Paperless Trade Facilitation in India: Achievements, Challenges and Opportunities

Prabir De

Amal Saji K

Discussion Paper # 306

RIS
Research and Information System
for Developing Countries
विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

RIS@40

Paperless Trade Facilitation in India: Achievements, Challenges and Opportunities

Prabir De

Amal Saji K

RIS
Research and Information System
for Developing Countries
विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

Paperless Trade Facilitation in India: Achievements, Challenges and Opportunities

Prabir De[*] and Amal Saji K[**]

Abstract: Trade facilitation is a key enabler for a country's effective participation in international supply chains and economic development. With technological advancement, trade facilitation has become an important tool to enhance trade, particularly in the post-COVID-19 phase. India has introduced simplification and automation of trade procedures and processes through a series of reforms and capital investment. In addition, the WTO's TFA has been helping India for digitalizing Customs and trade procedures. However, the coverage of cross-border paperless trade measures implementation is yet to pick up the desired momentum due to various challenges. This article provides a review of the current status of paperless trade in India and identifies major challenges that have been hindering paperless trade across borders. The analysis of this article shows that India has made considerable progress in establishing the national Single Window Interface for Facilitating Trade (SWIFT) and taken important some steps towards implementing the exchange of trade-related information across borders through several e-governance programmes.

Keywords: India, Trade, Trade facilitation, Paperless trade, WTO

JEL codes: F1, F15

1. Introduction

Trade is an important engine of economic growth and sustainable development. With ongoing geopolitical tensions and uncertainties, countries are looking towards technology-enabled supply chain diversification. To enable countries to effectively participate in international supply chains, reducing trade costs is essential. In addition,

---

[*] Professor, RIS. E-mail: prabirde@ris.org.in

[**] Research Assistant, RIS. E-mail: amal.saji@ris.org.in

Authors are grateful to one anonymous referee for useful comments. They are also grateful to Professor Sachin Chaturvedi, Director General, RIS for his encouragement. The first author acknowledges the discussion he had with several experts on the subjects such as Prof. S. K. Mohanty, Dr Rupa Chanda, Dr Yann Duval, Dr Arpita Mukherjee, Dr Tengfei Wang, Mr T. A. Khan, etc. Views are the authors' own. Usual disclaimers apply.

recent developments in international supply chains have reinforced the importance of simplifying trade procedures for improving supply chain efficiency and facilitating supply chain integration. To make trade more inclusive, formulating and mainstreaming viable arrangements for simplifying and automating trade procedures and documentation is extremely important[1]. Trade facilitation has always been considered as the most important element in reducing trade costs through simplification, modernization and harmonization of trade processes (WTO, 2015; UN, 2021). In addition, next generation trade facilitation measures, like paperless and cross-border paperless trade, have as much potential as traditional measures to reduce trade costs and increase intra- and extra- regional trade (ESCAP, 2014; UN, 2021). Thus, biggest gains can be achieved when countries are able to implement sustainable trade facilitation measures that go beyond traditional trade facilitation measures (ESCAP, 2023).

Paperless trade facilitates electronic exchange of information along international supply chains for stakeholders involved in international trade transactions. Paperless trade, in general, can bring huge cost savings and efficiency gains by addressing trade control and logistics challenges associated with movement of physical goods across borders (ESCAP, 2017). According to the Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and the Pacific, paperless trade is defined as trade "taking place on the basis of electronic communications, including exchange of trade-related data and documents in electronic form".[2] The ultimate goal of paperless trade is to dematerialize and digitalize all information flows associated with a given transaction for all stakeholders.

The implementation of the trade facilitation measures including paperless trade gained importance with the enforcement of Trade Facilitation Agreement (TFA) by the World Trade Organization (WTO), which aims to improve transparency and reduce corruption by addressing bureaucratic delays and red tape for moving goods across borders (WTO, 2015). Digitalization of customs systems and other trade facilitation initiatives are central to the WTO TFA as it contains a number

of provisions such as electronic submission of documents, e-payment systems, electronic single window systems and provision of pre-arrival processing, which are potentially relevant to paperless trade (ESCAP, 2021, 2024).

India has made enormous progress in trade facilitation in recent years.[3] Trade facilitation has been a major longstanding priority area of reform of the Government of India over the last few years. There was a sharp decline of India's trade soon after the COVID-19 pandemic. However, trade recovered later, preciously from December 2020 onward as India kept introducing new types of TF measures to bring back growth momentum (Figure 1). In other words, to improve the business regulatory climate and expedite trading process, the government has been proactively working towards reducing transaction time and costs of trade through rationalization of documentation and border compliance procedures.[4]

Figure 1: India's Year-wise Export and Import and TF Measures: October 2019 to August 2024
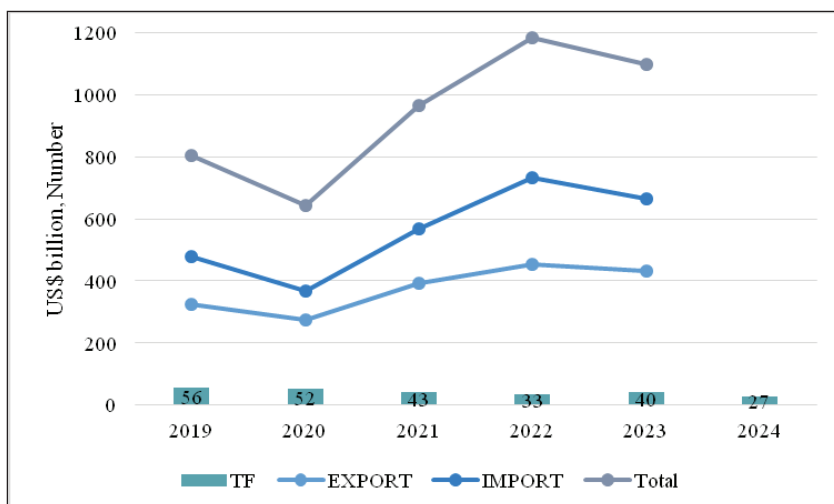
Note: TF measures based on the number of notifications per year.
*Source*s: DOTS for trade and DGFT for TF measures.

The WTO TFA has been an important enabler in accelerating the prioritization of trade facilitation initiatives on the agenda of the governments of the WTO member countries. India ratified the WTO TFA in April 2016, which subsequently came into force on 22 February 2017. Since then, the Government of India has made incremental improvements in trade facilitation, simplification and automation of trade procedures and processes. Some of the major reforms in the area of paperless trade includes introduction of Single Window, which is known as Single Window Interface for Facilitating Trade (SWIFT), e-SANCHIT (e-Storage and Computerized Handling of Indirect Tax documents), Importer -Exporter Code (IEC), the Integrated Risk Management System (RMS), the Direct Port Delivery (DPD) facility, Authorised Economic Operators (AEOs), among others. As part of the WTO TFA, India has also set up the National Committee on Trade Facilitation (NCTF) and announced National Trade Facilitation Action Plan (NTFAP) for the period 2024-2027. As on May 2025, India has successfully established the NCTF. The NCTF is a three-tiered body that coordinates and implements the TFA.

Rest of the paper is organised as follows. Section 2 provides an overview of India's performance in trade facilitation implementation. Section 3 provides a review of the paperless trade initiatives taken by India. Section 4 discusses the challenges in implementing paperless trade measures. Section 5 discusses the opportunities for enhancing cooperation and harmonization of trade procedures through cross-border paperless trade. Section 6 concludes.

2. Empirical Model

The efficiency of trade flows are significantly influenced by multiple regional and global factors, including economic size, logistics performance, trade liberalization, exchange rates, paperless trade, and shipping connectivity. To analyse the trade flows and the relationship

between their determinants, we first derive the functional form for both import and export flows.

Export equation:

$$EX = f(Y, L, S, R, T, P) \tag{1}$$

Import equation:

$$IM = f(Y, L, S, R, T, P) \tag{2}$$

where EX and IM are the export flow and import flow, respectively. Y is the economic size, L is the logistics performance, S is the shipping connectivity, R is the exchange rate, T is the trade liberalization, and P is the paperless trade.

To estimate the relationship, we derive the econometric model using logarithmic transformation of the functional equation. This allows us to interpret the coefficients as elasticities and to linearise the estimation.

$$EX_{it} = \alpha_0 + \alpha_1 GDP_{it} + \alpha_2 REER_{it} + \alpha_3 LPI_{it} + \alpha_4 LSCI_{it} + \alpha_5 D1_{it} + \epsilon_{it} \tag{3}$$

$$IM_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 REER_{it} + \beta_3 LPI_{it} + \beta_4 LSCI_{it} + \beta_5 D1_{it} + \epsilon_{it} \tag{4}$$

The empirical model in our study consists of two equations. The equation (1) represents the export model, whereas the equation (2) represents the import model. Both models provide a comprehensive framework to analyze the factors driving export and import performance, focusing on trade liberalization, paperless trade, logistics performances, and economic size. Table 1 presents is the description of variables and data sources.

Table 1: Variable Description and Data Source

Variable	Explanation	Source
EX	Individual country's global export	IMF DOTS
IM	Individual country's global import	IMF DOTS
GDP (Economic size)	Gross Domestic Product (GDP). It reflects the economic size of the country. Values are taken in current US$.	WB-WDI
REER (Exchange rate)	Real Effective Exchange Rate (REER) is a measure of a country's currency value against a weighted average of other currencies, adjusted for inflation	WB-WDI
LSCI (Shipping connectivity)	Liner Shipping Connectivity Index (LPI) measures how well a country is connected to global shipping networks	UNCTAD
LPI (Logistics Performance)	Logistics Performance Index (LPI) is a metric used to rank a country's efficiency in trade logistics, based on factors like customs clearance, infrastructure quality, ease of arranging shipments, logistics service quality, tracking ability, and delivery timeliness, essentially providing a measure of how well a country facilitates the movement of goods across borders	World Bank
TS (Trade strength)	TS represents the multiplicative variable of paperless trade (Single Window) and trade liberalization (WTO membership)	UNTF Survey, WTO
CE (Customs efficiency)	CE stands for Customs efficiency. It is an LPI indicator that measures how efficient and effective a country's customs procedures are. It considers factors like: How fast customs clearance is, How transparent customs processes are, and How predictable customs-related requirements are.	World Bank

Continued...

TI (Transport infrastructure)	Transport infrastructure score evaluates the quality and development of a country's transport infrastructure, including roads, railways, ports, and airports. A well-developed infrastructure enables efficient transportation and smooth flow of goods within and across borders.	World Bank
IS (International shipment)	IS is International Shipment score, and it measures the ease of arranging and conducting international shipments. It considers factors such as the availability of international shipping services, the quality of logistics services providers, and the accessibility of international trade documentation.	World Bank
LS (Logistics services)	LS is Logistics Services score, which assesses a country's ability to provide quality logistics services, including logistics expertise, competence of logistics operators, and the availability of logistics service providers.	World Bank
ToS (Tracking of shipment)	The Tracking & Tracing Score reflects a country's capabilities in providing visibility and real-time tracking of shipments. It considers factors such as the use of advanced tracking technologies, the availability of online shipment tracking systems, and the accuracy of tracking information.	World Bank
RoL (Reliability of logistics)	Reliability of Logistics (RoL) score measures the speed and reliability of logistics services, including the timeliness of deliveries, transit times, and adherence to schedules. A country with a higher Timeliness Score demonstrates efficient logistics operations, ensuring that goods reach their destinations promptly and according to predetermined timelines.	World Bank

The empirical analysis adopts cross-section pooled data, covering 117 countries (refer Appendix 5 Table 1) and six time periods (2010, 2012, 2014, 2016, 2018, and 2023). These specific years were selected due mainly to the availability of LPI data for these years. In the estimation, various trade facilitation factors are controlled for, including trade liberalization, paperless trade, and LPI indicators. Basic summary statistics are provided in the Appendix 5 Table 2.

Since the study uses the cross-section pooled data that accounts for both time series variation and cross-country variations certain measures are taken to ensure the robustness of the analysis. All the variables except the dummy variables are transformed to natural logarithms to reduce the skewness of the data. Hausman test was conducted to determine the appropriate model specification to choose between fixed effect and random effect. To address the usual issues in panel data such as heteroskedasticity and auto correlation, we have taken the VCE robust (robust variance-covariance estimator) in our regression analysis. This ensures a valid and reliable interpretation of the results. The goodness of the fit for both models has been identified using the R-squared value.

3. Overview of India's Trade Facilitation Implementation

3.1 India's WTO TFA Commitments

India ratified the WTO TFA in 2016 and started its implementation in 2017. India's WTO commitments have added additional momentum to trade facilitation initiatives by mandating introduction of further reforms to simplify and expedite the clearance of goods and promoting effective cooperation between Customs and other authorities of the trading partners. At the time of ratification, India notified 72.3 per cent of TFA provisions as Category A commitments, which were supposed to be implemented with the entry into force of TFA, and 27.7 per cent of TFA provisions as Category B commitments, which were due to be implemented within five years from entry into force of the TFA i.e., February 2022.

India established a National Committee Trade Facilitation (NCTF) in 2016, which is a mandatory obligation of the TFA (under Article 23.2) for domestic coordination and implementation of TFA. To meet the implementation timelines, the NCTF formulated the National Trade Facilitation Action Plan (NTFAP) 2017-2020, which contained 96 specific measures under two distinct set of measures. The first set of measures has focused on compliance with India's Category B commitments and Category A commitments. The second set of measures has identified as TFA Plus measures that go beyond the ambit of TFA (CBIC, 2019). The TFA Plus category includes infrastructure and technology augmentation measures as they play a pivotal role in India's trade facilitation strategy.

Figure 2: India's WTO TFA Commitments Implementation Level, 2016

Category A, 72.30%   Category B, 27.70%

Source: WTO

By February 2020, India completed the designation of all Category A and Category B commitments, of which 72.3 per cent of Category A commitments have already been implemented (Figure 2), and 5.9 per cent of Category B commitments were implemented during the intervening period of the NTFAP 2017-2020 under which India notified WTO regarding the implementation of the Single Window Interface for Facilitation of Trade (SWIFT) under the Single Window Project (TFA Article 10.4 - Establishing a Single Window) to facilitate trading across borders under the ease of doing business initiative of India (Figure 2).

Figure 3: India's Implementation Commitments, 2024*

Based on implementation commitments by all WTO Members over time
India
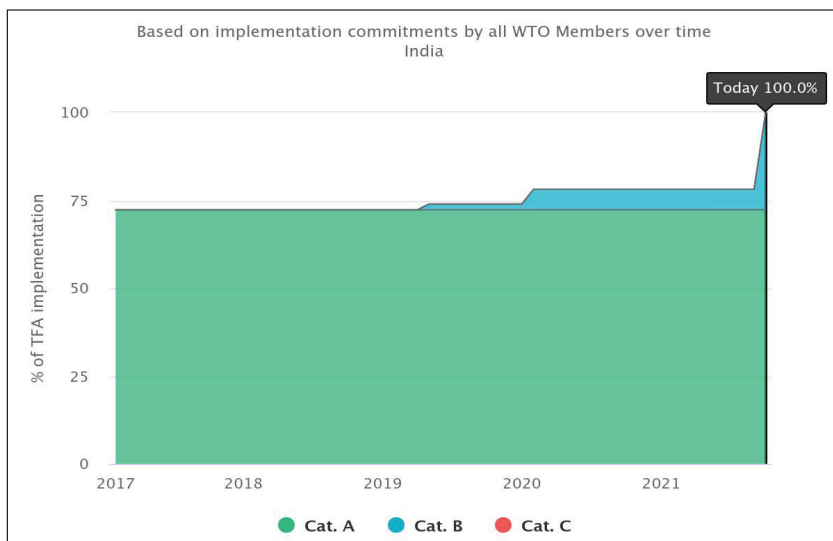
*As on December 2024
Source: WTO TFA Database

As on date, India's current rate of implementation commitments stands at 100 per cent with a time-frame spanning from February 2017 to October 2021 (Figure 3). [5]

India has introduced the NTFAP 3.0 (2024-27) in 2024. The NTFAP 3.0 is a live document prepared with an objective to accelerate growth through efficient information, simplified regulatory compliances, collaboration among stakeholders, etc.

3.2 Analysing the Performance

To analyse India's performance in trade facilitation and paperless trade facilitation over the last few years, the study reviews some of the independent global indices and performance indicators such as Global Competitiveness Index, Logistics Performance Index, OECD Trade Facilitation Indicators, United Nations Global Survey on Digital and Sustainable Trade Facilitation, among others.

