AI driven trade facilitation and digital governance in international trade: Opportunities and regulatory challenges

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Artificial Intelligence, Trade Facilitation, WTO Trade Facilitation Agreement (TFA), AI Governance, Cross-Border Data Governance, Non-Tariff Barriers, Digital Trade, Regulatory Interoperability

Abstract

Purpose: *Artificial intelligence (AI) is increasingly transforming customs administration, trade facilitation, and cross-border regulatory cooperation. However, the rapid deployment of AI-driven systems has outpaced the development of coherent international legal and governance frameworks, particularly concerning data protection, algorithmic accountability, and equitable participation by developing countries. This paper examines the interaction between AI-enabled trade facilitation and emerging digital governance obligations under the WTO framework, while analysing the growing influence of regulatory regimes such as the EU Artificial Intelligence Act and the General Data Protection Regulation (GDPR) on international trade.*

Methodology: *The study adopts a qualitative doctrinal and comparative legal-policy methodology. It analyses the WTO Trade Facilitation Agreement, ongoing WTO discussions on e-commerce and digital trade, AI-related provisions in recent free trade agreements, and emerging regulatory frameworks including the EU AI Act and the GDPR. The analysis evaluates their implications for customs modernization, cross-border data governance, regulatory interoperability, technology transfer, and digital capacity-building. The study includes both descriptive doctrinal analysis of existing obligations and advances normative policy recommendations.*

Research Ethics: *This paper draws upon secondary data from published reports of international organisations including the World Trade Organization (WTO), the World Customs Organization (WCO), the United Nations Conference on Trade and Development (UNCTAD), and the Organisation for Economic Cooperation and Development (OECD), alongside academic papers, government publications, policy papers, international trade reports, publicly available and published literature on AI in trade facilitation and Digital governance in International trade. This paper considers the legal and regulatory landscape from 2015 to 2026 (as of June 2026). Formal ethical approval was not required for this study, as it did not involve human participants or the collection of personal data or confidential information.*

Limitations: *The methodology used is qualitative and doctrinal, relying on treaty guidelines, regulatory instruments and secondary sources. This study lacks primary data on compliance costs, trade flows or sector-level outcomes. As a result, the empirical claims regarding AI's impact on exporters and global value chains are illustrative and not rigorously measured. The WTO dispute settlement mechanism has not yet addressed an AI-related measure directly, therefore, the application of TBT and GATS necessity-test doctrines to AI regulations is prospective and not grounded in any decided case law. The comparative analysis mainly covers the European Union, the United States, China, and India, while other regions receive less detailed attention due to limited data availability. Finally, the regulatory and legal landscape considered in this study focusses on the EU AI Act's implementation timeline and the WTO's evolving digital trade and AI governance framework. Some factual claims therefore may require updating as these frameworks develop further.*

Results/Findings: *The study finds that AI has significant potential to improve customs efficiency, regulatory compliance, and supply chain resilience. However, these benefits are unevenly distributed due to disparities in digital infrastructure, technological capabilities, institutional capacity, and access to AI technologies. The analysis further demonstrates that emerging AI governance frameworks, particularly stringent data protection and algorithmic compliance requirements adopted*

by advanced economies, may operate as de facto technical or non-tariff barriers, increasing compliance burdens for exporters from developing countries. In addition, fragmented approaches to cross border data governance, cybersecurity, and algorithmic transparency create regulatory uncertainty that may impede the seamless operation of AI enabled trade systems.

The paper argues that without a coherent, inclusive, and multilateral framework governing AI in international trade, regulatory fragmentation is likely to widen existing digital divides and reinforce technological dependence. It therefore advocates the development of balanced international rules that promote interoperability, responsible AI governance, technology transfer, digital capacity-building, and equitable participation of developing countries in the evolving digital trading system.

