JOINT WCO-WTO WEBINAR ON THE ROLE OF ADVANCED TECHNOLOGIES IN CROSS-BORDER TRADE: A CUSTOMS PERSPECTIVE

KEY FINDINGS
Introduction

• Objectives of the paper:
  • Better understanding of how Customs, as a key stakeholder in international trade, can further contribute to trade facilitation, among other, through the use of latest technologies
  • State of play of implementation of 3 groups of technologies (blockchain/DLT; IoT; and DA, AI, ML)
  • Stage of adoption (global/regional level), benefits and challenges, use cases

• Source of information: results of WCO’s 2021 Annual Consolidated Survey (ACS), new Chapter 4 on disruptive technologies – 18 questions prepared by WCO and WTO

Overview of survey results

124 out of 183 Customs administrations (68%) responded to at least one, and in general to more than half, of the questions in Chapter 4 of the ACS.

Highest level of response (77%) in the European region.
Stage of Adoption of Blockchain

- 41% No plans
- 24% Plans in next 3 years
- 19% Proof of concept
- 14% Pilot project
- 2% Full deployment

Note: Total respondents numbered 110.
Blockchain Benefits & Challenges

Main benefits of introducing blockchain:
- Transparency, immutability and accessibility of information: 68
- Lower verification and transaction costs: 52
- Sharing of information amongst all relevant stakeholders in real time: 50
- Increased availability of information from different sources: 49
- Increased data quality: 45
- Automation through smart contracts: 41
- Data privacy: 24
- Secure IT environment: 23
- Easy to use technology: 16

Main obstacles to adopting blockchain:
- Lack of expertise: 50
- Costs: 48
- Lack of traction on the use of the technology by other stakeholders: 37
- Lack of good practices: 31
- Lack of a standardized dataset used by AEOs within supply chain: 23
- Lack of government strategy: 23
- Lack of trust in data-sharing platforms: 17
- Existing legacy systems: 17

Note: Total respondents numbered 87.
# Blockchain – use cases

<table>
<thead>
<tr>
<th>Sharing VAT info (Customs and Tax)</th>
<th>Sharing logistics-related information</th>
<th>Sharing AEO information</th>
<th>Single Window interoperability</th>
<th>Certificates of Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>• European Union: <strong>SEED-on-Blockchain</strong></td>
<td>• <a href="#">TRADELENS</a></td>
<td>• Mercosur members (Argentina, Bolivia, Brazil, Paraguay and Uruguay): <strong>bConnect</strong></td>
<td>• China and Singapore</td>
<td>• Australia and Singapore, under the <strong>TradeTrust</strong> framework</td>
</tr>
<tr>
<td><img src="image" alt="EU flag" /></td>
<td>• Azerbaijan</td>
<td>• Latin American countries (Bolivia, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Mexico and Peru)</td>
<td><img src="image" alt="China flag" /></td>
<td><img src="image" alt="Georgia flag" /> and Azerbaijan</td>
</tr>
<tr>
<td>Port Community System</td>
<td>E-Commerce platforms</td>
<td>Cerfification of high-quality products</td>
<td>Free Trade Agreements</td>
<td></td>
</tr>
<tr>
<td>• Guatemala</td>
<td>• Morocco</td>
<td>• Malaysia</td>
<td>• United States: NAFTA/CAFTA PoC</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Guatemala flag" /></td>
<td><img src="image" alt="Morocco flag" /></td>
<td><img src="image" alt="Malaysia flag" /></td>
<td><img src="image" alt="United States flag" /></td>
<td></td>
</tr>
</tbody>
</table>

- **Port Community System**
- **E-Commerce platforms**
- **Certification of high-quality products**
- **Free Trade Agreements**
The Internet of Things

The role of advanced technologies in cross-border trade: a customs perspective

Key Findings

Stage of adoption of the internet of things

- 40% No plans
- 9% Planned
- 51% Deployment

- X-ray and CT scanners: 54
- QR code and barcode readers: 32
- Automated licence plate readers and cameras: 28
- E-Seals: 26
- Others: 5

Note: Total respondents numbered 94.
Main benefits of introducing the internet of things

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better risk management</td>
<td>67</td>
</tr>
<tr>
<td>Greater efficiency of customs clearance processes</td>
<td>66</td>
</tr>
<tr>
<td>Better analytics</td>
<td>59</td>
</tr>
<tr>
<td>Lower labour costs</td>
<td>40</td>
</tr>
<tr>
<td>Help prioritize customs clearance</td>
<td>37</td>
</tr>
</tbody>
</table>

Note: Total respondents numbered 83.