The improvement in India's rankings in both Trading across Border and Ease of Doing Business can be attributed to paperless trade facilitation measures taken by Indian Customs as part of the ease of doing business drive (refer, De, 2024). These measures include, inter alia, implementation of the SWIFT, reduction in mandatory documents for imports and exports, adoption of digital signature 24x7 Customs clearance, abolition of mate receipt, reducing/eliminating printouts in Customs clearance, Import Data Processing and Management System (IDPMS), email notification, electronic self-sealing of the container at the factory, computerized risk management system, facility for Advance Bill of Entry (Advance Import Declaration), among others (see Box 1).

3.2.1 Logistics Performance Index

The scope of logistics performance index (LPI) is closely related to the issues of trade facilitation, which can assist countries in identifying

---

Box 1: Steps Taken by Indian Customs for Ensuring "Ease of Doing Business"

1. Indian Customs Single Window Project –Online message exchange
Indian Customs has introduced SWIFT (Single Window Interface for Facilitating Trade) for ensuring ease of doing business where the importers and exporters electronically lodge their Customs clearance documents at a single point only with the Customs.

2. Reduction in mandatory documents for imports and exports
To simplify procedures to facilitate genuine trade, CBIC has reduced the number of mandatory documents and prescribed only three mandatory documents for general import/export. Packing list and commercial invoice has been merged into a single document for Customs purposes. Also, SDF form required to be submitted along with shipping bill (export declaration) is no longer required.

3. Adoption of Digital Signature
To encourage paper less working and dispense with the requirement of physical submission of documents 'Digital Signature' has been introduced for importers, exporters, airlines, shipping lines etc.

4. Amendments in Warehousing provisions for introducing record-based controls

---

Significant amendments in warehousing provisions have been made to leverage the benefits of automation for facilitating trade and to enable monitor of the permitted period for which goods remain in the warehouse. The amended provisions provide a single point for the importer or owner to seek extension of the warehousing period and pay duties online.

5. 24x7 Customs Clearance

The 24X7 Customs clearances have been extended to all Bills of Entry (and not just facilitated Bills of Entry) at 19 seaports and 17 Air Cargo Complexes.

6. Abolition of Mate Receipt

With the automation of Customs procedures, manual issuance of mate receipt for containerized cargo has become redundant and therefore dispensed with.

7. Reducing/eliminating printouts in Customs Clearance

With the aim of ease of doing business' and promoting paperless clearance, Board has decided to do away with routine print-outs of several documents including GAR 7 Forms/ TR 6 Challans, TP copy, Exchange Control Copy of Bill of Entry and Shipping Bill, and Export Promotion copy of Shipping Bill.

8. The Courier Imports and Exports (Clearance) Amendment Regulations,2016

Several reforms have been initiated in Courier regulations including liberalization of norms for outsourcing and CSB form.

9. Import Data Processing and Management System (IDPMS)

IDPMS has been jointly launched with RBI to facilitate efficient data processing for payment of imports and effective monitoring.

10. Email notification service to importers for all important stages related to import clearances has been initiated.

Source: Central Board of Excise & Customs, Ministry of Finance, Government of India

areas need improvement in trade logistics. It tracks improvements on trade logistics on qualitative and quantitative measures by comparing both domestic and international perspective by evaluating a country's performance based on six dimensions, namely, efficiency of the clearance process by border control agencies, including Customs; quality of trade and transport related; ease of arranging competitively priced shipments; competence and quality of logistics services; ability to track and trace consignments; and timeliness of shipments in reaching destination within

the scheduled or expected delivery time. India's LPI rank has improved from 47 in 2010 to 38 in 2023, showing significant improvements, however, a drop in rank between 2016 and 2018 could be because of the high positive correlation between six sub-indicators which divert trends (Chauhan and Vijayakumar, 2021) (Figure 4).

Figure 4: India's Logistics Performance Index Rank and Score
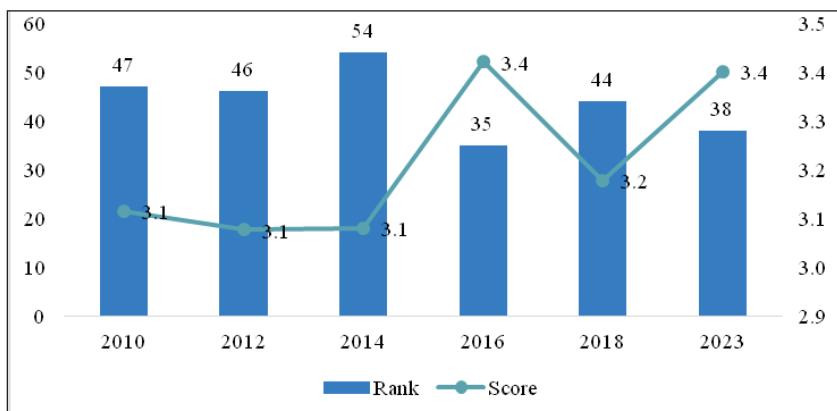
Source: The World Bank, Logistics Performance Index Database

Figure 5: India's Logistics Performance Index Sub Indicators Rank
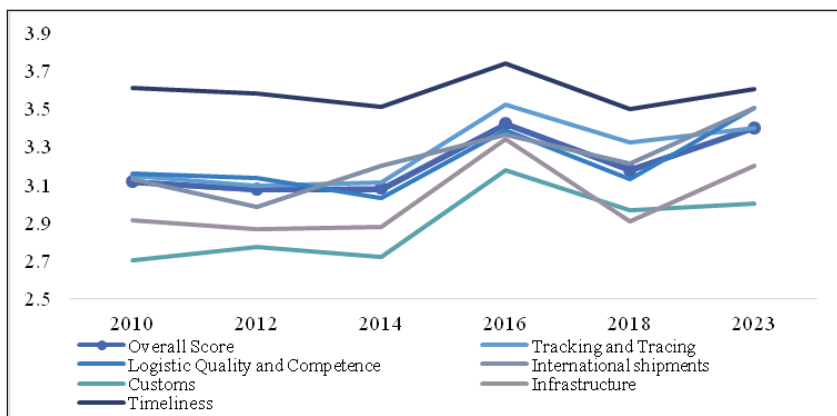
Source: The World Bank, Logistics Performance Index Database

Figure 5 shows the trends of LPI sub-indicators from 2010 to 2023. The trends reflect that India's performance has improved in all dimension primarily on account of several initiatives adopted for Customs reforms such as the automation of the Customs system with the implementation of Indian Customs Single Window project and electronic acceptance of Customs declarations and supporting documents, automated routing, etc., for tracking and traceability facilities.

3.2.2 Global Competitiveness Index

With Initiatives like 'Make in India', India has been working toward improving its ICT enabled infrastructure, regulatory and business environment as well as developing sophisticated designs, technologies and innovations by supporting many tech start-ups in the countries. India's performance in Global Competitiveness Index (GCI) has improved consecutively from 55 in 2015 to 39 in 2024, thereby indicating India is becoming a facilitation-oriented country post the ratification of WTO's TFA in 2016 (Figure 6). With advanced ICT enabled infrastructure and innovation, India has the scope for further improving paperless trade processes.

Figure 6: Trends of India's Global Competitiveness Index Rank
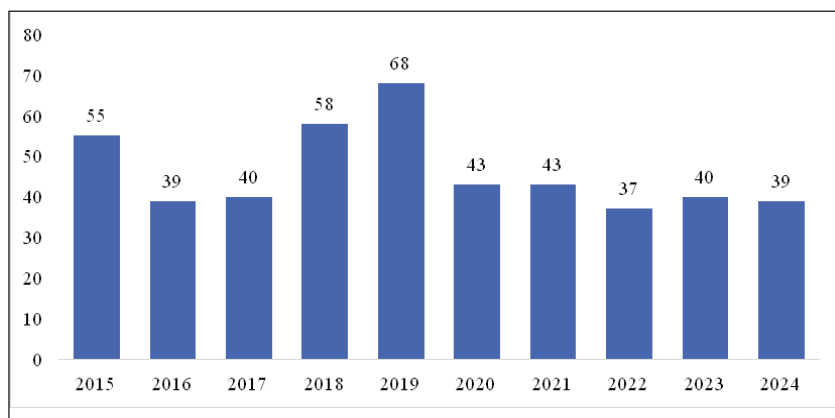
Source: The World Economic Forum

14

3.2.3 OECD Trade Facilitation Indicators (TFIs)

The OECD has developed a set of 11 trade facilitation indicators (TFIs) to help policy makers in assessing their trade facilitation efforts. The TFI indicators cover a full spectrum of trade and border procedures (such as information availability, involvement of the trade community, advance ruling, appeal procedures, fees and charges, document formalities, automation formality, procedure formality, internal and external border agency cooperation and governance and impartiality) for more than 160 countries, which are ranked on a scale of 0 to 2 measuring worst or best performance. The OECD TFIs data is updated every two years, which allows countries to monitor their progress in implementing trade facilitation measures.

The average trade facilitation performance score of OECD TFIs for India has improved from 1.3 in 2017 to 1.55 in 2022, thus indicating India's overall performance in implementing trade facilitation measures have improved from 2017 to 2022 (Figure 7). In addition, India's performance in implementing formalities associated with automation measures show a noteworthy improvement which covers procedures like percent of export and import declarations cleared electronically, single window supported by information technology (IT) Systems capable of accepting and exchanging data electronically, digital certificates and signatures in place, automated processing for Customs declarations available 24x7, risk management applied and operating in an automated environment, among other paperless trade measures. The performance score for automation measure has increased to 1.7 in 2022 from 1.2 in 2017 (Figure 7).

Similarly, the performance of informational availability measures like publication of trade information on internet, establishment of a national customs website, possibility to provide online feedback to Customs, publication of necessary information on advance rulings, user manuals available online, applicable legislation published on internet etc., also show improvement in their implementation. The performance score for information availability has increased from 1.6 in 2017 to 1.91,

thereby implying that India has given its best performance in providing trade-related information electronically (Figure 7).

Figure 7: OECD Trade Facilitation Indicators
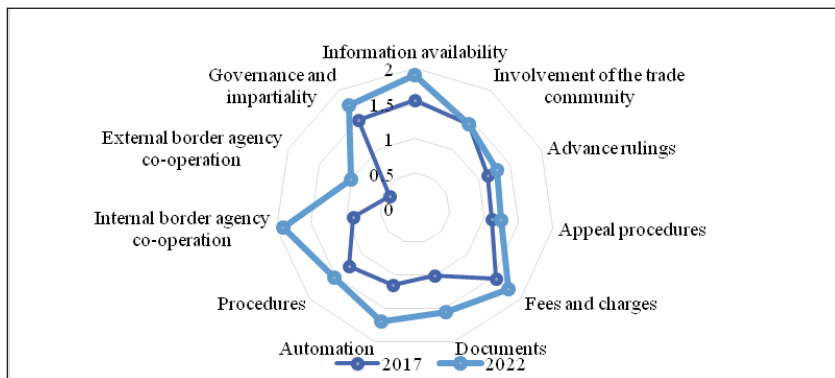
3.2.4 United Nations Global Survey on Digital and Sustainable Development

The UN Global Survey on digital and sustainable development (UNTF Global Survey) currently covers 148 countries and 58 trade facilitation measures with the aim to enable countries to better understand and monitor their progress in trade facilitation that go beyond the measures included in the WTO TFA, with the addition of paperless, cross-border and sustainable trade facilitation. These measures are covered in 5 broad categories and 11 indicators. In our study, we analyse only five indicators, namely, transparency, formalities, institutional arrangement and cooperation, paperless trade and cross-border paperless trade. To calculate the implementation level, these measures are scored as "fully implemented" (3), "partially implemented" (2), "planning stage" (1), or "not implemented" (0).

Figure 8 shows India's trade facilitation measures implementation level in UNTF Global Survey from 2015 to 2021. India's overall trade

facilitation implementation scores have significantly improved from 63.44 per cent in 2015 to 90.32 per cent in 2021 (Figure 8). By looking at the scores of all four Surveys, we conclude that India has witnessed improvement in all five indicators i.e., transparency, formalities, institutional arrangement and cooperation, paperless trade and cross-border paperless trade. In addition, the overall score as well as the individual indicator scores for India are greater than Bangladesh, Nepal and the Asia-Pacific regional average (see Appendix 1 Figure 1).

Figure 8: India's Trade Facilitation Measures Implementation Level
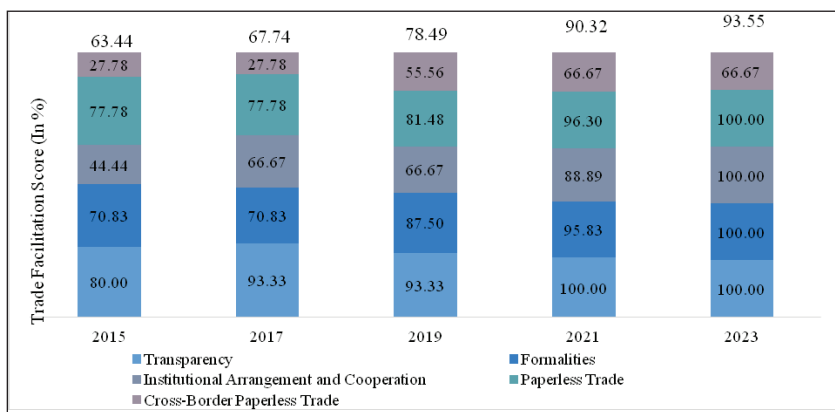
Source: UN Global Survey on Digital and Sustainable Development

India's paperless trade facilitation measures implementation has the second highest share (19.4 per cent) in the overall trade facilitation score, while cross-border paperless trade facilitation measures implementation has the lowest share (13.45 per cent) in 2021 (Figure 8). Compared to previous Surveys, India has made significant improvement in cross-border paperless trade facilitation measures implementation as well. In addition, the combined share of paperless and cross-border paperless trade facilitation measures implementation in total trade facilitation measures has improved from 22.26 per cent in 2015 to 32.88 per cent in 2021 (Figure 9). Also, India's combined share of paperless and cross-border

paperless trade facilitation measures (32.88 per cent) implementation level are higher than Bangladesh (17.35 per cent) and Nepal (17.03 per cent) in 2021 Survey (see Appendix 1 Figure 2). This indicates that India has been actively working towards digitalizing trade procedures and processes. India has introduced series of reforms for making Customs faceless, paperless and contactless. Among those, reforms introduced under 'Turant' Customs initiative has played a major role in improving India's overall as well as paperless and cross-border paperless trade facilitation measures implementation scores in UNTF Global Survey 2023. Appendix 2 presents the trends in paperless trade in India in several editions of the UNTF survey.

Figure 9: Combined Share of Paperless and Cross-Border Paperless Trade Facilitation Measures and Total Trade Facilitation
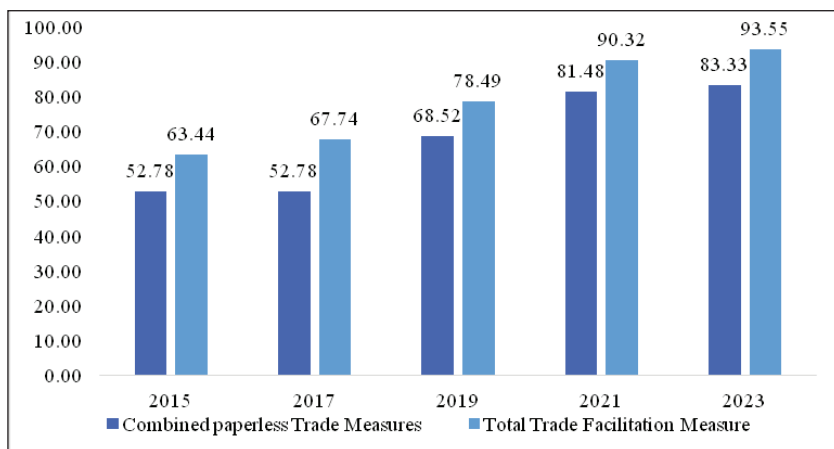
Source: UN Global Survey on Digital and Sustainable Development

To assess the current status of India's paperless and cross-border paperless trade facilitation measures, our study analyses the sub-indicators of paperless and cross-border paperless trade facilitation measures covered in all four UNTF Global Surveys. Table 2 shows the implementation status of paperless and cross-border paperless trade facilitation measures. In total, there are 16 measures under these

two indicators, out of which 10 measures come under paperless trade facilitation and 6 measures in cross-border paperless trade facilitation. Paperless trade facilitation measures, which were partially implemented or in planning stage in the previous Surveys, have been fully implemented in 2021 Survey except electronic application and issuance of Preferential Certificate of Origin, which is now partially implemented. On the other, 3 out of 6 cross-border paperless trade facilitation measures were either not implemented or were in planning stage do not show any improvement. Only paperless collection of payment from a documentary letter of credit, which was not implemented in the last three Surveys, is partially implemented in the 2023 Survey. Overall, out of the 16 paperless and cross-border paperless trade facilitation measures, 11 measures have been fully implemented (i.e., 73 per cent), while 3 measures have been partially implemented and 2 measures are in planning stage. This indicates that India needs to put more efforts and come up with reforms to facilitate cross-border paperless trade efficiently.

