

# Simplifying and Securing Cross-Border eCommerce: The Case for Blockchain in Bonded Warehouses

## Abstract

As countries tighten their borders and increase regulatory control, transparency in the supply chain matters more than ever. Blockchain, the new gatekeeper of identity, trust, security and visibility, is set to revolutionize global trade operations, increasing efficiencies while cutting time and costs.

Blockchain can be applied to a myriad use cases across the supply chain, including shipment tracking, product provenance, trade documents sharing, supply chain finance, and so on. Given the extent of benefits and the variety of use cases, it is not a matter of if, but when, blockchain will be implemented in customs and border services. This paper focuses on the benefits of blockchain logistics in area of customs bonded warehouse operations.

## Growing Cross-border Trade: Opportunities and Challenges

As digital increasingly becomes the way to engage customers in ecommerce, retailers across countries are attracting online shoppers beyond their borders to get a bigger piece of the pie. Forrester foresees cross-border ecommerce outpacing domestic growth, with a compound annual growth rate of 17% between 2017 and 2022, compared with 12% percent for overall B2C ecommerce.<sup>1</sup> Such cross border sales need to be competitive enough in terms of landed cost, while providing abundant delivery choices and delivery assurance to the buyers. However, several constraints in the logistics of cross border e-commerce prevent retailers from better managing buyer expectations.

Some of the constraints include gaps in the visibility of shipment status due to partnerships between logistics service providers in different geographies, longer transit time that hampers competitiveness with local retailers, and varying customs duties and taxes that increase the landed cost of a cross border e-commerce product. Other challenges include the inability to provide value-added services such as collect on delivery, returns and tax reversals; facilitating secure payments between retailers and buyers; and ensuring trust while goods are in transit.

The good news is the constraints open up opportunities for logistics service providers (LSPs) to serve cross border e-commerce retailers with differentiated services. Realizing the opportunity, however, depends on setting up a blockchain-enabled bonded warehouse services framework where in:

- Retailer's products are shipped to the destination country in bulk by LSPs under customs bond based on anticipatory sales in that country LSPs manage the inventory in the bonded warehouse until it is sold
- Goods are de-bonded and delivered when a sales order is received from online shopper

Let's take a deep dive into the opportunity created by blockchain solutions in the following sections.

## Understanding the Challenges in Customs Bonded Warehouse Operations

Customs bonded warehouses are an important entity in cross-border trade. They fulfil different functions as shown in Figure 1.

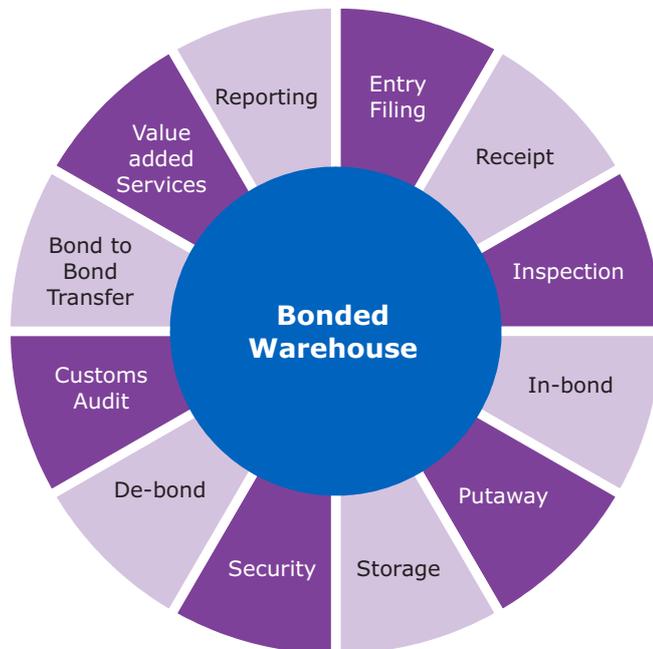


Figure 1: A Snapshot of Various Functions in a Customs Bonded Warehouse

However, for LSPs, the process spanning varied functions is typically beset with multiple challenges.

