

China's Smart Customs Journey: Insights into Modernizing International Customs

WANG Lingjun, Vice Minister of the General Administration of Customs of the People's Republic of China

In today's world, the global economy is navigating a complex web of risks and challenges, while technological advancements and emerging trends evolve rapidly. This underscores the urgent need to leverage technologies to innovate operational approaches and reform traditional governance models across the international customs community. In recent years, in response to these imperatives, China Customs has been actively implementing the "Smart Customs, Smart Borders and Smart Connectivity" concept proposed by Chinese President Xi Jinping, and following through on such key initiatives announced by the President as the development of a Smart Customs Cooperation Partnership, the establishment of a Smart Customs Community Portal and the creation of a BRICS Customs Center of Excellence. In alignment with the World Customs Organization (WCO) Strategic Plan's focus on "Technology and Innovation", China Customs has taken proactive and innovative measures to accelerate the development of Smart Customs, contributing to China's own modernization and offering insights for the collective modernization journey of the international customs community.

I. The urgency of developing Smart Customs in China

As the world's largest goods trading nation, China faces immense pressure in import and export supervision. Developing Smart Customs is no longer optional but essential, driven by the pressing need to adapt to a new wave of technological revolution and industrial transformation. This journey is not only about modernizing supervision methods but also about re-imagining governance philosophies and operational models.

1. Keeping pace with technological trends

Global technological innovation has entered an unprecedentedly dynamic phase since the 21st century. The new wave of technological revolution and industrial transformation is fundamentally reshaping global

innovation landscapes and economic structures. The rise of the digital economy and other new industries has elevated data to a critical production factor, with digital technologies emerging as pivotal tools for production and management, making data-centric innovation a hallmark of modern society. These changes have not only redefined the approaches to international trade and customs supervision but also presented new historic opportunities for customs modernization. Embracing digital transformation, strengthening data governance, and enhancing the application of disruptive technologies have become indispensable for synchronized innovations in supervision mechanisms, organizational structures and operational workflows.

2. Adapting to international customs dynamics

With the rapid development of social economy and international trade, global attention is increasingly focused on trade security and facilitation. Countries are exploring ways to leverage cutting-edge technologies to optimize customs functions and meet the development requirements through building a “smarter” customs. China Customs, with the largest supervision volume and highly diverse customs regulatory scenarios and models, has the responsibility and is uniquely-positioned to transform its scale advantage into practical customs innovations. By focusing on digital transformation and intelligent upgrades, China Customs is exploring smarter ways to better facilitate and secure global trade.

3. Addressing cross-border trade complexities

Nowadays the growing diversity in cross-border trade operators and the fragmentation of transactions have rendered traditional customs methods less effective in meeting the evolving demands of global trade. Solutions must be derived from digital and smart technologies to foster innovative supervision models, addressing such issues as managing increasing supervision workloads with limited resources and, in particular, ensuring both effective control and smooth trade flows.

II. Tangible outcomes of China’s Smart Customs initiative

China has fully rolled out the development of Smart Customs, with such scenarios as seamless clearance, automated supervision, non-disruptive inspections, and ubiquitous services being realized progressively. Thanks to these reform measures, both frontline customs officers and the businesses are happier while trade security and facilitation is achieved.

1. Enhanced security through smart supervision

Leveraging big data and advanced smart equipment, China Customs has significantly improved its precision in identifying and mitigating risks. This approach has enhanced efforts to combat smuggling activities, effectively building a “Smart Great Wall” to safeguard national borders.

- **Non-Intrusive Inspection:** The “AI-based image analysis” technology is employed to accurately detect concealed contraband in import and export, and has led to the seizures of a large number of drugs, endangered species and their products, as well as other prohibited items. This has also proven effective in preventing the smuggling of invasive species such as exotic pets.
- **Revenue-related Risk Management:** The “Big Data Smart Screening Project for Revenue Risks” has been implemented, which conducts intelligent risk assessments on elements such as the HS code, value and origin of the commodities, thus effectively preventing revenue-related risks.
- **Big Data Strategy and Practices:** By constructing, deploying, utilizing and managing customs data, China Customs has resolved issues of data inconsistency and low application efficiency. To date, 35 intelligent models have been developed. For example, the smart targeting model has been rolled out at 269 air, land and sea ports. In the first 11 months of 2024, these models accounted for 4.32% of all targeting, with the success rate in identifying violations 7 percentage points higher than that of manual targeting, demonstrating notable improvements in data-driven applications.

2. Greater convenience through smart services

China Customs has made continuous improvements of its processes to facilitate seamless cross-border movement of goods and people.