Table 2: Paperless and Cross-Border Paperless Trade Facilitation Measures Implementation Status

Trade Facilitation Measures	2015	2017	2019	2021	2023
Paperless Trade Facilitation					
Automated Customs System	*	*	*	*	*
Internet connection available to Customs and other trade control agencies	*	*	*	*	*
Electronic Single Window System	**	**	**	*	*
Electronic submission of Customs declarations	**	**	**	*	*
Electronic application and issuance of import and export permit	**	**	**	*	*
Electronic Submission of Sea Cargo Manifests	*	*	*	*	*
Electronic Submission of Air Cargo Manifests	*	*	*	*	*

Continued...

Electronic application and issuance of Preferential Certificate of Origin	***	***	***	**	*
E-Payment of Customs Duties and Fees	*	*	*	*	*
Electronic Application for Customs Refunds	**	**	*	*	*
Cross-Border Paperless Trade					
Laws and regulations for electronic transactions	*	*	*	*	*
Recognised certification authority	**	**	*	*	*
Electronic exchange of Customs Declaration	****	****	***	***	***
Electronic exchange of Certificate of Origin	****	****	***	***	***
Electronic exchange of Sanitary & Phyto-Sanitary Certificate	****	****	**	**	**
Paperless collection of payment from a documentary letter of credit	****	****	****	**	**

Notes: * Fully Implemented, ** Partially Implemented, *** Planning Stage and **** Not yet implemented

Source: UN Global Survey on Digital and Sustainable Development

Overall, the analysis of India's performance through various performance indicators suggests that implementation of WTO's TFA in 2017 has provided momentum to India's trade facilitation initiatives by mandating introduction of reforms to simplify, automate and expedite the clearance of goods and promote effective cooperation between stakeholders. With digitalization, India has been proactive in transforming the paperless trade ecosystem and implementing the automation of customs systems and other trade processes.

4. Review of Paperless Trade Initiatives in India

4.1 Current Status of Paperless Trade and Single Window in India

Earlier Customs clearance processes involved preparing and sharing large number of documents to border agencies, which were manually operated, complex and time-consuming. In addition, the importers and

exporters were required to submit the documents separately to border agencies and other relevant authorities. Gradually, Custom clearance process was automated and a digital risk management system was introduced for examination and clearance of cargo with minimal checks. In February 1995, India's first electronic Bill of Entry (BE) was filed at New Customs House, New Delhi, which was a stepping stone towards migrating the Customs clearance process to a digital platform and opened-up opportunities to reform the Customs clearance ecosystem (CBIC, 2020a). Further, to expedite the clearance process, Customs formed several Participating Government Agencies (PGAs) for transmission and processing of documents.

In recent times, technological advancement through Artificial Intelligence (AI)/Machine Learning (ML), Internet of Thing (IoT), among others, have increased the possibility of enhancing trade facilitation. Further, uncertainty and supply chain disruptions due to the Covid-19 outbreak have fast tracked the digitization of trade facilitation measures. India has been at the forefront in transforming the country into a digitally empowered economy under the Digital India flagship programme and has introduced several e-governance programmes for enhancing trade facilitation and promoting paperless trade. Central Board of Indirect Taxes and Customs (CBIC) of Indian Ministry of Finance has been catalysing automation of trade facilitation in India. It is also the administrative authority of Custom Houses, which mandates Customs clearance of cross-border trade. Over the years, CBIC has taken the lead for improving the overall business environment and implementing paperless trade measures in India by introducing a series of reforms.

The CBIC has executed multiple projects to automate Customs clearance processes and introduced electronic data interchange (EDI) with all PGAs. For example, the government has designed the Indian Customs EDI System (ICES) for exchanging and transacting Customs clearance related information electronically using EDI. Large number of trading documents, which were earlier submitted during the process of live Customs clearance, have been now processed online. Till 2024-25, 288 EDI's were operational at major Customs locations, handling

nearly 98 per cent of India's exports and imports (Figure 10).[6] The ICES is supported by risk management system (RMS) and it also manages bonds and guarantees online.

Figure 10: Number of EDI Locations in India
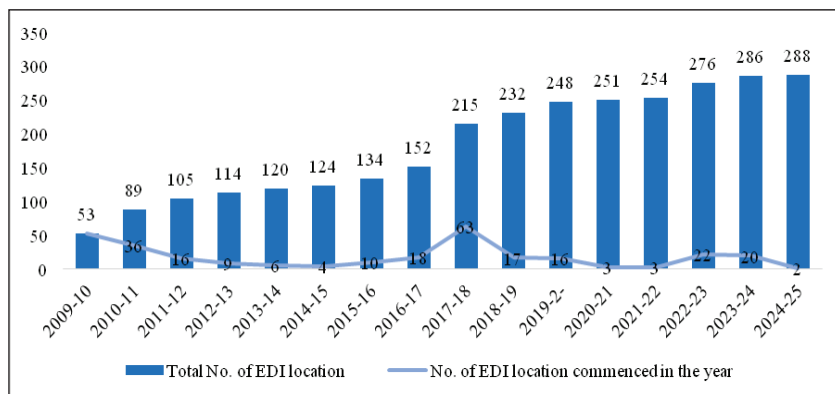
Source: ICEGATE, Central Board of Excise & Customs, New Delhi

In July 2014, the CBIC introduced the concept of single window to facilitate trade. In March 2016, India launched SWIFT (Single Window Interface for Facilitating Trade) under the single window project, where exporters and importers can lodge their clearance documents at a single point and obtain required permissions from different regulatory authorities online without approaching these agencies.[7] Progressing of India's single window project gained momentum with the implementation of WTO's TFA in 2017, which requires its members to establish a single window facility for facilitating trade. The SWIFT integrates nine forms required by six PGAs, and enables traders to submit a common electronic 'Integrated Declaration' at a single point replacing the separate form requirements.[8] These PGAs are: Food Safety (FSSAI), Drug Controller, Plant Quarantine (PQ), Animal Quarantine (AQ), Central Drugs Standard Control Organisation (CDSCO), Wildlife Crime Control Bureau (WCCB) and Textile Committee. SWIFT has dispensed the requirement of approval from multiple agencies. The declaration is directly routed to the concerned PGAs through the 'PGA Corridor', located within the platform's risk

management system (RMS) (CBIC, 2020a). The SWIFT has several other features such as automated routing, integrated risk assessment, e-payment of fee and charges, online message exchange, etc., which enable exporters and importers to lodge trade-related documents online (Figure 11). These key features of SWIFT are summarized in Box 2. By far, single window is one of the most complex system integration efforts of the CBIC. Appendix 3 presents notifications issued by India on paperless trade and the summary of key trade facilitation initiatives.

Box 2: Main Features of Indian Customs Single Window Project- SWIFT

1. Integrated Declaration - Information required for import/export clearance by PGAs will be electronically submitted by importers/exporters through an integrated declaration at a single-entry point, i.e., the Customs Gateway (ICEGATE). Separate application forms required by different agencies would be dispensed with.

2. Automated Routing- The Customs IT system will automatically identify import/export goods that require clearance by the PGAs.

3. Integrated Risk Assessment - Integrated Risk Management facility for PGAs will ensure that consignments are not selected by agencies routinely for examination and testing, but based on the principle of risk management.

4. Connectivity for Online Clearance – Offices of other government agencies will be connected with the Customs System.

5. Paperless Processes: With the introduction of Single Window, it enables exporters and importers to submit documents digitally. This process has progressively eliminated the dependence on paper.

6. e-Payment of Fees & Charges- All fees and charges are paid by the importer/exporter for testing or for processing clearances by PGAs would be collected online in the same way as Customs duties are presently collected.

7. Customs Clearance Facilitation Committees (CCFCs)- Ports and central level CCFCs have been established to simplify and streamline their interagency procedures and documentary requirements for import and export of cargo.

8. Automatic License Verification- A system that automatically verifies licenses, permits and certificates and other authorizations received by a

---

Continued...

trader, provided the document issuer grants access to the corresponding electronic records or documents.

9. Online Message Exchange- The importers electronically lodge their Customs clearance documents at a single point only with the Customs. The required permission, if any, from other PGAs is obtained online without any exporter/importer having to separately approach these agencies.

10. Adoption of Digital Signature- In order to encourage paper less working and dispense with the requirement of physical submission of documents 'Digital Signature' has been introduced for importers, exporters, airlines, shipping lines etc

11. Compliance Information Portal- A single web-based source for all clearance-related procedural steps, duties, fees and charges for import and export of any commodity, reflecting the logic that drives the Single Window**.**

12. Event Notification, Tracking and Scheduling- A facility that instantaneously updates trader's/ transporter's systems and devices with event-based status information drawn from systems operated by Customs, PGAs and logistics provider, including Custodians, so that the trader receives a single view of operations. Platform also receives tracking facilities for vessels, trains, vehicles, containers.

13. Appointment Management System- A system for managing field operations for cargo clearance activities requiring co-ordination of multiple agencies. Actions requiring multi-agency co-ordination include supervision of operations, examination, inspection, drawing of samples, check-point/gate operations.

Source: Central Board of Excise & Customs, Ministry of Finance, Government of India

SWIFT has introduced paperless processes, which enables exporters and importers to submit, scan, digitally sign and upload supporting documents (such as invoices, packing lists, licenses, certificates, permits, etc.) electronically. In addition, routine printouts at the Customs are being eliminated, electronic-led export order and out of charge are issued with digital signatures. To complement SWIFT's paperless processing feature, CBIC has launched e-SANCHIT (e-Storage and Computerized Handling of Indirect Tax documents) for uploading supporting documents by exporters and importers and to facilitate trading across borders (CBIC, 2020b). The e-SANCHIT also enables PGAs to upload documents clearance certificates for exporters and importers, who are notified in the due time.

Figure 11: Main Features of SWIFT

Integrated Declaration

Automated Routing

Appointment Management System

Paperless Processes

Event Notification, Tracking and Scheduling

Integrated Risk Assessment

SWIFT

Compliance Information Portal

Connectivity for Online Clearance

Digital Signature

e-Payment of Fees & Charges

Online Message Exchange

Customs Clearance Facilitation Committees

Automatic License Verification

Source: Authors' own compilation.

All the e-filing processes under SWIFT are carried out on Indian Customs Electronic Gateway (ICEGATE), which is the national portal of CBIC that provides e-filing services to exporters, importers and other trading partners and clients of Customs. At present, 1.25 million importers and exporters are being served by 43542 registered users of ICEGATE.[9] The portal's user growth has increased from around 1000 per month in 2019-20 to over 3000 per month in 2023-24, except the initial months (see Appendix 1 Figure 3). ICEGATE is also the interface of ICES for providing Customs related messages and sharing trade and Customs clearance data with banks and regulatory agencies involved in Customs clearances.

Through ICEGATE, CBIC fulfils its EDI and data communication requirements and offers a host of services such as e-filing of the Bill of Entry (import goods declaration), Shipping Bills (export goods declaration), e-Payment of Customs Duty, a free of cost web-based Common Signer utility for signing all the Customs Documents, facility to file online supporting documents through e-SANCHIT, end to end electronic IGST Refund etc. for exporting and importing through Customs (see Appendix 4 Table 1 and Table 2).[10] In addition to e-filing, ICEGATE also provides host of other services like 24X7 helpdesk facility for its trading partners, e-payment of Central Excise and Service Tax, on-line registration for intellectual property rights (IPR), Document Tracking status at Customs EDI, online verification of licenses, IE code status, PAN based CHA data, IGST Refund Status and links to various other important websites/information related to Trade.[11]

The ICEGATE is linked to multiple PGAs as well as Customs, Reserve Bank of India (RBI), Banks, DGFT, Directorate of Valuation involved in trade for expediting Customs clearance and exchanging data. The ICES processes all the e-documents such as Bill of Entry (import goods declaration), Shipping Bills (export goods declaration) and related electronic messages (e-mail, web-upload, etc. between Customs and trading partners) handled by ICEGATE.[12] SWIFT, ICES and ICEGATE have been an integral part of the digital evolution journey of Indian Customs and e-Governance initiatives of the country.

So far the CBIC has introduced 33 paperless trade facilitation policy measures through ICEGATE under the Single Window Project which include information about pilot implementation of paperless process under SWIFT, uploading of supporting documents through e-SANCHIT for exports, publishing of service level standards, acceptance of digital signature, implementation of integrated declaration, extending SWIFT to EDI locations/other PGA, implementation of PGA e-SANCHIT system, online exchange of message between Customs and other regulatory agencies etc. (see Appendix 5 Table 1 and Appendix 6 Table 1). About 33 additional paperless trade facilitation policy measures such as reducing eliminating printouts in Customs clearance, obtaining sea cargo manifest

from ICEGATE, online filing of AEO application, electronic declaration and paperless processing of shipping bill and bills of entry, electronic acceptance of export and import courier etc. have been introduced by CBIC (see Appendix 4 Table 1 and Appendix 5 Table 2).

The CBIC has also launched Express Cargo Clearance Systems (ECCS) in 2017 for automating the clearance process of courier under the Courier Imports and Exports (Electronic Declaration and Processing) Regulations, 2010 and fastening the delivery of goods at the exporter and importer doorsteps.[13] Digitalization of express cargo system has been supporting the e-commerce industry in India by expediting the clearance process of courier. So far, CBIC has implemented 40 paperless trade facilitation measures related to ECCS which includes establishment of ECCS for clearance of export and import goods in different States of India like Mumbai, Cochin etc., electronic clearance of courier exports and imports, contactless delivery of international courier consignment, auto out of charge and auto led export and import orders, among others (see Appendix 4 Table 1 and Appendix 6 Table 3). However, documents requirement and procedures for export and import through courier are partially electronic (see Appendix 4 Table 3 and Table 6).

In addition, the CBIC has digitized the application filing, processing and provides digitally-signed delivery of (Authorized Economic Operator) AEO certification to seamlessly facilitate the ever-growing flow of goods in international trade and ensure safety and security of supply chains.[14] As a result, the AEO entities have been able to reduce time and cost of international by accessing a wide range of benefits (such as expedited processing and clearance of goods, deferred duty payment, direct port delivery and entry) provided by the Customs.

India has been actively engaged with over 30 nations for mutual recognition agreements (MRAs) through the Authorised Economic Operator (AEO) programme. AEOs help ease overseas trade by avoiding dual certifications. The AEO programme enables the Customs administration to identify safe and compliant exporters and importers and to provide them with better facilitation. It thus reduces compliance cost, simplifying compliance requirements by adhering to only one

regulation and enhancing trade opportunities. As on December 2024, India has successfully signed MRAs with several key trading partners including the US, South Korea, the UAE, Taiwan, Singapore, Australia and Malaysia[15].

For improving ease of doing business cross border trade, the CBIC has developed the Indian Customs Compliance Informational Portal (CIP) which provides free access to up-to-date information on all procedures and regulatory requirements of Customs and PGAs (FSSAI, AQIS, PQIS, Drug Controller, etc.), covering nearly 12,000 Customs Tariff Items (see Appendix 4 Table 1-Table 4).[16] To further facilitate ease of doing business, CBIC has launched the 'Turant' Customs Programme in 2020, which aims to make Customs and border regulatory processes faceless, paperless and contactless with enhanced use of digital technology (such as Secure QR coded Shipping Bill, etc.) and thereby reduce the time and cost for traders (CBIC, 2020a). Figure 12 shows major faceless, contactless, paperless Customs reforms adopted by India in recent years. The faceless Customs reforms aims to eliminate physical interaction between traders and Customs authorities through faceless assessment and risk management system and thereby, increase transparency (CBIC, 2020a). The paperless Customs reforms aims at reducing interface between traders and Customs officers by digitizing Customs processes through e-SANCHIT, ICETRAK, e-COO and e-Gatepass. To make Customs faceless, Customs has eliminated the requirement of physically approaching the Customs officers for clearance of goods. The contactless initiatives aim at enhancing the efficiency of Customs clearance processes by automating the process of registration, documents submission, verification and issuing electronic gate-pass. The CBIC has introduced several other initiatives such as facilitation centre for direct port delivery and entry, radio frequency identification (RFID) of containers through e-seals, online Know Your Customer (KYC) verification, paperless processing of warehouse procedures, non-intrusive inspection through container scanners and container scanner analytics application etc (CBIC, 2020a). These paperless trade reforms are summarized in Appendix 4 Table 2.

