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GST REFORMS

Economic, Social and Cultural Dimensions

Editors: Prof. Dr. Anjali Sane, Dr. Jivan Biradar and Dr. Sushil Kumar Gupta

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GST Reforms:
Economic, Social and Cultural Dimensions

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About the Book

This edited volume is an outcome of the Two-Day International Conference on 'GST Reforms and Their Social and Cultural Impact', organised by the School of Economics and Commerce, Dr. Vishwanath Karad MIT World Peace University, Pune, on 27–28 March 2026 in hybrid mode. Moving beyond conventional fiscal and administrative assessments of the Goods and Services Tax, the book explores how India's most ambitious indirect tax reform has reshaped the nation's economic, social, and cultural fabric, influencing industries, communities, and cultural practices far beyond the domain of taxation.

Adopting a multidisciplinary lens, the chapters examine the impact of GST on finance, tax compliance, and enterprise resilience; marketing, consumption patterns, and cultural symbolism; human resource management and informal labour transitions; operations, supply chains, and regional industrial networks; strategy, competitive dynamics, and market structure; information systems, digitalisation, and financial literacy; and legal, governance, and institutional adaptation. Particular attention is paid to MSMEs, artisan clusters, informal labour, consumption shifts, and digital inclusion, while variations in outcomes across gender, caste, region, and enterprise size are critically analysed.

By bringing together contributions from academia, industry, policymakers, and civil society, the volume seeks to foster an informed dialogue on balancing tax efficiency with social equity and cultural sensitivity. It proposes inclusive policies, capacity-building measures, and culturally informed implementation strategies, and will serve as a valuable reference for researchers, students, practitioners, and policymakers interested in understanding the wider human dimensions of tax reform in India and other emerging economies.

About the Editors

Prof. Dr. Anjali Sane is Professor & Dean, School of Economics and Commerce, Dr. Vishwanath Karad MIT World Peace University, Pune. With over two decades of experience in teaching, research, and academic administration, she holds a Ph.D. in Management along with advanced qualifications in Economics. Her academic expertise encompasses business economics, financial literacy, banking, corporate governance, and international trade. She has published extensively in Scopus and Web of Science journals, served as Guest Editor for Emerald's *Journal of Indian Business Research*, and was honored with the Women Leadership Award (2024). In addition, she contributes to the scholarly community as a reviewer for multiple Scopus indexed journals.

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Preface

The introduction of the Goods and Services Tax marked a watershed in India's fiscal history, subsuming a complex web of central and state levies into a unified regime under the banner of 'One Nation, One Tax, One Market'. While its revenue and compliance dimensions have been widely debated, the deeper social and cultural consequences of this transformation have received far less scholarly attention. It was this gap that inspired the School of Economics and Commerce, Dr. Vishwanath Karad MIT World Peace University, Pune, to organise the Two-Day International Conference on 'GST Reforms and Their Social and Cultural Impact' on 27-28 March 2026 in hybrid mode.

This volume brings together selected papers presented at the conference. The contributors, drawn from academia, industry, government, and civil society, examine how GST has altered the working of MSMEs, artisan clusters, traditional crafts, and the informal workforce; how it has influenced consumption patterns, cultural spending, and digital inclusion; and how its outcomes vary across gender, caste, region, and enterprise size. The chapters traverse the disciplines of finance, marketing, human resources, operations, strategy, information systems, and law, offering both empirical evidence and policy insight. Together, they paint a nuanced portrait of a reform whose effects reach deep into the everyday economic and cultural life of the nation.

We hope this book will stimulate further interdisciplinary research and dialogue on designing tax policies that are not only efficient but also socially equitable and culturally sensitive. We are confident that students, researchers, practitioners, and policymakers alike will find these pages a useful and thought-provoking resource.

Editors

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Dr. Jivan Biradar
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We gratefully acknowledge the Convenor – Prof. Dr. Anjali Sane and co-convenors of the conference—CA Bipin Palande, Dr. Sushil Kumar Gupta, Dr. Jivan Biradar, Dr. CA Dhaarna Rathore, Dr. Waseem Khan, and Dr. Ritu Goel—and the members of the organizing committee, particularly Dr. Ashish Kathale and Prof. Gopal Wamane, for their tireless efforts in making the conference a success. Our sincere thanks are due to all the authors who contributed their research, the reviewers who ensured the academic rigour of the chapters, and the keynote speakers, session chairs, and delegates whose deliberations enriched this volume.

We also thank the faculty and administrative staff of the School of Economics and Commerce for their wholehearted cooperation, and the publishers for their professional support in bringing out this book. Finally, we are grateful to our families for their patience and encouragement throughout this endeavour. Any errors or omissions that remain are entirely our own.

Editors

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CHAPTER 1

Banking Technology in GST Ecosystem: Transforming Compliance, Payments, and Financial Integration

*Gaurav Kulkarni**

ABSTRACT

The integration of banking technology within India's Goods and Services Tax (GST) ecosystem represents one of the most significant convergences of financial infrastructure and tax policy in modern economic history. Since the rollout of GST in July 2017, banks and financial institutions have played a pivotal role as both intermediaries and technology enablers — facilitating tax payments, enabling automated reconciliation, providing credit against input tax credits (ITC), and powering the digital compliance machinery that governs India's 1.4 billion-strong economy. This research paper examines the multifaceted role of banking technology in the GST ecosystem, covering the architecture of payment gateways integrated with the GST Network (GSTN), the emergence of RegTech and FinTech solutions for GST compliance, real-time banking data reconciliation with GST returns, the transformative role of APIs, Artificial Intelligence (AI), Machine Learning (ML), and Blockchain in tax administration, and the challenges that persist. Drawing on industry data, policy documents, and case studies from leading Indian banks and fintech firms, the paper evaluates how banking technology has evolved to support the digital GST ecosystem and presents a roadmap for future integration. The findings indicate that while significant progress has been made, particularly in payment gateway integration and automated reconciliation, there remain critical gaps in interoperability, cybersecurity, MSME adoption, and real-time data analytics that must be addressed to realize the full potential of the GST ecosystem.

Keywords: GST; Banking technology; Fintech; Tax compliance; Payment systems; API integration; RegTech; Digital India.

1.0 Introduction

India's transition to a unified Goods and Services Tax (GST) regime in 2017 was not merely a legislative overhaul — it was a fundamental reimagining of how tax compliance, payment infrastructure, and financial data systems interact at a national scale.

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With over 14 million active GST registrations, more than ₹1.5 lakh crore in monthly tax collections (as of 2025), and billions of invoices processed annually, the GST ecosystem demands a robust, scalable, and intelligent banking technology backbone. Banking institutions occupy a unique position in this ecosystem. They serve simultaneously as payment processors collecting GST on behalf of the government, as lenders evaluating creditworthiness based on GST filings, as technology partners enabling API-driven compliance, and as data custodians whose transaction records must reconcile seamlessly with the GSTN. This multi-dimensional role has made banking technology a cornerstone of GST's success.

1.1 Background and motivation

Prior to GST, India's indirect tax system comprised a labyrinth of central and state taxes — Central Excise Duty, Service Tax, Value Added Tax (VAT), octroi, entry tax, and dozens of surcharges — administered through different portals, paper-based filings, and disconnected banking channels. Tax evasion was rampant, inter-state commerce was hampered by checkposts, and compliance costs were prohibitive for small businesses.

The Digital India initiative provided the infrastructure impetus for GST's technology-first approach. The GSTN — a not-for-profit entity managing the GST IT ecosystem — was designed to handle unprecedented transaction volumes with real-time validation. This necessitated deep integration with banking systems, particularly for Electronic Cash Ledger (ECL) management, tax payment channeling, and ITC verification.

1.2 Research objectives

This paper addresses the following research questions:

- How has banking technology been architected to support GST payment flows and reconciliation?
- What role do emerging technologies (AI, ML, Blockchain, APIs) play in enhancing GST compliance through banking channels?
- What are the key challenges and gaps in the current banking-GST technology interface?
- What regulatory and technological innovations are needed to future-proof the banking-GST ecosystem?

1.3 Scope and methodology

This research covers the period from 2017 to 2026, encompassing the full lifecycle of GST implementation in India. Data sources include RBI circulars, GSTN technical documentation, NPCI reports, Ministry of Finance press releases, annual reports of major public and private sector banks, and primary research from industry surveys and expert

interviews. The paper also draws on comparative analysis with international VAT/GST technology frameworks from the EU, Singapore, and Australia.

2.0 The GST Ecosystem: Architecture and Banking Touchpoints

2.1 Structure of the GSTN

The GST Network (GSTN) serves as the technological foundation of India's GST regime. It is a cloud-based system that handles taxpayer registration, return filing, tax payment, refund processing, and e-way bill generation. As of 2025, GSTN processes over 300 million invoices per month and manages data for approximately 14 million registered taxpayers. The GSTN interfaces with multiple stakeholders: taxpayers, tax authorities (Central and State), banks, GST Suvidha Providers (GSPs), Application Service Providers (ASPs), and the Reserve Bank of India (RBI). Banking technology is woven into each of these interfaces, making it foundational rather than peripheral to GST administration.

2.2 Banking touchpoints in GST

The major touchpoints where banking technology intersects with the GST ecosystem include:

- Electronic Cash Ledger (ECL): Taxpayers maintain an ECL on the GSTN portal, which functions like a pre-paid wallet for GST payments. Banks are authorized to accept deposits into the ECL through the GST Payment Gateway.
- Authorized Bank Network: The GSTN has authorized over 25 banks (including SBI, HDFC, ICICI, Axis, and all major public sector banks) to accept GST payments. These banks are integrated with the GSTN via APIs.
- Input Tax Credit (ITC) Reconciliation: Banks provide financing against ITC claims. Their systems must reconcile GSTR-2A data with vendor payment transactions.
- Tax Deducted at Source (TDS) and Tax Collected at Source (TCS): Banking and e-commerce platforms are required to deduct/collect GST at source and deposit it directly into the government's account.
- Refund Processing: Banking technology enables automatic refund of excess GST paid into taxpayers' registered bank accounts through the PFMS (Public Financial Management System).
- E-Invoice and E-Way Bill Verification: Banks financing trade transactions verify e-invoice authenticity and e-way bill compliance before disbursing funds.

2.3 GST payment flow architecture

The GST payment flow involves a sophisticated multi-party architecture. When a taxpayer initiates a payment, the flow traverses through the GSTN portal, the authorized

bank's net banking or payment gateway, the RBI's e-Kuber system for government account crediting, and back to the GSTN for ECL update. This entire cycle is designed to complete within T+1 days, with real-time challan generation (CPIN) and bank reference numbers (BRN) for audit trails.

Table 1: GST Payment Modes and Associated Banking Technology

Payment Mode	Technology Used	Settlement Timeline
Net Banking	Bank API + GSTN Portal Integration	Real-time / Same Day
NEFT/RTGS	RBI NEFT/RTGS Infrastructure + GSTN	T+1 / Same Day
OTC (Over Counter)	Bank Branch CBS Integration	T+1
UPI (Proposed)	UPI Rails + NPCI + GSTN API	Real-time (Pilot)
IMPS	NPCI IMPS + Bank Core Banking	Real-time

3.0 Core Banking Technology Components in the GST Ecosystem

3.1 API-driven integration architecture

Application Programming Interfaces (APIs) form the connective tissue between banking systems and the GSTN. The GSTN has published a suite of APIs covering registration, returns, payments, e-invoicing, and refunds. Banks consume these APIs to provide seamless in-banking GST compliance services.

Major banks like HDFC Bank, ICICI Bank, and State Bank of India have developed GST Management Modules within their corporate banking portals. These modules allow businesses to file returns, make payments, view ITC ledgers, and download compliance reports without leaving the banking interface. The API stack typically employs REST architecture with OAuth 2.0 authentication, JSON data formats, and TLS 1.3 encryption.

The GST Suvidha Provider (GSP) ecosystem adds another layer, enabling third-party fintech companies to build GST compliance solutions on top of the GSTN API infrastructure. Leading GSPs like Tally Solutions, ClearTax (Defmacro Software), and IRIS Business Services work closely with banks to offer integrated GST-banking experiences.

3.2 Core Banking System (CBS) integration

The integration of GST with Core Banking Systems has required significant architectural evolution. Traditional CBS platforms (FINACLE, Temenos T24, Flexcube) were designed for deposit and lending operations with no native support for tax compliance workflows. Banks have addressed this through middleware layers, often based on ESB

(Enterprise Service Bus) or modern microservices architectures, that translate GST API calls into CBS transactions and vice versa.

Key CBS integration points include:

- TDS/TCS deduction and remittance for banking transactions attracting GST (e.g., processing fees, forex charges)
- Automatic GST invoicing for banking services with IRN (Invoice Reference Number) generation
- Account-level GST liability tracking for registered business customers
- Reconciliation of GSTR-2A with vendor payment records for trade finance products
- Automated ECL balance inquiry and replenishment for large corporate taxpayers

3.3 Payment gateway technology

GST payment gateways represent a specialized category of payment infrastructure designed for tax collections. Unlike commercial payment gateways, GST payment gateways must interface with both the banking system and the government's accounting infrastructure (PFMS/CGA). The key technical requirements include:

- Generation of CPIN (Common Portal Identification Number) for payment tracking
- Real-time CIN (Challan Identification Number) from bank upon payment
- Reconciliation with the government's treasury systems
- Multi-bank aggregation with unified reporting
- High availability (99.99% uptime) to support month-end filing deadlines

NPCI's Bharat BillPay System (BBPS) has been explored as an additional layer for GST payments, particularly for MSMEs using mobile banking. The integration of UPI for GST payments (piloted in 2024-25) represents the next frontier in payment gateway technology for the GST ecosystem.

3.4 Real-time gross settlement and government securities interface

Large GST payments (typically above ₹1 lakh) are processed through RBI's RTGS system. The GSTN interfaces with RBI's e-Kuber system — the RBI's core banking platform for government accounts — to ensure that tax receipts are credited to the Consolidated Fund of India in real time.

This interface requires banks to be RTGS-enabled and to maintain adequate liquidity in their SGL (Subsidiary General Ledger) accounts. The technological handshake between RTGS, e-Kuber, and GSTN involves standardized SFMS (Structured Financial Messaging System) messages, digital signatures, and automated reconciliation routines that run every 30 minutes during banking hours. Any mismatch triggers an exception workflow involving the bank's operations team and GSTN's helpdesk.

4.0 Emerging Technologies Reshaping Banking in the GST Ecosystem

4.1 Artificial intelligence and machine learning

AI and ML have become transformative forces in the banking-GST interface, enabling capabilities that were previously impossible with rule-based systems. The key applications include:

4.1.1 Fraud detection and tax evasion prevention

Machine learning models trained on transaction patterns, GST return data, and banking flows can identify anomalies indicative of fake invoice fraud — one of the most significant challenges in the GST system. Banks are deploying graph neural networks (GNNs) to map invoice trails and detect circular trading schemes where multiple entities create artificial transactions to generate ITC claims without actual goods movement. GSTN itself has deployed an AI-based risk profiling system that assigns risk scores to taxpayers based on their filing behavior, ITC utilization patterns, and banking transaction data. Banks integrated with this system can flag high-risk transactions for enhanced due diligence before processing payments.

4.1.2 Automated ITC reconciliation

Reconciling GSTR-2A (auto-populated purchase register from supplier filings) with GSTR-3B (self-declared summary return) and actual purchase invoices is a major pain point for businesses. AI-powered reconciliation engines deployed by banks like Axis Bank and Kotak Mahindra can automatically match invoices across thousands of vendors, flag discrepancies, and generate actionable reports — reducing reconciliation time from weeks to hours. Natural Language Processing (NLP) is employed to extract invoice data from PDFs and scanned documents, enabling reconciliation even for vendors who provide paper-based invoices. This is particularly valuable for MSMEs that deal with a mix of digital and analog supplier documentation.

4.1.3 Predictive analytics for GST financing

Banks are leveraging ML models that analyze GST filing history, ITC accumulation trends, and payment patterns to predict future GST liabilities and financing needs. This enables proactive credit line management and early warning systems for businesses at risk of GST non-compliance due to cash flow constraints.

