

Advancing the digitalization of trade supporting documents

Unlocking the future of cross-border paperless trade

Introduction¹

Digitalization: The Future of International Trade

In today's increasingly interconnected and technology-driven world, digitalization is changing the face of international trade. It is reshaping how businesses operate and how goods are bought, sold, and transported across borders. This transformation has the potential to bring significant benefits, from speeding up trade processes to reducing costs and increasing efficiency.

Introducing the UNNExT Working Paper

In recognition of this, an in-depth study on "Advancing the Digitalization of Trade Supporting Documents (TSDs)" has been conducted and released as a [UNNExT Working Paper](#). This research examines the current state of TSD digitalization, explores various models for its advancement, and proposes practical steps towards a future where trade processes are more streamlined and efficient.

In the researched context, TSDs mean commercial and transport documents owned by businesses (inherently B2B documents), but sometimes are required by governmental agencies to complete trade regulatory procedures, and then become B2G documents.

Why This Study?

The digitalization of TSDs is a crucial area of focus as these documents play a pivotal role in international trade transactions. They provide necessary information for customs clearance, confirm shipment details, and act as a legal record of the trade transaction. Despite their importance, the handling of TSDs is often a paper-heavy and time-consuming process. This not only slows down trade but can also increase costs and the risk of errors.

Moreover, the global COVID-19 pandemic has underscored the urgency of transitioning to paperless trade. As businesses and governments faced disruptions due to lockdowns and social distancing measures, those that had adopted digital processes were able to continue operations more seamlessly.

However, moving towards a digital, paperless trade environment is not without its challenges. Issues such as the need for interoperability between different digital systems, legal considerations around the use of electronic documents, and ensuring data security and privacy all need to be carefully addressed.

In the following pages, we delve into the findings of the UNNExT study, exploring the current practices, potential models for digitalization, and a roadmap for the way forward. This would support a discussion about the future where international trade is more efficient, cost-effective, and resilient.

¹ This document summarizes the main findings of: [Alekssei Bondarenko \(2023\). "Advancing the digitalization of trade supporting documents in the Eurasian Economic Union member States and beyond", UNNExT Working Paper Series No. 3, September 2023, Bangkok, ESCAP.](#)

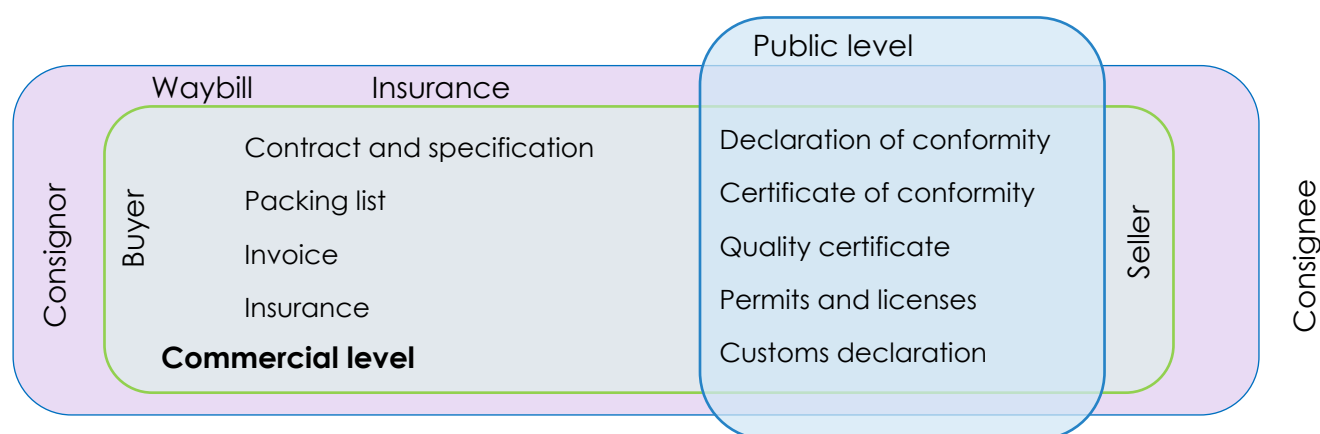
Current State of TSD Digitalization

Understanding the Landscape

To set the stage for advancing digitalization, it's important to understand the current status of TSD digitalization. Despite significant progress in certain areas, there remain substantial challenges that hinder the full transition to a digital trade environment.