***Direction for future research:** According to EU AI Act (Regulation EU 2024/1689 laying down harmonised rules on artificial intelligence), the transparency rules of the act will come into effect in August 2026, and the deferred high-risk obligations will take effect in December 2027. Future scope of this study can include empirical analysis measuring actual compliance cost and their distribution across sectors, which would eventually test the claims made in this paper. Researchers could extend this study's doctrinal analysis to a more quantitative analysis after the provisions are in effect. Moreover, an empirical study could be conducted on Multi-Party Intern Appeal Arrangement, exploring how these measures treat algorithmic non-tariff barriers in practice. Further work could deepen the developing-country case studies as mentioned in Section 3 of this paper and explore the regions that were beyond the scope of this study. AI's differential impact on sectors would further refine the claims made throughout this paper.*

Introduction

For the purpose of this paper, Artificial Intelligence (AI) is defined consistent with the WTO's characterization of it as a general-purpose technology marked by continuous evolution, such that no single legal definition exists across jurisdictions. Emphasis is therefore placed on functional application, regulatory coherence and plurilateral dialogue over definitional precision. The existing literature establishes that AI carries significant implications for trade governance, but neither explores AI's interaction onto specific WTO Trade Facilitation Agreement provisions, nor it tests the claims that AI regulation can function as a disguised non-tariff barrier. This paper moves beyond the scope and methodology used in existing literature by using the WTO's cross-jurisdictional definition of AI as an object of analysis and addressing concerns of capacity-differentiation architecture through the comparative framework.

AI and The WTO Trade Facilitation Framework

As global trade becomes increasingly digitalized, customs authorities must process growing volumes of cross-border transactions while ensuring security, revenue collection, and compliance with trade laws. AI has emerged as a transformative tool for trade facilitation by improving customs administration, border management, and regulatory compliance. The World Trade Organization (WTO) Trade Facilitation Agreement (TFA), which entered into force on 22nd February 2017, aims to simplify, modernize, and harmonize customs procedures to reduce trade costs and improve border efficiency. According to the WTO, full implementation of the TFA could reduce global trade costs by 14.3%, reduce time to import over 47%, and reduce export time by almost 91%, with particularly significant benefits for developing countries. Although the TFA does not specifically mention AI, its provisions encourage the use of information technology, electronic processing, and coordinated border management. AI therefore serves as an enabling technology that enhances compliance with existing WTO obligations rather than creating new legal commitments.

A primary application of AI in international trade is customs modernization. Traditional customs systems relied on manual document verification, paper-based procedures, and physical inspections, resulting in delays and higher compliance costs. AI technologies including machine learning (ML), optical character recognition (OCR), natural language processing (NLP), and computer vision have significantly streamlined customs operations. OCR extracts information from invoices, certificates of origin, and

customs declarations, while NLP compares trade documents with tariff schedules and customs regulations to detect inconsistencies. Computer vision analyses X-ray images to identify concealed or prohibited goods more accurately than manual inspections. The World Customs Organization (WCO), through its Smart Customs Project, recognizes AI-driven customs modernization as a key development for improving transparency, consistency, and operational efficiency in customs administration.

In the Baltic region, Estonia, Latvia, and Lithuania run the Baltic X-ray Images Exchange (BAXE) project, where 16 integrated scanners share images that are centrally analysed in Latvia. Alongside this, the Baltic States and Poland use a joint automated licence plate recognition system and are piloting a corridor-as-a-service (CaaS) project that applies Internet of Things (IoT) to automate border crossings. In Asia, Indonesia's Customs authority monitors container transfers in real time by sealing them with e-seals connected to GPS and a central control room. Malaysia's SmartCargo project combines radiation scanners with optical character recognition (OCR) linked to the customs system, ensuring container numbers of match declarations.