Figure 12: Faceless, Contactless, Paperless Customs Reforms by India in Recent Years

Customs Reforms

Faceless
- Faceless Assessment
- RMS Facilitation

Contactless
- Web Based Registration
- Customs Compliance Verification
- ICEDASH
- Auto Queuing

Paperless
- ICETRAK
- e-SANCHIT
- e-OOC & e-Gatepass

Others
- Direct Port Entry (DPE)
- Port Delivery (DPD)
- Icedash
- RFID (e-seals)

Source: Authors' own.

29
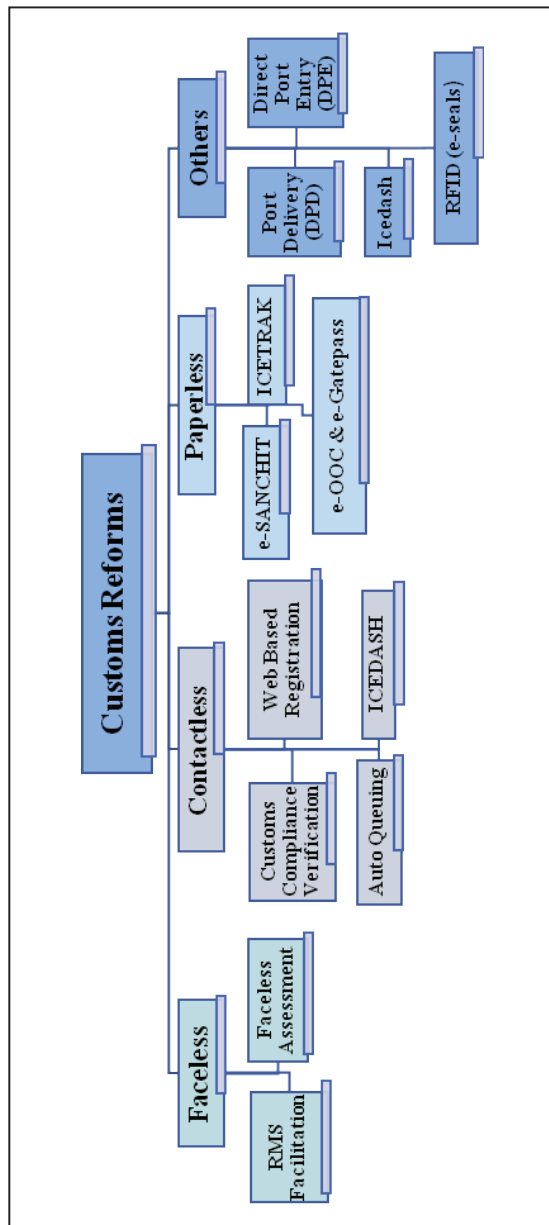
To complement CBIC's paperless trade facilitation reforms, Directorate General of Foreign Trade (DGFT) under Ministry of Commerce and Industry has also been embarking paperless trade facilitation initiatives and automation of trade related formalities through a single portal for simplifying and expediting trade clearance procedures. The DGFT is responsible for issuing and managing the profile of Import-Export Code (IEC), which is a key business identification number mandatorily required for exporting or importing to India.[17] The DGFT provides 24x7 auto issuance of e-IEC facility and the total time taken from application to issuance is less than 30 minutes (DGFT, 2021). Figure 16 shows the trends of number of IECs issued by the DGFT from 2012-13 to 2023-24. The issuance of IEC by the DGFT increased from 61,435 in 2012-13 to 73,936 in 2015-16. However, IEC issuance dropped by 1 per cent in 2016-17 and again spiked at a growth rate of 32 per cent and 17 per cent in 2017-18 and 2018-19. Post the COVID-19 outbreak in 2019-20, IEC issuance has been showing a declining trend till 2020-21, and rebounded with a growth of 14 per cent in 2021-22 (Figure 13).

Figure 13: Trends of Number of IECs Issued from 2012-13 to 2023-24
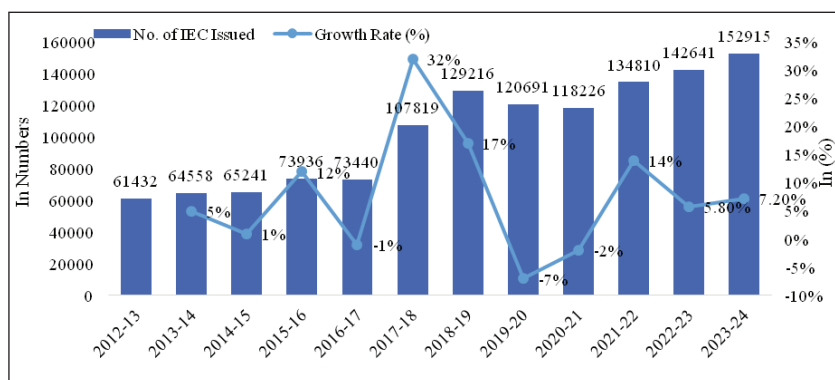
In addition, the DGFT has taken several measures for simplifying trade clearance procedures through real-time electronic communication

and electronic data exchange which includes electronic issuance of Preferential Certificates of Origin, issuance of e-licences for export and import of restricted products through the Export/Import management system, helpdesk services for addressing international trade issues, allows duty free import of intermediate inputs that are physically incorporated in export products through the advance authorization scheme, provides provision for filing quality complaints and trade disputes, provides online issuance and transfer of export duty benefits such as MEIS, paperless processing and (e-verification) rules-based risk management for IEC, online payment of user fees and charges etc (see Figure 14). In 2020, DGFT has launched Virtual Assistant to Help Exporters and Importers (VAHEI), which is an AI-powered chatbot to cater to queries related to Foreign Trade Policy of India.

Figure 14: Key Paperless Trade Facilitation Measures Provided by the DGFT
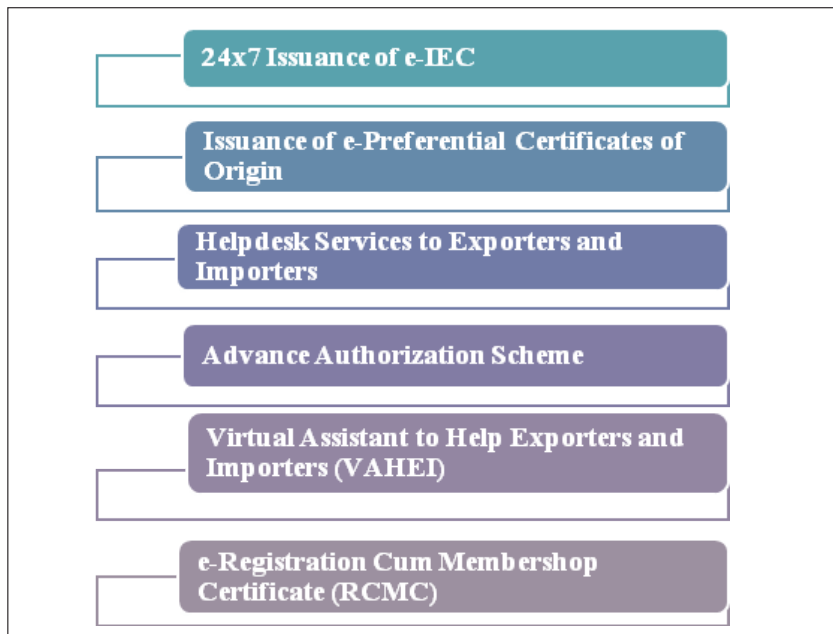
Source: Authors' own.

The VAHEI users can also check new notifications, trade notice, public notice & circulars as well as status of various applications and authorisations. The DGFT has taken 16 paperless trade facilitation measures regarding online filling and issuance of Preferential Certificate of Origin and extension of dates for mandatory electronic filing of Certificate of Origin.

In addition, Federation of Indian Exports Organisations (FIEO) under the Department of Commerce, Ministry of Commerce and Industry provides crucial interface between International Trading community of India and other stakeholders (such as the Central and State Governments, Financial Institutions, Ports, Railways, Surface Transport) engaged in export trade facilitation (FIEO, 2021). Set up in 1965, the FIEO is the apex body of the Government recognized Export Promotion Councils, Commodity Boards and Export Development Authorities in India.[18] The FIEO web portal provides access to updated trade policies, publications, global business opportunities, 24x7 global exposure to FIEO members, links to global trade promotion organizations, facilitates redressal of exporter' problems, etc., among others (Figure 15). Over the years, the FIEO has also undertaken several paperless trade facilitation initiatives such as India Trade Portal, NIRYAT MITRA Mobile App, platform for exporters for creating their own free online store etc., for facilitation international trade and encouraging exporters to expand their market access globally (see Box 3).

Box 3: Paperless Trade Facilitation Initiatives by FIEO

- Provides opportunity to the exporters to discuss online with FIEO experts their issues on International Trade, seek clarification on policy matters etc.
- The FIEO web portal provides access to updated trade policies, publications, global business opportunities, links to global trade promotion organizations etc.
- Option for members to upload product photographs, company logo and company profile on FIEO web portal.

Continued...

- Developed and maintains the India Trade Portal for providing key information about the MFN or Preferential tariff, Rules of Origin, SPS-TBT measures, Export promotion schemes, among others.
- The Niryat Mitra Mobile App launched by FIEO in 2018 provides services such as daily updates on Business Opportunity, Policy, SPS-TBT Measures, FOREX update, MFN or Preferential tariff, easy to use tools to identify ITC HS Code of products and Export-Import policy, GST rate, Export Incentives, Rules of Origin, etc.
- Provides platform to the exporters to create their own free online store and extend their reach to new and existing customers globally.
- Provides 24x7 exposure to FIEO members across the globe through the FIEO web portal.
- FIEO web portal provides unique platform to buyers abroad to search, identify and communicate with FIEO members at no cost.
- Provides updated, searchable directory of exporters on FIEO website

Source: FIEO, Department of Commerce Ministry of Commerce and Industry, Government of India.

Figure 15: Four Steps Search Information Process in India Trade Portal
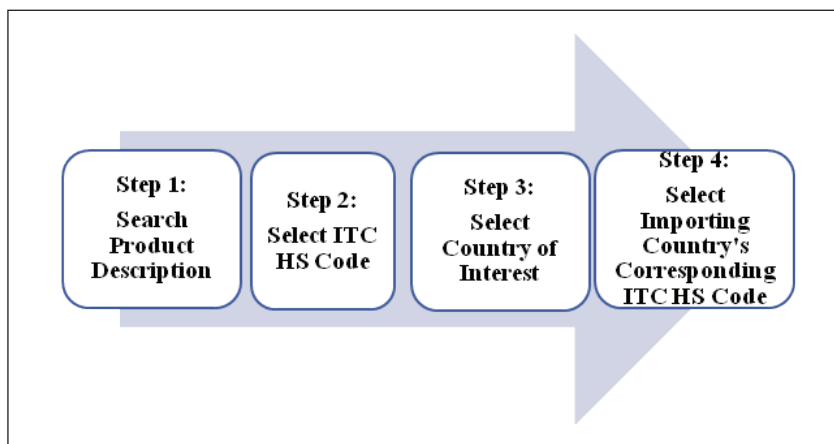
Source: FIEO, Department of Commerce Ministry of Commerce and Industry, Government of India.

The FIEO has developed the Indian Trade Portal (ITP) which is India's first web-based trade information portal that provides vital and up-to-date information for exporters and importers on all trade-related matters available in one page. The key features of ITP include-information about the MFN or Preferential tariff of 90 countries, Rules of origin to avail preferential tariff, SPS-TBT measures mapped at tariff line of 90 countries, trade statistics of 87 countries, item-wise export and import policy of the Government of India and Duty Drawback, Export Promotion Schemes such as Merchandise Exports from India Scheme etc., Interest Equalization rates, GST and other levies, and several other export benefits schemes, among others (see Box 4).

The information regarding product-wise MNN tariff, Preferential Tariff, Rules of origin, SPS and TBT measures, Custom Duties, Duty drawback, Export benefit schemes, Export-Import policy of India etc., on the ITP can be accessed in four easy steps i.e., search product description, identify and select ITC HS Code, select importing country for tariff and lastly select importing country's corresponding ITC HS Code (Figure 15).[19]

4.2 Other Paperless Trade Facilitation Initiatives Under Implementation

The CBIC is planning to implement several other initiatives such as import general manifest (IGM) for electronic confirmation of arrival of goods and their transhipment for faster clearance of imported goods; cash ledger for faster duty payment, facility for goods arrival messages at seaports and land ports; an analytics platform is being developed to enable monitoring of initiatives under the Turant programme (CBIC, 2020a). In addition, CBIC is conducting strong outreach and training programmes for the smooth transition and implementation of the Turant programme.

The DGFT is also planning to roll out new IT systems to make DGFT offices faceless, contactless and paperless. The new IT systems would provide a 360-degree view for traders and government agencies to track and monitor all past and present actions at different points of

Box 4: Key Features of India Trade Portal

India Trade Portal has the following key features:

- User-friendly Search- By product name, By ITC HS code and Mapping of Indian ITC-HS codes vis-à-vis that of other countries.
- Classification of goods at country-specific disaggregated HS levels 6, 8, 9,10.
- Product-wise MFN Tariff & Preferential Tariff applicable on Indian products for over 90 countries are available
- Product-wise & FTA-wise Rules of Origin conditions & Certificate Origin format are available
- Provides more than 3500 Sanitary and Phyto-Sanitary (SPS) Measures and Technical Barriers to Trade (TBT) of India's major markets with regular updates
- Provides Information on Product-wise Export Promotion Schemes & Duty drawback rate
- Product-wise Export & Import policy of India
- Provides links to Indian Business Portal
- Ease of Logistics Portal
- Trade Statistics
- Daily updating of policy matters at item level
- Free alerts over SMS and email on the updates
- Access Trade and Tender Queries uploaded by the Indian missions abroad
- FAQs on basic topics like "How to Export" and operational matters pertaining to Foreign Trade Policy, Banking, Customs, Trade Agreements, GST etc.
- Provides hyperlinks of the following trade-related regulatory authorities like Export Promotion Bodies of India, International Trade Bodies, Directorate General of Foreign Trade, Central Board of Excise and Customs, Customs Duty Calculator etc.

Source: FIEO, Department of Commerce Ministry of Commerce and Industry, Government of India.

time (DGFT, 2021). Henceforth, the DGFT is likely to be transformed to play more trade promotion roles so that it acts as a single-window for trade promotion activities (DGFT, 2021). The DGFT is also planning

to remove the usual process of queuing up for benefits and approvals wherever possible which would not require exporter or importers to wait on DGFT for any business approval under the new paradigm (DGFT, 2021). For this, the DGFT would be implementing post-issuance audit systems for managing risks in the flexible system.

The NCTF published a revised NTFAP 2020-2023 in 2019 by incorporating the inputs from "four Working Groups on Legislative Changes, Time Release Studies, Infrastructure Augmentation and Outreach along with the key suggestions of private sector" (CBIC, 2019).[20] The NTFAP 2020-2023 contains a combination of 66 Category B and TFA Plus measures under three categories i.e., regulatory (1-29), technology (30-48) and infrastructure (49-66) with expected implementation timelines, lead agencies and performance indicator (CBIC, 2019). Out of the 66 action plans, 19 are covered under the technology category, which correspond to further enhancement and implementation of paperless trade measures. Some of the action plans such as upgradation of SWIFT, enhancement of DGFT portal for ease of online transaction, Chatbot facility for information about trade facilitation, Turant Customs Programme, among others, have already been implemented and the remaining action plans are under process and expected to be implemented soon.