The United Nations Conference on Trade and Development (UNCTAD) estimates that five billion trade documents are exchanged every year around the world and the International Air Transport Association (IATA) estimates that the processing of paper trade documents costs approximately \$1.5 billion dollars per year².

FIGURE 1: TRADE SUPPORTING DOCUMENTS



Diverse Practices

Today's global trade landscape exhibits an asynchronous digitalization condition. While some nations have made significant strides towards digitizing TSDs, others are still primarily reliant on paper-based processes. This disparity often leads to a loss of potential benefits and profits for traders.

Legal Challenges

One of the main challenges is the legal requirement for paper TSDs in many jurisdictions, even when electronic versions are available. This practice often stems from the need to provide physical documentation for control and verification purposes, especially at the border. Additionally, insufficient implementation of international Electronic Data Interchange (EDI) standards contributes to a lack of interoperability between different systems.

The Need for Harmonization

The UNNEXt study emphasizes the need for harmonization of digital trade practices. The adoption of paperless trade environments can lead to simpler trade procedures and significant cost savings. However, to effectively do this, there must be consistent standards and regulations in place that can ensure the secure and reliable exchange of electronic documents.

² UNCTAD. Trust Fund for Trade Facilitation Negotiations Technical Note No.16 (2016) Available at https://unctad.org/system/files/official-document/TN16_ElectronicTradedocSubmission.pdf.

Country Experiences in TSD Digitalization

European Union (EU):

The EU requires declaration of all imported goods to customs authorities using the single administrative document, along with supporting TSDs depending on the goods' nature. While a flexible approach to TSD digitalization is used, with scanned PDF copies or their Excel/Word versions mainly used for B2B commercial and transport documents, there is still a requirement to store physical document originals for three years for post clearance audit.

Eurasian Economic Union (EAEU):

The EAEU uses the term "customs operations performance documents" (COPDs) for documents of business interest to customs authorities, including TSDs. A significant role is given to pre-arrival information (PAI), aiming to replace TSDs when submitted electronically. While TSDs can be submitted in paper or electronic form, priority is legally given to the electronic form of interaction, for this the XML forms for all COPDs are provided. In this case, traders need to retype all necessary information from the TSD to the provided forms, which is time and labor consuming.

Singapore:

Singapore uses TradeNet for all trade formalities, allowing Singapore Customs and other authorities to track goods movement and ensure regulatory compliance. TSDs required for customs clearance may vary, but often include invoices, packing lists, bill of lading/air waybill, and relevant permits. Traders can attach up to six documents for each permit application on TradeNet, with a range of file formats accepted.

Georgia:

In the Georgian customs system, the exchange of information between traders and customs authorities is predominantly done electronically, with exceptions for specific cases where tangible documents may be used. TSDs for customs declarations are kept electronically, and physical copies are not required unless requested by customs authorities. The e-Customs system allows for the electronic submission of TSDs and provides a range of services through a single taxpayer's electronic account.

Republic of Korea:

The Korea Customs Service typically operates three clearance procedures based on risk management: paperless, documents inspection, and physical inspection. In most cases, the paperless approach is adopted where no supporting documents need to be submitted. For document inspection cases, traders submit scanned TSDs to the Customs Single Window system. While some traders exchange cross-border trade documents electronically, the Korea Customs Service primarily accepts copied or scanned TSDs, barring some serious inspection cases.

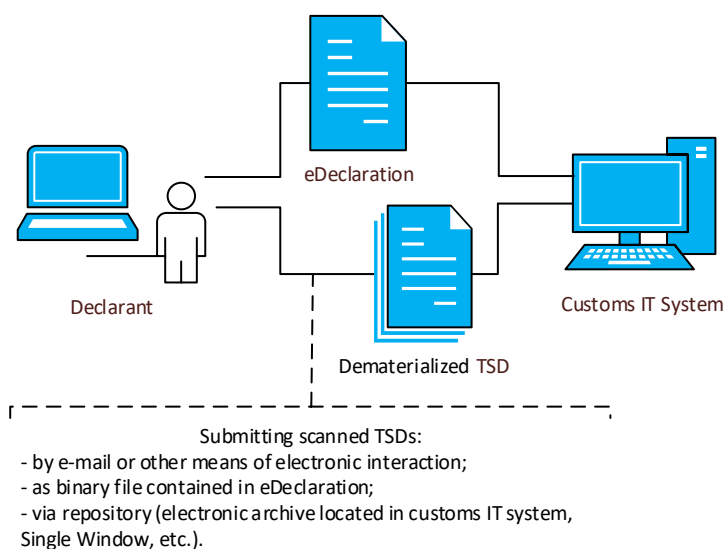
These varying practices reflect the diverse stages of digitalization of trade supporting documents across the world, each with unique challenges and advantages.