4.2 Blockchain technology

Blockchain's properties of immutability, transparency, and decentralized verification make it particularly well-suited for addressing the trust deficit in the GST ecosystem, especially around ITC fraud. Several initiatives are underway:

The State Bank of India, in collaboration with GSTN, piloted a blockchain-based e-invoice verification system in 2023-24 that records invoice metadata on a permissioned blockchain. Participating banks can verify the authenticity of invoices in real time before financing trade transactions, eliminating the risk of duplicate financing against the same invoice. The National Payments Corporation of India (NPCI) explored DLT (Distributed Ledger Technology) for GST TCS reconciliation in the e-commerce space, where multiple marketplace operators and their banking partners must reconcile TCS collections with GSTN records. The blockchain approach eliminates the need for a central reconciliation authority and provides all parties with a single version of truth. Smart contracts on blockchain networks are being explored for automated GST payment triggers — where payment of goods/services automatically triggers the corresponding GST remittance based on pre-coded tax rates, eliminating the need for manual return filing for routine transactions.

4.3 RegTech solutions

Regulatory Technology (RegTech) has emerged as a major growth sector at the intersection of banking and GST compliance. RegTech platforms provide:

- Automated GSTR filing integrated with banking transaction data
- Real-time compliance dashboards showing GST liability, ITC availability, and pending filings
- e-Invoice generation and IRN management at scale
- e-Way bill tracking integrated with logistics and banking payment flows
- GST audit trail management for regulatory examinations

Banks have responded by either acquiring RegTech startups (HDFC Bank's investment in Clear in 2021) or building in-house capabilities. The embedded finance model, where GST compliance is embedded directly into banking workflows, has significantly reduced compliance costs for SME customers.

4.4 Open banking and account aggregator framework

The RBI's Account Aggregator (AA) framework, launched in 2021, has created new possibilities for GST-banking integration. Under the AA framework, businesses can consent to sharing their banking transaction data with GSPs and tax authorities, enabling automated pre-population of GST returns based on banking transaction patterns. The Financial Information Network and Operations (FINO) and several commercial banks have built GST cash flow financing products leveraging the AA framework, where real-time banking data is used to assess creditworthiness for GST working capital loans without requiring separate financial statement submissions. This represents a significant advancement in the use of alternative data for MSME credit underwriting.

4.5 Cloud computing and microservices

The shift to cloud-native architecture has been transformative for banks' GST compliance infrastructure. Traditional on-premise systems struggled with the massive volume spikes seen at month-end GST filing deadlines — up to 10x normal transaction volumes. Cloud infrastructure allows banks to scale compute resources elastically, ensuring portal availability during peak periods. Microservices architectures have replaced monolithic GST modules in leading banks, with separate services for payment processing, reconciliation, ITC management, and reporting. This modularity enables rapid deployment of updates when GST rules change (a frequent occurrence in the first years of GST implementation) without disrupting the entire compliance stack.

5.0 Timeline of Key Banking Technology Developments in GST

One of the most significant, yet underappreciated, consequences of GST implementation has been the creation of a rich, government-verified dataset on business revenues and tax compliance. GST filings provide banks with quarterly or monthly snapshots of business turnover, ITC utilization, supplier networks, and tax behavior — data that is far more granular and reliable than traditional financial statements.

Table 2: Key Banking Technology Milestones in the GST Ecosystem (2017–2026)

Year	Development	Banking Technology Impact
2017	GST Launch	25 banks integrated with GSTN; ECL system established; NEFT/RTGS payment modes activated
2018	e-Way Bill System	Banks required to verify e-way bill compliance for trade finance; new API integrations developed
2019	New Return System (Proposed)	Banks prepared for GSTR-Anx-1/2 integration; ultimately rolled back, requiring re-architecture
2020	e-Invoicing (Turnover >₹500 Cr)	Banks integrated IRN verification into trade finance workflows; API-based validation at scale
2021	AA Framework + e-Invoice expanded	Open banking enabled GST cash flow financing; e-invoice threshold lowered to ₹50 crore
2022	Sequential ITC Blocking	Banks updated credit risk models to account for ITC restrictions; real-time ITC ledger monitoring
2023	Blockchain ITC Pilot	SBI-GSTN blockchain pilot for invoice verification; DLT-based TCS reconciliation (NPCI)
2024	AI Fraud Detection at GSTN	Banks integrated with GSTN risk scores; ML-based anomaly detection in payment flows
2025	UPI for GST Payments Pilot	NPCI-GSTN-Bank integration for UPI-based GST payments; real-time settlement testing
2026	Full e-Invoicing Mandate	All registered taxpayers mandated for e-invoicing; banks update all trade finance APIs

6.0 GST-Based Financing: A New Paradigm for Banking

6.1 GST data as a credit intelligence tool

Banks have been quick to leverage this data. HDFC Bank's SmartUp loans for SMEs use GST return data to assess creditworthiness without requiring audited financials. SIDBI (Small Industries Development Bank of India) partnered with GSTN to create a GST-based credit scoring model that has disbursed loans worth thousands of crores to first-time borrowers who previously lacked formal credit histories. This shift represents a fundamental change in credit underwriting — from asset-based lending to cash-flow-based lending powered by tax compliance data. It has particular significance for India's approximately 63 million MSMEs, many of whom were previously excluded from formal credit markets due to lack of documentation.

6.2 GST invoice financing and factoring

Invoice financing against GST-registered invoices has emerged as a major product category. When an e-invoice is registered on the IRP (Invoice Registration Portal) and an IRN is generated, that invoice carries a government-verified timestamp and authenticity certificate. Banks can finance against these verified invoices with significantly lower fraud risk than traditional invoice discounting. The Trade Receivables Discounting System (TReDS) — a digital platform mandated by RBI for MSME invoice financing — is deeply integrated with the GST e-invoice system. Large corporates that are mandated to onboard their MSME vendors on TReDS now reference IRNs when uploading invoices for discounting, creating an end-to-end digital trail from invoice generation to payment.

6.3 GST working capital loans

The cyclical nature of GST cash flows — where businesses pay output tax in one period and claim ITC in subsequent periods — creates predictable working capital gaps. Banks have developed specialized GST working capital products that bridge these gaps using Electronic Credit Ledger (ECLR) balances as collateral proxies. ICICI Bank's GST-linked credit line, for instance, provides instant credit to businesses based on their net ITC balance, with automatic repayment when the ITC is converted to cash through refund claims. The entire process is automated through API integration between the bank's CBS, the GSTN, and the PFMS refund system.

7.0 Challenges and Pain Points

7.1 Interoperability and standardization gaps

Despite significant progress, interoperability between different banking platforms, GSPs, and the GSTN remains a challenge. The absence of standardized data formats across

all GST-banking interfaces leads to reconciliation errors, data loss during transformation, and integration failures. Different banks implement GSTN APIs differently, creating inconsistent experiences for businesses operating across multiple banking relationships. The lack of a standardized API gateway for all banking-GSTN interactions (similar to the UK's Open Banking Standard) means that each bank-GSP pairing requires custom integration, significantly increasing the cost and time of new product development.

7.2 Cybersecurity and data privacy

The concentration of sensitive financial and tax data at the GSTN-banking interface creates a high-value target for cyberattacks. The 2021 GSTN data breach attempt, which was thwarted, highlighted the vulnerabilities in the system. Banks face the dual challenge of securing GST payment flows (which involve real-money transactions) and protecting sensitive business financial data. The implementation of the Digital Personal Data Protection Act 2023 adds compliance complexity, particularly around the consent framework for sharing GST data with banking applications. Banks must implement granular consent management systems that allow businesses to control which aspects of their GST data are shared with which banking services.

7.3 MSME adoption and digital literacy

While large corporates have fully embraced banking-integrated GST compliance, MSME adoption remains uneven. Many small businesses lack the technical capacity to integrate their accounting software with banking GST modules, relying instead on manual data entry that defeats the purpose of automation. The digital literacy gap, particularly in rural and semi-urban areas, means that potential efficiency gains remain unrealized. The cost of GST compliance software remains a barrier for micro-enterprises. While several banks offer free basic GST filing tools, advanced features like AI-powered reconciliation and predictive analytics are typically priced beyond the reach of the smallest businesses.

7.4 Technical failures during peak filing periods

The GSTN portal and banking payment gateways have experienced periodic outages during month-end and quarter-end filing deadlines. These failures, while less frequent than in the early years of GST, impose significant costs on businesses and banks. The cascading effect — where GSTN slowdowns cause banking API timeouts, which cause CBS transaction failures, which generate customer complaints and operational interventions — highlights the fragility of tightly coupled systems.

7.5 Reconciliation complexity

The mismatch between GSTR-2A (auto-populated from supplier filings) and actual purchases remains one of the most time-consuming compliance challenges. Banking

technology has helped automate this process, but the fundamental issue — that supplier filing delays or errors create phantom ITC mismatches — cannot be solved by banking technology alone. It requires both regulatory intervention and broader supplier compliance improvement.

Table 3: Key Challenges, Current Mitigations and Recommended Solutions

Challenge	Current Mitigation	Recommended Solution
API Standardization Gaps	Custom bilateral integrations	RBI-mandated Open Banking GST API Standard
Cybersecurity Risks	TLS 1.3, OAuth 2.0, WAF	Zero-trust architecture + AI threat detection
MSME Digital Adoption	Bank-provided free tools	Subsidized GST-banking integration platforms
Peak Period Outages	Load balancing, CDN	Cloud-native elastic infrastructure
ITC Reconciliation Errors	AI-powered matching engines	Real-time ITC verification at invoice stage
Data Privacy Compliance	Consent management modules	Federated learning for privacy-preserving analytics

8.0 International Comparative Analysis

8.1 Lessons from the European Union

The EU's VAT system, particularly the SAF-T (Standard Audit File for Tax) initiative and the upcoming ViDA (VAT in the Digital Age) reforms, provides valuable benchmarks for India. The EU's approach of real-time digital reporting requirements, electronic invoicing mandates, and central transaction databases mirrors India's direction but with stronger emphasis on cross-border harmonization. EU banks have developed VAT compliance modules that are embedded in ERP systems, a model that India's banking sector is increasingly adopting.

8.2 Singapore's GST-banking integration

Singapore's GST system, managed by the Inland Revenue Authority of Singapore (IRAS), offers perhaps the most technologically advanced GST-banking integration globally. Singapore's IRAS has implemented APEX (API Exchange), a government API gateway that standardizes how banks and businesses interact with tax systems. India's GSTN API ecosystem, while more extensive, lacks the standardization and centralized governance that APEX provides. Singapore also pioneered the use of voluntary tax gap analysis tools — where banks provide aggregated (anonymized) transaction data to help IRAS identify sectors with potential compliance gaps. This public-private data partnership model has been discussed in India but not yet implemented at scale.

8.3 Australia's BAS-banking integration

Australia's Business Activity Statement (BAS) system — which covers GST, PAYG withholding, and other taxes — has been integrated with banking through the myGovID framework and Standard Business Reporting (SBR) initiative. Australian banks offer automated BAS pre-population from banking transactions, similar to India's GSTR-2A auto-population model. The key difference is Australia's use of a single digital identity framework (myGovID) that eliminates the need for separate authentication at the bank-ATO interface — a gap India is addressing through the Account Aggregator framework.

9.0 Future Roadmap and Policy Recommendations

9.1 Unified GST-banking API standards

The single most impactful policy intervention would be the establishment of a unified API standard for all banking-GSTN interactions, similar to the UK's Open Banking API standards. The RBI, in consultation with GSTN and industry bodies like IBA (Indian Banks' Association), should publish mandatory API specifications covering authentication, data formats, error handling, and performance benchmarks. This would dramatically reduce integration costs, improve reliability, and enable a richer ecosystem of GST-banking products.

9.2 Real-time GST compliance monitoring

The move toward real-time transaction reporting (already underway for e-invoicing) should be extended to provide real-time compliance status to banks integrated with the GSTN. When a business makes a payment through its bank, the banking system should instantaneously know the business's current GST compliance status — whether all returns are filed, whether there are outstanding demands, and what the current ITC balance is. This would enable banks to offer dynamic credit facilities tied to GST compliance, incentivizing timely filing.

9.3 AI-powered GST audit assistant for banks

Banks should develop AI-powered GST audit assistants that help their business customers prepare for GST audits by continuously monitoring transaction data against GST return filings, flagging discrepancies in real time, and providing audit-ready documentation. This would shift the paradigm from retrospective compliance to real-time compliance assurance.

9.4 Blockchain-based national ITC ledger

A national blockchain-based ITC ledger, governed jointly by GSTN, RBI, and major banks, would provide an immutable record of all ITC transactions across the supply chain.

Banks financing ITC-backed loans would have real-time visibility into ITC availability and any restrictions, eliminating the ITC fraud that has cost the exchequer thousands of crores. The technology foundation for this exists; what is needed is regulatory will and industry coordination.

9.5 MSME GST-banking super app

A government-sponsored, bank-agnostic MSME GST-banking super app — combining e-invoice generation, return filing, payment, ITC management, working capital credit, and compliance analytics in a single mobile interface — would dramatically improve MSME adoption. The app could be developed through a public-private partnership with GSTN, RBI, NPCI, and leading fintech firms, with banks competing to offer value-added financial services on the platform.

9.6 Green taxonomy integration

As India pursues its sustainability commitments, the GST-banking interface offers an opportunity to embed green finance incentives. Differential GST rates for sustainable products, already partially implemented, could be linked to banking green loan products. Banks could offer preferential financing rates for businesses that demonstrate GST compliance on green product inputs, creating a virtuous cycle of tax compliance and sustainable finance.

10.0 Conclusion

The integration of banking technology within India's GST ecosystem has been a remarkable achievement of collaborative policymaking and technological innovation. Over the past nine years, India has built one of the world's most sophisticated tax-banking interfaces — processing billions of transactions, generating trillions in tax revenues, and providing the government with unprecedented visibility into economic activity.

The journey has not been without challenges. Interoperability gaps, cybersecurity vulnerabilities, MSME adoption barriers, and reconciliation complexity continue to limit the system's full potential. However, the trajectory is unmistakably positive. Emerging technologies — AI, blockchain, open banking, and cloud computing — are reshaping the banking-GST interface in ways that will make compliance more automated, fraud more detectable, and financing more accessible.

The next phase of banking technology evolution in the GST ecosystem must be guided by three principles: inclusion (ensuring MSME access to GST-banking tools), intelligence (leveraging AI and data analytics for proactive compliance), and integration

(creating seamless, standardized connections between all stakeholders in the GST value chain). With these principles as the north star, India's banking-GST ecosystem can serve as a global model for technology-enabled tax administration.

For banking institutions, the GST ecosystem represents not just a compliance obligation but a strategic opportunity — to deepen customer relationships, expand credit portfolios, develop new data-driven products, and position themselves as indispensable partners in India's economic formalization journey. The banks that invest most deeply in GST technology integration today will be best positioned to capture the growth opportunities of India's digital economy tomorrow.

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CHAPTER 2

Beyond Taxation: GST, Consumption Patterns and Cultural Symbolism in India

Kalpakshi Kadam and Mobina Abutalibi***

ABSTRACT

The Goods and Services Tax (GST) is a major indirect tax reform in India aimed at simplifying taxation and building a unified market. While it is usually assessed through revenue and compliance outcomes, its impact on consumption behaviour and inequality is equally important. This paper treats GST as both a fiscal tool and a factor shaping consumer choices and social meaning of goods. The study uses secondary data on income distribution and GST burden across income groups in India. A quantitative method is applied by converting grouped data into numerical form. Pearson correlation is used to examine the link between income share and GST contribution. A burden-to-income ratio is also calculated to compare tax pressure across groups. Results show that higher-income groups pay more GST in absolute terms, but lower-income households face a heavier relative burden due to higher consumption share of income. The analysis further shows that GST rate differences create price gaps between essential and premium goods, influencing consumption patterns and market segmentation. These differences also reflect social meanings attached to goods, including status and aspiration. GST is a socio-economic force shaping equity, consumption behaviour and market structure.