The paper next examines AI-enabled risk management in customs administration. Customs authorities increasingly rely on trade statistics, routing patterns, and intelligence reports to identify consignments that pose higher risks. Under Article 7.4 of the WTO Trade Facilitation Agreement (TFA), members are required to adopt or maintain risk management systems that focus inspections on high-risk shipments while allowing low-risk goods to move quickly. Artificial intelligence (AI) strengthens this process by using machine learning to refine risk models continuously. Instead of checking every shipment, customs administrations apply AI-powered risk assessment tools that analyze historical trade data, trader compliance records, and cargo patterns. This enables authorities to concentrate inspections on suspicious consignments while expediting clearance for compliant traders. According to the World Customs Organization (WCO), AI-supported risk management improves border security, reduces congestion at ports, and lowers transaction costs for businesses engaged in global trade. In addition, Article 7.7 of the TFA requires members to provide extra facilitation measures such as faster cargo release, reduced inspections and simplified customs documentation for Authorized Economic Operators (AEOs) trusted traders who meet specified compliance and security standards.

Single window systems constitute the second major locus of AI integration and trade facilitation. Article 10.4 encourages members to establish or maintain a single window enabling traders to submit documentation and data through a single-entry point to fulfil all import, export, and transit requirements. AI enhances single windows through automated document validation, natural-language processing of trade declarations across multiple languages, and anomaly detection that cross-references submitted data against bills of lading, letters of credit, and prior filings in real time. Singapore's TradeNet and South Korea's UNI-PASS systems have incorporated machine-learning modules that auto-populate customs declarations from commercial invoices, reducing the documentary burden that Article 10.1 requires Members to minimize through periodic review of formalities. Optical character recognition combined with large language models now permits automated extraction of harmonized system codes, valuation data, and rules-of-origin certifications from unstructured trade documents, directly advancing Article 10.2 mandates that the members minimize the incidence and complexity of import, export, and transit formalities and acceptance of copies should be developed.

AI in Single Window Systems further strengthens trade facilitation by enabling traders to submit standardized information through a single electronic platform instead of separately filing documents with customs, quarantine, food safety, port, and licensing authorities. AI enhances these systems by validating submitted information, identifying missing documents, detecting inconsistencies, routing applications to the relevant agencies, and providing real-time status updates. Intelligent workflow automation improves coordination among border agencies, reduces duplication of inspections, and facilitates faster cargo clearance, thereby promoting a more transparent and efficient border management system.

Another significant application is trade documentation. International trade requires numerous commercial and regulatory documents, including invoices, bills of lading, certificates of origin, customs declarations, and sanitary certificates. Manual preparation and verification often lead to clerical errors and delays. AI-powered document intelligence systems employ OCR, NLP, and machine learning to automate

document extraction, cross-verification, anomaly detection, and classification. These technologies compare information across multiple documents, detect discrepancies, and facilitate paperless trade by enabling secure electronic document exchange. This significantly reduces processing time, minimizes documentary errors, and lowers compliance costs.

Article 1 of the TFA, concerning publication and availability of information, benefits from AI-driven chatbots and natural-language query systems that render tariff schedules, procedural requirements, and regulatory changes accessible to traders particularly small and medium enterprises lacking dedicated compliance departments. Article 1.4 requires establishing or maintain enquiry points is increasingly operationalized through AI-assisted virtual enquiry points capable of answering routine procedural questions instantaneously, in multiple languages, thereby reducing the informational asymmetries that historically disadvantaged smaller traders. Article 8, governing border agency cooperation, is likewise advanced where AI platforms enable interoperable data-sharing between customs, sanitary and phytosanitary authorities, and other border agencies, supporting the coordinated controls and joint procedures maintained in Article 8.2 of the TFA.