Exploring Theoretical Models for TSD Digitalization

Dematerialization

The dematerialization model simplifies the handling of TSDs, by transforming them from hard copies to digital versions. This process involves using an optical scanner to produce digital copies of TSDs with possibilities to secure them with digital signatures. Traders often utilize Excel/Word forms for TSDs, enabling them to use, share, and store them conveniently. TSDs are then sent to customs authorities through secured email or as XML formatted messages, providing a flexible and streamlined process.

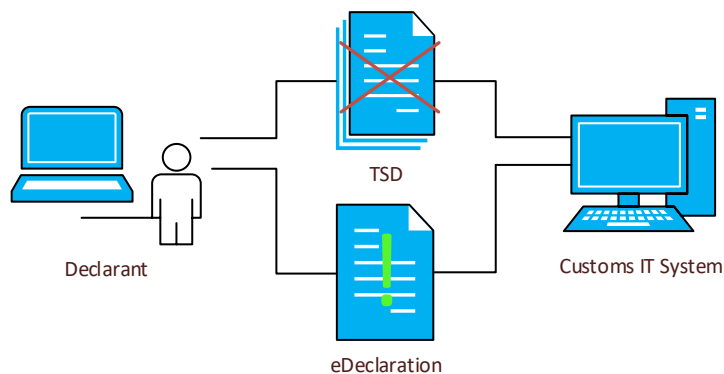
FIGURE 2. DEMATERIALIZED TRADE SUPPORTING DOCUMENTS TRANSMISSION



Paperless Environment through Methodological Transformation

An alternative to dematerialization is a methodological transformation that creates a paperless environment. It suggests that the customs authority no longer needs TSDs during customs clearance as the customs declaration serves as a self-sufficient document. This model strengthens the responsibility of economic operators for the accuracy of the information they declare. A flexible approach can be proposed where TSDs are requested only when risks are identified.

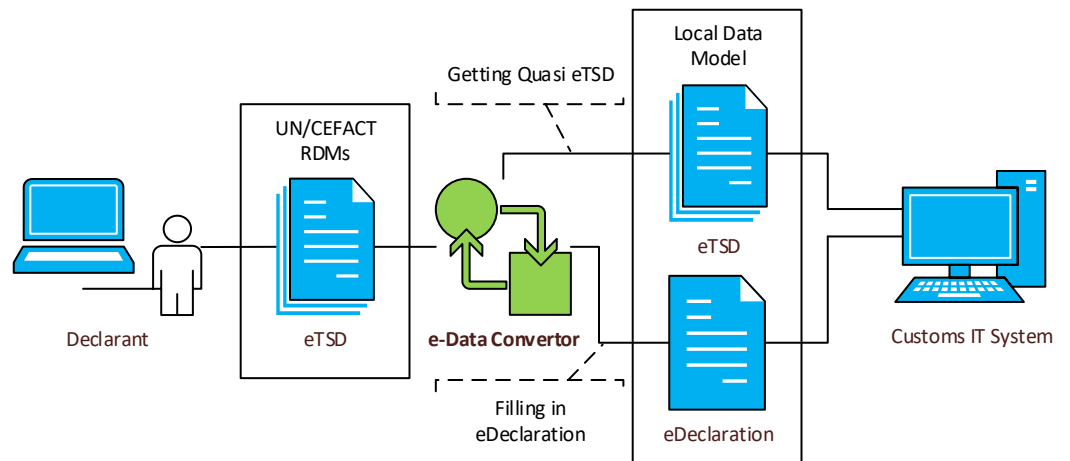
FIGURE 3. TRADE SUPPORTING DOCUMENT-LESS ENVIRONMENT AND NEW STATUS OF CUSTOMS DECLARATION



The UN/CEFACT Data Model and E-data Convertor

The UN/CEFACT Data Model supports TSD digitalization through Electronic Data Interchange (EDI). Meanwhile cross-border EDI is still rarely using nowadays, especially by Small and Medium Enterprises. Moreover, even if parties are using the same data model, the XML documents may vary. So there is a need of E-data convertor, which can automatically translate data from one source to another (for example, from the Excel sheet to XML form, or from one XML form to another), which is particularly useful when goods are declared in another jurisdiction. This process results in the creation of equivalent documents, compliant with local data models.