The National Trade Facilitation Action Plan (NTFAP) 3.0 (2024-27) has been introduced in 2024 building upon previous NTFAPs. The NTFAP 3.0 goes beyond the WTO TFA with "TFA Plus" commitments, focusing on next-generation reforms. This edition of the NTFAP focuses on coordinated, digital, seamless, and risk-based trade processes. It aims to achieve these goals by focusing on four key areas: ease of compliance, enhancing EXIM efficiency through collaboration, sustainability, inclusion, and resilience, and infrastructure upgradation. By streamlining processes and improving infrastructure, it seeks to lower the cost of trade, particularly for exports. The plan is aligned with India's goal of becoming a US$ 5 trillion economy and achieving Viksit Bharat 2047. Key areas of focus include:

(i) Ease of Compliance: This includes simplifying procedures, reducing red tape, and promoting transparency in trade regulations.

(ii) Enhancing EXIM Efficiency: Focus on collaboration between various stakeholders, including government agencies, customs, and the private sector, to improve the efficiency of import and export processes.

(iii) Sustainability, Inclusion, and Resilience: This involves incorporating sustainable practices, promoting gender mainstreaming in trade, and building resilient supply chains.

(iv) Infrastructure Upgradation: This includes improvements to ports, airports, land border crossings, and other logistics infrastructure.

(v) Implementation and Monitoring: (a) Time-bound Roadmap: The plan includes a detailed roadmap with specific actions to be carried out by various regulatory agencies. (b) Steering Committee: A Steering Committee, chaired by the Revenue Secretary and Commerce Secretary, will monitor the implementation of NTFAP 3.0. (c) Consultative Process: The plan emphasizes a consultative process with the private sector to incorporate their feedback and address their concerns.

India has introduced an Electronic Cargo Tracking System (ECTS). The ECTS allows for the lodging of standardized information and documents at a single point of entry. India has also developed an electronic health certification system. This system is necessary to ensure adequate bio security measures for livestock imports. India has also established a mechanism to monitor detention of goods. This mechanism ensures that the importer and carrier are informed of any detentions. However, coverage of current implementation of paperless trade measures is limited due to several complicated procedures and bottlenecks. This study will review the current status of paperless trade in India and discuss major challenges that have been hindering paperless trade across borders.

4.3. Paperless Trade Initiatives during COVID-19 Breakout

India has introduced several trade facilitation measures to promote trade, while protecting the country from the pandemic and issued 150 notifications regarding its trade facilitation policy initiatives between January and July 2020 (De, 2020). Out of the 150 policy measures, 24 trade facilitation measures were specifically related to paperless and cross-border paperless trade for expediting and facilitating the Customs clearance process by making it contactless and paperless. These measures include contactless and paperless bill of entry amendment, acceptance of digital copies, clearing goods on the basis of undertaking on plain paper in lieu of bond, machine-based automated release of import consignments on all India basis. India has also introduced many measures such as the e-gate pass to custom brokers/exporters for releasing consignments, acceptance of e-preferential certificates of origin and e-certificates of origin, uploading and accepting digitally signed licenses/permits/certificates/other authorizations by PGAs on e-SANCHIT at all customs EDI systems (De, 2020).

In addition, a new DGFT platform was launched for issuing certificate of origin and digital delivery of IEC related services to facilitate foreign trade. A dedicated single window for the COVID-19, 24x7 helpdesk for export and import was created on CBIC website to facilitate quick resolution of issues faced by importers. Most of the paperless trade facilitation measures (such as e-bills of landing, e-bills of entry, e-preferential certificates of origin, e-certificates of origin, e-gate pass, e-Customs declaration, online acceptance of sea cargo manifest) that were introduced by the Government of India during January 2020-July 2020 are still in operation (see Table 3). Post July 2020, the government has introduced few more paperless trade facilitation measures, which include e-Customs declaration, e-refund and duty drawback, pre-registration application, electronic acceptance of export and import courier declaration for the COVID-19 vaccinations.

Table 3: COVID-19 Paperless Trade Facilitation Policy Measures

Measure	No. of Notifications
e- Gate Pass/ Bills of Entry	2
e- Certificate of Origin (COO)	4
e-Preferential Certificate of Origin (COO)	2
e-Customs Declaration	1
e-Refund and Duty Drawback	1
e-SPS Certificates	1
e-Export Bills of Landing/Shipping Bill Handover	1
For In-Bonding of Cargo filed Under Warehouse e-Bills of Entry	1
Pre-registration Application	1
Sea Cargo Manifest	1
Courier Imports and Export Declaration for covid Vaccinations	3
Total Measures	**18**

Source: ICEGATE, Central Board of Excise & Customs, India.

What follows from the above review is that India has made noteworthy improvement in implementing general paperless trade initiatives such as automation of Customs system, electronic data interchange between Customs and PGAs, and Single Window (SWIFT). As a result, India has gained significantly from reduced transaction cost and time. For example, the number of users of Single Window Interface are increasing every day in addition to e-documents filing and e-payment transactions at the national portal of Indian Customs i.e., ICEGATE. The CBIC has made the use of e-delivery orders, e-payment of charges and fees and e-invoice mandatory at major ports for all stakeholders in the maritime trade. Also, CBIC has made it obligatory to upload supporting documents through e-SANCHIT for all BEs, which has facilitated easier submission of trade-related documents on ICEGATE. The CBIC has also

made the use of e-OOC and e-gate pass at Customs mandatory post the COVID-19 outbreak.

In addition, the use of Radio Frequency Identification (RFID) has been adopted by major ports of India to reduce the dwell and transaction cost. For example, Jawaharlal Nehru Port Authority (JNPA) was the first port to implement logistics data bank tagging system wherein the containers are attached with a RFID tag, which helps in tracking the container through the RFID readers installed at different locations. Also, the self-sealing procedure of containers has simplified the procedure for factory stuffing under the Central Excise officers.[21] To comply with international safety standards, ports in India have started installing Radiological Detection Equipment (RDE) for screening containers.[22] The JNPA has installed RDE at roads and rail gates.

5. Challenges in Implementing Paperless Trade in India

Even though India has been at the forefront for bringing paperless trade facilitation reforms in the country, there are still several complicated procedures and bottlenecks which are required to be reengineered for increasing transparency and efficiency of Customs procedures. Further, the focus of the Indian government has been on facilitating electronic information exchange between traders, Customs and PGAs domestically. The country is still in the process of building capacities for fully implementing the cross-border paperless trade measures i.e., electronic exchange of trade-related data and documents between countries. However, implementing paperless trade measures across borders is not easy as it requires coordination and harmonization of different legal, policy, institutional and technology frameworks (Ha and Lim, 2014). Based on India's performance assessment and review of current paperless trade initiatives this study has identified the following challenges.

Inadequate infrastructure: The infrastructure in general at the Container Freight Stations (CFS), Inland Container Depots (ICD) and Integrated Check Posts (ICP) is one of the major bottlenecks hampering trade in India. Poor road conditions and congestion at ports increases the cargo release time of transit and further add to the cost of trade. Most

of the ports lack the facility of testing laboratories which is an essential part of cargo inspection process. In addition, there is insufficient rail connectivity to major ICDs, which adds to the time of transportation and cargo shipping. Further, the infrastructure at some of the check posts, sea ports and airports are still under development which again delays the clearance process of export and import cargo.

Inadequate Application of ICTs: India has set up a paperless trading environment through e-platforms such as ICEGATE and DGFT. However, comprehensive exchange of data and documentation is still a challenge as some of the sea and land ports have not been able to apply ICTs adequately. As a result, many of the trade procedures are still manually processes.

Lack of Technical Interoperability: With the lack of ICT infrastructure at ports and Customs stations, the issue of technical interoperability arises (i.e., ability of two or more systems to exchange and use trade-related information) in conducting paperless trade domestically as well as across borders. This indicates that there is absence of a proper guiding framework for the use of certain technologies and standards which has made technical interoperability of the paperless systems challenging in matters relating to exchange and use of information for Customs and port clearance.

Lack of Harmonisation and Coordination: Automation of Customs and trade procedures by different departments of different ministries is carried out in an uncoordinated manner which has made the implementation of paperless trade difficult. In addition, the coordination mechanisms for cross-border data exchange are also not harmonized. For example, the issuance of e-COOs and preferential e-COOs to the FTA/PTA partners accelerated during the COVID-19 outbreak. However, with the opening of the economy and businesses, India exporters have been expressing difficulties in obtaining preferential access in countries like Thailand and Vietnam. As a result, the DGFT e-platform is not accepting and processing e-COO applications for exports to Thailand and Vietnam. This indicates that difficulty in harmonising and coordinating different

regulatory regimes within and across borders has been one of the major challenges in implementing paperless trade.

Lack of Cooperation between Public and Private Sectors: There is lack of consultation and cooperation between public and private sector in evolving a better trading environment with the help of paperless trade systems such as ICEGATE, DGFT and India Trade Portal (ITP). Many times, traders are not aware of the requirements of different regulatory agencies that are required to be fulfilled before trading. In addition, traders find difficulty in adopting and using the online portals for completing the Customs and clearance procedures. Therefore, paperless trade systems should be implemented through proper cooperation between the public sector, industry associations and other stakeholders involved in trading.

6. Opportunities for Enhancing Cooperation, Digitalisation and Harmonization of Trade Procedures through Cross-Border Paperless Trade

Together with other cross-border trade documents such as Bills of Lading and Shipping Bills, Integrated Declaration, SPS Certificate and COO have been identified as key documents which are required to be harmonized through the automated systems for seamless exchange of information across border. In addition, online collection of fees and charges as well as other payments such as payment from a documentary letter of credit are also an integral part of a paperless trading system. Thus, simplification and rationalization of trade-related data, documents and transactions using international common standards play an essential role in implementing cross-border paperless trade.

In recent years, the DGFT has come up with several reforms for the electronic exchange of COOs and preferential COOs with India's Free Trade Agreement (FTA)/Preferential Trade Agreement (PTA) partners through its e-platform. However, exporters are still required to submit the COOs and preferential COOs manually to the issuing agencies such as Export Inspection Agency (EIA) and Marine Products Export Development Authority (MPEDA) for exports to several FTA/PTA

partners due to preferential access issues in partner country. Therefore, proper legal, policy, institutional and technology frameworks are required for creating an enabling environment for cross-border electronic exchange of COOs and preferential-COOs.

Traders can exchange electronic export and import Customs Declaration domestically with PGAs through ICEGATE. However, the electronic exchange of Customs Declarations across borders is still under planning stage.[23] Thus, India should encourage comprehensive exchange of cross-border data related to Customs Declaration through the Single Window (SWIFT) by harmonizing the information and documentation requirements of other nations with appropriate application of global standards.

India has involved in the issuance of electronic SPS Certificates domestically through PQIS, however, the exchange of e-SPS Certificates across borders has only been partially implemented and most of the certificates are still delivered in paper form. This indicates that even though the issuing and receiving bodies are same kind of inspection agencies at both ends, India and its trading partners are using different computerization systems, which have made interoperability difficult. Therefore, an integrated technological framework is required for developing paperless systems to facilitate the exchange and use of SPS e-certificates across borders.

The ICEGATE and DGFT do provide the facility of online payment of fees and charges as well as other miscellaneous payments, but, paperless collection of payment from a documentary letter of credit (which is issued by banks to traders for exporting goods) across borders is still under process. This indicates that the legal and regulatory regime of India for paperless trade transactions is still not completely interoperable. Therefore, India requires to develop a harmonized legal and regulatory system for continuous and efficient flow of paperless trade transactions across borders.

Therefore, to further automate trade procedures and conduct trade transactions using electronic data and documents exchange, participation in the Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and Pacific (Henceforth Agreement) can help India to better implement the WTO TFA measures as well as paperless trade measures domestically and across borders. The Agreement was adopted by United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) in 2016 and has in effect in 2020, which aims to "promote cross-border paperless trade by enabling the exchange and mutual recognition of trade-related data and documents in electronic form and facilitating interoperability among national and subregional

---

Box 5: Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and Pacific

The Framework Agreement contains a preamble which provides the background and rationale of the Agreement and 25 Article. Article 1 to 16 are substantive clauses, covering objective, scope definitions, general principles and other action-oriented measures, while article 17 to 25 are final clauses, specifying standard provisions typical of a UN treaty. Key substantive articles are as follows:

Article 5: General principles

Article 6: National Policy Framework, Enabling Domestic Legal Environment and Paperless Trade Committee

Article 7: Facilitation of Cross-border Paperless Trade and Development of National Single Window(s)

Article 8: Cross-Border Mutual Recognition of Trade-related Data and Documents in Electronic Form

Article 10: Relation with Other Legal Instruments Enabling Cross-Border Paperless Trade

Article 11: Institutional Arrangements

Article 12: Action Plan

Article 13: Pilot Projects and Sharing of Lessons Learned

Article 14: Capacity Building

Source: ESCAP, 2017.

single windows and/or other paperless trade systems, for the purpose of making international trade transactions more efficient and transparent while improving regulatory compliance" (ESCAP, 2016). The Framework contains a preamble and 25 Articles which includes a set of key principles to promote connectivity and trade facilitation and a comprehensive action plan for parties for addressing legal and technical issues in cross-border trade (see Box 5). "The implementation of Agreement is expected to reduce transaction time and cost as well as increase regulatory compliance through seamless electronic exchange of data and documents across borders" (ESCAP, 2017). The Framework Agreement has entered into force in February 2020 with five ESCAP member countries (Azerbaijan, the Philippines, Islamic Republic of Iran, Bangladesh and China). For India, the expected benefits of becoming a party to the Agreement can be summarized as follows:

- Enable India to further reduce time and cost of trade transactions, by rationalizing the exchange of documents and regulatory procedures, thereby boosting country's trade competitiveness;
- Accelerate India's paperless trade facilitation reform of making Customs and border regulatory processes faceless, paperless and contactless and enable seamless cross-border data exchange;
- Potential opportunity to incorporate emerging paperless trade considerations of trading partners through structured and regular sharing of best practices to ensure interoperability and future cross-border data exchange in a seamless manner;
- Enable mutual recognition of trade data and documents which will be exchanged between the border agencies of trading partners;
- With concurrent development of the India's paperless system and environment, the overall investment cost will reduce which will further help in facilitating cross-border trade data exchange;
- Further improve the compliance mechanism of regulatory procedures with greater efficiency, transparency and uniformity of assessment of traders and border agencies; and
- Increase participation of small and medium-size enterprise (SMEs) in international trade and supply chains and accelerate their engagement in cross-border e-commerce.

Figure 16(a): Relationship between LPI and Export
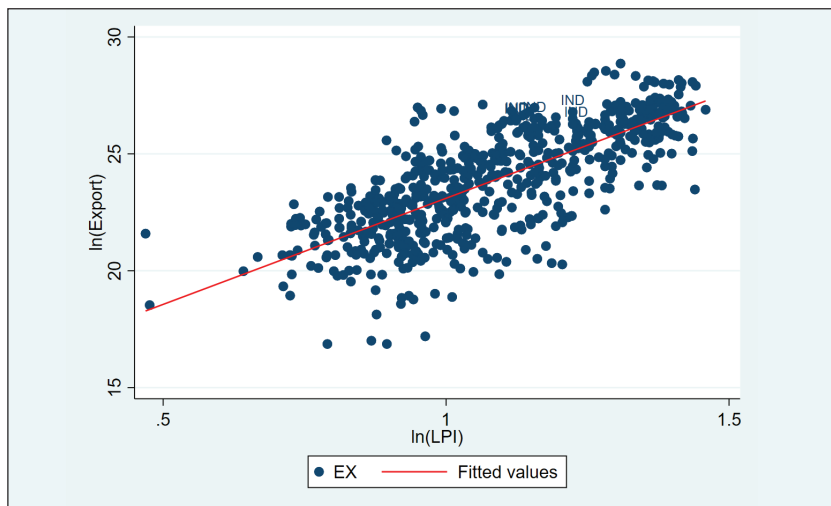
Figure 16(b): Relationship between LPI and Import
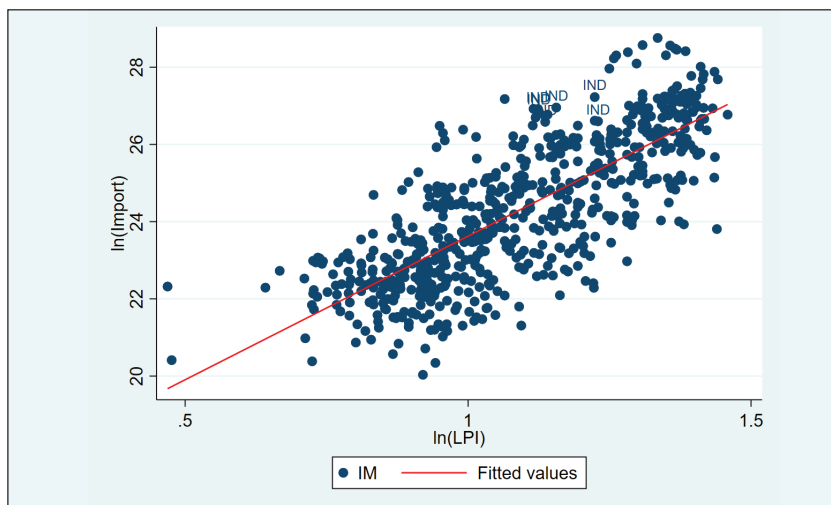
Figure 16 (a, b) highlights the role of Logistics Performance Index (LPI) in influencing the trade flows both export and import. Efficient logistics environment enhance country's ability to engage in international trade by reducing the trade costs. The fitted lines in both the figures show the clear evidence of the positive association of logistics performance with trade flows. In both the figures India (IND) is clustered around the upper end of the fitted line, showing India is having higher logistics performance and also has higher export and import levels, compared to other countries. At the same time, trade performance, logistic performance and shipping connectivity show positive association (Figure 17).