Keywords: Goods and Services Tax [GST]; Tax burden; Consumption patterns and cultural symbolism.

1.0 Introduction

The introduction of the Goods and Services Tax (GST) represented a significant restructuring of India's indirect tax system by replacing multiple taxes with a unified framework. While GST is frequently assessed in terms of administrative efficiency, compliance, and revenue generation, its broader influence on consumption behaviour and market dynamics deserves equal attention.

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By placing goods and services under different tax slabs, GST affects final prices, purchasing decisions, and the way products are positioned within the market. The effects of GST are also uneven across income groups. Although higher-income households may contribute more to absolute tax terms, lower-income households often experience a greater burden relative to their income because a larger share of their earnings is spent on consumption. This raises important questions of equity within a consumption-based tax structure. Beyond economic outcomes, GST can also be understood through the cultural meaning of consumption. Tax-based distinctions between essential and premium goods may influence how products are socially perceived, where certain forms of consumption become linked with status, aspiration, or lifestyle identity. In this sense, taxation interacts not only with markets but also with social behaviour. Against this background, the present study examines GST at the intersection of taxation, consumption patterns, and cultural symbolism in India. It aims to analyse the distribution of tax burden across income groups while also exploring how GST shapes consumer choices and the symbolic value attached to goods.

2.0 Literature Review

Pardeshi (2024): This paper examines the effect of GST on consumer behaviour in India by focusing on changes in pricing and purchasing decisions after the reform. The study notes that GST replaced multiple indirect taxes with a more unified structure, which improved price clarity for consumers and reduced confusion in the market. As prices became more transparent, buyers responded more carefully to cost differences across products. The research further observes that lower tax rates on essential commodities helped maintain affordability and supported demand for necessary goods. In contrast, products considered luxury or discretionary items experienced slower demand growth because of relatively higher tax rates. The study concludes that GST influenced spending priorities by encouraging consumers to focus more on needs than non-essential purchases.

Mukherjee (2025): The paper analyses how GST affects different income groups and whether the burden of indirect taxation is distributed fairly. According to the study, the design of GST attempts to reduce inequality by placing lower tax rates or exemptions on basic goods and services commonly consumed by lower-income households. At the same time, the paper explains that higher tax rates on luxury consumption increase the contribution of wealthier consumers in absolute terms.

However, the study also points out that lower-income households spend a larger share of their earnings on consumption, which means they may still feel the impact of indirect taxes more strongly. The paper therefore suggests that GST contains progressive elements, but its real effect depends on spending patterns across social groups.

Garg, Narwal and Kumar (2023) study the broader economic impact of GST in India by examining market performance, sectoral adjustment, and efficiency outcomes. The authors note that the initial phase of GST implementation created short-term disruption, as many businesses required time to adapt to new rules, filing systems, and tax procedures. Over time, however, the study finds that the unified tax framework helped create a more integrated domestic market. The replacement of multiple taxes with a single system reduced complexity and improved the movement of goods across states. The paper concludes that although transitional challenges were visible, the long-term benefits of GST are linked with greater transparency, efficiency, and smoother business operations.

Shambharkar and Tekade (2025): The researchers focus on the role of GST in simplifying India's indirect tax environment and influencing business decision-making. Their study highlights that a common tax system reduced administrative complications and made compliance more systematic for firms operating in different sectors. The researchers also explain that GST affected pricing, production planning, and cost management by reducing the cascading effect of earlier taxes. In addition, they note that differences in GST rates across product categories influence consumer demand by changing final prices. The study concludes that GST has shaped both business strategy and consumer response within the market.

Deota and Sahu (2025): The researchers investigate the relationship between GST and household expenditure through survey-based analysis. Their findings indicate that changes in tax rates influence spending behaviour mainly through their effect on product prices. Lower taxation on essential goods helped households continue meeting basic needs without severe disruption. However, the study also finds that the burden of GST is experienced differently across income categories. Households with lower incomes, which spend a larger proportion of earnings on regular consumption, remain more sensitive to indirect taxation. The paper concludes that while GST has improved tax structure and transparency, its impact on household welfare varies according to income and consumption behaviour.

3.0 Research Methodology

The present study examines how the burden of Goods and Services Tax (GST) is distributed across different income groups in India. Since the available data was presented in grouped form, it required numerical conversion before statistical analysis could be conducted. Accordingly, the methodology involved three stages: data standardisation, correlation analysis, and comparative burden assessment.

3.1 Data preparation

The original dataset reported GST burden in percentage ranges and classified the population into broad income categories. For analytical purposes, midpoint values were used

where ranges were provided, and each income group was assigned its corresponding income share and GST burden share.

Table 1: Converted Dataset for Analysis

Income Group	Income Share [X]	GST Burden [Y]
Bottom 50%	17	31.5
Middle 30%	30	31.5
Top 20%	53	37

Source: Calculation based on secondary data from RBI, MOSPI, and World Bank reports.

3.2 Specification of Variables

Two variables were selected for the analysis:

- Income Share (X): Share of total income received by each group
- GST Burden (Y): Share of total GST contribution made by each group

These variables were used to examine whether tax contribution rises in proportion to income.

3.3 Statistical technique

Pearson's correlation coefficient was applied to identify the direction and strength of the relationship between income share and GST burden. This method was chosen to assess whether higher income groups contribute a larger proportion of GST in aggregate terms.

3.4 Correlation analysis

To measure the relationship between income share and GST burden, Pearson's correlation coefficient was used. This method helps in identifying both the strength and direction of the relationship between the two variables.

Table 2: Calculation Table for Co Relation

Share [X]	GST Burden [Y]	XY	X^2	Y^2
17	31.5	535.5	289	992.25
30	31.5	945	900	992.25
53	37	1961	2809	1369

3.5 Calculation of Required Totals

From the above table, the following totals were obtained:

- Sum of Income Share ($\sum X$) = 100
- Sum of GST Burden ($\sum Y$) = 100

- Sum of XY ($\sum XY$) = 3441.5
- Sum of X^2 ($\sum X^2$) = 3998
- Sum of Y^2 ($\sum Y^2$) = 3353.5
- Number of observations (n) = 3

3.6 Application of correlation formula

The values obtained above were substituted into Pearson's correlation formula:

$$r = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$$

the numerator calculation:

$$3 \times 3441.5 = 10324.5$$

$$10324.5 - 10000 = 324.5$$

the denominator calculation:

$$3 \times 3998 = 11994,$$

$$11994 - 10000 = 1994$$

$$3 \times 3353.5 = 10060.5,$$

so $10060.5 - 10000 = 60.5$

Multiplying both terms: $1994 \times 60.5 = 120{,}637$

Square root: $\sqrt{120{,}637} \approx 347.3$

$$r = \frac{324.5}{347.3} \approx 0.93$$

3.7 Correlation analysis

The value of correlation coefficient is 0.93, which indicates a strong positive relationship between income share and GST burden. This suggests that higher-income groups contribute a larger share of GST in absolute terms. However, this result only reflects total contribution and does not fully capture the fairness of the tax burden.

3.8 Burden-to-income ratio analysis

The ratio clearly shows how heavily each group is taxed relative to its income:

Table 3: Relative Tax Burden

Income Group	Income Share	GST Burden	Burden-Income Ratio
Bottom 50%	17	31.5	1.85
Middle 30%	30	31.5	1.05
Top 20%	53	37	0.70

Source: Computation based on secondary data (RBI, MOSPI, World Bank) and derived values from the converted dataset.

- The bottom 50% has a ratio of 1.85, meaning they pay significantly more tax compared to their income share
- The middle group is close to proportional
- The top 20% has a ratio of 0.70, indicating a relatively lower burden

This reveals that lower-income groups are more heavily affected by GST.

Interpretation: The results need to be viewed beyond their surface implication. The strong positive correlation indicates that higher-income groups contribute a larger share of GST in absolute terms. However, this does not fully capture how the burden is experienced across different sections of society. When the burden is assessed relative to income, a clearer imbalance emerges. The bottom 50% bears a disproportionately higher tax burden, as reflected in its elevated burden-to-income ratio, while the top 20% contributes less in proportion to its income. This suggests that GST, in practice, places greater financial pressure on lower-income groups despite appearing proportionate in aggregate terms.

This pattern is closely linked to the consumption-based nature of GST. Lower-income households allocate a larger share of their income to consumption, making them more exposed to indirect taxation. In contrast, higher-income groups are able to divert a portion of their income towards savings and investments, thereby reducing their relative tax burden. At the same time, the structure of GST influences how goods are priced and positioned in the market. The classification of goods into different tax slabs creates implicit distinctions between essential and premium categories, which shape consumer perception and market strategies. These distinctions are not purely economic; they carry broader social implications.

In this context, GST also functions as a cultural and symbolic force. The differential taxation of goods contributes to the way products are associated with necessity, aspiration, or status. As a result, consumption choices begin to reflect not only purchasing power but also social positioning. However, the unequal burden identified in the analysis suggests that access to such symbolic consumption is uneven, with lower-income groups facing greater constraints. Overall, the findings indicate that GST operates beyond a neutral fiscal mechanism. While it appears aligned with income in terms of total contribution, its relative impact reveals an unequal distribution of burden. Simultaneously, its influence on pricing and perception integrates it into the broader dynamics of consumption, where economic factors intersect with cultural meaning and social identity.

4.0 Results

The results reveal a clear distinction between how GST appears in overall figures and how it is actually experienced by different income groups. The correlation analysis shows that higher-income groups contribute a larger share of total GST, indicating that tax

contribution rises with income at an aggregate level. However, this pattern shifts when the burden is viewed relative to income. The lower-income group bears a noticeably higher burden in proportion to its earnings, while the higher-income group contributes less when compared to its income capacity.

This highlights that the impact of GST is not evenly distributed. This difference is closely reflected in consumption behaviour. Lower-income households, being more dependent on consumption, are more directly exposed to indirect taxes. In contrast, higher-income groups have greater flexibility in how they allocate their income, which reduces their relative tax exposure. As a result, the influence of GST extends beyond revenue collection. It shapes how different groups engage with the market and access goods. The structure of tax rates indirectly creates distinctions in consumption, where economic capacity influences not only what is consumed but also the extent to which individuals can participate in broader patterns of consumption.

5.0 Discussion

This study's findings emerge directly from the methodological design adopted for analysis. By transforming GST burden ranges into single representative figures, the data was made suitable for quantitative examination through correlation analysis. The outcome shows a clear positive relationship between income share and total tax contribution, indicating that higher-income groups account for a greater share of GST in absolute terms.

However, this result primarily reflects distribution in aggregate form and does not fully explain how the tax burden is experienced relative to income levels. To address this, a burden-to-income ratio was introduced, which reorients the analysis toward proportional incidence. When viewed through this measure, a clear disparity becomes visible, where lower-income groups face a heavier relative burden compared to higher-income groups, despite the earlier correlation suggesting overall alignment with income.

When interpreted through the lens of consumption behaviour, this pattern becomes more coherent. GST is applied to expenditure, which means its impact depends largely on how much of an individual's income is consumed rather than saved. Households in lower-income categories typically allocate most of their earnings to consumption, leaving them more exposed to indirect taxation. In contrast, higher-income households tend to distribute their income across savings, investments, and consumption, which reduces their effective tax exposure. As a result, the inequality observed in the ratio analysis is closely tied to structural differences in consumption patterns rather than being a statistical anomaly.

Beyond economic distribution, the structure of GST also plays a role in shaping how goods are understood within the market environment. Differences in tax slabs contribute to

informal categorisation of goods, where certain items are perceived as essential while others are associated with higher value or aspirational consumption. This classification influences both pricing perception and consumer interpretation of goods in everyday decision-making. Consequently, GST functions not only as a revenue mechanism but also as an indirect force that interacts with consumption choices and market perceptions.

Overall, the results suggest that while aggregate data may present a balanced picture, the underlying distribution reveals inequality, and this inequality is closely connected to consumption structure and the social meaning attached to goods.

6.0 Policy Recommendations

6.1 Simplification of GST structure

The current multi-rate system can be confusing and sometimes misleading in how products are positioned in the market. Streamlining tax slabs would make the system easier to understand and reduce the artificial distinction between "essential" and "premium" goods created purely by taxation.

6.2 Regular revision of product classification

Consumption patterns are constantly evolving. Goods that were once considered non-essential may now be part of everyday life. Periodic updates in classification would ensure that GST remains relevant and aligned with current societal needs.

6.3 Improving equity in tax burden

Since the impact of GST is not evenly distributed across income groups, there is a need to make the system more balanced. Providing relief on commonly consumed goods or introducing targeted support mechanisms can help reduce the burden on lower-income households.

6.4 Encouraging small and local businesses

Simplified compliance procedures and selective tax benefits for small enterprises can promote inclusivity. This also helps sustain local industries, which often carry cultural and traditional significance.

6.5 Promoting responsible consumption

GST can be used as a tool to guide consumer behaviour by imposing higher taxes on environmentally harmful or purely status-driven goods, while supporting sustainable and socially beneficial products through lower rates.

6.6 Enhancing transparency and awareness

Increasing consumer awareness about how GST is applied can build trust and encourage more informed purchasing decisions, linking taxation more closely with conscious consumption.

6.7 Strengthening digital infrastructure

A more efficient and user-friendly digital system can improve compliance, reduce tax evasion, and ensure a fairer marketplace for businesses of all sizes.

7.0 Limitations of the Study

- *Dependence on secondary data:* The study is based on secondary data collected from published sources. As a result, the analysis depends on the availability, scope, and reliability of existing data.
- *Use of broad income group categories:* The research uses aggregated income group classifications instead of household-level or individual-level data. This limits a more detailed understanding of variations within each income group.
- *Limited number of observations:* The statistical analysis is based on a small number of grouped observations. Therefore, the findings should be interpreted as indicative patterns rather than universally conclusive results.
- *Conversion of data into representative values:* Certain data ranges were converted into single numerical values to make quantitative analysis possible. While necessary, this may involve a slight reduction in precision.
- *Conceptual nature of cultural symbolism analysis:* The discussion on cultural symbolism is interpretative and theoretical in nature. It is not supported by direct survey-based or behavioural evidence, leaving scope for future empirical research.

8.0 Conclusion

The findings of this study show that the impact of Goods and Services Tax (GST) extends beyond its role as a revenue-generating mechanism and administrative tax reform. While the analysis indicates that higher-income groups contribute a larger share of GST in absolute terms, a deeper examination reveals that lower-income households bear a comparatively heavier burden in relation to their income. This suggests that the practical experience of taxation is not uniform across society and that indirect taxes can create unequal pressure on different economic groups. The study further highlights that GST also influences market behaviour by shaping price structures and affecting consumer choices. Tax rate

differences between categories of goods contribute to distinctions between essential and premium consumption, which influence how products are valued and positioned in the market. In this way, GST interacts not only with economic decisions but also with the symbolic meaning attached to consumption, where goods may reflect status, aspiration, and social identity.

Overall, the paper concludes that GST should not be evaluated only through the lens of efficiency, compliance, or revenue collection. Its broader effects on equity, consumption behaviour, and market perception are equally significant. A balanced tax system must therefore aim not only for administrative simplicity but also for fairness and inclusive economic participation. Future policy discussions on GST would benefit from considering these wider social and economic dimensions.

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CHAPTER 3

GST and Changing Consumption Patterns in India

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ABSTRACT

The introduction of the Goods and Services Tax (GST) in India in 2017 marked a significant reform in the country's indirect taxation system, with important implications for prices, consumer behaviour, and consumption patterns. While existing literature highlights the role of GST in influencing household spending, much of the research remains descriptive, with limited empirical analysis of its direct impact on consumption. This study examines the impact of GST on consumption patterns in India using a quantitative approach. Secondary data from the World Bank for the period 2016–2024 is analysed using a multiple linear regression model. Final consumption expenditure growth is taken as the dependent variable, while GST implementation, inflation, and GDP per capita are used as explanatory variables. The results indicate that inflation has a negative relationship with consumption, while income shows a positive association, consistent with economic theory. The GST variable exhibits a negative coefficient, suggesting possible short-term adjustment effects following its implementation. However, the results are not statistically significant due to the limited sample size and external economic disruptions. Overall, the findings suggest that consumption patterns in India are more strongly influenced by macroeconomic factors such as income and price levels, while the impact of GST appears to be indirect and transitional.