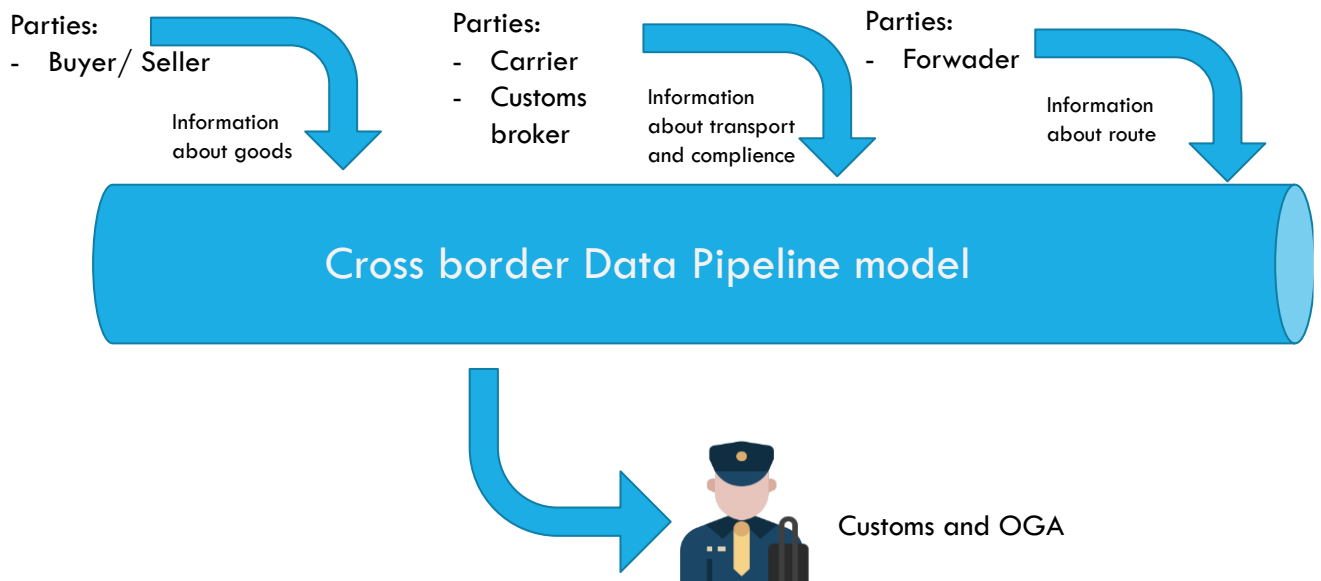
FIGURE 4. E-DATA CONVERTOR FOR TRADE SUPPORTING DOCUMENTS



Data Pipeline

The data pipeline model allows for single-time data entry and multiple uses throughout the supply chain. This process aims to make the required data available to the right stakeholders in real-time and increase transparency and efficiency.

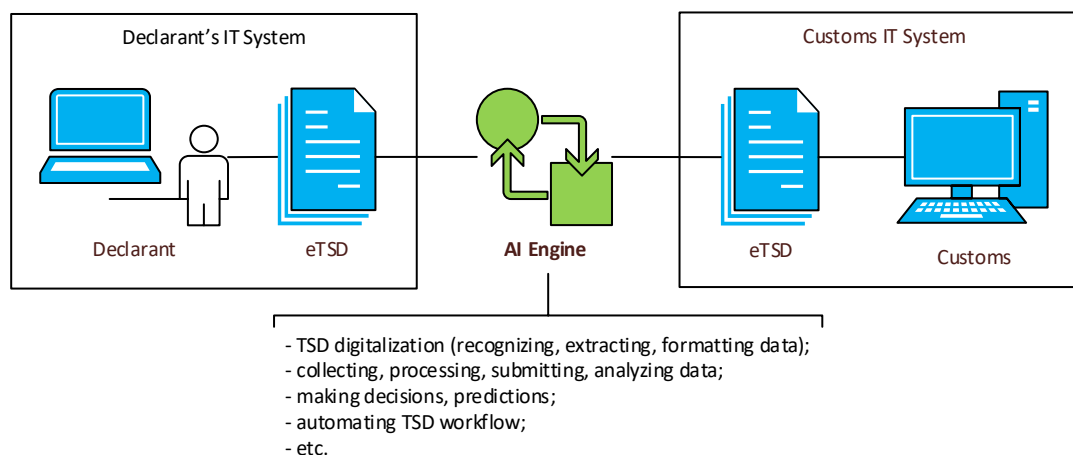
FIGURE 5: DATA PIPELINE CONCEPT FOR TRANSPORT SUPPORTING DOCUMENT DIGITALIZATION