These applications intersect with, but remain analytically distinct from, the WTO's broader e-commerce and digital trade discussions. The 1998 WTO Work Programme on E-Commerce moratorium on customs duties on electronic transmissions, periodically renewed at successive Ministerial Conferences, lapsed on 30th March 2026 after members failed to reach consensus at the 14th Ministerial Conference in Cameroon. In its place, a plurilateral Agreement on E-Commerce, concluded through the Joint Statement Initiative process among 66 Members representing roughly 70% of world trade, was opened for signature, alongside a separate open-ended commitment among the United States and allied Members not to impose duties on electronic transmissions inter se. These developments concern the classification and tariff treatment of digital transmissions, a market-access and tariff-binding question whereas AI's role in trade facilitation concerns the administrative machinery through which any goods, digital or physical, are cleared, inspected, and documented. The two tracks are complementary but conceptually separate from the E-Commerce Agreement and address what obligations attach to digital trade, while AI-enabled customs modernization addresses how existing TFA obligations are operationally discharged.

AI should therefore be viewed as a technology that complements rather than replaces existing WTO obligations. The legal principles governing transparency, due process, non-discrimination, and customs administration remain rooted in WTO agreements, while AI enhances the efficiency and effectiveness of their implementation. Human authorities continue to retain responsibility for customs valuation, tariff classification, enforcement decisions, and dispute resolution. As emphasized by both the OECD and the World Customs Organization, AI should support human decision-making by improving administrative capacity while ensuring accountability, explainability, and procedural fairness. Accordingly, AI strengthens the practical implementation of the WTO Trade Facilitation Agreement and supports ongoing digital trade initiatives without altering the existing multilateral legal framework. This capacity-enhancing role, however, is not uniform across the membership. Article 13's self-differentiation mechanism already recognizes that members implement TFA obligations according to their own institutional capacity, and the same constraint applies to AI. Its ability to strengthen implementation will depend on the very capacity gaps that differentiate members under the agreement.

Emerging AI Governance Frameworks and their Trade Implications

The regulatory foundations of AI governance frameworks have shifted remarkably over the past decade, moving from the GDPR's rights-based protections towards the EU AI Act's sector-specific compliance regime built to address AI's potential risks. Unlike previous waves of digital regulation, AI governance has evolved through a fragmented yet increasingly convergent landscape comprising soft-law principles, ethical guidelines, domestic legislation, and digital trade agreements. Instruments such as the OECD AI Principles and the UNESCO Recommendation on the Ethics of Artificial Intelligence establish normative standards for trustworthy AI, while binding regulatory regimes including the General Data Protection Regulation (GDPR) and the European Union (EU) AI Act impose legally enforceable

obligations concerning transparency, risk management, conformity assessment, and accountability. Simultaneously, contemporary digital economy agreements, including the Digital Economy Partnership Agreement (DEPA), the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the Singapore-United Kingdom Digital Economy Agreement (DEA), and the United States-Mexico-Canada Agreement (USMCA), increasingly incorporate provisions facilitating digital trade, cross-border data flows, and regulatory cooperation relevant to AI-enabled commerce.

This shift signals that AI is no longer being governed as an offshoot of data protection law, but as a policy domain. Against this backdrop, AI governance is further emerging not merely as a matter of technology regulation but as an increasingly important determinant of market access, regulatory compliance, and competitiveness in international trade. This chapter compares the principal AI governance frameworks through a trade law perspective, examining their approaches to transparency, conformity assessment, accountability, cross-border data flows, and the extraterritorial influence of the EU's regulatory model. It further evaluates their implications for exporters and participation in global value chains.

Why AI Governance? The Emergence of AI as a Trade Policy Issue:

Artificial intelligence (AI) has evolved from a technological innovation into a strategic driver of international trade, transforming supply chains, customs administration, digital platforms, financial services, and cross-border commerce while enhancing productivity and competitiveness. As AI systems increasingly rely on cross-border data flows, cloud computing, and globally integrated value chains, they have also raised significant regulatory concerns relating to algorithmic bias, transparency, cybersecurity, privacy, and accountability, making domestic AI regulations capable of producing substantial international trade effects. Initially governed through voluntary ethical principles, AI regulation has gradually shifted towards legally enforceable frameworks to ensure trustworthy, transparent, and accountable AI, reflecting the growing recognition that public trust is essential for the sustainable development of the digital economy. From an international trade perspective, AI governance now functions similarly to technical regulation by imposing requirements relating to conformity assessment, transparency, data governance, documentation, and risk management, all of which influence market access, compliance costs, and participation in global value chains. At the same time, divergent national regulatory approaches risk creating regulatory fragmentation and barriers to digital trade, while simultaneously encouraging greater international regulatory cooperation through soft-law instruments and digital trade agreements.