Figure 17: Relationship between Trade Performance, Logistics Performance and Shipping Connectivity
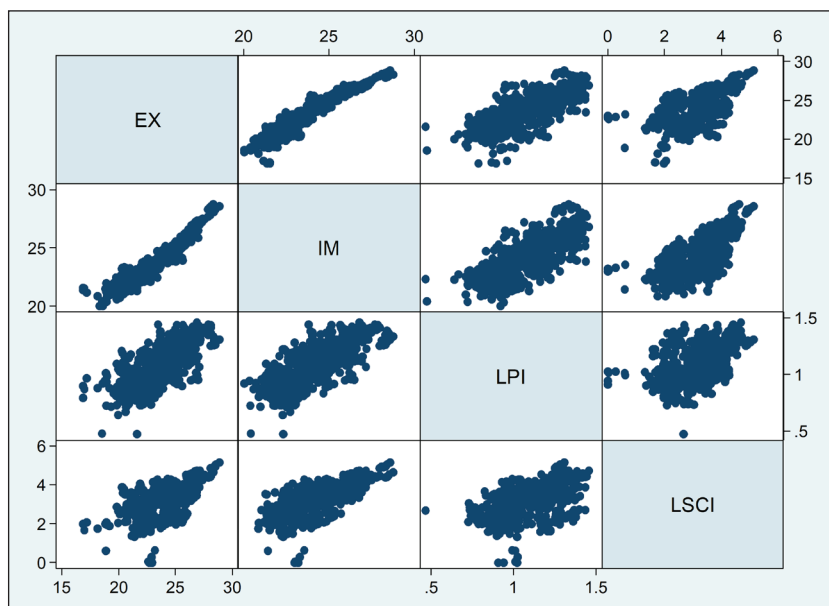
Source: Authors' own calculation.

Table 4 presents the impact of logistics performance on the trade flows. The fit of the models is expected to be very good, with about 93 per cent of observations in export model and 94 per cent in the import model

explained by these results, which are robust. The parameter estimates are corrected for cross-sectional heteroskedasticity and autocorrelation. A number of variables produce statistically significant results at the 1 per cent, 5 per cent, and 10 per cent levels, respectively.

Our controlled variable of interest is the LPI. The results in Appendix 5 show the sign of coefficient of LPI is positive and significant at 1 per cent level in the case of import and 10 per cent in the case of export. The estimated coefficient in log does indicate elasticity between LPI and trade flow. Other variables like paperless trade, trade liberalization, and shipping connectivity all are statistically significant. For example, in the case of the export model trade liberalization and paperless trade both are significant but not shipping connectivity, where in the import model, shipping connectivity and the paperless trade are insignificant (Table 4). Results are satisfied, however, the estimates are not all significant but they all have correct signs.

Table 4: Regression Results

Variables	(1)	(2)	(3)	(4)
	Export Model		Import Model	
Economic Size	0.956***	0.956***	0.875***	0.869***
	(0.0448)	(0.0482)	(0.0436)	(0.0434)
Logistics performance	0.866***	0.913***	0.517***	0.555***
	(0.269)	(0.240)	(0.167)	(0.171)
Shipping connectivity	0.0945	0.0888	0.117	0.123
	(0.0921)	(0.0764)	(0.0878)	(0.0870)
Exchange rate	-0.725***	-0.685***	0.143**	0.135*
	(0.110)	(0.103)	(0.0718)	(0.0693)
Trade liberalization	0.416***		0.872***	
	(0.122)		(0.0966)	
Paperless trade	0.136**		0.0132	
	(0.0535)		(0.0292)	
Trade strength*		0.112**		0.00915
		(0.0545)		(0.0300)

Continued...

Continued...

Constant	1.259	1.481	-0.496	0.492
	(1.238)	(1.163)	(1.092)	(0.985)
Observations	149	149	149	149
R-squared	0.917	0.918	0.917	0.913
No. of Country id	51	51	51	51
Chi-square	1042	886.9	1388	1378
Rho	0.938	0.935	0.945	0.944

Source: Authors' own.

Note: *Multiplicative variable of Trade liberalization and Paperless trade. Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Statistically positive correlation of LPI with export and import leads to the conclusion that the logistics is an important determinant of international trade as improved logistics can improve the trade. The findings of this study are very much in consistent with the results found in previous studies.

In the equations 1 and 2, many variables considered to determine trade other than the LPI, which are also controlled for export and import in equations.

Results in Table 4 of controlled variables indicate that trade liberalization, paperless trade and country's economic size are important determinants of country's import.

In the model we have also considered lagged import and export to check the issue of autocorrelation on the import side. Other than the LPI, economic size, shipping connectivity, trade liberalization and paperless trade are key determinants of trade flow are found to be significant determinants.

Given the positive effect of LPI on import and export, the empirical analysis is extended further to test if some of the specific aspects of logistics are important for trade. The effects of disaggregated measures of logistics are tested for export and import. These indicators are as follows: Customs, Infrastructure, International shipments, Quality logistics

services, Tracking and Tracing, and Timeliness. These six measures of logistics specificities were tested in several specifications one at a time to avoid the multicollinearity effect. Appendix 5 presents the regression results of effects of logistics specificity on export and import, respectively.

The results in Appendix 5 indicate the positive effects of all six logistics specificities on export. However, variables such as Infrastructure, International shipments, Quality logistics services, Tracking and Tracing, and Timeliness are also found to be statistically significant. The Appendix 5 presents the regression results of the impact of logistic specificities on import, and results are statistically significant. However, the variable customs is not statistically, significant but has positive sign. In other words, all the logistics specificities have a positive correlation with import.

7. Conclusions

International trade involves flow of information and data through documents that are either paper or electronic. Therefore, it is essential to rationalize documents requirement involved in the trading process through reforms, which will significantly reduce transaction time and cost and expedite the movement of goods across border. Simplification and harmonization of trade processes and documents requirement is an integral part of trade facilitation reforms. The WTO's TFA has proved forward-looking in helping India to re-engineer the trade processes for expediting cargo clearance and develop ICT infrastructure. In addition to this, the Digital India flagship programme has boosted the implementation of e-governance initiatives for enhancing trade facilitation and promoting paperless trade. The review of India's paperless trade initiatives shows that the country has made considerable efforts in the development of national Single Window (SWIFT) and has taken some steps towards the development of cross-border paperless exchange of data and documents. India is proactively making efforts for automating the Customs and trade processes through a series of reforms. It is important to maintain the momentum of reforms and resolve pending bottlenecks and

challenges expeditiously. To develop seamless exchange of information and documents across borders and have sustained improvement in India's export competitiveness, addressing various legal, regulatory, technological and infrastructure issues is indispensable. Going forward, India's accession to the UN CPTA is going to be another opportunity for the country to sustain the momentum of country's cross-border trade at a particular time when the countries across to the world are struggling with the supply chain disruptions and high logistics costs.

[Some of the lengthy appendices have been ignored due to space constraints. Interested readers may contact the authors to know further on the appendices.]

Endnotes

[1] Digital innovations are transforming the global trade. A recent set of literature indicates digital innovations have larger role in fostering global and regional trade. Refer, for example, Smeets (2021), Yann and Mengjing (2017)

[2] Refer, the text and status of the Framework Agreement, available at https://www.unescap.org/kp/cpta

[3] Reforms indeed helped India to improve the country's global ranks in UN Survey on Digital and Sustainable Trade Facilitation (ESCAP, 2021). Also refer De and Kumarasamy (2021) for a comprehensive review of India's trade facilitation.

[4] Refer, CBIC for further details, available at https://www.cbic.gov.in/htdocs-cbec/home_links/trade_agreement

[5] Rate of current and future implementation commitments according to notification data available at https://www.tfadatabase.org/en/members/india

[6] Based on https://ices.nic.in/ices/aboutus

[7] Refer, https://www.unescap.org/sites/default/files/India-Presentation.pdf

[8] Refer, https://www.ciiblog.in/trade-facilitation-reforms-in-india/

[9] Refer, https://www.icegate.gov.in/about_icegate.html

[10] Refer, https://www.icegate.gov.in/about_icegate.html

[11] Refer, https://www.icegate.gov.in/about_icegate.html

[12] Refer, https://www.icegate.gov.in/about_icegate.html

[13] Refer, https://courier.cbic.gov.in/Aboutus.jsp

14   Refer, https://www.cbic.gov.in/resources//htdocs-cbec/edited_Fact%20 Sheet_05122018.pdf

15   Refer, for example, https://aeoindia.gov.in/

16   Refer, For more information, https://cip.icegate.gov.in/CIP/static/images/doc/ CIP-Tutorial.pdf

17   Refer, for more information, https://www.dgft.gov.in/CP/?opt=iec-profile-management

18   Refer, For more details, https://www.fieo.org/

19   Refer, For more details, https://www.indiantradeportal.in/

20   Refer, For more information, https://www.cbic.gov.in/resources//htdocs-cbec/ implmntin-trade-facilitation/NTFAP2020-23jk.pdf

21   Refer, https://www.ciiblog.in/trade-facilitation-reforms-in-india/

22   Refer, https://www.ciiblog.in/trade-facilitation-reforms-in-india/

23   Refer, https://www.untfsurvey.org/economy?id=IND

References

CBIC. 2020a. Guidebook for Faceless Assessment. Turant Customs Programme. Faceless, Contactless and Paperless Customs Clearance. Central Board of Indirect Taxes and Customs, New Delhi

CBIC. 2020b. e-Sanchit Application Process Guide for IEC Users Version 1.1. Central Board of Indirect Taxes and Customs, New Delhi

CBIC. 2019. Implementation of Trade Facilitation Agreement. National Trade Facilitation Action Plan 2020-2023, New Delhi

Chauhan, S, V., and Vijayakumar, S. 2021. "Measuring Trade Facilitation: Evidence from India". Carnegie Endowment for International Peace, Washington, D.C.

Chauhan, Vijay Singh and Sruti Vijayakumar (2024) "India's trade facilitation journey: viewed through the lens of the National Time Release Study", World Customs Organisation (WCO) News, Brussels, 24 June 2024

De, Prabir. 2020. "Trade facilitation in times of pandemic: Practices from South and South West Asia", ARTNeT Working Paper Series, No. 198, September, 2020, Bangkok.

De, Prabir. 2024. "Paperless Trade Facilitation in India: New Initiatives and Challenges", UNNEXT Working Paper Series No. 13, ESCAP, Bangkok.

De, Prabir and Durairaj Kumarasamy. 2021. "Facilitating Trade in India: What Matters the Most" in Ajitava Raychauduri, Prabir De and Suranjan Gupta (Eds.), *World Trade and India: Multilateralism, Progress and Policy Response*, Sage, New Delhi

De, Prabir and Durairaj Kumarasamy. 2024. "Assessing the trade–connectivity linkages in South Asia in post-pandemic period: an empirical investigation", *Journal of Asia Pacific Economy*, Vol. 29

DGFT. 2021. Electronic Governance & Trade Facilitation Reforms. Directorate General of Foreign Trade, Ministry of Commerce & Industry, New Delhi

Duval, Y. and K. Mengjing. 2017. "Digital Trade Facilitation: Paperless Trade in Regional Trade Agreements". ADBI Working Paper 747. Asian Development Bank Institute (ADBI), Tokyo

ESCAP. 2023. *Digital and Sustainable Trade Facilitation in Asia and the Pacific*, Bangkok

ESCAP. 2021. *Handbook on Provisions and Options for Trade in Times of Crisis and Pandemic*, Bangkok

ESCAP. 2017. *Digital Trade Facilitation in Asia and the Pacific*. Studies in Trade Investment Innovation 87, Bangkok

ESCAP. 2016. Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and the Pacific, Bangkok

ESCAP. 2014. Estimating the Benefits of Cross-Border Paperless Trade, Bangkok

FIEO. 2021. 56th Annual Report & Accounts 2020-21. New Delhi.

Ha, H, S., and Lim, W, S. 2014. "The Progress of Paperless Trade in Asia and the Pacific: Enabling International Supply Chain Integration". ADB Working Paper Series on Regional Economic Integration No. 137. Asia Development Bank, Manila

Smeets, Maarten (ed.). 2021. *Adapting to the Digital Trade Era: Challenges and Opportunities*, WTO, Geneva

WTO. 2015. World Trade Report. Speeding up trade: benefits and challenges of implementing the WTO Trade Facilitation Agreement. World Trade Organization, Geneva.

Appendix 1

Appendix Figure 1: Trade Facilitation Measures Implementation Level (2023)

Source: UN Global Survey on Digital and Sustainable Development.

Appendix Figure 2: Share of Paperless Trade Facilitation Measures in Total Trade Facilitation Measures (2023)
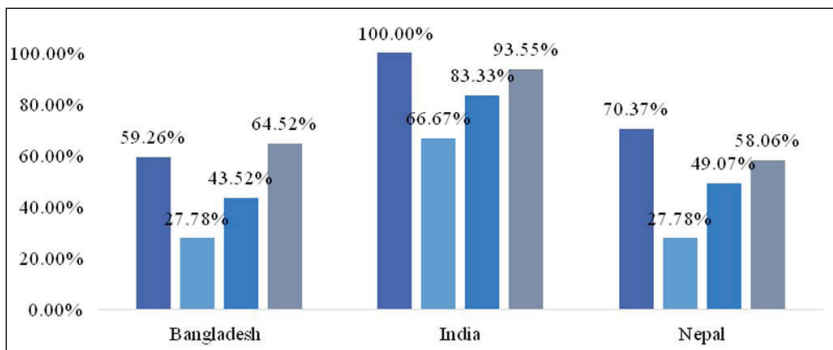
Source: UN Global Survey on Digital and Sustainable Development.

Appendix Figure 3: Monthly ICEGATE User Growth
(April 2021-October 2024)
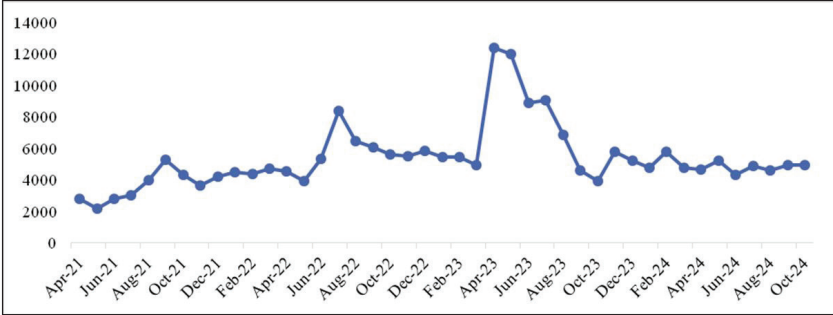
Source: ICEGATE, Central Board of Excise & Customs.

Appendix 2

India's Progress in Trade Facilitation

Measure	Survey 2015	Survey 2017	Survey 2019	Survey 2021	Survey 2023
Transparency					
Publication of existing import-export regulations on the internet	Partially implemented	Partially implemented	Partially implemented	Fully implemented	Fully implemented
Stakeholders` consultation on new draft regulations (prior to their finalization)	Partially implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Advance publication/notification of new trade-related regulations before their implementation*	Partially implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Advance ruling on tariff classification and origin of imported goods*	Fully implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Independent appeal mechanism	Fully implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Formalities					
Risk management	Partially implemented	Partially implemented	Partially implemented	Partially implemented	Fully implemented
Pre-arrival processing	Partially implemented	Partially implemented	Fully implemented	Fully implemented	Fully implemented

Continued...