Keywords: GST; Consumption patterns; Inflation; GDP per Capita; Indirect tax reform.

1.0 Introduction

The Goods and Services Tax (GST), introduced in India in July 2017, represents a major structural reform in the country's indirect taxation system. By subsuming multiple indirect taxes into a unified framework, GST aims to enhance tax efficiency, reduce cascading effects, and create a common national market.

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As a destination-based consumption tax, GST directly influences the prices of goods and services, thereby playing a crucial role in shaping consumer behaviour and expenditure patterns. Given that consumption constitutes a significant component of India's GDP, understanding the impact of GST on consumption patterns is essential for evaluating its broader economic implications.

In the initial years of implementation, GST has been associated with price adjustments across various sectors, changes in cost of living, and shifts in household spending behaviour. While essential goods continue to dominate consumption, discretionary spending appears to have become more sensitive to price fluctuations and tax changes. These dynamics suggest that GST not only affects aggregate demand but also alters the composition of consumption. However, the extent and nature of this impact remain complex and context-dependent, influenced by factors such as income levels, inflation, and consumer perception.

Although several studies have examined GST's impact on India's economy in terms of tax efficiency, revenue generation, and sectoral performance, there is limited empirical evidence focusing on its micro-level impact on consumption patterns. Much of the existing literature remains descriptive or macro-oriented, with relatively few studies employing econometric techniques to analyse the relationship between GST, prices, income, and consumption behaviour. Moreover, the interaction between GST and key macroeconomic variables such as inflation and income in shaping consumption patterns remains underexplored, particularly during periods of economic disruption.

In this context, the present study aims to bridge this gap by adopting a quantitative approach to examine the impact of GST on consumption patterns in India. By analysing the relationship between GST-induced price changes, income levels, and consumer expenditure behaviour, the study seeks to provide a more comprehensive and data-driven understanding of how GST influences consumption decisions.

2.0 Literature Review

Existing literature highlights that GST has significantly influenced consumption patterns, pricing behaviour, and household welfare across different economic contexts. As a destination-based consumption tax, GST directly affects consumer expenditure decisions, making it an important area of study in understanding behavioural and economic responses. Existing literature across different countries and contexts highlights that GST impacts not only the level of consumption but also the composition of spending, consumer perceptions, and overall welfare outcomes.

According to Memon (2025), GST reforms have a significant impact on consumption patterns among salaried individuals in India, particularly through changes in relative prices.

The study finds that GST has led to a shift in consumption towards essential goods, with consumers becoming more price-sensitive and cautious in their expenditure decisions. Spending on luxury and discretionary goods has declined, indicating a structural change in consumption behaviour. Interestingly, demographic factors such as age, income, and education do not significantly influence these changes, suggesting that GST has a broad and relatively uniform impact across consumer groups. However, consumer perception regarding affordability plays a critical role, highlighting that behavioural responses are influenced not only by economic variables but also by psychological factors (Memon, 2025).

In a similar context, Amulya (2019) analyses the impact of GST on consumer spending habits in Mysore, providing micro-level evidence of behavioural changes. The study highlights that GST has resulted in a perceived increase in the prices of both essential and non-essential goods and services, including groceries, restaurants, and entertainment. As a consequence, a significant proportion of consumers report reduced spending after GST implementation, reflecting a contraction in consumption.

Additionally, many respondents perceive GST as contributing to an increase in the overall cost of living, reinforcing the idea that GST influences both actual expenditure and perceived financial burden. The study also identifies low levels of consumer awareness and understanding of GST, which limits its effective implementation and acceptance (Amulya, 2019). Further extending the discussion, Harun et al. (2017) investigate the relationship between GST knowledge and spending patterns among students.

The findings reveal that although respondents possess moderate knowledge of GST, they largely perceive it as unfair and burdensome, particularly for individuals without a stable income. This perception significantly influences their spending behaviour, leading to a reduction in discretionary expenditure. The study concludes that perception of fairness is a key determinant of consumption behaviour, more influential than knowledge about GST's contribution to government revenue. This highlights the importance of behavioural economics in understanding tax-induced consumption changes (Harun et al., 2017).

From an international perspective, Zabri et al. (2016) provide insights into consumer spending behaviour in Malaysia following GST implementation. The study observes that GST leads to a decline in overall consumption levels, particularly in non-essential categories, as consumers adjust to higher prices and increased cost of living. Essential goods continue to dominate household expenditure, indicating that GST has a limited impact on necessary consumption but a significant effect on discretionary spending.

Unlike Memon (2025), this study finds that demographic factors such as age and employment sector significantly influence consumption responses, suggesting that GST impacts may vary across different population groups (Zabri et al., 2016).

Adding another dimension, Karmani et al. (2025) explore the role of GST in influencing sustainable consumption behaviour in India. The study suggests that GST can act as a policy tool to encourage environmentally responsible purchasing behaviour by altering relative prices and improving transparency. It finds that higher levels of GST awareness and positive perception are associated with increased adoption of eco-friendly consumption practices. However, challenges such as lack of clarity in tax structures and insufficient awareness among consumers limit its effectiveness. These findings indicate that GST influences not only traditional consumption patterns but also qualitative aspects such as sustainability and ethical decision-making (Karmani et al., 2025).

A more rigorous and analytical perspective is provided by Iqbal et al. (2019), who examine the microeconomic impact of GST on household consumption patterns using advanced econometric modeling. The study demonstrates that GST significantly affects expenditure allocation across different commodity groups, particularly due to changes in prices. Essential goods such as food and health are found to be price inelastic, meaning that consumers continue to spend on these items despite price increases. While this generates stable revenue, it also results in a higher burden on lower-income households, thereby increasing inequality. The study further shows that GST leads to a reallocation of budget shares, with food and housing accounting for the largest proportion of household expenditure (Iqbal et al., 2019). In addition to behavioural factors, several studies highlight the role of macroeconomic variables such as prices and income in shaping consumption patterns. Changes in price levels due to taxation and variations in income significantly influence household expenditure decisions.

Across the reviewed studies, several consistent themes emerge. First, GST leads to a reallocation of consumption patterns, with a clear shift from discretionary to essential goods, driven by price changes and affordability (Memon, 2025; Amulya, 2019). Second, GST tends to have a contractionary effect on overall consumption, particularly in the short run, as consumers adjust their spending behaviour (Zabri et al., 2016). Third, consumer behaviour under GST is influenced not only by economic factors such as prices and income but also by behavioural factors such as perception, awareness, and fairness (Harun et al., 2017).

Another important theme is the impact of GST on consumer welfare and inequality. While GST enhances government revenue and improves tax efficiency, it may disproportionately affect lower-income groups, especially when essential goods are taxed (Iqbal et al., 2019). Furthermore, the literature emphasises the importance of awareness and information dissemination, as a lack of understanding reduces the effectiveness and acceptance of GST (Amulya, 2019; Karmani et al., 2025). Additionally, GST's influence on sustainability highlights its broader implications beyond traditional economic outcomes (Karmani et al., 2025).

3.0 Research Gap

Several studies have been conducted examining the impact of Goods and Services Tax (GST) on India's Economy, mainly in the fields of tax efficiency, revenue generation and sectoral performance, but there is limited empirical evidence focusing specifically on its impact on the consumption patterns. Most of the studies focus on descriptive or macro-level analysis, with relatively fewer studies that focus on applying econometric techniques to quantify the relationship between GST, price levels, income, and consumption behaviour. Furthermore, the interaction between GST and key macroeconomic variables such as inflation and income in shaping consumption patterns remains underexplored, particularly in the context of recent economic disruptions. This study attempts to address this gap by employing a quantitative approach to analyse the impact of GST on consumption patterns in India.

4.0 Hypothesis

- H_0 (Null Hypothesis): GST has no significant impact on consumption patterns in India.
- H_1 (Alternative Hypothesis): GST has a significant impact on consumption patterns in India.

Bifurcation of H_1

- H_1a: The implementation of GST has a significant effect on consumption expenditure.
- H_1b: Inflation harms consumption expenditure.
- H_1c: Income has a positive impact on consumption expenditure.

These hypotheses are tested using a multiple linear regression model.

5.0 Methodology

This study adopts a quantitative research approach to examine the impact of the Goods and Services Tax (GST) on consumption patterns in India. The analysis is based on secondary data obtained from the World Bank for the period 2016–2024.

To test the stated hypotheses, a multiple linear regression model is employed. This method is appropriate as it allows for the estimation of the relationship between a dependent variable and multiple independent variables simultaneously, while controlling for other macroeconomic factors influencing consumption.

Additionally, a correlation analysis is conducted as a preliminary test to examine the relationships between the variables taken in pairs to assess the potential presence of multicollinearity. This helps to understand the direction and the strength of associations between the variables Consumption, Inflation, and Income before estimating the regression

model. The dependent variable in the study is final consumption expenditure growth (annual %), which reflects changes in consumption patterns over time.

The independent variables include:

A GST dummy variable, which takes the value 0 for the pre-GST period (2016) and 1 for the post-GST period (2017 onwards), captures the structural impact of GST implementation. Inflation (consumer price index) serves as a proxy for price levels and is expected to influence consumption through changes in purchasing power. Income, measured using GDP per capita, which represents the economic capacity of consumers to spend.

The regression model is specified as follows:

$$Consumption = \beta 0 + \beta 1 GST + \beta 2 Inflation + \beta 3 Income + \epsilon$$

where β0 is the intercept, β1,β2, and β3 are the coefficients of the respective variables, and ϵ represents the error term.

The expected relationships, as derived from economic theory and the stated hypotheses, are that GST may have a structural impact on consumption, inflation is expected to have a negative effect, and income is expected to influence consumption positively. Due to the limited number of observations and the presence of external economic shocks, the analysis focuses on identifying the direction and economic significance of relationships rather than strict statistical significance.

Table 1: Variables (2016–2024)

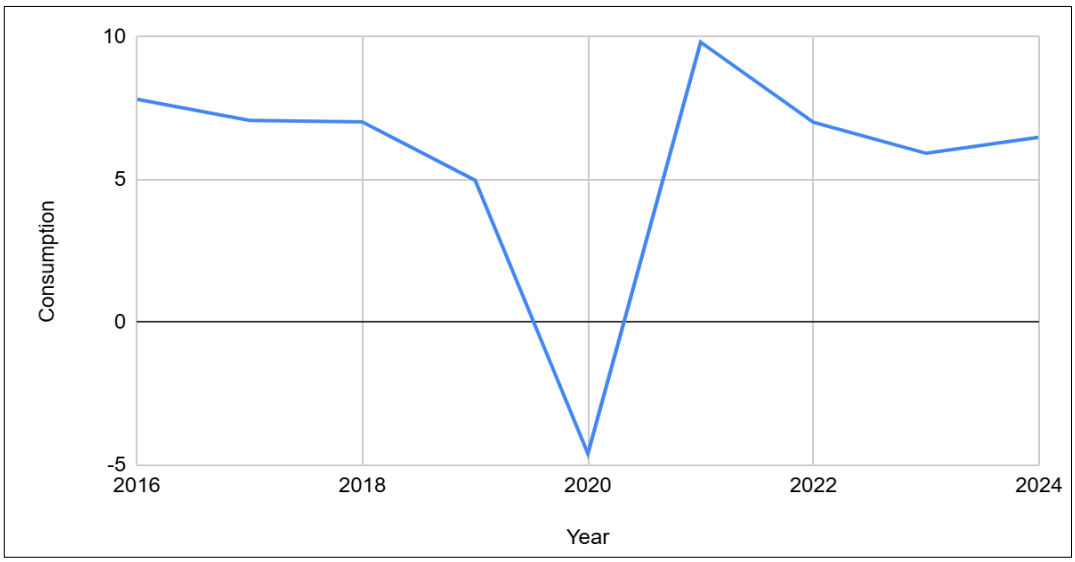
Year	Consumption Growth (%)	GST Dummy	Inflation (%)	Income (GDP per Capita in USD)
2016	7.820010186	0	4.948216341	1707.508929
2017	7.081569863	1	3.328173375	1950.104683
2018	7.029139287	1	3.938826467	1966.254552
2019	4.980240091	1	3.729505735	2041.428637
2020	-4.59785588	1	6.623436776	1907.042516
2021	9.821187417	1	5.131407472	2239.613844
2022	7.010372652	1	6.699034141	2347.448294
2023	5.924781026	1	5.649143189	2530.120313
2024	6.486086341	1	4.95303551	2694.737809

Source: World Bank and added dummy variable

6.0 Results

As illustrated in Figure 1, consumption growth shows noticeable fluctuations over the study period, including a sharp decline in 2020 followed by a recovery in subsequent years. These variations highlight the influence of underlying macroeconomic factors, which are further examined through correlation and regression analysis.

Figure 1: Consumption Growth Trend (2016-2024)



The trend in consumption growth over the study period is illustrated in Figure 1.

6.1 Correlation analysis

Pairwise correlation analysis was done to examine the relationships between the variables of Consumption, Inflation and Income. The results show a moderate negative correlation between consumption and inflation ($r = -0.427$) . Inflation and income show a weak positive correlation ($r = 0.280$). Consumption and Income also show a weak positive relationship($r = 0.215$). The relatively low correlations among the independent variables suggest that multicollinearity will hardly be a major concern in the regression analysis.

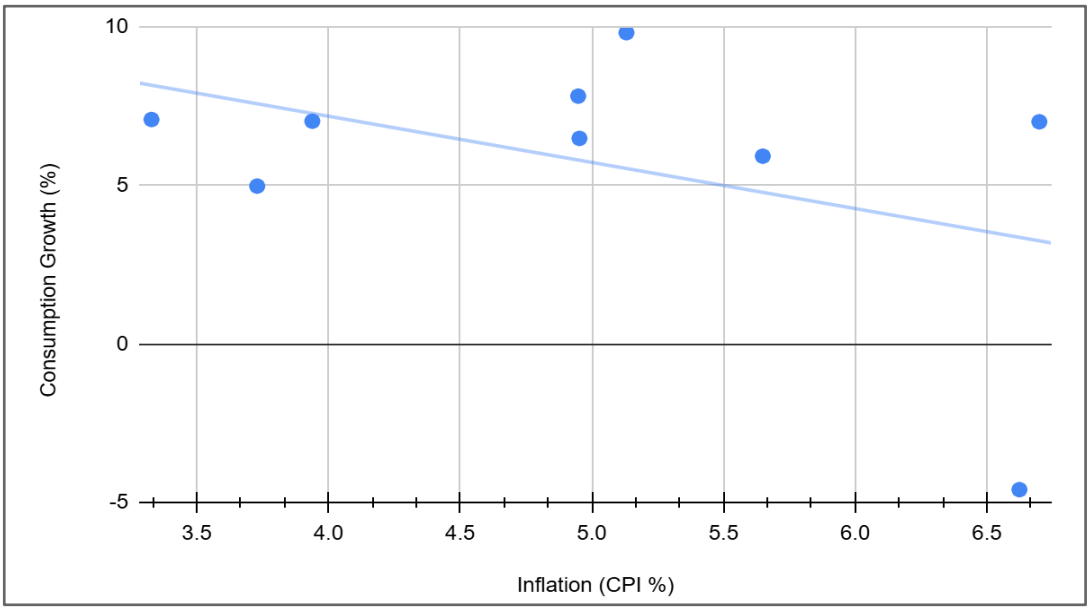
The scatter plot indicates a moderate negative relationship between inflation and consumption growth. Higher inflation is generally associated with lower consumption, as seen prominently during the 2020 pandemic shock. However, the dispersion of points suggests that the relationship is not strongly linear.

