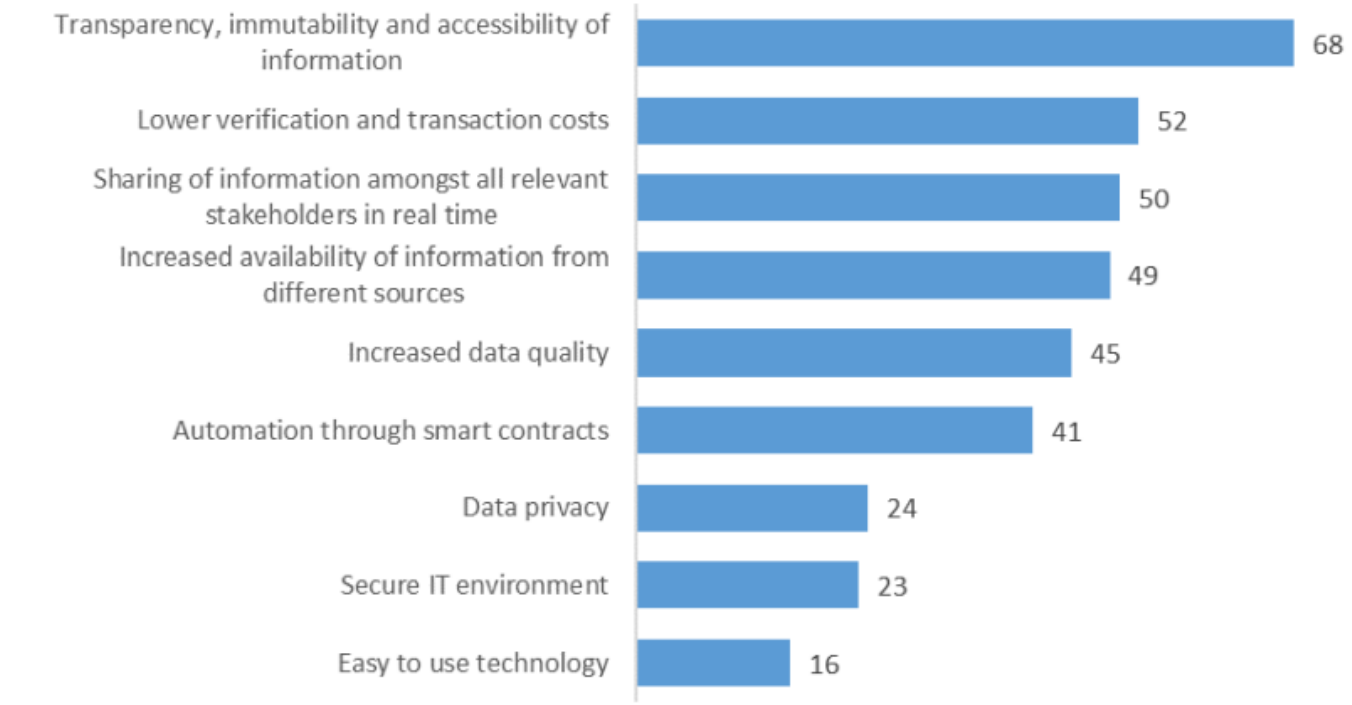


Blockchain technology: Stage of adoption



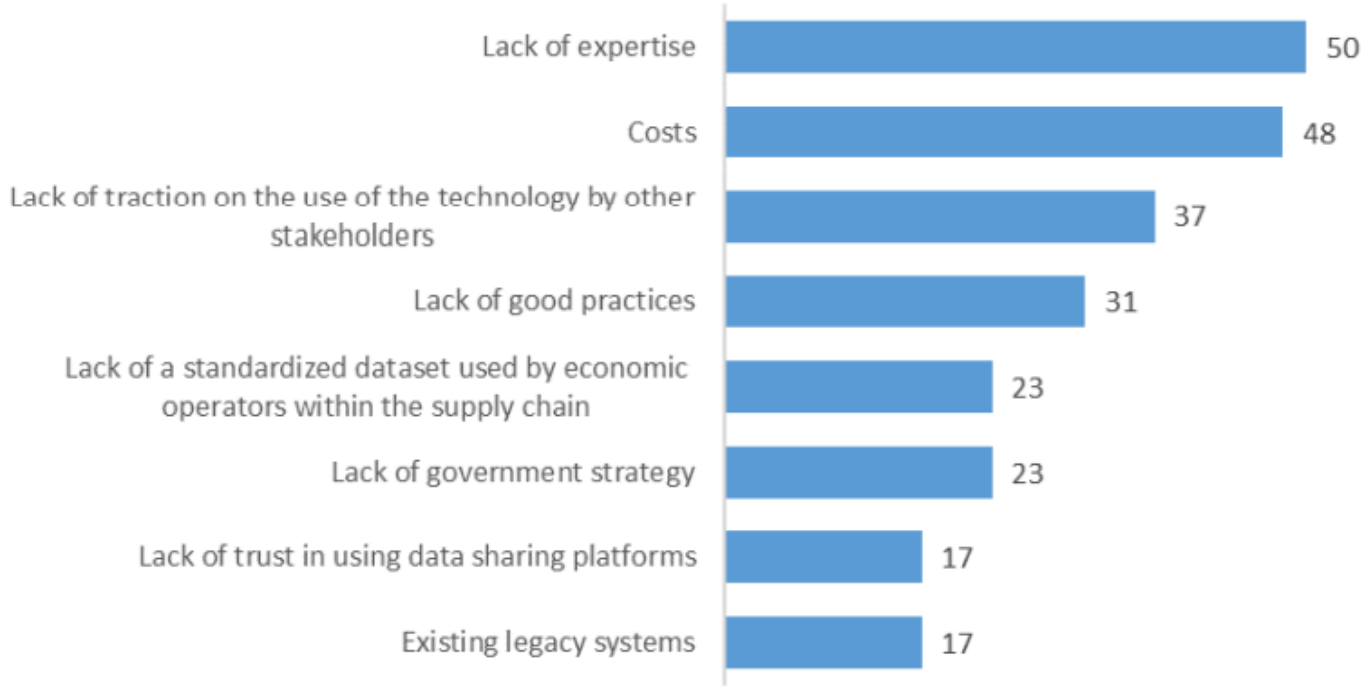


Blockchain technology: Main Benefits



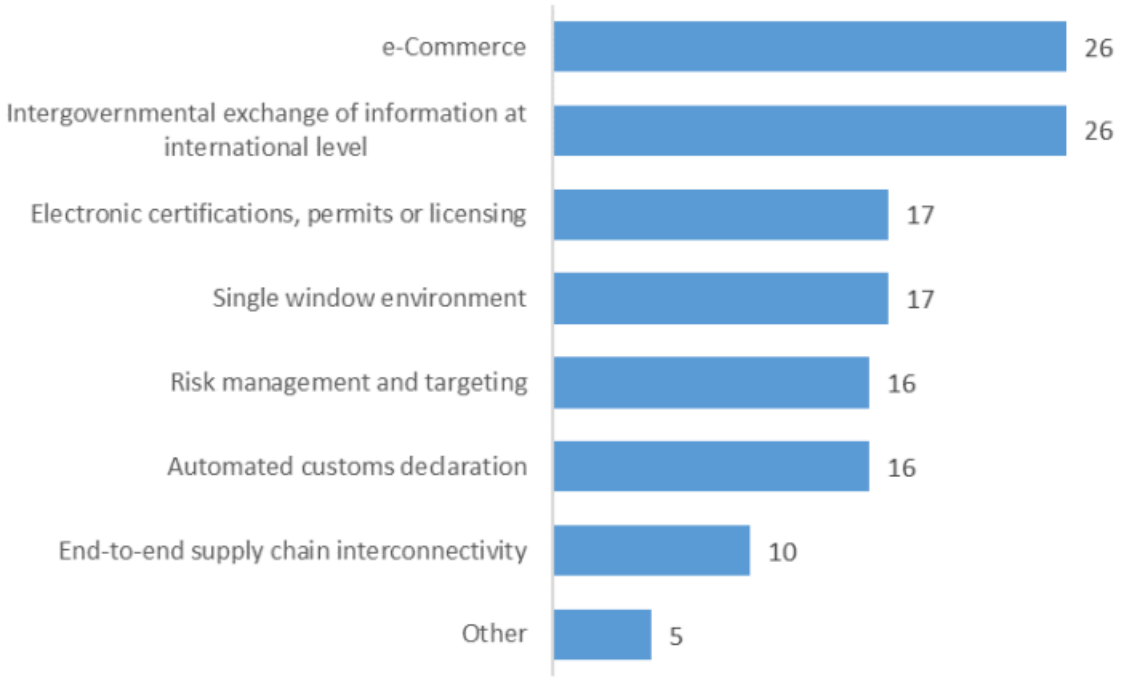
Note: Total respondents numbered 87.

Blockchain technology: Main obstacles



Note: Total respondents numbered 95.

Blockchain technology: Areas of implementation



Note: Total respondents numbered 44.