Artificial Intelligence (AI) Based Models

AI systems can aid the TSD digitalization process. From simple OCR technologies for scanned documents to advanced machine learning technologies for autonomous data structuring and decision making, AI systems can optimize various stages of TSD digitalization.

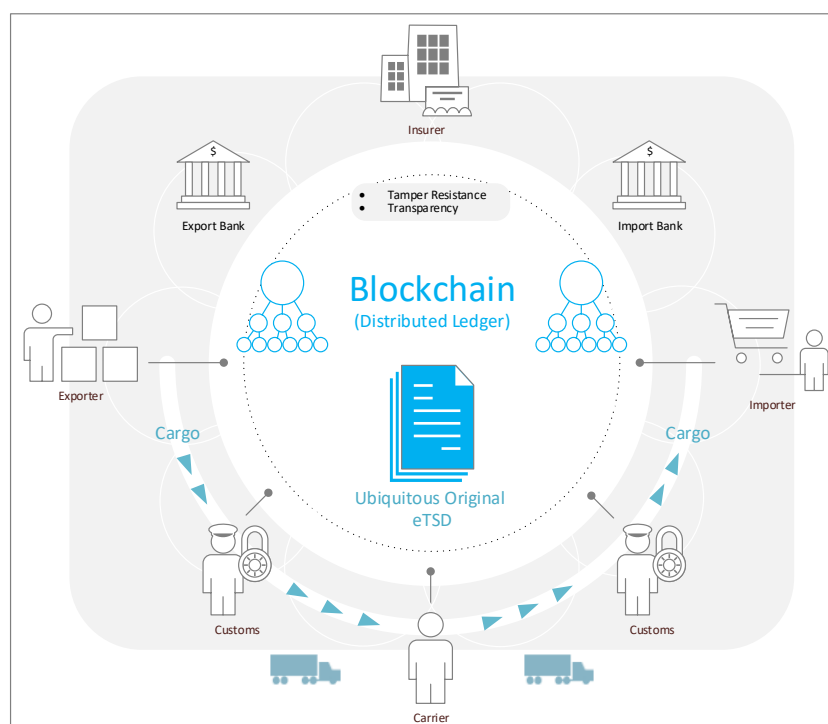
FIGURE 6: AI-BASED MODEL FOR TRADE SUPPORTING DOCUMENT DIGITALIZATION



Blockchain-Based Models

In blockchain-based models, businesses use a common information system, where data is immutable and reliably encrypted. Blockchain technologies can facilitate the exchange of documents, data, and digital assets. When integrated with internationally recognized standards, these models can also support TSD for automated information extraction and transmission.