Table 2: Correlation Matrix

Variables	Consumption	Inflation	Income
Consumption	1	-0.427	0.215
Inflation	-0.427	1	0.28
Income	0.215	0.28	1

Source: Author's calculations

Figure 2: Scatter Plot Showing the Relationship between Inflation and Consumption Growth in India (2016–2024). The downward-sloping Trendline Indicates a Negative Association, with the 2020 Observation Reflecting the Impact of the COVID-19 Pandemic



6.2 Regression analysis

Building on the correlation analysis, the regression results provide insights into the relationship between GST, inflation, income, and consumption patterns in India. The model explains approximately 49.7% of the variation in consumption growth, as indicated by the R^2 value, suggesting moderate explanatory power given the limited dataset. However, the overall model is not statistically significant at conventional levels, which may be attributed to the small sample size and external economic disruptions.

6.3 Testing of hypotheses

H_1a: GST has a significant effect on consumption expenditure

The coefficient of the GST dummy variable is negative, indicating that the implementation of GST is associated with a decline in consumption growth. However, the result is not statistically significant.

H_1b: Inflation harms consumption expenditure

Inflation shows a negative coefficient, suggesting that higher price levels reduce consumption. This is consistent with economic theory, as rising prices reduce purchasing

power. Although not statistically significant, the direction of the relationship supports the hypothesis.

H_1c: Income has a positive impact on consumption expenditure

Income, measured by GDP per capita, exhibits a positive relationship with consumption, indicating that higher income levels lead to increased spending.

This is consistent with theoretical expectations, and the hypothesis is supported in terms of direction.

Overall Interpretation: The findings suggest that inflation and income play an important role in determining consumption patterns, while the impact of GST appears to be more complex and indirect. The negative coefficient for GST may reflect short-term adjustment effects following its implementation rather than a long-term decline in consumption. However, due to data limitations and the influence of external factors such as the COVID-19 pandemic, the results should be interpreted cautiously. The analysis is indicative and highlights general trends rather than definitive causal relationships.

Table 3: Regression Results

Variable	Coefficient	Standard Error	t-Statistic	P-value	Expected Sign
Intercept	3.761	9.34	0.403	0.704	—
GST	-6.415	4.618	-1.389	0.223	Negative
Inflation	-2.054	1.142	-1.798	0.132	Negative
Income	0.0083	0.005	1.672	0.155	Positive

R^2	0.497
Adjusted R^2	0.196
F-statistic	1.648
Prob (F-statistic)	0.291
Observations	9

Source: Author's calculations

The regression results presented in Table 3 form the basis for hypothesis testing and interpretation.

7.0 Discussion

The objective of this study was to examine whether the implementation of the Goods and Services Tax (GST) has influenced consumption patterns in India, while also considering the roles of inflation and income. The findings of the regression analysis provide useful insights into how these macroeconomic variables interact with consumption behaviour in the post-GST period.

The results suggest that the implementation of GST is associated with a negative coefficient in relation to consumption growth. Although this relationship is not statistically significant, it may indicate short-term adjustments in consumer behaviour following the introduction of the new tax regime. When GST was introduced, several sectors experienced price restructuring, compliance changes, and transitional uncertainties. Such changes could have temporarily affected purchasing decisions as consumers and businesses adapted to the new tax structure. Therefore, the observed negative association may reflect transitional effects rather than a permanent decline in consumption.

Another important finding relates to the role of inflation. The analysis shows a negative relationship between inflation and consumption expenditure, which aligns with standard economic theory. As inflation increases, the purchasing power of consumers declines, making goods and services relatively more expensive. This often leads households to reduce discretionary spending and adjust their consumption choices. Even though the relationship in the model is not statistically significant, the direction of the coefficient supports the idea that price levels remain an important determinant of consumption behaviour in India. These findings are consistent with correlation analysis, which also indicated a negative relationship between inflation and consumption, thereby reinforcing the reliability of the observed pattern.

Income, represented by GDP per capita, demonstrates a positive relationship with consumption growth. This finding is consistent with fundamental economic principles, particularly the idea that higher income levels increase the ability of households to spend. As individuals experience rising incomes, they tend to increase both essential and non-essential consumption. In the Indian context, rising income levels during the study period may have supported consumption demand despite economic fluctuations and policy changes. This is also supported by the correlation results, which show a positive, albeit weak, association between income and consumption.

The moderate explanatory power of the model (R^2 = 49.7% approx.) indicates that while GST, inflation, and income explain a substantial portion of the variation in consumption growth, other factors also play an important role. Consumption behaviour is influenced by a wide range of variables such as employment conditions, consumer confidence, credit availability, government policies, and unexpected economic shocks.

For instance, the COVID-19 pandemic in 2020 caused a sharp contraction in consumption, which may have influenced the regression results and masked the long-term structural effects of GST. Overall, the findings suggest that consumption patterns in India are shaped more strongly by macroeconomic fundamentals such as income and price levels, while the effect of GST appears to be indirect and transitional. GST may influence consumption through changes in price structures, tax compliance, and supply chain

efficiency, but these effects may take longer to fully materialise in aggregate consumption data. This discussion highlights that GST should not be viewed in isolation when analysing consumption trends. Instead, it operates within a broader macroeconomic environment where income growth, inflation dynamics, and external shocks jointly influence consumer behaviour. Consequently, future research with a larger dataset and a longer time horizon may provide clearer evidence regarding the long-term impact of GST on consumption patterns in India.

8.0 Policy Implications

The findings of the study provide useful insights for policymakers regarding the relationship between GST, inflation, income, and consumption patterns in India. While the results do not show strong statistical significance due to the limited sample size and external economic disruptions, the observed trends still offer meaningful guidance for policy formulation. The following policy implications emerge from the analysis.

8.1 Simplification and stability in the GST framework

The analysis indicates a negative association between the introduction of GST and consumption growth, which may reflect short-term adjustment challenges experienced by businesses and consumers after the implementation of the new tax regime.

To reduce such transitional effects, policymakers should focus on simplifying the GST framework and ensuring greater stability in tax rules. Clear guidelines, fewer procedural complexities, and consistent policy communication can help businesses adapt more efficiently. A stable and predictable tax system may encourage smoother market functioning and indirectly support consumer demand.

8.2 Rationalisation of GST rates

Since consumption behaviour is sensitive to price changes, careful structuring of GST tax slabs becomes important. A well-balanced tax structure that keeps essential goods affordable while maintaining adequate revenue generation can help protect household consumption levels. Rationalising tax rates and periodically reviewing the classification of goods and services could help reduce price distortions and maintain stable consumption patterns.

8.3 Inflation management as a key policy priority

The regression results show a negative relationship between inflation and consumption expenditure, indicating that rising prices tend to weaken purchasing power and reduce consumer spending. This highlights the importance of maintaining price stability

through coordinated fiscal and monetary policies. Measures such as efficient supply chain management, monitoring of essential commodity prices, and prudent monetary interventions can help contain inflationary pressures and sustain consumer demand in the economy.

8.4 Strengthening income growth to support consumption

The study finds that income, measured by GDP per capita, has a positive relationship with consumption expenditure. This suggests that policies aimed at improving income levels can play a significant role in strengthening consumption demand. Government initiatives focused on employment generation, skill development, and productivity improvements can help raise household incomes and contribute to more stable consumption growth over time.

8.5 Policy support during economic disruptions

The study period includes years affected by major economic disruptions, particularly the COVID-19 pandemic, which had a significant impact on both income levels and consumption patterns. In such circumstances, targeted fiscal measures, such as temporary tax relief, income support programmes, and stimulus packages, can help stabilise household consumption and support economic recovery.

8.6 Continuous monitoring and evaluation of GST outcomes

The findings suggest that the impact of GST on consumption may not be immediate and could evolve as businesses and consumers gradually adjust to the tax structure. Therefore, continuous monitoring of GST's long-term effects on prices, production costs, and consumer behaviour is necessary. Regular policy reviews and evidence-based adjustments can help ensure that the GST framework continues to support economic efficiency while maintaining stable consumption patterns.

9.0 Conclusion

The introduction of the Goods and Services Tax (GST) marked a significant shift in India's indirect tax structure, with important implications for consumption behaviour. This study set out to examine whether GST has influenced consumption patterns, while also considering the roles of inflation and income.

The findings suggest that consumption in India is shaped more strongly by broader macroeconomic factors than by GST alone. In particular, income emerges as a key driver of consumption, reinforcing the idea that rising purchasing power plays a central role in sustaining demand. At the same time, inflation appears to have a dampening effect, highlighting the importance of price stability in maintaining consumption levels.

While the GST variable shows a negative association with consumption, this effect appears to be more reflective of short-term adjustment challenges rather than a long-term structural decline. The transition to a new tax regime likely introduced temporary disruptions in pricing, compliance, and consumer expectations, which may have influenced spending behaviour during the initial years.

Overall, the study suggests that GST operates within a broader economic environment and its impact on consumption is indirect and evolving. Rather than being a dominant factor, it interacts with income growth, inflation dynamics, and external shocks in shaping consumption trends. As the economy continues to adjust to the GST framework, its long-term effects on consumption may become clearer over time. Thus, the study highlights that tax reforms like GST influence consumption not in isolation, but through their interaction with broader macroeconomic conditions

10.0 Limitations

Despite providing useful insights, the study is subject to certain limitations. First, the analysis is based on a relatively small sample size due to the limited availability of consistent time-series data, which may affect the statistical robustness of the results.

Second, the use of aggregate macroeconomic data does not capture variations in consumption behaviour across different income groups, regions, or sectors. As a result, the findings may not fully reflect micro-level behavioural changes.

Third, the GST variable is represented using a dummy indicator, which captures the presence of the reform but does not account for variations in tax rates across different goods and services. This limits the ability to measure the precise impact of GST on consumption.

Additionally, the study period includes major external shocks, particularly the COVID-19 pandemic, which had a significant impact on both consumption and income levels. These disruptions may have influenced the regression results and masked the underlying effects of GST. Finally, the analysis focuses on a limited set of variables, whereas consumption behaviour is influenced by multiple factors such as employment conditions, consumer confidence, credit availability, and policy interventions. Future research using a larger dataset, more granular data, and advanced econometric techniques may provide deeper insights into the long-term impact of GST on consumption patterns in India.

11.0 Declarations

Declaration of Originality: We hereby declare that this research paper titled *"GST and Changing Consumption Patterns in India"* is an original work carried out by us. The

work has not been submitted to any other journal, conference, or institution for publication or academic evaluation. All sources of information have been duly acknowledged and cited in accordance with academic standards.

Declaration on the Use of Artificial Intelligence (AI): This study made limited use of artificial intelligence tools for language refinement, structuring, and editing purposes. The core research work, including data collection, analysis, interpretation, and conclusions, was conducted independently by the authors. The use of AI tools did not influence the originality or integrity of the research findings.

Author Contributions: All authors contributed to the conceptualisation, data collection, analysis, and writing of the paper. Specific roles were distributed collaboratively, and all authors have reviewed and approved the final manuscript.

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CHAPTER 4

GST and Changing Consumption Patterns in India: A Comparative Look at the Pre-GST and Post-GST Tax Burden on Digital Streaming Services in India

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ABSTRACT

GST came into force on 1 July 2017 and replaced the service tax, the state-level entertainment tax and VAT with a single 18% rate on OTT services. India's streaming market has grown very quickly in the years since. Our paper tries to work out whether this change in the tax regime actually left subscribers paying less, and whether the government ended up collecting more, particularly from foreign platforms. We use Netflix India for the calculations. The Rs. 149 mobile plan is the baseline, since it is the widest-reach tier. Service tax before GST was about 15%, which sounds lower, but entertainment tax in some states went as high as 110% and VAT also applied in parts. After adding everything up, the total burden came to roughly 20-25% in most regions. After GST the rate is a uniform 18%, and Input Tax Credit further reduces the cost on the platform side, so the effective burden on the consumer came down even though the headline rate technically went up. Revenue collection from foreign OTT providers was weak before 2023. The Finance Act, 2023 widened the OIDAR definition, and CBIC Notification No. 28/2023 removed the exemptions that foreign suppliers had been relying on. Netflix, Amazon Prime Video and similar platforms now register, file GSTR-5A every month and pay 18% IGST. Our Netflix-only estimate shows annual GST collections of around Rs. 335 crore, against roughly Rs. 287 crore under the old regime — a 17% increase. 18% on digital content is still high compared to several other jurisdictions. For a cost-sensitive market, a lower slab on entry-level subscriptions may be worth thinking about.

Keywords: Goods and Services Tax (GST); Over-the-Top (OTT) services; Digital taxation; Netflix India; OIDAR compliance.

1.0 Introduction

Streaming has become the default way Indians watch things. Netflix, Amazon Prime

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Video and others coexist with domestic platforms like Disney+Hotstar, ZEE5 and SonyLIV, and more than 30 crore people in India now hold at least one paid subscription as of 2025. Cheap mobile data and regional-language content are usually cited as the two main reasons.

The tax treatment of this sector before 2017 was complicated. Service tax was around 15%. Entertainment tax, which was a state subject, ranged from zero to over 100% depending on the state. VAT showed up in some combinations as well. The effective rate a subscriber paid could therefore be anywhere between 15% and 30%, sometimes higher, and it depended on where they lived. Platforms dealt with different rules in different markets, which made consistent pricing difficult.

GST was introduced on 1 July 2017. OTT services were classified under OIDAR — Online Information Database Access and Retrieval — and a flat 18% tax became applicable. The classification is in Section 2(17) of the IGST Act, 2017. Domestic compliance became relatively straightforward. Cross-border supplies did not, and issues around place of supply, foreign-supplier registration and what counts as OIDAR in a digital context kept coming up for the next several years. What we try to do in this paper is compare the effective tax burden under the two regimes, using Netflix India as a concrete example, and then look at what the Finance Act, 2023 did to foreign platform compliance. A smaller thread runs alongside — what 18% on digital content means for subscription uptake in a price-sensitive market.

2.0 Hypothesis

The hypothesis is that GST, despite raising the headline rate from 15% to 18%, reduced the total tax burden on OTT subscribers, because the earlier regime's entertainment tax and VAT layers disappeared. A related claim is that collection from foreign OTT firms improved once OIDAR compliance was made mandatory. A third claim, which we are less confident about, is that 18% is higher than ideal for a price-sensitive market.

The three parts are:

- **Part 1.** The effective burden fell. Under the old regime the total could reach 20-25% once entertainment tax and VAT were layered on. Under GST it is a flat 18%, with ITC available on the supply-chain side. So the headline rate is higher, but the number the user actually pays is lower in most states.
- **Part 2.** Revenue collection from foreign providers improved after 2023. The Finance Act, 2023 and CBIC Notification No. 28/2023 brought Netflix, Amazon Prime, Disney+ and others fully into the OIDAR net with monthly GSTR-5A filings and 18% IGST. Before this, enforcement was patchy.
- **Part 3.** 18% is on the high side when compared to digital service tax rates in several other jurisdictions, which have either reduced slabs or no separate digital levy. A lower rate on entry-level plans might raise adoption enough to keep total collections roughly neutral.

3.0 Literature Review

There is not a lot of academic work specifically on OTT taxation in India. Practitioner commentary from tax consultancies, industry publications and occasional government documents fills most of the gap. The sources we used are grouped below.

3.1 Pre-GST digital service taxation

OTT services pre-2017 were taxed under the Service Tax regime. The base rate was 14%, with Swachh Bharat Cess and Krishi Kalyan Cess adding roughly one percentage point combined. Classification was inconsistent — some jurisdictions treated streaming as telecom, some as broadcasting, some as a generic internet-based service. On top of all this was the state entertainment tax. In some states there was no entertainment tax at all. In others it was enough to almost double the subscription price. The combined burden in many regions worked out to 20-25% on the final bill (ClearTax, 2023; Enterslice, 2024).