Trade Implications of Emerging AI Governance Frameworks

AI governance frameworks, despite differing in their legal status and regulatory approaches, increasingly converge around core principles such as transparency, accountability, conformity assessment, and cross-border data governance, all of which have significant implications for international trade. These principles are gradually becoming determinants of market access for AI-enabled goods and services, making regulatory compliance a key element of global competitiveness. Transparency has emerged as a common requirement across international instruments. The OECD AI Principles and the UNESCO Recommendation encourage explainability and responsible AI governance, while the EU AI Act transforms these principles into binding obligations by requiring disclosure of AI interactions, technical documentation, and transparency for certain AI-generated content.

Digital trade agreements such as the Digital Economy Partnership Agreement (DEPA) and the Singapore–United Kingdom Digital Economy Agreement (UKSDEA) complement these developments by promoting regulatory cooperation and interoperability rather than imposing detailed substantive obligations. Similarly, accountability has evolved from a soft-law principle into a legally enforceable requirement under the GDPR and the EU AI Act through obligations relating to risk management, human oversight, documentation, and post-market monitoring, thereby extending compliance responsibilities across the AI value chain.

The EU AI Act further introduces conformity assessment requirements for high-risk AI systems, including compliance with standards on risk management, data governance, cybersecurity, and technical documentation before market entry. These requirements resemble technical regulations under the WTO Agreement on Technical Barriers to Trade (TBT Agreement), promoting consumer protection while simultaneously increasing compliance costs and potentially operating as de facto market-access conditions for foreign suppliers.

Another significant issue concerns cross-border data governance. While the GDPR permits international data transfers only through mechanisms such as adequacy decisions and standard contractual clauses, digital trade agreements, including the CPTPP, USMCA, DEPA, and UKSDEA, generally favour the free flow of data and discourage unjustified data localisation requirements, subject to legitimate public policy exceptions. Finally, the extraterritorial influence of the European Union's regulatory model, commonly described as the "Brussels Effect," has encouraged multinational enterprises to voluntarily align with EU AI standards to maintain access to the EU market, thereby promoting global regulatory convergence and shaping international commercial practices beyond the Union itself.

Table 1: Comparative overview of AI governance frameworks

Framework	Legal status	Scope	Relevance to AI governance and Trade
OECD AI principle	Soft Law (non-binding council recommendations)	AI-specific	First intergovernmental AI standard, principles recur across the binding instruments below
UNESCO recommendation on Ethics of AI	Soft Law (non-binding recommendations)	AI-specific	First global AI instrument adopted by consensus, periodic member state reporting gives it practical, if non-justiciable, traction
GDPR	Hard Law - binding EU regulations	General data protection	Regulates AI only via Article 22's restriction on solely automated decision-making not through AI specific obligations
EU AI Act	Hard Law - binding EU regulations	AI-specific	First comprehensive, risk specific statue directly regulating AI
Digital Trade Agreements (DEPA, CPTPP, UKSDEA, USMCA)	Hard Law - binding treaty commitments	General digital trade / e-commerce, AI is addressed incidentally	Govern AI-enabled trade only through data-flow localisation and regulatory cooperation disciplines, no AI specific standards