Post-clearance audits*	Partially implemented	Partially implemented	Fully implemented	Fully implemented	Fully implemented
Separation of Release from final determination of customs duties, taxes, fees and charges	Partially implemented	Partially implemented	Fully implemented	Fully implemented	Fully implemented
Establishment and publication of average release times	Partially implemented	Partially implemented	Fully implemented	Fully implemented	Fully implemented
TF measures for authorized operators*	Fully implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Expedited shipments	Partially implemented	Partially implemented	Partially implemented	Fully implemented	Fully implemented
Acceptance of copies of original supporting documents required for import, export or transit formalities*	Partially implemented	Partially implemented	Partially implemented	Fully implemented	Fully implemented
Institutional Arrangement and Cooperation					
National Trade Facilitation Committee or similar body*	Partially implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
National legislative framework and/ or institutional arrangements for border agencies cooperation*	Partially implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Government agencies delegating border controls to Customs authorities*	Not implemented	Not implemented	Not implemented	Partially implemented	Fully implemented

Alignment of working days and hours with neighbouring countries at border crossings	Partially implemented	Partially implemented	Partially implemented	Partially implemented	Partially implemented
Alignment of formalities and procedures with neighbouring countries at border crossings	Partially implemented	Partially implemented	Partially implemented	Partially implemented	Partially implemented
Paperless Trade					
Automated Customs System*	Fully implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Internet connection available to Customs and other trade control agencies*	Fully implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Electronic Single Window System	Partially implemented	Partially implemented	Partially implemented	Fully implemented	Fully implemented
Electronic submission of Customs declarations	Partially implemented	Partially implemented	Partially implemented	Fully implemented	Fully implemented
Electronic application and issuance of import and export permit*	Partially implemented	Partially implemented	Partially implemented	Fully implemented	Fully implemented
Electronic Submission of Sea Cargo Manifests	Fully implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Electronic Submission of Air Cargo Manifests	Fully implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented

Electronic application and issuance of Preferential Certificate of Origin	Planning stage	Planning stage	Planning stage	Partially implemented	Fully implemented
E-Payment of Customs Duties and Fees	Fully implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Electronic Application for Customs Refunds	Partially implemented	Partially implemented	Fully implemented	Fully implemented	Fully implemented
Cross-Border Paperless Trade					
Laws and regulations for electronic transactions	Fully implemented	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Recognised certification authority	Partially implemented	Partially implemented	Fully implemented	Fully implemented	Fully implemented
Electronic exchange of Customs Declaration*	Not implemented	Not implemented	Planning stage	Planning stage	Planning stage
Electronic exchange of Certificate of Origin	Not implemented	Not implemented	Planning stage	Planning stage	Planning stage
Electronic exchange of Sanitary & Phyto-Sanitary Certificate	Not implemented	Not implemented	Partially implemented	Partially implemented	Partially implemented
Paperless collection of payment from a documentary letter of credit*	Not implemented	Not implemented	Not implemented	Partially implemented	Partially implemented
Transit Facilitation					
Transit facilitation agreement(s)*	Partially implemented	Partially implemented	Partially implemented	Partially implemented	Fully implemented

Limit the physical inspections of transit goods and use risk assessment*	Partially implemented	Partially implemented	Partially implemented	Partially implemented	Fully implemented
Supporting pre-arrival processing for transit facilitation	Partially implemented	Partially implemented	Partially implemented	Partially implemented	Partially implemented
Cooperation between agencies of countries involved in transit	Partially implemented	Partially implemented	Partially implemented	Partially implemented	Partially implemented
Trade Facilitation for SMEs					
Trade-related information measures for SMEs*	Not available	Partially implemented	Partially implemented	Fully implemented	Fully implemented
SMEs in AEO scheme*	Not available	Fully implemented	Fully implemented	Fully implemented	Fully implemented
SMEs access Single Window*	Not available	Partially implemented	Partially implemented	Partially implemented	Partially implemented
SMEs in National Trade Facilitation Committee*	Not available	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Other special measures for SMEs*	Not available	Not available	Fully implemented	Fully implemented	Fully implemented
Agricultural Trade Facilitation					
Testing and laboratory facilities available to meet SPS of main trading partners*	Not available	Fully implemented	Fully implemented	Fully implemented	Fully implemented

National standards and accreditation bodies to facilitate compliance with SPS*	Not available	Fully implemented	Fully implemented	Fully implemented	Fully implemented
Electronic application and issuance of SPS certificates*	Not available	Partially implemented	Partially implemented	Partially implemented	Partially implemented
Special treatment for perishable goods	Not available	Not available	Partially implemented	Fully implemented	Fully implemented
Women in Trade Facilitation					
TF policy/strategy to increase women's participation in trade*	Not available	Do not know	Do not know	Partially implemented	Partially implemented
TF measures to benefit women involved in trade*	Not available	Do not know	Do not know	Partially implemented	Fully implemented
Women membership in the National Trade Facilitation Committee or similar bodies*	Not available	Not available	Do not know	Partially implemented	Partially implemented
Trade Finance Facilitation					
Single window facilitates traders access to finance*	Not available	Not available	Do not know	Do not know	Partially implemented
Authorities engaged in blockchain-based supply chain project covering trade finance*	Not available	Not available	Do not know	Do not know	Partially implemented
Variety of trade finance services available*	Not available	Not available	Do not know	Fully implemented	Fully implemented

Continued...

Trade Facilitation in Times of Crisis					
Agency in place to manage TF in times of crises and emergencies	Not available	Not available	Not available	Partially implemented	Fully implemented
Online publication of emergency TF measures	Not available	Not available	Not available	Fully implemented	Fully implemented
Coordination between countries on emergency TF measures	Not available	Not available	Not available	Partially implemented	Partially implemented
Additional trade facilitation measures to facilitate trade in times of emergencies	Not available	Not available	Not available	Fully implemented	Fully implemented
Plan in place to facilitate trade during future crises	Not available	Not available	Not available	Fully implemented	Fully implemented
Trade Facilitation for E-Commerce					
TF measures for cross-border e-commerce*	Not available	Not available	Not available	Not available	Partially implemented
Trade Facilitation and Wildlife Protection					
Electronic application, issuance and exchange of eCITES*	Not available	Not available	Not available	Not available	Not implemented

Source: Global Trade Facilitation Survey, UNESCAP.

Appendix 3

Appendix Table 1: Number of Paperless Trade Facilitation Measures Notifications

Paperless Trade Facilitation Measure	No. of Notifications
Central Board of Indirect Taxes & Customs (CBIC)	
Reducing/ eliminating printouts in Customs Clearance	2
Mandatory filling of Import Declaration on e-SANCHIT	1
Sea Cargo Manifest form ICEGATE	3
Transhipment of Cargo to Nepal under Electronic Cargo Tracking System	2
Online filling of AEO T2 and T3 Application	12
Export and Import Courier Regulation	10
All India roll-out of Faceless Assessment	3
Remission on Duties and Taxes on Export Products (RoDTEP)	1
Implementation of Risk Management System for processing of Duty Drawback Claims	1
Shipping Bill (Electronic Integration Declaration)	2
Bill of Entry (Electronic Declaration and paperless processing)	2
Automation in the customs	7
Exchange Rate Automation	1
Rule of origin	1
Indian Customs and Central Excise Electronic Commerce/Electronic Data Interchange (ICEGATE)	
Single Window Project-Pilot Implementation of paperless process under SWIFT	6
Single Window Project-Referral of imported consignments to PGAs	1
Single Window Project- Uploading of supporting documents (e-SANCHIT) for exports	2

Continued...

Continued...

Single Window Project-Publishing of Service Level Standards	1
Single Window Project-Digital Signature	2
Single Window Project-Implementation of PGA e-SANCHIT– Paperless Processing under SWIFT- Uploading of Licenses/Permits/Certificates and Other Authorizations (LPCOs) by PGAs	7
Simplified auto registration of beneficiaries on ICEGATE for e-SANCHIT	2
Single Window Project-Online message exchange between Customs and other regulatory agencies	1
Single Window Project-Clearance of import of metal scrap procedure	2
Single Window Project-Extending Single Window interface to EDI Locations/other PGAs/Export	3
Forwarding of samples for testing in laboratories through Single Window	1
Single Window Project-Problems in clearance of Ex-Bond Bills of Entry in online clearance facility	1
Single Window Project-Simplification of procedure in SWIFT for clearance consignment related to drugs and cosmetics	1
Implementation of Integrated Declaration under the India Customs Single Window	1
Single Window Project- Implementation of Risk based selectivity criteria for clearance of consignments related to PGAs	1
Single Window Project- Clearance of food consignment at locations where FSSAI has provided delegation	1
Electronic Cash Ledger 2.0	1
Exchange rate automation module (ERAM) on ICEGATE 2.0	1
E scrip to avail of Export Incentive Schemes	1
Express Cargo Clearance System (ECCS)	

Implementation of ECCS for clearance of export goods at courier terminal	10
Electronic clearance of export/imported good	22
Auto led export order under ECCS	4
Auto out of charge under ECCS	5
IGST Refund Module for Exports in ECCS Application-reg	3
Roll out of CSB IV and CSB V in ECCS	4
Contactless delivery of international courier consignments	2
Courier bond executed CCSPs	1
Electronic Cash Ledger	7
Directorate General of Foreign Trade (DGFT)	
Online filling and Issuance of Preferential Certificate of Origin	14
Retrospective Issuance of Certificate of Origin in India's Trade Agreement	7
Extension of dates for mandatory Electronic Filing of Certificate of Origin	9
Total	**172**

*Source*s: CBIC, DGFT (2020-24), ECC and ICEGATE

Appendix Table 2: Summary of Paperless Trade Initiatives Adopted by India

Initiative	Objective and Description
Customs Compliance Information Portal (CIP)	The Indian Customs Compliance Information Portal (CIP) has been launched for providing free access to information on all Customs procedures and regulatory compliance for nearly 12,000 Customs Tariff Items. CBIC has developed this facilitation tool to empower businesses as well as any interested person with up-to-date information on the legal and procedural requirements of Customs and Partner Government Agencies (FSSAI, AQIS, PQIS, Drug Controller etc.) for carrying out imports and exports.

DG (Systems & Data Management)	The Directorate General of (Systems & Data Management) is responsible for the design, development, programming, testing, implementation and maintenance of Customs and Central Excise automated systems, and for overseeing and managing the projects sanctioned by CBIC related to IT.
Express Cargo Clearance Systems (ECCS)	Express Cargo Clearance Systems (ECCS) is a highly efficient and robust system that enables automated clearances in the express mode. ECCS carries out clearance process under the Courier Imports and Exports (Electronic Declaration and Processing) Regulations, 2010.
Importer -Exporter Code (IEC)	An Importer -Exporter Code (IEC) is a key business identification number which is mandatory for export from India or Import to India. No export or import shall be made by any person without obtaining an IEC unless specifically exempted.
Indian Customs EDI System (ICES)	Indian Customs EDI System (ICES) provides Internal Automation of the Custom House for a comprehensive, paperless, fully automated customs clearance system that makes the functioning of Customs clearance transparent and efficient. It provides online, real-time electronic interface with the trade, transport, banks and regulatory agencies concerned with customs clearance of import and export cargo through ICEGATE.
VAHEI (Virtual Assistant to Help Exporters and Importers)	The DGFT has deployed an AI-powered virtual assistant VAHEI (Virtual Assistant to Help Exporters and Importers) chatbot on its portal to promote and facilitate foreign trade by instantly helping importers and exporters with their queries. Users can see new notifications, trade notice, public notice & circulars on chatbot. The chatbot gives text responses for a simple query or provides the relevant URLs. If no direct response is found, it finds references in foreign trade policy/Handbook of procedure and opens related section in PDF.

Turant Suvidha Kendra	Turant Suvidha Kendra (TSKs) have been established at all Customs formations country wide for pan India roll out of faceless assessment. These will provide range of services to trade including exceptional submission of documents at single point.
e-SANCHIT (e-Storage and Computerized Handling of Indirect Tax documents)	e-Sanchit (e-Storage and Computerized Handling of Indirect Tax documents) provides paperless processing, uploading of supporting documents and facilitates the trading across Borders. This application provides an electronic interface between tax payers and custom departmental officers to submit their import/export related supporting documents hassle-free and without any human intervention.
SWIFT (Single Window Interface for Facilitating Trade)	SWIFT (Single Window Interface for Facilitating Trade) enables electronic communication between customs and importers/CBs/Ports/ICDs/CFSs. Importers/exporters are able to file a common electronic 'Integrated Declaration' on the ICEGATE portal. The Integrated Declaration compiles the information requirements of Customs, FSSAI, Plant Quarantine, Animal Quarantine, Drug Controller, Wild Life Control Bureau and Textile Committee and it replaces nine separate forms required by these 6 different agencies and Customs.
ICEDASH	It is a performance measurement initiative where the general public can monitor efficiency of the clearance process on a dashboard of the Indian Customs at various formations. Businesses can accordingly compare clearance times across ports and plan their logistics.

ICETRAK	It is a Mobile app ICETRACK that enables trade stakeholders to live track the BE/SB status, Duty, GSTN enquiry and validate the gate pass/ BE/SB copies with QR code scanning functionality.
Web based registration of goods	It provided an importer the facility of initiating the process of examination, documentary verification and issuance of Out Of Charge (OOC). The facility has been well received by trade with majority of importers (83%) availing of the facility.
Auto Queuing	Under ICES 1.5, BE pending clearance can be electronically registered by the importer after which it is queued before the OOC officer on a First-in First-Out (FIFO) basis. The feature is similar to the queuing of BE for assessment among Appraising Groups.
Machine based release	The Customs Automated System automatically gives clearance to imported goods when all the compliances are met. Customs officer does compliance verification such as examination of goods even before duties are paid.
Customs Compliance Verification (CCV)	Customs Compliance Verification (CCV) delinks duty payment from the commencement of compliance verifications and allows the importer to register his/her goods pending duty payment. Post registration, the concerned officer is able to conclude necessary compliance verifications and on his/her satisfaction provisionally clear the BE in the system. The importer may thereafter complete duty payment, receive OOC electronically and proceed to take the goods out of Customs control.
E-OOC BE and e-Gatepass	A secure QR Code enabled PDF copy of final BE is electronically dispatched to the trader or his/her authorised representative's registered email address. Further, e-Gatepass PDF copy is also shared in similar manner which has eased logistics movement.

Registration of Authorised Dealer Code, Bank Accounts through ICEGATE	ICEGATE has the function which allows the exporters to make an online request for registration/ modification of their AD Code/Bank Account(s) and also electronically submit the Passbook copy or Bank Authorisation letter through e- SANCHIT. No physical interaction with Customs is required now for this process.
e-LEO Shipping bill and e-Gatepass	This measure has been initiated for export processes to reduce interface during Customs export clearance process, Expediting Customs clearance of exports, and saving time and cost.
Automated debit of bond after Assessment	ICES provided the function of automatically debiting the Bond and reflecting the same in the first copy of the Bill of Entry, provided the details of the Bond are provided during submission of the Bill of Entry.
Simplified Registration of Importers/Exporters in ICEGATE	Registration at ICEGATE can be done without uploading the Digital Signature Certificate (DSC) and PAN verification on ICEGATE. Simplified Auto Registration is based on Import Export Code (IEC) and Goods and Services Tax Identification Number (GSTIN) and requires a One Time Password (OTP) verification of e-mail and mobile number. The portal also has facilities for management of bank accounts, ledger view, IGST Refund status, query reply etc.
ICEGATE e-Payment	The e-Payment Gateway provides facility of payment of multiple challans in single transaction. Any person having net banking facility in the designated bank can proceed for the payment of custom duty.
Intellectual Property Rights (IPR) e-Registration	Trader can register their products with Customs under trademark, copyright, industrial design and geographical indicator category using the IPR e-Reg Registration Link.

ICEGATE 24x7 Help Desk	The ICEGATE also provide 24X7 helpdesk facility. End users can log a call at the helpdesk by making a phone call to Helpdesk analysts sitting at ICEGATE location and other custom locations. For Custom locations the phone numbers are published in the respective public notices of the Commissionerate. End users can also send their problems using the HELPDESK interface provided in the website www.icegate.gov.in in the option " use helpdesk".
AEO Programme	The Indian AEO Programme was started in 2011. It has been designed to set standards to secure and to facilitate the ever-growing flow of goods in international trade. To ensure that the processes and benefits of the programme are at par with the International best standards, CBIC has thoroughly digitized the application filing, processing and digitally-signed delivery of AEO certification for AEO T1 applications.