Blockchain technology: Use cases

PILOT

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

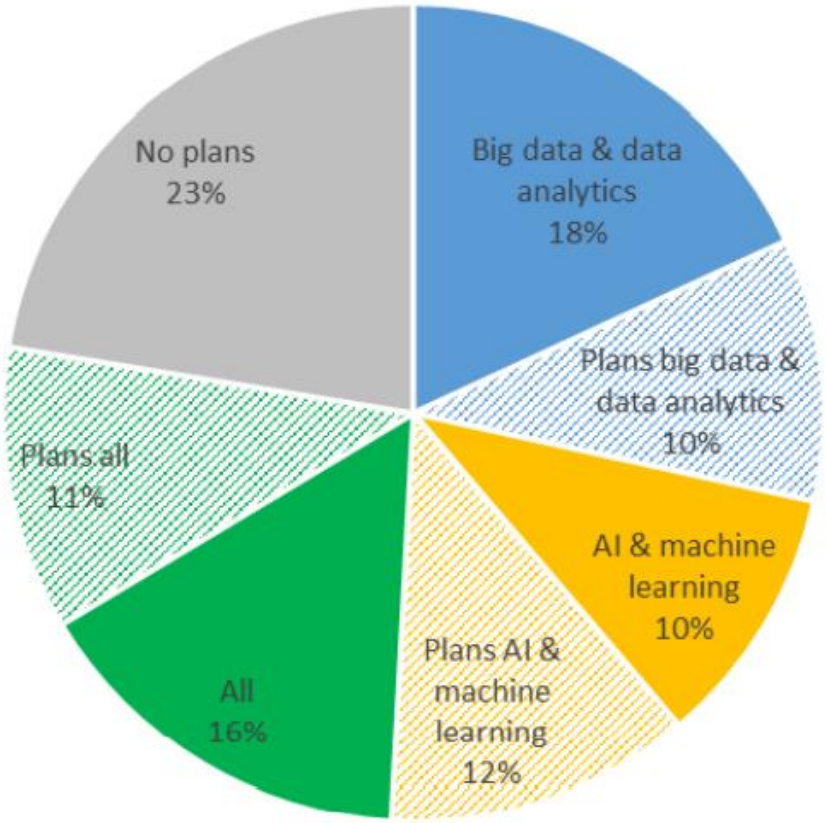
1. E-commerce / logistics Company will submit an E-Commerce Order with transport details to the platform;
2. The platform sends Declaration Creation Request to the Declaration system;
3. The Declaration system will send back a clearance message after risk assessment;
4. Last mile delivery company will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

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.

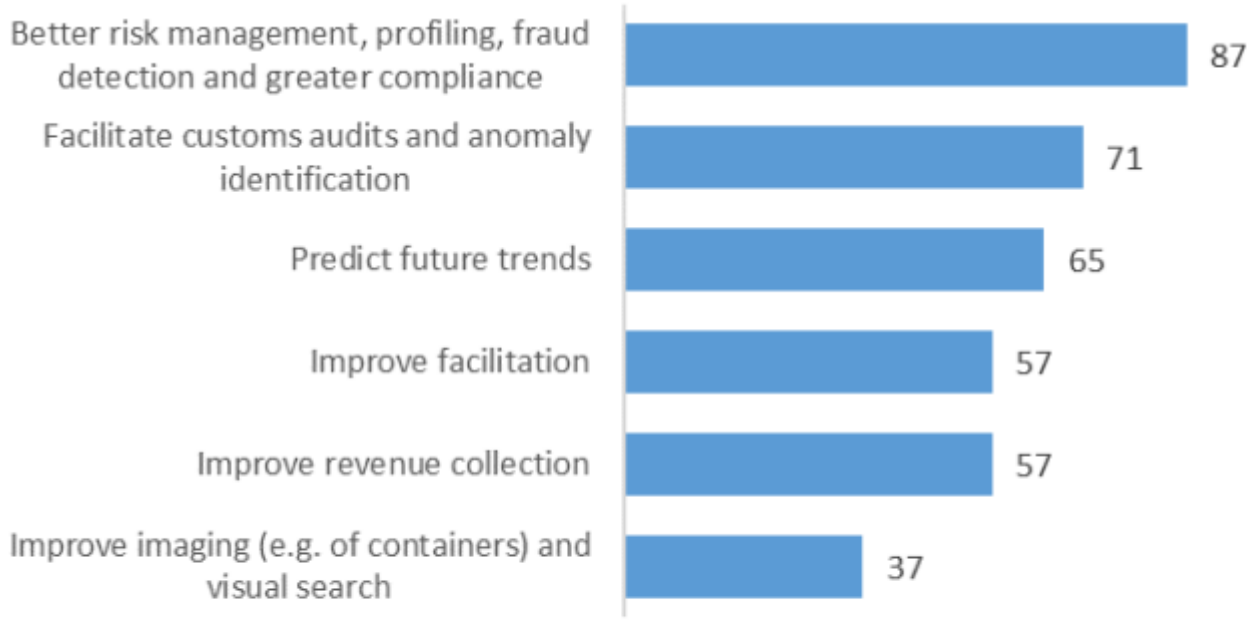
- Detect and predict patterns more accurately than humans can
- Revenue collection models, classification of products, Customs audits, risk-based targeting, analyzing container images from x-ray scanners, logistics monitoring, identifying high-risk passengers and vehicles
- Visual search and facial recognition, 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



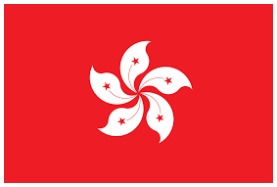
Note: Total respondents numbered 94.

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.

Big Data & Artificial Intelligence: Use cases

Belgium Customs: Behavioral consequences of tariff changes

Historical big data are used to detect fraudulent behavior following the introduction or increase of EU tariff measures.

Recommendations

- Take your time
- Don’t eliminate the human element
- Move from transaction-driven to data-driven processes
- Use Big data for better decision-making
- Needs-driven not technology-driven
- Flexible and future-proof
- Customs needs a strategy
- Cost/Benefit analysis
- Use existing standards
- Legal Framework
- Culture shift to a data-driven organization
- Cooperations

World Customs Organization

Thank You

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