Implications for Exporters and Global Value Chains

Divergent AI regulations risk fragmenting global value chains, forcing exporters to build separate compliance systems for each market they serve. Yet this divergence coexists with real convergence at the regulatory level, as the Brussels Effect draws a third-country framework toward EU AI Act-style, and digital trade agreements increasingly promote regulatory cooperation to ease cross-border compliance. As a result, exporters of AI-enabled goods and services must integrate regulatory compliance into product development, software design, and supply chain management from the outset rather than treating it as a post-market obligation. This convergence remains partial and gradual, leaving exporters to navigate the regimes. While the gradual convergence of AI governance standards may reduce regulatory uncertainty for multinational enterprises, it still requires substantial investments in governance systems, algorithmic audits, documentation, and legal compliance, with these costs falling more heavily on small and medium-sized enterprises (SMEs).

The impact extends across global value chains (GVCs), where lead firms increasingly require suppliers to comply with international AI governance standards as a prerequisite for participation, making AI governance a new form of supply chain regulation like product safety and sustainability standards. For developing countries, interoperable AI governance frameworks present opportunities to strengthen digital trade and attract investment, however, fragmented regulatory approaches may increase compliance costs and widen existing technological and digital divides. Accordingly, greater international

cooperation, regulatory harmonisation, and capacity-building will be essential to ensure that AI governance promotes inclusive participation in global digital trade rather than creating new barriers to market access.

Regulatory Challenges for AI-enabled International Trade

The spread of artificial intelligence across cross-border commerce from algorithmic trade finance to automated customs risk assessment and AI-enabled service delivery has moved faster than the regulatory framework of the multilateral trading system, which was largely established during the Uruguay Round. Four interconnected issues stand out in this context are the governance of data flows, the need for algorithmic accountability, the risk that AI regulation may function as a disguised trade barrier, and the disproportionate compliance burdens such regulation places on developing economies.

Cross Border Data Governance and Localisation

AI systems rely heavily on data, requiring continuous cross-border flows for training, validation, and deployment. States, however, have responded to concerns over privacy, national security, and digital sovereignty with divergent and often incompatible frameworks. The EU's General Data Protection Regulation (GDPR) restricts transfers of personal data outside the Union unless the destination country is deemed adequate or safeguards such as standard contractual clauses are in place. In contrast, India's Digital Personal Data Protection Act, 2023 adopts a "blacklist" approach, permitting transfers to all jurisdictions except those specifically restricted by the Central Government, thereby retaining executive discretion. China's Cybersecurity Law and Data Security Law impose mandatory local storage for "important data" and personal information collected by critical infrastructure operators, alongside security assessments for transfers. The United States, by comparison, has historically favoured a market-driven model, though the CLOUD Act extends US law-enforcement access to data held by US providers regardless of where it is stored, creating its own extraterritorial tensions.

The rise of divergent national data regimes has created a complex compliance patchwork that significantly increases the cost of AI development, particularly for firms without strong in-house legal capacity. These rules also fragment the global data pool essential for AI training, a phenomenon often described as "data fragmentation". At the multilateral level, the WTO's Joint Statement Initiative (JSI) on E-commerce has sought to establish disciplines on cross-border data flows and to prohibit data-localization requirements, reflecting provisions already included in agreements such as the USMCA and the CPTPP. However, countries like India and South Africa have declined to participate, contending that binding trade rules on data flows would undermine their policy space for industrialization strategies that treat data as a national resource. This unresolved tension between data as a tradable, borderless input and data as sovereign patrimony is likely to remain central to AI-related trade rulemaking in the years ahead.

Algorithmic Accountability, Transparency, Explainability, and Liability

A key regulatory challenge lies in ensuring accountability for algorithmic decision-making. Many AI systems, especially deep-learning models, operate as "black boxes," making it difficult to apply traditional administrative or tort law that assumes transparent, explainable decisions. The EU Artificial Intelligence Act addresses this through a risk-tiered framework, requiring transparency, documentation, and human oversight proportional to risk, while banning certain "unacceptable risk" uses. Its extraterritorial reach mirrors the GDPR, applying to providers whose systems are marketed or used within the Union regardless of origin. By contrast, the United States relies on sector-specific and voluntary tools such as the NIST AI Risk Management Framework, creating uneven compliance burdens for exporters.