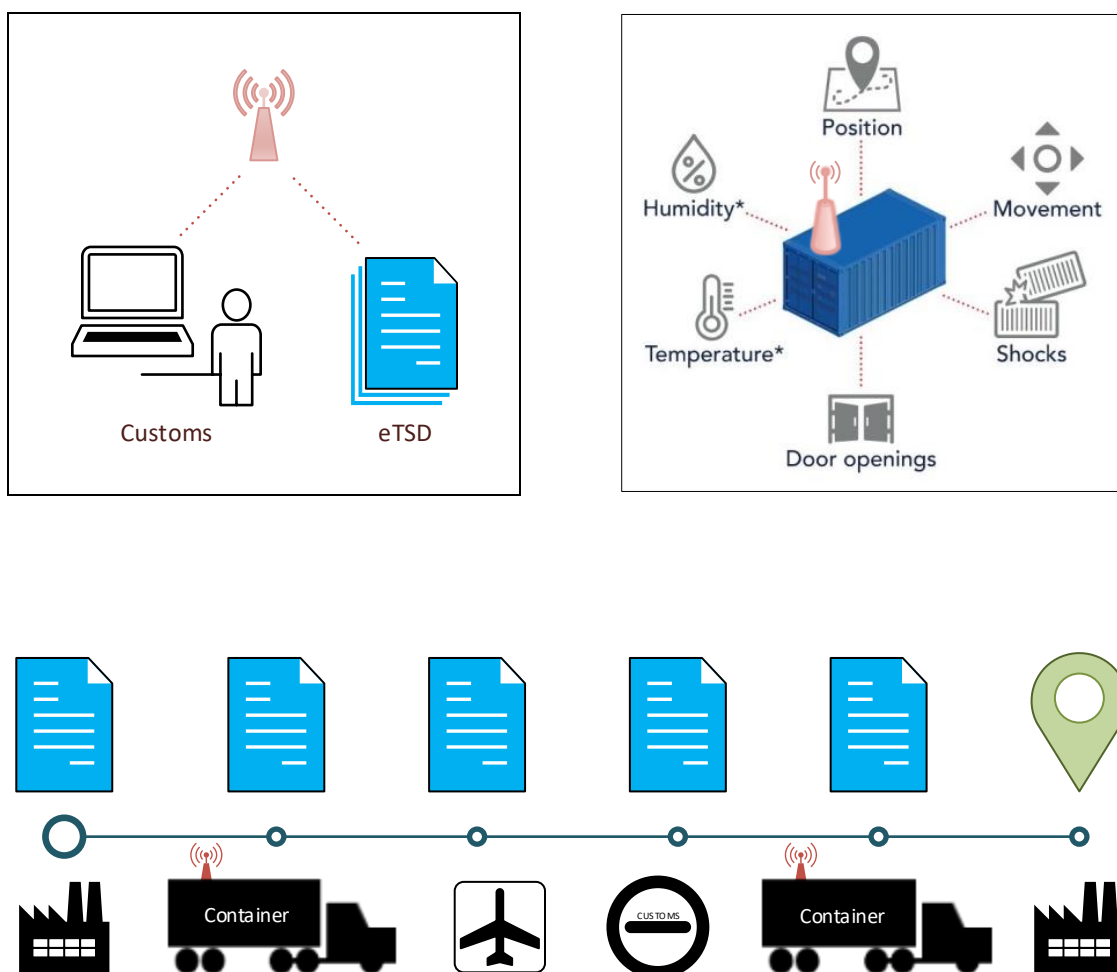
FIGURE 7: BLOCKCHAIN-BASED MODEL FOR TRADE SUPPORTING DOCUMENT DIGITALIZATION



Internet of Things (IoT) Based Models

The Internet of Things (IoT) can revolutionize the EDI model. IoT devices, such as smart containers and electronic seals, can gather and transmit information in real-time, offering an additional data source that current TSDs can't provide. This approach aligns well with modern smart checkpoints equipped with IoT technologies.

FIGURE 8: IOT MODEL FOR TRADE SUPPORTING DOCUMENT DIGITALIZATION



Business Needs and Opportunities for TSD Digitalization

An Urgent Shift to Digital

The Covid-19 pandemic has served as a catalyst for TSD digitalization, particularly within the realm of trade finance. A survey by the International Chamber of Commerce indicated that more than a third of respondents are predicting growth in their trade finance business through digital ecosystems.

Cost-effective and Efficient

Digital processing of documents has been estimated to be three to four times more cost-effective than the traditional paper-based method. This cost reduction, coupled with an increase in profits, is driving businesses towards a digital future. A case in point is the e-freight electronic Air Waybill, whose worldwide usage had reached 60.8% by the end of 2018³.

Meeting the Challenges Head-On

Despite the clear benefits, the widespread use of paper documents persists, with electronic forms only supplementing paper-based ones. This neither fulfills the needs of businesses and governments nor keeps up with the pace of emerging technologies. What we need is a complete shift to electronic TSDs, integrating disparate trade chains, and streamlining technologies.