3.2 GST rules and OIDAR classification

The definition of OIDAR in Section 2(17) of the IGST Act, 2017 covers services supplied over the internet or a similar network with minimal human intervention. Streaming fits this definition, so OTT subscriptions attract 18% GST. For intra-state supplies the split is 9% CGST plus 9% SGST. For inter-state and cross-border supplies the full 18% is charged as IGST. The earlier variation across states disappeared after this (Chartered Club, 2023; Fonoa, 2023).

3.3 Finance Act, 2023 changes

Two amendments in the Finance Act, 2023 matter for the OTT sector. First, the OIDAR definition was widened — the earlier reference to services being 'essentially automated' and 'involving minimal human intervention' was removed, which meant a broader set of digital services came under the category. Second, the definition of Non-Taxable Online Recipient (NTOR) was updated to include unregistered individuals in India regardless of whether they were using the service for personal or business purposes. CBIC Notification No. 28/2023, effective 1 October 2023, then removed the exemptions some foreign providers had been using. Every foreign OIDAR supplier serving Indian customers now has to register, collect IGST and file returns.

4.0 Objectives of the Study

The specific objectives:

- Examine how GST has reshaped OTT taxation in India, in rupee terms, for consumers and for the government.

- Compare the pre-GST and post-GST regimes on compliance ease, classification clarity and predictability.
- Examine where OTT platforms sit within the OIDAR framework and what this means for reporting and audit obligations.
- Study the effect of GST on OTT pricing and subscription take-up, at the platform and the consumer level.
- Identify practical compliance challenges for domestic and foreign OTT platforms.
- Assess the effect of the 2023 OIDAR and cross-border reforms on OTT operations, particularly for foreign suppliers.
- Analyse the contribution of OTT platforms to government revenue through GST.

5.0 Research Methodology

5.1 Research design

A descriptive and analytical design, using secondary sources only. A legal and policy subject lends itself to qualitative work of this kind. The analysis combines comparative study of the two regimes, a worked numerical example, and legislative reading. No primary data was collected.

5.2 Data sources

Primary legislation — CGST Act, 2017 and IGST Act, 2017 — administered by the CBIC. Apart from the base Acts, we drew on:

- Finance Act, 2023 amendments relating to OIDAR and NTOR.
- CBIC Notifications 28/2023 and 51/2023 on foreign OIDAR compliance.
- Subscriber numbers and revenue figures for the major OTT platforms, taken from publicly available industry reports.
- Practitioner analysis from ClearTax, TaxGuru, Chartered Club, Enterslice, Fonoa and Bhatt & Joshi Associates.

5.3 Methods of analysis

- Comparative analysis. The pre-GST and post-GST regimes are compared side by side — multiple overlapping levies earlier, a single 18% rate plus ITC now.
- Netflix India case study. Netflix India's entry-level Rs. 149 mobile plan is used to calculate the tax burden under both regimes. The numbers are indicative, not exact.
- Legislative analysis. OIDAR-related amendments are traced from 2017 through the Finance Act, 2023 and the CBIC notifications that followed.

5.4 Limitations

The revenue figures we use are based on publicly available subscription data and approximate pricing. Granular internal revenue data for individual platforms was not available. Our Netflix calculations rely on the Rs. 149 mobile plan as a baseline, so premium tiers, promotional discounts and telco-bundled plans are not fully reflected. The aggregates are therefore reasonable approximations rather than precise numbers.

6.0 Amendments and Reforms Over Time

India's approach to taxing digital services evolved in stages. Early attempts in 2016 to bring foreign providers into the service tax net; the equalisation levy debates of 2018-2020; amendments under the Income Tax Act; and finally the post-2023 OIDAR regime. Table 1 sets out the main checkpoints.

Table 1: Legislative Timeline of OTT Taxation Reforms

Year / Date	Amendment or Reform	Impact on OTT
Pre-2017	Service tax of about 15%, state entertainment tax of 0-110%, VAT in some states.	Uneven burden across states, inconsistent treatment, compliance difficult to plan.
December 2016	Foreign service providers brought under Service Tax for OIDAR services, before GST.	First serious attempt to tax foreign streaming services in India.
1 July 2017	GST rollout; OTT classified under OIDAR.	Flat 18%, ITC conditionally available, unified compliance replacing the earlier patchwork.
2017-2022	Gradual build-out of foreign compliance rules; GSTR-5A return introduced.	Foreign platforms start formal compliance, with gaps.
Finance Act, 2023	Widened OIDAR definition; NTOR revised to cover unregistered individuals.	Broader category of online content pulled in; streaming subscriptions unambiguously taxable.
1 October 2023	CBIC Notification No. 28/2023 removes earlier exemptions for foreign providers; gaming treated separately.	All foreign OTT providers fully liable; long-running classification uncertainty largely resolved.
2024-25	GST 2.0 procedural simplifications; headline OTT rate held at 18%.	Stable rate, continued compliance, incremental simplification.

7.0 OTT Market Overview

India's OTT market has grown rapidly over the last decade. Mobile data pricing and smartphone penetration are the two most commonly cited drivers, with regional-language

programming playing a significant role in pulling audiences away from cable. Competition has intensified — platforms are chasing a shared user base, content budgets have risen and subscriber fatigue has become a measurable concern.

7.1 Competitive Landscape (2025)

Table 2: OTT Market Share in India (2025)

OTT Platform	Owned By	Subscribers (Cr)
Disney+Hotstar	JioStar	14
Amazon Prime Video	Amazon	6
Netflix	Netflix Inc.	4
ZEE5	Zee Entertainment	3.7
SonyLIV	Culver Max Entertainment	2.5

7.2 Annual subscription pricing

Table 3: Indicative Annual Subscription Prices (2025)

Platform	Minimum Annual (Rs.)	Maximum Annual (Rs.)
Disney+Hotstar	499	1,499
Amazon Prime Video	799	1,499
Netflix	1,788	7,788
ZEE5	499	1,299
SonyLIV	699	1,499

8.0 Taxation of OTT Platforms: Before and After GST

8.1 The pre-GST regime

Service tax of approximately 15% applied to streaming services under the earlier regime. The rate was not the main problem.

- Classification was unsettled — OTT was variously treated as broadcasting, telecom or a general internet-based supply, depending on the authority.
- No specific OIDAR category existed, so edge cases were argued by analogy.
- In several states a subscriber paid VAT and service tax on the same subscription.
- Enforcement against foreign platforms was weak in practice.
- State entertainment tax was the most unpredictable layer — 0% in some states, close to 110% in others. Competitive pricing varied by state for reasons unrelated to the service itself.

8.2 The Post-GST regime

OTT services are now classified under OIDAR, and the rules apply uniformly across India.

- 18% GST applies on every OTT subscription. Intra-state supplies are 9% CGST + 9% SGST; inter-state and cross-border supplies attract 18% IGST.
- Advertising revenue earned by OTT platforms also attracts 18% GST.
- Input Tax Credit is available on platform procurement — server costs, content production, office infrastructure.
- Foreign OTT platforms are required by law to register under GST and file GSTR-5A.

8.3 Core comparison

Table 4: Pre-GST and Post-GST Tax Comparison

Component	Before GST (pre-July 2017)	Post-GST (current)
Primary Tax	Service Tax at about 15%	GST at 18% (9% CGST + 9% SGST)
Entertainment Tax	0% to 110% across states; average around 30%	Subsumed into GST at 18%
VAT	Applied in some states	Subsumed; no longer a separate levy
Cascading Effect	Tax-on-tax; levies stacked	Largely eliminated through ITC
Foreign Platforms	Weak enforcement in practice	Mandatory GSTR-5A filing; 18% IGST
Classification	Ambiguous	Clear OIDAR rules under the IGST Act
ITC	Limited across tax types	Available across the supply chain
Effective Burden	Roughly 20-25% cumulative	Flat 18%

9.0 Netflix India: A Working Tax-Burden Model

Netflix India is a subscription video-on-demand service. The entry-level plan is priced at Rs. 149 per month, mobile-only. For FY 2023-24, public sources place the subscriber count at roughly 1.23 crore. We use this plan as our baseline because of its reach and because it is the most relevant tier for affordability questions.

9.1 Post-GST calculation (base scenario)

Netflix India's reported FY24 revenue was Rs. 2,845.7 crore. Our bottom-up estimate, using the Rs. 149 plan as a proxy and excluding advertising and other income, comes to around Rs. 2,199 crore. The estimate is lower than the actual figure, but close enough that the calculation appears directionally correct. It was not meant to be exact.

Table 5: Netflix India GST Estimate (FY 2023-24)

Component	**Value**
Inclusive Price	Rs. 149 per month
Base Price (ex-GST)	Rs. 126.27 (149 / 1.18)
GST at 18%	Rs. 22.72 per user per month
Monthly GST Collection (1.23 Cr users)	**Rs. 27.95 crore**
Annual GST Collection	**Rs. 335.4 crore**

9.2 Pre-GST counterfactual

The same Rs. 149 plan under the pre-GST regime would have looked different. Service tax was lower, but the additional layers pushed the effective rate well above today's 18%.

Table 6: Tax Breakdown on the Rs. 149 Netflix Plan

Component	**Pre-GST**	**Post-GST**
Base Subscription	Rs. 149	Rs. 149
Primary Tax	Service tax at 15% = Rs. 19.43	GST at 18% = Rs. 22.72
Entertainment Tax	Rs. 12.96 to Rs. 19.43 in several states	Nil (subsumed)
Cascading	Additional tax layered on service charges	Eliminated
Effective Tax Range	**15% to about 30%**	**Flat 18%**
ITC	Not available	Available

9.3 Revenue collection comparison

The per-user rate went from 15% to 18%, and yet the average subscriber ended up paying less in most states. Entertainment tax — which used to sit on top of the service tax at 10-30% in many regions — has been absorbed into the 18% rate, not added to it. On the revenue side, collection from foreign platforms improved substantially after mandatory OIDAR compliance. Two things that look as though they should conflict — a higher headline rate and lower consumer cost — are both true, for the same reason.

Table 7: Government Revenue Comparison

Metric	**Pre-GST**	**Post-GST**
Monthly Tax per User	Rs. 19.43	Rs. 22.72
Monthly Collection	About Rs. 23.9 Cr	About Rs. 27.95 Cr
Annual Collection	About Rs. 287 Cr	About Rs. 335 Cr
Foreign Compliance	Minimal	Full (OIDAR mandatory)
Net Revenue Gain	**Baseline**	**+17% with full foreign compliance**

10.0 Compliance Framework

Four categories of compliance apply to OTT platforms operating in India. General business licences, domestic GST registration and returns, export of services (zero-rated with supporting paperwork), and foreign OIDAR-specific rules for overseas platforms.

- Domestic Platforms. GSTIN is mandatory. Invoices must show the 18% tax split clearly — CGST + SGST for intra-state, IGST for inter-state. ITC records have to be maintained for the prescribed period. Returns — GSTR-1, GSTR-3B, annual GSTR-9 — are filed on schedule.
- Export of Services. Services supplied to subscribers outside India are zero-rated. Annual Letter of Undertaking (LUT), export invoices without GST, FIRC or BRC records for foreign exchange receipts, and Form RFD-01 for refund of accumulated ITC.
- Foreign OIDAR Providers. Non-resident suppliers register under the simplified OIDAR regime. An authorised Indian representative handles compliance. GSTR-5A is filed monthly. 18% IGST is collected and remitted on all Indian supplies. Tax invoices follow the prescribed format.

Netflix and Amazon both contribute directly to GST collections through these monthly GSTR-5A filings, as do the other major foreign platforms. The classification uncertainty that existed before 2023 has been largely resolved. The appendix at the end of this paper lays out the full set of compliance documents.

11.0 Findings and Analysis

11.1 Unified tax structure

A single rate applies across India now. Pre-GST, the same Netflix plan could carry very different total tax loads depending on which state the subscriber lived in, because the entertainment tax layer varied so much. Combined rates of 20-25%, occasionally higher, were common. Post-GST, the rate is 18% everywhere. State-specific surcharges have gone. This is the most straightforward simplification in the reform.

11.2 Foreign platforms now comply

Tax collection from overseas digital service providers used to be the weakest part of the Indian system. The earlier framework did not have a clean mechanism for non-resident suppliers, and enforcement was limited. After the Finance Act, 2023 and the October 2023 CBIC notification, Netflix, Amazon Prime Video, Disney+ and others are required to register under OIDAR, file GSTR-5A every month, collect 18% IGST and remit it. The compliance loop closed in 2023, effectively.

11.3 Revenue gain

The Netflix slice of the market alone gives an estimated Rs. 335 crore of annual GST collection under the current regime, against about Rs. 287 crore under the pre-GST counterfactual — a 17% increase. Scaled to the 30+ crore subscriber base across all OTT services, the aggregate revenue uplift is significant.

12.4 Lower effective cost

Headline rate up from 15% to 18%, effective cost down in most states. The entertainment tax layer and the cascading are both gone. In states where entertainment tax used to be high, the subscriber saves under the current regime. ITC along the supply chain reduces the platform's cost structure further.

11.5 Affordability

18% is still high for digital content compared to several other jurisdictions, some of which offer reduced rates on online services or no separate digital levy at all. A lower slab on basic OTT subscriptions — mobile-only tiers particularly — could boost adoption enough to raise total tax collected. It is not certain, but the argument is worth considering.

12.0 Conclusion and Suggestions

12.1 Conclusion

The evidence supports most of our hypothesis. GST simplified the OTT tax regime and reduced the effective cost on the consumer in most states, even though the headline rate rose. Entertainment tax was the dominant component of the earlier burden — once it was subsumed, 18% under GST came out ahead of 15% service tax plus the state overlay. Foreign platforms are now fully inside the compliance net. The Netflix slice alone shows a 17% uplift in annual GST collections compared with the pre-GST counterfactual.

We are more cautious on the third leg. 18% is simple and it has worked. But in a market where scale matters and a large part of the potential subscriber base sits at the price-sensitive end, a single slab is a blunt instrument. A lower rate on entry-level plans would probably not cost the government much revenue and could be recovered through faster growth in the paying subscriber base.

12.2 Suggestions

- Consider a reduced GST rate — something like 12% — on entry-level OTT subscriptions. Price elasticity in this segment is real, and a lower rate could grow the subscriber base enough to keep total collections roughly neutral or positive.

- Simplify GSTR-5A filing for foreign OIDAR providers. The monthly cadence and documentation could be streamlined, particularly for smaller non-resident suppliers, without weakening the revenue case.
- Expand ITC benefits to incentivise OTT investment in Indian content production — aligned with broader policy on domestic creative industries.
- Issue a clear circular distinguishing OTT services from online real-money gaming. The two carry very different tax treatments, and classification disputes have caused avoidable friction.
- Introduce a tiered GST structure for digital subscriptions, with a lower rate on mobile-only plans, to support digital access in price-sensitive segments.

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Appendix: Compliance Documents - Detailed Tables

The documentation framework that OTT platforms in India are expected to maintain. Referenced in Section 11, reproduced in full below for convenience.