Liability further complicates matters. When AI causes harm in cross-border trade, for example, mispricing risk in trade finance or misclassifying goods in customs, conflict-of-laws rules struggle to assign responsibility between developers, firms, and users. The absence of harmonized explainability standards also affects trade remedies. Authorities increasingly use AI-assisted analytics in anti-dumping and countervailing-duty cases, yet Article 6 of the WTO Anti-Dumping Agreement requires parties to

comment meaningfully on the evidence. This obligation is difficult to meet when the analytical methods themselves cannot be fully explained, raising due-process concerns.

AI Regulations as Potential Technical or Non-Tariff Barriers

Domestic AI regulation, though often legitimate in purpose, can act as a de facto non-tariff barrier when it places heavier burdens on foreign AI products or service suppliers. Under the WTO Agreement on Technical Barriers to Trade (TBT), mandatory AI product standards such as certification for medical devices or autonomous systems must comply with rules on non-discrimination (Article 2.1) and necessity (Article 2.2). The necessity test, as clarified in US - Clove Cigarettes, requires weighing a measure's contribution to its objective against its trade-restrictiveness and the availability of less restrictive alternatives. Where AI standards favour domestic models for example, through data-residency requirements or disclosure rules targeting foreign firms they risk breaching these disciplines.

For AI-enabled services like cloud computing or algorithmic trading, the General Agreement on Trade in Services (GATS) is more relevant. Its market-access and national-treatment obligations apply only where Members have scheduled commitments, meaning coverage is partial and often outdated. Article VI:4 seeks to prevent qualification and licensing rules from becoming unnecessary barriers, a mandate advanced through the 2021 Reference Paper on Services Domestic Regulation. Even so, measures may still be justified under Article XIV's general exceptions, provided they are not applied in an arbitrary or protectionist manner. Appellate Body rulings in US – Shrimp and India – Solar Cells highlight that legitimate objectives must be pursued through flexible, non-discriminatory means, a principle equally relevant to AI regulation.

Challenges for Developing Countries

For developing countries, AI regulation is complicated by structural gaps in infrastructure, institutional capacity, and enterprise scale. Effective governance requires reliable connectivity, computing power, and skilled regulators resources concentrated in advanced economies. Adopting stringent standards, such as those modelled on the EU AI Act, risks overwhelming domestic firms with compliance costs they cannot absorb, while weak regulation leaves them dependent on foreign AI providers. Small and medium enterprises, which dominate developing economies, are least able to meet requirements for auditing or data-localization, reinforcing market concentration among large incumbents. This dependence also means that global standards set externally by the EU, the US, or technical bodies become de facto benchmarks, leaving developing countries as rule-takers rather than rule-makers. The digital divide, spanning connectivity, training data, and computing infrastructure, risks turning AI into a new axis of the North-South gap. Addressing this will require a multilateral framework that embeds capacity-building, technology transfer, and technical assistance as binding obligations, not just aspirational commitments.

Policy Recommendations: Towards an Inclusive Multilateral Framework

The comparative analysis demonstrates that while Artificial Intelligence has considerable potential to improve trade facilitation and digital trade, its benefits remain unevenly distributed due to differences in technological capacity, regulatory maturity, and institutional readiness. At the multilateral level, the absence of harmonised AI governance standards risks increasing regulatory fragmentation and creating new barriers to international trade. Moreover, the Appellate body has been unable to hear new appeals since 2019, and members' commitments carry less practical weight without an efficiently functioning appeal mechanism to test them. The Multi-Party Interim Appeal Arbitration Arrangement (MPIA), operating under DSU Article 25 since 2020, offers a solution but currently covers only 60 of the WTO's 164 members. To ensure that AI contributes to an efficient, transparent, and inclusive trading system, the following policy measures merit consideration.