Critical Speed of Technology Adoption

A collective effort from the business community and regulatory structures is crucial for the swift adoption of technology. An improved legal framework, ensuring data interoperability and trust in electronic TSDs created across various jurisdictions, is also required.

The Promise of New Technologies

Emerging technologies and innovative business models open up numerous opportunities for the logistics industry. Digitization benefits every aspect of the ecosystem – from methods of shipment, cargo management, to administrative activities like documentation and payments. However, the transformation comes with its set of challenges, including the overlook of national specifics by standardized digital products and issues regarding data reliability and legal significance.

³ VCC Paper on the Digital Transformation in Logistics Sector (2019), 25 June. Available from <https://www.vcargocloud.com/our-solutions/brochures-and-resources/>.

The Way Forward

Stepping into the future of trade requires a strategic and well-structured plan to advance TSD digitalization. Several key steps can serve as a foundation to pave the way forward.

1. Adoption of a "Regulatory Sandbox" Approach:

A regulatory sandbox provides an experimental space where businesses can test new technologies and business models under the supervision of regulators. This approach can be instrumental in promoting TSD digitalization by allowing experimentation without the fear of regulatory backlash. It will provide room for innovative solutions to emerge while also identifying potential regulatory challenges and solutions.

2. Joining the Framework Agreement and provide National Legal Acts:

To create a harmonious and robust digital trade environment, it is important for nations to adopt and ratify Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and the Pacific and enact national legal acts. These would set a unified framework for using legally significant electronic documents, foster trust among trading partners and government, and ensure that all parties abide by the agreed-upon rules and standards.

3. Testing and Operationalization of Digitized Supply Chain of Goods:

The digital supply chain promises numerous benefits, ranging from real-time visibility of goods to improved inventory management and reduced operational costs. Piloting the digital supply chain in a controlled environment, assessing its viability, and gradually rolling it out on a larger scale will aid in the operationalization of trade's digital transformation. It is crucial to explore and scale up existing trade network platforms.

4. Adopt TSD digitalization models based on readiness levels:

The study explores models that can be adopted by any country, ranging from simple dematerialization to advanced IoT models. Assessing the capacity level of the country is important in choosing the appropriate model.

Among the different models for TSD digitalization, we can recommend the model based on the E-data convertor. This model essentially acts as a translator, transforming structured data from one document.

This model's flexibility and compatibility with various data formats make it a powerful tool for seamless data conversion and interoperability. It helps in significantly reducing the paperwork involved in trade transactions and can act as a crucial stepping-stone towards a fully paperless trade environment.

The journey to a digitized trade world is a complex one that involves continuous testing, learning, and adapting. However, with strategic planning, collaborative efforts, and the right tools in place, a robust digital trade ecosystem can be created that not only meets the needs of today but is also ready to embrace the opportunities of tomorrow.

Conclusion and Call to Action

Embrace the Future of Trade

Digitalization is sweeping across every industry, transforming the way we conduct business. This wave of change also reaches international trade, presenting a compelling case for the digitalization of Trade Supporting Documents (TSD). Our exploration of various theoretical models, with a focus on the innovative e-data convertor model, has revealed a wide range of practical tools for facilitating this transition.

Reaping the Benefits

The implications of TSD digitalization are profound. A digital shift presents opportunities to transcend geographical limitations, enhance data exchange speed and precision, decrease human error, and significantly trim operational costs. Moreover, it sets the stage for increased transparency, fostering a trade network built on trust and collaboration.

Join the Paperless Trade efforts

You are invited to join this journey towards a new era of trade. Whether you are a business leader, policy-maker, or an engaged citizen, your contribution matters:

Advocate: Support the adoption of Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and the Pacific and national legal acts enabling digital trade. Harmonized regulation paves the way for a robust, efficient digital trade ecosystem.

Adopt: Promote the use of innovative TSD digitalization models within your organization or country. Consider the potential of e-data converters and other digital tools to optimize your trade procedures.

Engage: Participate in forums and discussions on TSD digitalization. Your unique insights and experiences enrich the collective knowledge pool.

Innovate: Push for the testing and operationalization of digitized supply chains within your organization or sector.

A Call to Action

As we stand at the crossroads of an exciting digital future, the potential for a seamless, cost-effective trade environment lies within our reach. Join the UNESCAP paperless trade efforts, and let's make a difference.