



**World Customs
Organization**

The Study Report on Disruptive Technologies: Data Analytics

**UNESCAP / WCO / ICC / ADB Webinar
on Data Analytics for Cross-border Paperless Trade**

25 January 2023

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



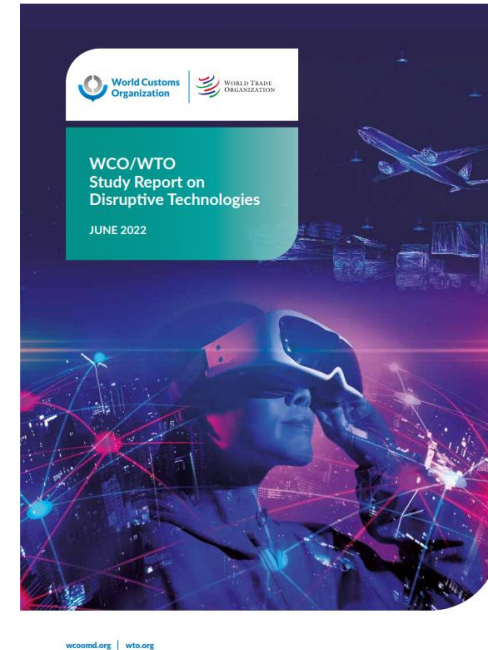
- Focuses on 7 technologies: blockchain; IoT; AI and ML; biometrics; drones; virtual, augmented and mixed reality; 3D printing
 - What is it and how is it broadly used?
 - How is it used in Customs and border management today? And in the future?
 - What are the benefits and risks?
- Strategy behind technology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

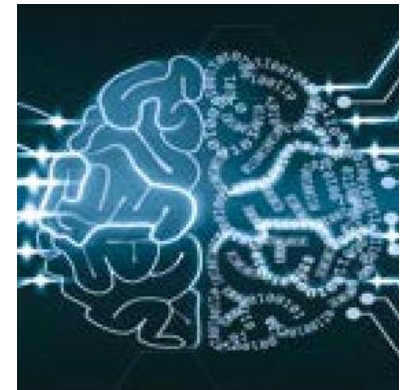


Big Data & Artificial Intelligence

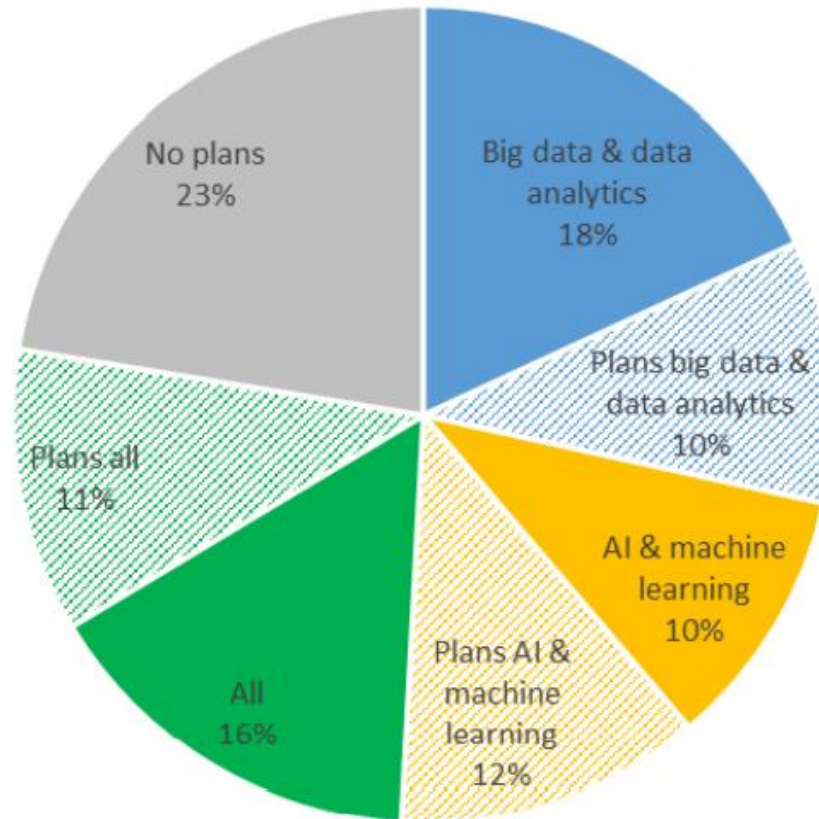


Artificial intelligence (AI) is an area of computer science that focuses on the creation of intelligent machines that work and react more like humans. AI refers to systems that change behaviors without being explicitly programmed, based upon data that is observed, collected and analyzed. It is a broad 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



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.

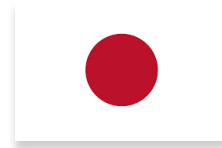
Big Data & Artificial Intelligence: Use cases



US CBP: AI Center of Innovation (COI)

Established in late 2020 to act as the catalyst to create the enterprise processes, tools, and infrastructure needed to rapidly develop, test, and deploy new AI solutions.

Big Data & Artificial Intelligence: Use cases



Japan Customs: AI X-Ray and Big Data

AI X-Ray

Since 2017 Japan Customs started a study on X-ray image analysis with AI by collecting large amounts of X-Ray Images to train the AI.

Big Data in Customs declaration

In 2019 Japan Customs started to train AI models by using Big Data including Customs declaration.

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.

Big Data & Artificial Intelligence: Use cases



Zambia: Using AI Chatbot (ZAX)

Chatbot to engage with taxpayers alongside other customer service channels

- Uses natural language processing to answer basic questions via a business.
- The information on the chatbot is managed by the Customers Support Unit working in collaborations with various divisions to ensure that relevant and updated information is fed into ZAX.



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Thank You

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