A.1 General Operational Documents

Document	Purpose	Authority
Certificate of Incorporation	Establishes a legal entity in India	MCA
MoA and AoA	Sets out the company's scope and governance	MCA
Trade Licence	Required to carry on business operations	Local authorities
IT Rules, 2021	Appointment of CCO, Nodal Contact and Grievance Officer	MeitY
Content Licensing	Contractual arrangements with content creators	Private / contractual
Privacy Policy and Terms of Service	Data handling and user rights	IT Rules, 2021

A.2 Domestic GST Rules

Document	Purpose	Authority
GSTIN Registration	Mandatory for OIDAR providers	GSTN
GST / Tax Invoices	Show the 18% GST split (CGST + SGST or IGST)	GST laws
ITC Documentation	Vendor invoices supporting Input Tax Credit claims	GST laws

A.3 Export of Services (Zero-Rated)

Document	Purpose	Requirement
LUT / Bond	Permits export of services without paying IGST	Filed annually
Export Invoices	Issued to overseas subscribers without GST	GST laws
FIRC / BRC	Verification of foreign exchange receipts	Bank-issued
Form RFD-01	Claim refund of accumulated ITC on exports	GSTN

A.4 Foreign OIDAR Rules

Document	Purpose	Requirement
OIDAR GST Registration	Simplified registration for foreign suppliers	GSTN
Authorised Representative	Appointed person in India handling compliance	GST laws
GSTR-5A Filing	Monthly return including IGST details	GSTN
IGST at 18%	Collected and remitted on all Indian supplies	GST laws
Tax Invoices	GST-compliant invoices using the OIDAR GSTIN	GST laws

CHAPTER 5

GST's Role in 5G Rollout in India: A Critical Analysis of Its Impact on Telecom Infrastructure

Prathamesh Bhingare and Venkatesh Gajare***

ABSTRACT

The rollout of 5G in India represents one of the most capital-intensive transitions in the country's telecom history. While the Goods and Services Tax (GST) simplified the earlier fragmented tax structure, its current design has created unintended financial frictions for telecom operators. This paper examines how GST, particularly restrictions on Input Tax Credit (ITC), affects the cost dynamics of 5G deployment. Using secondary data from regulatory bodies and industry reports, the study compares pre- and post-GST conditions, evaluates the cost composition of 5G infrastructure, and models potential rollout outcomes under existing and reformed tax frameworks. The findings indicate that nearly ₹18,000 crore worth of ITC remains unutilized annually, largely due to exclusions on passive infrastructure such as towers and power systems. Additionally, GST on spectrum payments without credit availability further inflates capital costs. If these structural issues persist, 5G expansion may fall significantly short of national targets by 2030, particularly in non-urban regions. However, targeted GST reforms, especially around ITC eligibility, could improve rollout efficiency without materially affecting government revenue. The paper argues that aligning tax policy with infrastructure economics is essential for achieving equitable and timely 5G deployment in India.

Keywords: GST, 5G Rollout, Input Tax Credit, Telecom Infrastructure, Tax Policy Reform.

1.0 Introduction

India's transition to 5G, launched in October 2022, is not just a technological upgrade, it is a large-scale infrastructure challenge with long-term economic implications. Unlike previous network generations, 5G requires dense deployment of towers, fiber networks, and reliable power systems. Industry estimates suggest that telecom operators may need to invest between ₹2 to ₹3 lakh crore over the coming decade.

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This comes at a time when the sector is already carrying substantial debt, placing additional pressure on investment decisions. In this context, taxation plays a far more critical role than it might in less capital-intensive industries. The introduction of GST in 2017 replaced a complex system of indirect taxes, offering greater transparency and reducing cascading effects. On the surface, this reform appeared beneficial for telecom operators by simplifying compliance and standardizing tax rates. However, the experience post-GST has been mixed. Certain high-value inputs especially those linked to infrastructure development do not qualify for Input Tax Credit. Civil works for tower construction, diesel generators required for backup power, and even significant portions of spectrum-related costs fall outside the credit mechanism. As a result, telecom companies are often unable to offset a large share of the taxes they pay, effectively increasing the overall cost of network deployment. This paper seeks to examine a central question: how do GST provisions, particularly ITC restrictions, influence the financial feasibility and pace of 5G rollout in India? By analysing industry data and policy frameworks, the study explores both the scale of the issue and the potential outcomes under alternative tax scenarios.

2.0 Literature Review

The relationship between taxation and infrastructure investment has long been recognized in economic literature. When firms are required to pay taxes on inputs without the ability to offset them through credits, the effective cost of investment rises. This is particularly significant in sectors that rely heavily on upfront capital expenditure, such as telecommunications, energy, and transport infrastructure. In such industries, even relatively small cost distortions can influence the pace and scale of deployment. In the Indian telecom sector, this issue has become increasingly visible over time. Reports published by the Telecom Regulatory Authority of India (TRAI) consistently highlight the sector's financial stress, driven by rising capital requirements alongside relatively constrained revenue growth. Each successive generation of technology, moving from 3G to 4G and now 5G has required significantly higher levels of investment, without a proportional increase in returns.

This imbalance has made cost efficiency a critical factor in determining the viability of expansion. Within this context, the structure of the Goods and Services Tax (GST) has drawn attention. While GST simplified the earlier multi-layered tax system, certain provisions particularly those relating to Input Tax Credit (ITC) have created unintended cost pressures. In its consultation paper on ease of doing business, TRAI pointed out that restrictions on ITC eligibility, especially for passive infrastructure, add to the overall cost of network deployment. Although the regulator recommended bringing such components within the ITC framework, concrete policy action in this area has remained limited. Industry

estimates further illustrate the scale of the issue. Submissions by the Cellular Operators Association of India (COAI) indicate that nearly ₹18,000 crore worth of input tax credit is effectively locked each year. A substantial portion of this is linked to civil works such as tower construction and base station infrastructure, which are currently excluded from credit eligibility under existing GST provisions.

Independent assessments, including sectoral analysis by Grant Thornton Bharat, suggest that these blocked credits account for a significant share nearly 40 percent of the sector's total GST burden. For a capital-intensive industry, this represents a considerable inefficiency. International comparisons reinforce this concern. Cross-country analysis by the International Telecommunication Union (ITU) shows a clear pattern: markets where telecom operators are unable to recover input taxes tend to experience slower 5G rollout. In high tax-burden environments, average population coverage after three years remains significantly lower than in countries where tax systems allow more efficient credit recovery. This indicates that tax design can directly influence the speed of technological diffusion.

In the Indian context, researchers such as Rao and Kumar (2022) and Agarwal (2023) argue that the ITC challenge is not merely procedural but structural. The issue arises from a mismatch between the long investment cycles typical of infrastructure sectors and the annual framework through which tax credits are applied and adjusted. As a result, firms are unable to fully utilize credits in a timely manner, leading to persistent accumulation and reduced liquidity. An additional dimension worth considering is the impact on long-term sectoral competitiveness. When capital costs rise due to tax inefficiencies, firms may prioritize short-term returns over long-term infrastructure expansion. This can slow innovation, delay rural connectivity, and widen the digital divide. Moreover, it may discourage new entrants, reinforcing market concentration among a few large players. In this sense, ITC restrictions do not only affect financial metrics, they shape the broader trajectory of telecom development in the country.

3.0 Methodology

This study adopts a descriptive and analytical approach, relying entirely on secondary data. No primary data collection methods such as surveys or interviews were used, as the focus of the research is on industry-wide financial patterns and the structural design of tax policies. These aspects are more effectively examined through established reports, regulatory publications, and institutional analyses rather than individual-level responses. The analysis draws upon four key categories of sources.

These include regulatory publications and statistical reports from the Telecom Regulatory Authority of India (TRAI) and the Department of Telecommunications (DoT);

industry submissions and financial data compiled by the Cellular Operators Association of India (COAI); sector-specific insights from the Grant Thornton Bharat (2024) report on GST in telecom; and international benchmarks provided by organizations such as the International Telecommunication Union (ITU) and GSMA. All financial figures used in the study are expressed in current Indian Rupees to maintain consistency and comparability. The analytical framework is structured in three stages.

In the first stage, a comparative assessment of the telecom sector before and after the implementation of GST is conducted. This comparison is based on four parameters: tax complexity, transparency in compliance, overall cost burden, and the effectiveness of input tax credit (ITC) utilization. Each parameter is evaluated using a standardized scoring approach on a ten-point scale, informed by trends and observations reported in the selected literature. In the second stage, the study breaks down the overall cost structure of 5G deployment into key components. These include spectrum acquisition, infrastructure development, equipment and technology, tax-related costs, and financing elements. The purpose of this step is to identify where GST has the greatest financial impact and to examine the extent to which ITC benefits are actually realized across different cost categories. The third stage involves a scenario-based analysis to estimate the potential trajectory of 5G rollout under different policy conditions.

Two scenarios are modelled: one reflecting the continuation of the current GST framework, and another incorporating targeted reforms suggested in this paper. Based on these scenarios, projections are made regarding the extent of 5G tower coverage by 2030. These projections are calibrated using publicly available investment estimates from COAI and coverage benchmarks reported by TRAI. To support the analysis, the findings are presented through a series of visual representations, including charts and comparative figures. These visuals are integrated with the discussion to improve clarity and interpretation, and all data sources are clearly cited in accordance with academic and conference guidelines. An additional methodological consideration is the use of triangulation. By comparing data across regulatory, industry, and international sources, the study aims to improve the reliability of its conclusions and reduce dependence on any single perspective. While the absence of primary data may limit the ability to capture firm-level variations, the approach ensures a broader and more policy-relevant understanding of the issue.

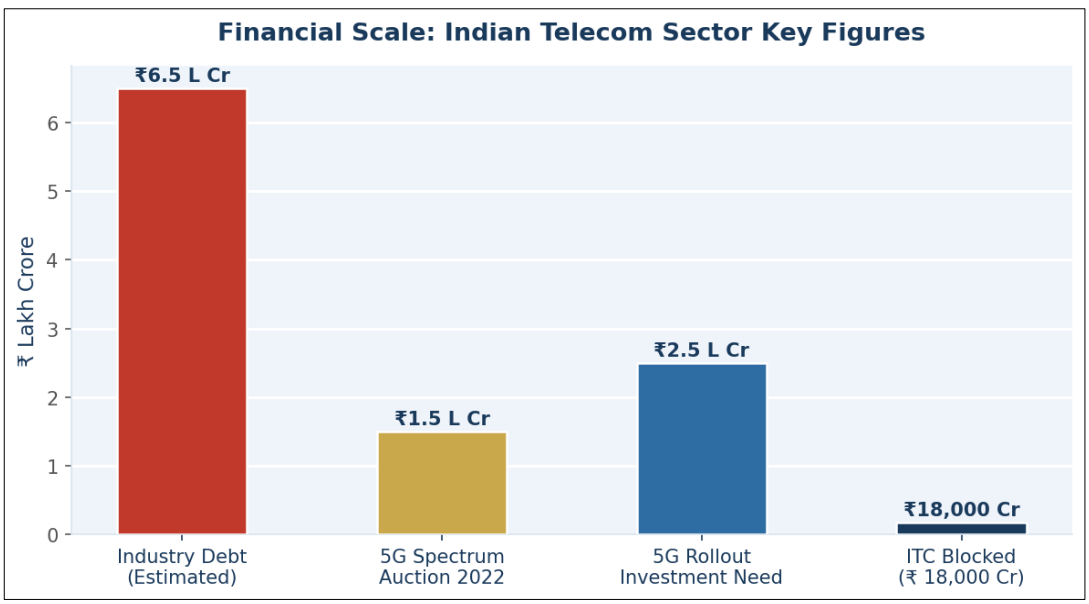
4.0 Findings and Analysis

4.1 How big is the financial challenge?

Before isolating the impact of GST, it is important to first understand the broader financial position of the telecom sector. The scale at which the industry operates is substantial,

and any additional cost pressures must be viewed in this larger context. As illustrated in Figure 1, key financial indicators sectoral debt, spectrum payments, projected 5G infrastructure investment, and blocked input tax credit (ITC) highlight the magnitude of the challenge. The sector is currently burdened with debt estimated at around ₹6.5 lakh crore, which exceeds both the revenue generated from the 2022 spectrum auction (approximately ₹1.5 lakh crore) and the expected capital expenditure required for nationwide 5G infrastructure (around ₹2.5 lakh crore).

Figure 1: Key Financial Metrics — Indian Telecom Sector (₹ Lakh Crore).



Source: COAI (2024); TRAI (2024); DoT (2023).

While the annual ITC blockage of roughly ₹18,000 crore appears relatively small when compared to these headline figures, such a comparison can be misleading. The significance of this amount becomes clearer when viewed from a liquidity and financing perspective. Telecom is a capital-intensive sector with a relatively high cost of capital, typically in the range of 10–12 percent. When ITC remains unutilized, it effectively locks up funds that could otherwise be deployed for network expansion. In practical terms, this blockage is comparable to the financial burden of servicing a much larger volume of debt, thereby tightening cash flows for operators already operating under significant leverage. This constraint has direct implications for investment decisions. Telecom companies tend to

prioritize projects with clearer and quicker returns, which often means that expansion into semi-urban and rural areas where demand is still developing gets delayed.

As 5G networks require a denser and more capital-intensive infrastructure compared to previous generations, even relatively modest inefficiencies in cash flow can translate into a meaningful slowdown in rollout. An additional aspect that merits attention is the cumulative effect of such blockages over time. Since 5G deployment is a multi-year process, persistent ITC accumulation can compound financial stress, limiting the sector's ability to reinvest internally generated funds. This not only affects the pace of infrastructure creation but may also increase reliance on external borrowing, further elevating financial risk. Taken together, these factors suggest that the issue of blocked ITC is not merely a marginal accounting concern. Instead, it represents a structural constraint that influences how, where, and how quickly telecom infrastructure is deployed across the country.

4.2 Pre-GST vs. Post-GST: Not a simple story

Table 1 below compares the sector across four parameters before and after GST. Figure 2 shows the same data visually.

Table 1: Pre-GST vs. Post-GST Parameter Comparison — Indian Telecom Sector

Parameter	Pre-GST Score	Post-GST Score	Net Effect
Tax Complexity (lower = better)	8	4	Significant improvement — compliance simplified
Compliance Transparency	4	8	Major improvement — unified portal, audit trail
Overall Cost Burden	6	7	Marginal increase — ITC gaps outweigh cascading gains
ITC Utilisation Efficiency	5	6	Moderate improvement — blockages persist

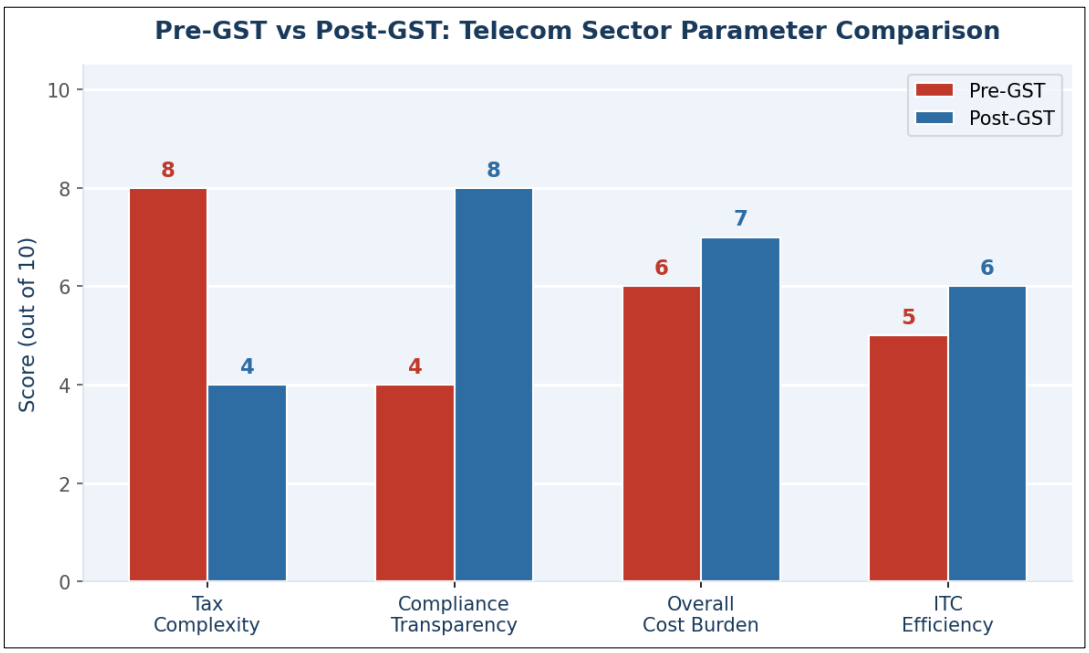
Source: COAI (2024); Grant Thornton Bharat (2024).

Table 1 is a mixed results set which is a fair point to admit. GST actually really made the tax complex quite a way down - the score actually went down to 4 which is the number of separate levies which have been amalgamated into a single system. Openness increased significantly as well. However, on the cost burden, life really deteriorated (by 6 to 7). The ITC restrictions that are being introduced under GST comes at a cost which is greater than the savings in cascade tax brings-at least to capital-intensive operators. The essence of the problem is that.