Promote Regulatory Interoperability

The WTO should encourage greater convergence among national AI governance frameworks by facilitating dialogue on common principles relating to transparency, accountability, explainability, and

human oversight. While complete harmonisation may not be feasible, greater regulatory interoperability would reduce compliance costs for exporters and minimise the risk of AI regulations becoming de facto technical barriers to trade.

Develop Trusted Cross-Border Data Governance Frameworks

Since AI systems depend on cross-border data flows, WTO Members should continue discussions on interoperable data governance frameworks that balance legitimate public policy objectives including privacy, cybersecurity, and national security with the need to facilitate digital trade. Cooperation with organisations such as the OECD, UNCITRAL, and ISO can assist in developing internationally accepted standards for trustworthy data sharing and AI-enabled commerce.

Strengthen Technology Transfer and Digital Capacity Building

Developing and least-developed countries require greater technical and financial support to deploy AI-enabled customs systems. Existing mechanisms under the Trade Facilitation Agreement, particularly Section II (Special and Differential Treatment) and the Trade Facilitation Agreement Facility (TFAF), should be further strengthened to support digital infrastructure, customs modernisation, technical training, and AI capacity-building.

Enhance Institutional Cooperation

Closer institutional cooperation among the WTO, World Customs Organization (WCO), OECD, ISO, UNCITRAL, UNCTAD, and UNECE should be encouraged to promote consistent technical standards, best practices, and model regulatory frameworks for AI in customs administration and digital trade. Such collaboration would reduce duplication of regulatory efforts and support greater interoperability across customs administrations.

Integrate AI Governance into WTO Digital Trade Discussions

Future WTO discussions on digital trade should explicitly consider the implications of Artificial Intelligence, particularly regarding algorithmic transparency, cross-border data flows, cybersecurity, and regulatory cooperation. Although the current Agreement on Electronic Commerce establishes an important foundation for digital trade, AI-specific governance issues remain largely outside its scope and warrant further multilateral dialogue.

Expand Aid for Trade and TFA Implementation Support

The WTO's Aid for Trade initiative should increasingly prioritise digital trade infrastructure, AI-enabled customs modernisation, and regulatory capacity-building. Expanding financial assistance and technical cooperation would enable developing Members to implement AI technologies more effectively while ensuring that the benefits of digital trade are shared more equitably across the multilateral trading system.

Conclusion

Artificial Intelligence has the potential to enhance the WTO's Trade Facilitation Agreement (TFA). Yet, its capacity to deliver such gains is closely tied to the institutional, technological and infrastructural endowments that already differentiate WTO members under Article 13 of the TFA. Consequently, rather than narrowing the developmental divide that the TFA seeks to address, the uneven adoption of AI may risk reproducing and potentially exacerbating the existing North-South gap in trade facilitation capacity. This asymmetry is also evident in the emerging architecture of AI governance. Regulatory and technical standards are increasingly shaped by advanced economies and may cascade through Global value chains as de facto conditions of market access. The paper rejects two opposing approaches: leaving AI governance entirely to national discretion and imposing a single harmonised regulatory standard. Instead, it advocates an incremental approach focused on regulatory interoperability, coherent data governance and capacity-building commitments that are treated as substantive and enforceable obligations rather

than merely aspirational objectives. Measures such as deepening regulatory interoperability, cross-border data governance, technology transfer and closer institutional cooperation can bring AI governance formally into WTO digital trade discussions. Together, these steps would lower compliance costs, preserve policy space and distribute the gains of AI-enabled trade facilitation more evenly across the multilateral trading system. These suggested policy recommendations, if pursued through an inclusive multilateral framework, are capable of accommodating differences in members' capacities while preserving the longer-term objective of a rules-based trading system.

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