- **Smart passenger inspection:** The “Smart Passenger Inspection” system integrates advanced technologies such as smart lanes, pre-X-ray screening and robot-assisted baggage handling, providing passengers with “unnoticeable customs clearance” experiences. For instance, at the pilot passenger inspection terminal in Shanghai, the clearance time for a 300-passenger flight has been reduced to just 30 minutes. Simultaneously, embedded screening technology for checked baggage enables the complete screening of luggage for an entire flight within just 20 minutes. As a result, 98% of arriving passengers can complete clearance within 5 minutes after claiming their baggage, reducing overall clearance time by more than 50%.
- **Automated cross-border transportation:** The application of the Automated Guided Vehicles (AGVs) has been piloted at China-Mongolia land borders, where electromagnetic or optical guidance systems facilitate a range of Customs operations. This innovation represents a significant transformation, upgrading traditional cross-border transportation from human-operated approach to fully automated systems, driving the modernization of logistics processes.

3. Higher efficiency through smart clearance

The integration of advanced technologies and smart equipment has significantly enhanced efficiency in risk identification, customs control inspections and enterprise services.

- **Non-intrusive smart inspection integrated into business flow:** This approach enables goods to seamlessly undergo inspections during loading, unloading or transportation, without interrupting the logistics flow.
- **Pilot program for remote local customs inspections:** This program enables businesses to complete inspection procedures remotely through

online connections with customs. This innovation has reduced the inspection process (from scheduling to completion) from three days to just half a day.

III. Experience to share in Smart Customs

The journey towards Smart Customs is a comprehensive endeavor requiring systematic thinking to effectively coordinate diverse elements. China Customs has embraced this approach, building on proven strategies with innovative solutions for acceleration and optimization. Here are four major takeaways:

1. Integrating top-level design and local-level innovation

On one hand, China Customs emphasizes strategic planning by developing a comprehensive roadmap and action plans for Smart Customs. These efforts encompass 12 key cross-cutting projects and 22 departmental projects, to ensure unified objectives, priorities and pacing for multi-pronged implementation, thus achieving comprehensive progress and economies of scale. On the other hand, local-level initiatives and innovation are given a greater play, with 132 business application scenarios developed. Local customs can propose action plans with new frontline experiences concluded, which ensures practicality, feasibility and applicability while reflecting evolving business, technology and operational needs. This approach fosters practical innovations at the local level, and transforms local-based small-scale innovations into major progress after rolling out.

2. Balancing holistic progress with key breakthroughs

The Smart Customs journey follows a phased strategy with clearly defined milestones: achieving significant breakthroughs within one year, establishing a foundational framework within three years, completing the whole system within five years, and ultimately reaching world-class standards. Annual tasks are planned holistically to integrate regulatory, service, operational, technological, functional and executional elements. Simultaneously, emphasis on key breakthroughs prevents resource

dilution, ensuring that targeted innovations drive systematic progress.

3. Internal-external coordination

From the perspective of frontline control and enforcement, China Customs addresses practical challenges across the entire customs control chain by integrating processes such as pre-shipment inspections, on-site checks and post-clearance audits into a cohesive system. This approach avoids the risks of “fragmentation” or “isolated applications” in the journey towards Smart Customs, ensuring that customs control becomes increasingly holistic, intelligent and automated. At the same time, guided by the concept of One-Stop Government Services, China Customs focuses on addressing the needs of businesses and the public. Efforts are directed at coordinating the standards and systems across different work streams and Customs Districts. Innovations such as integrated services, promise-based processing, cross-regional handling, and application-free services seamlessly embed customs controls and services into the operation flows of consignees, consignors, carriers, and port entities. These measures ensure smooth, efficient, and nearly “invisible” customs clearance.

4. Benchmarking against global standards while promoting inclusiveness

China Customs actively benchmarks against international standards, drawing on the successes of WCO Members in Smart Customs development. At the same time, it emphasizes inclusiveness by supporting developing and less technologically advanced Members in narrowing digital gaps to achieve shared progress. In December 2023, China Customs and the WCO jointly launched the Smart Customs Project, which includes creating an online Smart Customs Community Portal, updating study report on disruptive technologies, publishing research papers and hosting international workshops. This Project aims to identify Members' current status as well as needs, foster the application of technological and innovative solutions in Customs, bridge the digital divide among Members and help them better understand the technologies

available to them to tackle global challenges.

Way Forward

The modernization of China Customs is not only a critical aspect of China's own path to modernization but also an important engine to contribute to the collective modernization across the international customs community. Though China Customs is going all out to modernize its governance capacity through the Smart Customs initiative, there is still a long journey ahead. Going forward, China Customs will continue to strengthen collaboration with the WCO, its Members and other stakeholders, sharing experiences and insights to foster international cooperation, capacity building and knowledge exchange in the Smart Customs journey. These concerted efforts aim to advance the modernization of the international customs community, thus making new contributions to a smarter, safer and more prosperous world.