- **Security:** Ensuring security of the cargo while in storage and during transportation.
- **Compliance and documentation:** Maintaining accurate documentation for audit by customs authorities; examples: warehouse entry, storage, transfer, de-bonding, duty payment, damages, liquidation, remanufacturing, discrepancies, and abandonment.
- **Visibility:** Ensuring goods are transported between bonded warehouses using a bonded carrier, enabling total visibility into goods while in storage and in transit.
- **Fraud:** Enabling trustworthiness when using the services of third-party customs bonded warehouse operator.

The Qingdao metals scam in China which occurred in 2014 is relevant even today.<sup>2</sup> It is an example of how the lack of visibility and security can lead to fraud in a warehouse with devastating repercussions for both traders and bankers. In this case, a Chinese bonded warehouse operator pledged the same consignment of metals to secure loans borrowed from multiple lenders using fake warehouse receipts.

## Blockchain: The Panacea to Bonded Warehouse Challenges

Here are five ways blockchain-enabled bonded warehouse services can help address the challenges faced by LSPs.

- **Mitigating fraud:** A key feature of blockchain is that it decentralizes system management and authorization to a network of computers. This means blockchain can effectively prevent one or several colluding individuals from overriding controls, or illicitly changing or deleting official system records. There is also no possibility of issuing fake receipts as all documents are validated and verified by the parties participating in the consensus mechanism.
- **Improving compliance:** Compliance with customs rules, regulations, and documentation becomes simple and hassle-free with IT systems underpinned by a blockchain platform.
  - Transactions like cargo in-bonding, inspection, storage, de-bonding, and so on are visible in real time to customs officials as well as retailers, enabling them to proactively analyze information and take action.
  - Recording actions and their outputs immutably in a blockchain creates an audit trail for regulators to verify compliance.
  - Smart contracts can be used to pay customs duties as soon as the de-bonding process is completed, ensuring accurate payments and mitigating fines and penalties.
- **Reducing reconciliation issues:** The visibility and consensus provided by blockchain helps mitigate disputes among parties, including those related to inventory reconciliation, charges levied, service level agreements, billing and so on, thereby significantly reducing time and costs.
- **Improving Security:** Blockchain can ensure security both in terms of authorized personnel access to the warehouse as well as securing of goods in storage. Digital identity management combined with tags or sensors affixed to pallets can ensure that access is provided only to authorized personnel and any cargo tampering is recorded and alerted by the blockchain platform.
- **Enhancing customer experience:** In most cases, the estimated duty is prepaid by the consignee to the shipper and excess duty paid is seldom communicated or refunded

back. Blockchain provides consignees with visibility into all charges and duties actually paid, creating additional value to the consignee.

## Blockchain at the Border is the Way to Go

The potential of blockchain in enabling transparency and immutability is catching the attention of businesses and governments alike. Maersk, the global transportation and logistics giant, recently established a joint venture with IBM to improve global trade and digitize supply chains.<sup>3</sup> The U.S. Customs and Border Protection (CBP) set up an advisory committee to evaluate 14 use cases that could improve trade.<sup>4</sup> Disputes relating to HTS classification by customs brokers can easily be resolved using Machine learning (ML) solutions to auto-classify the commodities and log the information in to block chain shared ledgers. This will help reduce misinterpretations by customs brokers and provide an accurate view for the release of shipments. Similarly, various trade documents such as certificate of origin, free trade agreements, product qualification, permits and so on can be issued on the blockchain to establish their authenticity and reduce paperwork.

Blockchain enables a seismic shift in thinking in terms of how efficiency in cross border trade can go hand in hand with compliance. As blockchain moves from the curiosity phase to one of experimentation and establishment of proof-of-concepts, it's time for LSP's to unlock the potential of this disruptive technology.

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