*Source*s: CBIC, DGFT, ECCS and ICEGATE

Appendix 4

Appendix Table 1: Step-wise Documents Requirement for Exports through Sea Ports, Air Ports, Inland Container Depots and Land Custom Stations

S. No.	Trade Document Type	Electronic/ Paper-Based Status
Documents Required for Preparing to Export		
1	Importer Exporter Certificate	Electronic
2	AEO Certificate	Electronic
3	Goods and Services Tax (GST) Registration Certificate	Electronic
Documents Required for Pre-Export (Supporting Documents Updated through e- SANCHIT)		
4	Invoice	Electronic
5	Packing List	Electronic
6	Certificate of Origin or Preferential Certificate of Origin	Electronic
7	Export Order	Electronic
8	Pre-Export Clearance Certificates from PGAs (e.g., Sanitary & Phyto-Sanitary Certificate; Fumigation Certificate, etc.) Depending on the Product	Electronic
Documents Required to Export		
9	Integrated Declaration Includes: Shipping Bill (Export Goods Declaration) and Self-Assessment	Electronic
10	Let Export Order (with or without Assessment and Examination)	Electronic
11	Export General Manifest	Electronic
12	Drawback Claim and Disbursal Scrip (if applicable)	Electronic
13	IGST Refund (if applicable)	Electronic

Source: CBIC, Department of Revenue, Ministry of Finance, government of India

Appendix Table 2: Step-wise Documents Requirement for Imports through Sea Ports, Air Ports, Inland Container Depots and Land Custom Stations

S. No.	Trade Document Type	Electronic/ Paper-Based Status
Documents Required for Preparing to Import		
1	Importer Exporter Certificate	Electronic
2	AEO Certificate	Electronic
3	Goods and Services Tax (GST) Registration Certificate	Electronic
4	Export Scheme Benefit Scrip	
Documents Required for Pre-Import (Supporting Documents Updated through e- SANCHIT)		
5	Bill of Landing/Airway Bill	Electronic
4	Invoice	Electronic
5	Packing List	Electronic
6	Overseas Documents/Certificates	Electronic
7	Import Order	Electronic
8	Pre-Import Clearance Certificates from DGFT (e.g., License, Permit, Certificate or Other Authorization (LPCO) etc.) Depending on the Product	Electronic
9	Pre-Import Clearance Certificates from PQIS (e.g., Sanitary & Phyto-Sanitary Certificate; Fumigation Certificate, etc.) Depending on the Product	Electronic
Documents Required to Import		
10	Integrated Declaration Includes: Bill of Entry (Import Goods Declaration) and Self-Assessment	Electronic
11	E-payment of Customs duties by AEOs Scrip	Electronic
12	Other Regulatory Approval: FSSAI Certificate etc.	Electronic

Source: CBIC, Department of Revenue, Ministry of Finance, government of India

Appendix Table 3: Step-wise Documents Requirement for Export through Courier

S. No.	Trade Document Type	Electronic/ Paper-Based Status
Clearance of Export Goods		
1	Express Cargo Manifest-Export	Electronic
2	**Courier Shipping Bill (3 Type)**	
	1) Courier Shipping Bill-III (Document Courier)	Paper-Based
	2) Courier Shipping Bill-IV [Sample (Value not Exceeding Rs. 50,000), Gift Courier (Value not Exceeding Rs. 25,000), Dutiable or Commercial Goods (Value up to Rs. 1 Lakh or Above)]	Paper-Based
	3) Regular Shipping Bill (Value More than 1 Lakh or Other Criterion)	Electronic

Source: CBIC, Department of Revenue, Ministry of Finance, government of India

Appendix Table 4: Step-wise Documents Requirement for Import through Courier

S. No.	Trade Document Type	Electronic/ Paper-Based Status
1	Express Cargo Manifest-Import	Electronic
2	**Courier Bill of Entry (4 Type)**	
	Document Courier: 1) Courier Bill of Entry III	Paper-Based
	2) Courier Bill of Entry XI	Electronic
	Sample and Gift Courier (Value not Exceeding Rs. 10,000): 1) Courier Bill of Entry IV	Paper-Based
	2) Courier Bill of Entry XII	Electronic
	Dutiable or Commercial Goods (Value up to Rs. 1 Lakh or Above): 1) Courier Bill of Entry V	Paper-Based
	2) Courier Bill of Entry XIII	Electronic
	Regular Bill of Entry (Value More than 1 Lakh or Other Criterion)	Electronic

Source: CBIC, Department of Revenue, Ministry of Finance, government of India

Appendix 5

Appendix Table 1: Country List

Sr. No.	Country	Sr. No.	Country	Sr. No.	Country
1	Afghanistan	40	Guatemala	79	Niger
2	Albania	41	Guinea	80	Nigeria
3	Argentina	42	Honduras	81	Norway
4	Armenia	43	Hong Kong	82	Oman
5	Australia	44	Hungary	83	Pakistan
6	Austria	45	Iceland	84	Panama
7	Bahrain	46	India	85	Papua New Guinea
8	Bangladesh	47	Indonesia	86	Paraguay
9	Belarus	48	Iran	87	Peru
10	Belgium	49	Ireland	88	Philippines
11	Benin	50	Italy	89	Poland
12	Bhutan	51	Jamaica	90	Portugal
13	Bolivia	52	Japan	91	Qatar
14	Brazil	53	Jordan	92	Russian Federation
15	Bulgaria	54	Kazakhstan	93	Rwanda
16	Burundi	55	Kenya	94	Saudi Arabia
17	Cambodia	56	Korea, Rep.	95	Senegal
18	Cameroon	57	Kuwait	96	Singapore
19	Canada	58	Kyrgyz Republic	97	Slovenia
20	Chile	59	Lao PDR	98	South Africa
21	China	60	Latvia	99	Spain
22	Colombia	61	Lebanon	100	Sri Lanka
23	Congo, Rep.	62	Liberia	101	Sudan
24	Costa Rica	63	Lithuania	102	Sweden
25	Cote d'Ivoire	64	Luxembourg	103	Switzerland
26	Croatia	65	Madagascar	104	Syria
27	Cuba	66	Malawi	105	Tajikistan

Continued...

28	Cyprus	67	Malaysia	106	Thailand
29	Czechia	68	Maldives	107	Togo
30	Ecuador	69	Mali	108	Turkiye
31	Egypt	70	Malta	109	UAE
32	El Salvador	71	Mauritius	110	Ukraine
33	Fiji	72	Mexico	111	UK
34	Finland	73	Mongolia	112	United States
35	France	74	Morocco	113	Uruguay
36	Georgia	75	Myanmar	114	Uzbekistan
37	Germany	76	Nepal	115	Viet Nam
38	Ghana	77	Netherlands	116	Zambia
39	Greece	78	New Zealand	117	Zimbabwe

Source: Author's calculation based on WDI

Appendix Table 2: Basic Summary Statistics

Variable	Obs.	Mean	Std. Dev	Min	Max
Export	702	23.81	2.29	16.87	28.86
Import	702	24.21	1.82	20.02	28.76
Economic size	701	25.36	1.93	21.26	30.95
Exchange rate	382	4.60	0.15	4.06	6.17
Logistics performance	673	1.09	0.19	0.47	1.46
Shipping connectivity	558	3.24	0.89	0.00	5.14
Trade liberalization	702	0.92	0.26	0.00	1.00
Paperless trade	342	0.51	0.50	0.00	1.00
Customs efficiency	667	1.01	0.22	0.11	1.44
Transport infrastructure	667	1.03	0.24	0.21	1.53
International shipment	667	1.07	0.18	0.31	1.44
Logistics services	667	1.07	0.21	0.33	1.48
Tracking of shipment	667	1.09	0.21	0.47	1.48
Reliability of logistics	667	1.21	0.17	0.51	1.57
Strength of trade	342	0.49	0.50	0.00	1.00

Source: Authors' own.

Appendix Table 3: Diagnostics

Test	Model	Test statistics	P-value
Breusch–Pagan/Cook–Weisberg	Export	chi2(1) =0.07	0.7944
Breusch–Pagan/Cook–Weisberg	Import	chi2(1) =1.22	0.2695
Wooldridge Test for Autocorrelation	Export	F (1, 46) = 3.641	0.0626
Wooldridge Test for Autocorrelation	Import	F (1, 46) = 8.482	0.0055

Source: Authors' own

Appendix Table 4-A: Export Model Estimation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Economic Size	0.956***	1.000***	0.981***	0.997***	0.964***	0.970***	1.003***	0.956***	0.999***	0.980***	0.995***	0.963***	0.969***	1.002***
	(0.0448)	(0.0464)	(0.0474)	(0.0469)	(0.0507)	(0.0491)	(0.0472)	(0.0439)	(0.0457)	(0.0468)	(0.0462)	(0.0501)	(0.0485)	(0.0466)
Logistics performance	0.866***							0.913***						
	(0.269)							(0.284)						
Shipping connectivity	0.0945	0.111	0.109	0.108	0.126	0.129	0.117	0.0888	0.113	0.111	0.109	0.128	0.130	0.118
	(0.0921)	(0.0870)	(0.0833)	(0.0860)	(0.0851)	(0.0819)	(0.0768)	(0.0953)	(0.0861)	(0.0825)	(0.0852)	(0.0843)	(0.0813)	(0.0760)
Exchange rate	-0.725***	-0.893***	-0.893***	-0.896***	-0.850***	-0.912***	-0.890***	-0.685***	-0.900***	-0.899***	-0.902***	-0.854***	-0.915***	-0.896***
	(0.110)	(0.205)	(0.203)	(0.193)	(0.185)	(0.183)	(0.174)	(0.0887)	(0.201)	(0.198)	(0.188)	(0.181)	(0.178)	(0.170)
Trade liberalization	0.416***	0.309	0.289	0.284	0.255	0.224	0.302*							
	(0.122)	(0.203)	(0.197)	(0.194)	(0.187)	(0.187)	(0.179)							
Paperless trade	0.136**	0.102**	0.104**	0.114**	0.106**	0.116**	0.115***							
	(0.0535)	(0.0403)	(0.0431)	(0.0505)	(0.0441)	(0.0462)	(0.0436)							
Customs efficiency		0.324							0.329					
		(0.234)							(0.233)					
Transport infrastructure			0.432*							0.436*				
			(0.258)							(0.257)				
International shipment				0.520***							0.525***			
				(0.175)							(0.174)			
Logistics services					0.539**							0.546**		
					(0.265)							(0.263)		
Tracking of shipment						0.550***							0.556***	
						(0.164)							(0.163)	
Reliability of logistics							0.558***							0.561***
							(0.185)							(0.184)

Continued...

Continued...

								0.112**	0.103***	0.105**	0.115**	0.107**	0.117**	0.116***
Strength of trade*								(0.0456)	(0.0400)	(0.0428)	(0.0501)	(0.0437)	(0.0459)	(0.0432)
Constant	1.259	1.601	1.996	1.507	2.074	2.210	1.145	1.481	1.964	2.335*	1.841	2.374*	2.471*	1.494
	(1.238)	(1.484)	(1.469)	(1.450)	(1.423)	(1.435)	(1.407)	(1.079)	(1.341)	(1.320)	(1.302)	(1.279)	(1.281)	(1.279)
Observations	149	147	147	147	147	147	147	149	147	147	147	147	147	147
R-squared	0.917	0.906	0.909	0.909	0.910	0.910	0.909	0.918	0.906	0.908	0.909	0.910	0.910	0.908
No. of Countryid	51	51	51	51	51	51	51	51	51	51	51	51	51	51
Chi-square	1042	858.4	828.1	887.1	916.7	895.9	866.3	1108	852.9	815.7	883.8	899.1	894	857.5
Rho	0.938	0.945	0.944	0.940	0.943	0.945	0.947	0.935	0.944	0.944	0.939	0.942	0.944	0.946

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$
Note: *Multiplicative variable of Trade liberalization and Paperless trade
Source: Authors' own

Appendix Table 4-B: Import Model Estimation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Economic size	0.875***	0.898***	0.886***	0.892***	0.867***	0.890***	0.908***	0.869***	0.892***	0.880***	0.886***	0.860***	0.883***	0.902***
	(0.0436)	(0.0406)	(0.0457)	(0.0397)	(0.0435)	(0.0460)	(0.0424)	(0.0434)	(0.0408)	(0.0459)	(0.0400)	(0.0437)	(0.0462)	(0.0425)
Logistics performance	0.517***							0.555***						
	(0.167)							(0.171)						
Shipping connectivity	0.117	0.118	0.118	0.122	0.133	0.130	0.126	0.123	0.127	0.126	0.131	0.142	0.139	0.135
	(0.0878)	(0.0937)	(0.0959)	(0.0863)	(0.0883)	(0.0964)	(0.0963)	(0.0870)	(0.0945)	(0.0968)	(0.0874)	(0.0890)	(0.0972)	(0.0974)
Exchange rate	0.143**	0.0804	0.0760	0.0712	0.114	0.0587	0.0591	0.135*	0.0540	0.0496	0.0399	0.0903	0.0326	0.0289
	(0.0718)	(0.0757)	(0.0750)	(0.0825)	(0.0868)	(0.0788)	(0.0752)	(0.0693)	(0.0675)	(0.0666)	(0.0724)	(0.0789)	(0.0700)	(0.0663)
Trade liberalization	0.872***	0.848***	0.839***	0.831***	0.801***	0.826***	0.883***							
	(0.0966)	(0.120)	(0.128)	(0.117)	(0.123)	(0.126)	(0.124)							
Paperless trade	0.0132	-0.00249	-0.000105	0.00788	0.00157	0.00659	0.00453							
	(0.0292)	(0.0307)	(0.0309)	(0.0336)	(0.0293)	(0.0302)	(0.0307)							
Customs efficiency		0.275**							0.291**					
		(0.123)							(0.123)					
Transport infrastructure			0.314**							0.332**				
			(0.152)							(0.152)				
International shipment				0.375**							0.393***			
				(0.146)							(0.147)			
Logistics services					0.449**							0.471***		
					(0.176)							(0.177)		
Tracking of shipment						0.268**							0.291**	
						(0.128)							(0.128)	
Reliability of logistics							0.0943							0.108
							(0.124)							(0.123)

Strength of trade*								0.00915	0.00195	0.00440	0.0134	0.00609	0.0115	0.00993
								(0.0300)	(0.0309)	(0.0312)	(0.0340)	(0.0297)	(0.0305)	(0.0309)
Constant	-0.496	-0.472	-0.184	-0.404	-0.0426	-0.196	-0.501	0.492	0.587	0.878	0.663	0.980	0.859	0.606
	(1.092)	(1.119)	(1.161)	(1.122)	(1.142)	(1.185)	(1.114)	(0.985)	(1.022)	(1.048)	(1.017)	(1.030)	(1.067)	(1.013)
Observations	149	147	147	147	147	147	147	149	147	147	147	147	147	147
R-squared	0.917	0.911	0.912	0.913	0.915	0.910	0.906	0.913	0.909	0.910	0.911	0.913	0.908	0.903
No of Countryid	51	51	51	51	51	51	51	51	51	51	51	51	51	51
Chi-square	1388	1153	1222	1363	1313	1375	1257	1378	1157	1242	1405	1320	1420	1280
Rho	0.945	0.949	0.949	0.939	0.947	0.950	0.945	0.944	0.948	0.948	0.938	0.946	0.949	0.944

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: * Multiplicative variable of Trade liberalization and Paperless trade

Source: Authors' own

RIS Discussion Papers

Available at: http://www.ris.org.in/dicussion-paper

RIS A Think-Tank of Developing Countries

Research and Information System for Developing Countries (RIS) is a New Delhi-based autonomous policy research institute that specialises in issues related to international economic development, trade, investment and technology. RIS is envisioned as a forum for fostering effective policy dialogue and capacity-building among developing countries on global and regional economic issues.

The focus of the work programme of RIS is to promote South-South Cooperation and collaborate with developing countries in multilateral negotiations in various forums. RIS is engaged across inter-governmental processes of several regional economic cooperation initiatives. Through its intensive network of think tanks, RIS seeks to strengthen policy coherence on international economic issues and the development partnership canvas.

For more information about RIS and its work programme, please visit its website: www.ris.org.in

Research shaping the development agenda

RIS@40

RIS
**Research and Information System
for Developing Countries**
विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

Core IV-B, Fourth Floor, India Habitat Centre
Lodhi Road, New Delhi-110 003 India., Tel. 91-11-24682177-80
Fax: 91-11-24682173-74, Email: dgoffice@ris.org.in
Website: http://www.ris.org.in