Key Findings

Main obstacles to adopting the internet of things

<table>
<thead>
<tr>
<th>Obstacle</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>42</td>
</tr>
<tr>
<td>Integration of IoT with customs processes</td>
<td>36</td>
</tr>
<tr>
<td>Compatibility and interoperability of different IoT systems</td>
<td>34</td>
</tr>
<tr>
<td>Lack of expertise</td>
<td>31</td>
</tr>
<tr>
<td>Handling of IoT unstructured data and ability to transform information</td>
<td>25</td>
</tr>
<tr>
<td>Lack of good practices</td>
<td>21</td>
</tr>
<tr>
<td>Lack of traction on the use of IoT by other stakeholders</td>
<td>20</td>
</tr>
<tr>
<td>Existing legacy systems</td>
<td>18</td>
</tr>
<tr>
<td>Data security and privacy issues</td>
<td>16</td>
</tr>
<tr>
<td>Lack of government strategy</td>
<td>15</td>
</tr>
<tr>
<td>Legal issues</td>
<td>14</td>
</tr>
</tbody>
</table>
Internet of Things – use cases

**Exchange of x-ray images**
- Baltic countries (Estonia, Latvia and Lithuania) – BAXE (Baltic X-ray Images Exchange)

**Cargo tracking in transit**
- Argentina
- Democratic Republic of Congo
- Guatemala
- United Arab Emirates

**Green lanes**
- Hong Kong, China - Single E-lock Scheme (SELS)

**Automating border crossings**
- Baltic States and Poland – CaaS pilot project to experiment with fully automating border crossings
- United States

**Passenger e-gates at airports**
- Jordan

**Automatic tracking and facilitating/securing goods in/out of ports**
- Chile
- Indonesia
- Italy
- Singapore
Main benefits of introducing big data, data analytics, artificial intelligence and machine learning

Better risk management, profiling, fraud detection and greater compliance: 67
Facilitate customs audits and anomaly identification: 71
Predict future trends: 65
Improve facilitation: 57
Improve revenue collection: 57
Improve imaging (containers) and searches: 37

Main obstacles to adopting big data, data analytics, artificial intelligence and machine learning

Lack of expertise: 60
Costs: 54
Lack of good practices: 31
Existing legacy systems: 22
Lack of traction by others: 18
Lack of govt strategy: 13
Legal issues: 12

Note: Total respondents numbered 100.
### Example uses of big data, data analytics, artificial intelligence and machine learning

<table>
<thead>
<tr>
<th>Post-clearance audits and controls</th>
<th>Refunds and drawbacks non-compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated targeting systems</td>
<td>Detection of prohibited goods</td>
</tr>
<tr>
<td>Tariff misclassification and non-compliance with tariff advice</td>
<td>Monitoring service delivery performance in real time</td>
</tr>
<tr>
<td>Misuse of concessions (including tariff concession orders, by-laws, free trade agreements and origin masking)</td>
<td>Providing historical insights into customs statistical information for future planning and forecasting</td>
</tr>
<tr>
<td>Detection of anomalies in high revenue areas (including excise equivalent goods i.e. alcohol, tobacco, petroleum)</td>
<td>Compliance risk scoring in commercial and trade activities</td>
</tr>
<tr>
<td>Detection of dumping and countervailing anomalies</td>
<td>Identifying low value courier and postal shipments to improve risk assessment</td>
</tr>
<tr>
<td>Detection of undervaluation and overvaluation anomalies</td>
<td>Identifying low risk individuals at borders</td>
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<tr>
<td></td>
<td>Developing advanced analytics for AEOs</td>
</tr>
</tbody>
</table>
Conclusions

• Blockchain/DLT brings many benefits: better transparency, immutability and accessibility of information, data quality and sharing information

• Lack of expertise, good practices and the associated costs, as well as lack of standardized datasets impede broader implementation

• IoT sees more positive developments in implementation, but integrating data collected through smart devices into Customs clearance processes is still a challenge

• Customs have embraced advanced analytical technologies that contribute to enhanced risk management and profiling; however, improved data governance and data quality are required
Study Report on Disruptive Technologies

- Three years since the first version of the Study Report (2019) - an update to reflect latest developments (blockchain, AI/ML, IoT, biometrics, drones, virtual reality, 3D printing)
- Joint WCO-WTO endeavor
- Updates:
  - Stage of adoption by Customs in 2021
  - WCO and WTO initiatives, projects and programmes
  - Chapter on holistic use of technologies for Smart Customs of the future
  - Recommendations and lessons learnt
  - Cooperation between Customs and other stakeholders
  - 40 use cases from Customs, private sector, academia
- To be published in July 2022
JOINT WCO-WTO WEBINAR ON THE ROLE OF ADVANCED TECHNOLOGIES IN CROSS-BORDER TRADE: A CUSTOMS PERSPECTIVE

29 March 2022 – 15:00 – 16:30 CET (Geneva/Brussels time)