4.3 Where does the money go in 5G rollout?

Table 2 and Figure 3 break down the cost structure of 5G deployment. This is important because it shows exactly where GST hits hardest.

Figure 2: Pre-GST vs. Post-GST Comparative Analysis — Four Sector Parameters (Score out of 10)



Source: Authors' analysis based on COAI (2024); Grant Thornton Bharat (2024).

Table 2: 5G Rollout Cost Structure and GST Incidence by Category

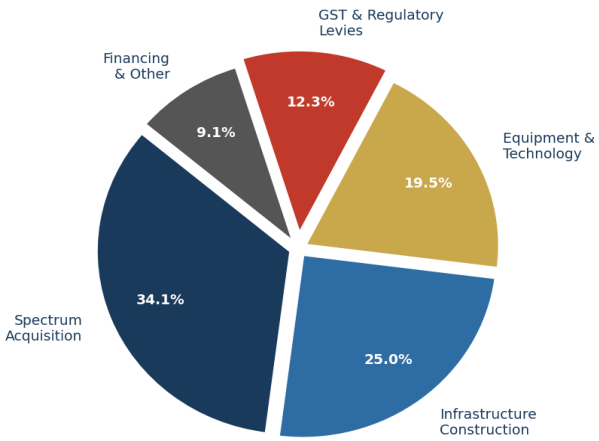
Cost Category	Est. Share (%)	ITC Available?	GST Implication
Spectrum Acquisition	37.5%	No	18% GST; zero ITC — full cost to operator
Infrastructure Construction	27.5%	Partial	Civil works excluded; equipment partly eligible
Equipment & Technology	21.5%	Yes	ITC largely available; net cost limited
GST & Regulatory Levies	13–15%	No	Direct unrecoverable tax embedded in total cost
Financing & Other	~10%	N/A	Indirectly inflated by liquidity cost of ITC blockage

Source: Authors' analysis based on COAI (2024); DoT (2023).

What stands out from Table 2 is how poorly aligned the ITC rules are with the actual cost structure. Spectrum (37.5%) and infrastructure construction (27.5%) together make up about 65% of total 5G investment costs and these are precisely the two areas where ITC is either completely blocked or only partially available. Equipment, where ITC does flow fairly

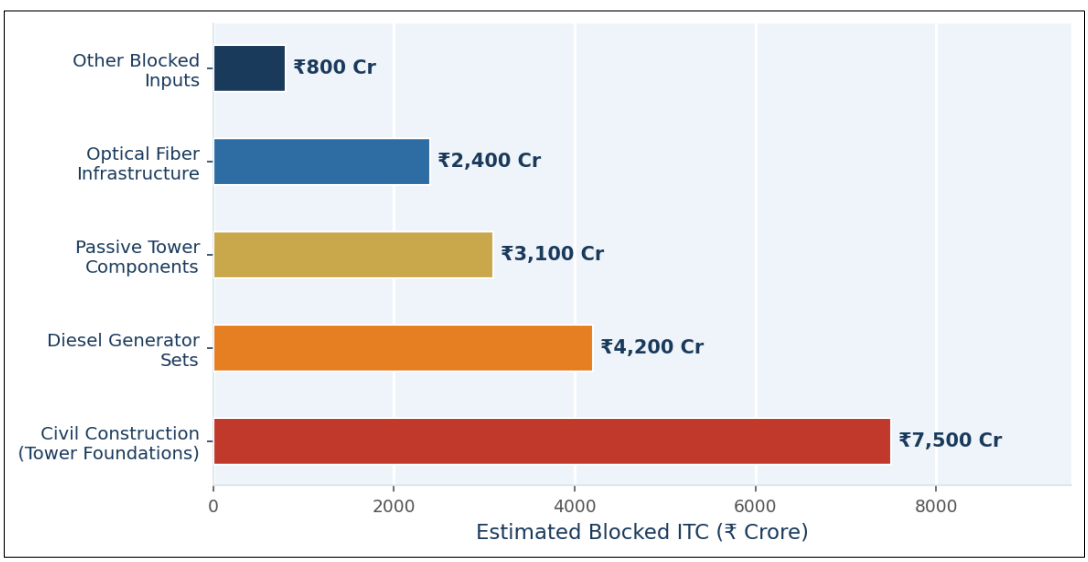
well, is less than a quarter of total costs. So the effective tax rate on 5G investment ends up being significantly higher than the headline 18%.

Figure 3: Estimated 5G Rollout Cost Structure — Proportional Breakdown by Category



Source: Authors' analysis based on COAI (2024); DoT (2023).

Figure 4: Estimated Annual ITC Blockage by Telecom Infrastructure Category (₹ Crore)



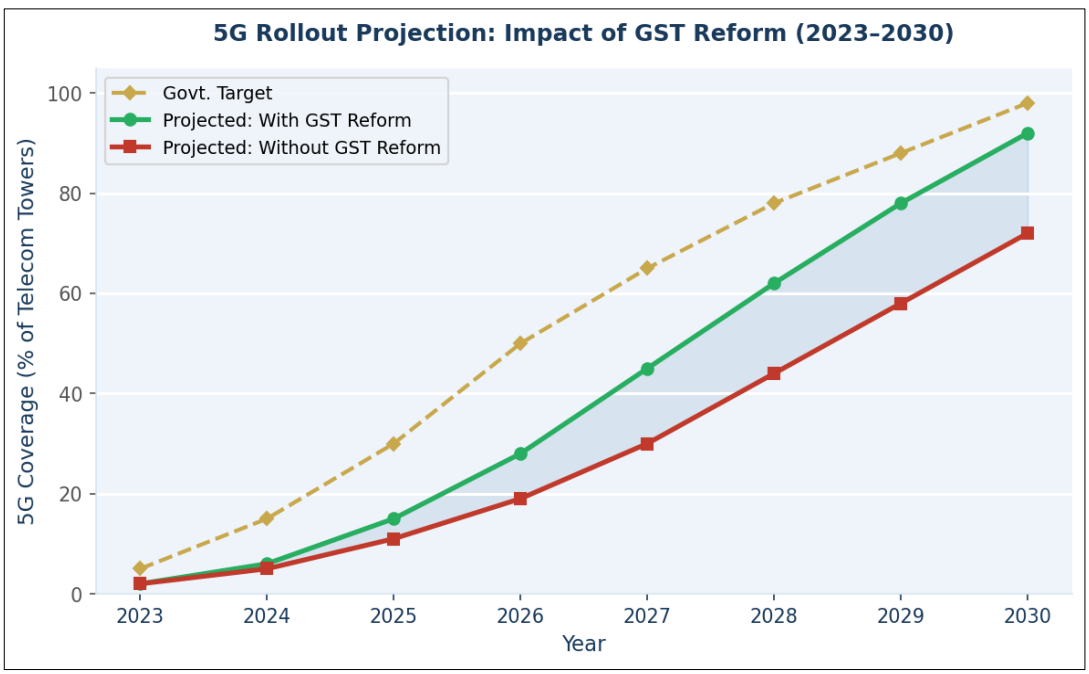
Source: COAI (2024); Grant Thornton Bharat (2024).

4.4 Breaking down the ₹18,000 Crore ITC blockage

Figure 4 shows where exactly the ₹18,000 crore of blocked ITC is sitting. This level of detail matters because fixing the problem requires different interventions for different categories. The largest amount ₹7,500 crore is tied up in civil construction expenses such as tower foundations and base station enclosures. These are not included in ITC under Schedule II of the CGST Act, which is an indivisible rule that was likely not intended to consider telecom densification. The next largest category is that of diesel generators (₹4,200 crore), which are problematic to say the least: the requirement of backup power is obligatory according to the licensing requirements in the DoT, but the GST on the generators is not credible at all. The main categories are topped off by passive tower components (₹3,100 crore) and optical fibre infrastructure (₹2,400 crore). There is no good news, of course, but the best news is that most of the blockage is confined to a small number of specific categories - which suggests a focused solution, as opposed to a wholesale GST redesign.

4.5 What happens to 5G rollout if nothing changes?

Figure 5: 5G Rollout Projections 2023–2030 — Reform vs. No-Reform vs. Government Target (% of towers)



Source: Authors' scenario model; calibrated against COAI (2024) and TRAI (2024).

Figure 5 illustrates three coverages of 5G between 2023 and 2030 - what the government wants, what we forecast will occur with the existing GST framework and what could occur with the proposed reforms outlined in Section 5. This would leave the difference in percentage between the reform and no-reform lines at approximately 20 percentage points in 2030- 92 vs 72 per cent of towers in coverage. Reducing it to the real world, that would equate to between 80,000 and 100,000 towers that would be postponed or never constructed on the status quo. And it will not be the cities that will suffer the most - 5G in Metro areas, even with increased taxes, remains economic. The semi-urban and rural situations are those that have thinner margins, and those that most readily bear the additional cost burden, switching a borderline project to the non-viability side.

4.6 Does GST reform actually cost the government too much?

A common objection to extending ITC is that the government will lose revenue. Table 3 and Figure 6 below look at this question directly. The blocked ITC has been operating at an average of 38-49 percent of the annual GST revenue in the sector as seen in Table 3. It would cost the government about ₹18,000 crore annually in revenue forgone to give complete ITC relaxation on categories that are already blocked. This is a lot alone - but the total GST collections in India in FY 2024 were approximately ₹20 lakh crore. Thus the reform cost is less than 0.1-percent of the total GST base. And the payoffs of the faster rollout of 5G, which multiple studies suggest could contribute between 1.5 and 2.0 percent per annum to annual GDP, are worth several lakh crore/year at the present GDP growth levels. There is no close math.

Table 3: GST Revenue from Telecom Sector vs. Estimated ITC Blockage — FY 2020 to FY 2024

Financial Year	GST Revenue (₹ Cr)	Blocked ITC (₹ Cr)	Blockage as % of Revenue
FY 2019–20	32,000	14,000	43.8%
FY 2020–21	30,500	14,800	48.5%
FY 2021–22	36,000	16,000	44.4%
FY 2022–23	41,000	17,200	41.9%
FY 2023–24	47,500	18,000	37.9%

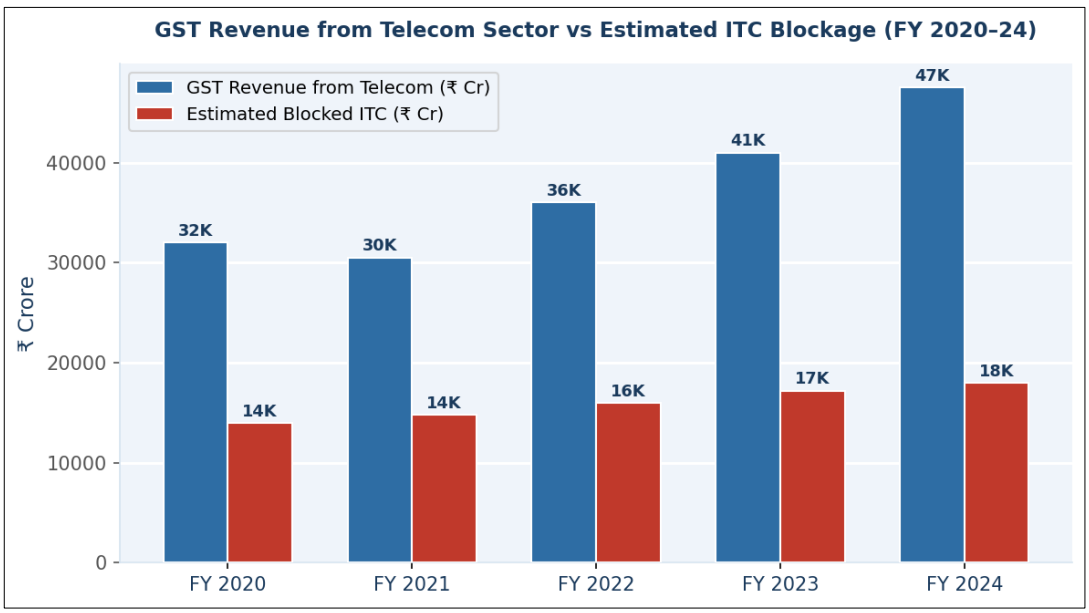
Source: Authors' estimates based on COAI (2024); Ministry of Finance (2024).

5.0 Policy Recommendations

The findings of this study suggest that the challenges posed by GST to 5G deployment are not insurmountable, but they do require targeted and carefully sequenced reforms. Rather than proposing a complete overhaul of the existing system, a phased approach

is more practical beginning with measures that can be implemented quickly and progressing toward more structural adjustments over time. This ensures that immediate relief is provided to the sector while maintaining policy stability.

Figure 6: GST Revenue from Telecom Sector vs. Estimated Blocked ITC, FY 2020–24 (₹ Crore)



Source: Authors' estimates based on COAI (2024); Ministry of Finance (2024).

5.1 Immediate measures (0–12 months: Within existing framework)

Certain issues can be addressed without legislative amendments, making them suitable for quick implementation through notifications or administrative clarifications.

- Allow ITC on diesel generators used in telecom operations: Backup power is not optional but a regulatory necessity for telecom towers, especially in regions with unstable electricity supply. Allowing input tax credit on diesel generators would correct this inconsistency in policy design and release approximately ₹4,200 crore in blocked credits annually. This step would directly improve cash flow without altering the broader tax structure.
- Clarify ITC eligibility for optical fibre infrastructure: Uncertainty around the classification of optical fibre cables and ducting has led to disputes and delays. Issuing a clear classification guideline would reduce litigation and unlock an estimated ₹2,400

crore in credits each year. More importantly, it would create predictability for long-term network planning, which is essential for fiber-intensive 5G architecture.

- Introduce time-bound processing of ITC refunds: Delays in refund approvals increase the effective cost of capital for telecom operators. Establishing a fixed timeline such as 30 days for processing ITC claims, along with interest on delays, would not change eligibility but would significantly ease liquidity pressures. Faster credit cycles can have a meaningful impact on the pace of infrastructure rollout.
- Enable provisional ITC utilization for large infrastructure projects: For long-gestation telecom projects, allowing provisional or partial utilization of ITC subject to later reconciliation—could ease short-term financial constraints. This would be particularly useful during the initial years of heavy capital expenditure.

5.2 Medium-term reforms (12–36 months: Policy adjustments required)

More substantive changes will require deliberation within the GST Council but remain achievable within the current institutional framework.

- Create a dedicated ITC framework for passive telecom infrastructure: A significant share of blocked credits arises from civil works related to towers, foundations, and enclosures. Introducing sector-specific provisions to allow ITC on these components would address the largest bottleneck, estimated at around ₹7,500 crore annually. Given the infrastructure nature of telecom networks, aligning tax treatment with investment realities is both logical and necessary.
- Re-evaluate GST treatment of spectrum payments: Spectrum represents one of the largest cost components in 5G deployment, yet the GST paid on it does not currently allow for credit utilization. Two potential approaches could be considered: treating spectrum as a capital asset (thereby enabling ITC) or introducing a deferred credit mechanism that allows operators to claim ITC gradually over the license period. Either approach would reduce the upfront financial burden.
- Introduce sector-linked tax offsets tied to rollout milestones: ITC benefits could be partially linked to measurable deployment outcomes, such as rural tower installation or fibre expansion. This would align fiscal incentives with policy goals, ensuring that tax relief translates into tangible infrastructure growth.

5.3 Long-term structural reforms (beyond 36 months)

Over the longer term, the focus should shift toward building a more adaptive and future-ready tax framework.

- Institutionalize periodic policy review mechanisms: Given the rapid pace of technological change, a static tax framework may become misaligned with industry

needs. Establishing a formal review cycle such as every three years would allow GST provisions affecting telecom to be reassessed in light of evolving technologies and market conditions.

- Design targeted fiscal incentives for underserved regions: To address disparities in network coverage, GST policy can be used as a tool to encourage investment in rural and semi-urban areas. Preferential ITC treatment or additional credits for infrastructure deployed in low-revenue regions could help bridge the digital divide.
- Integrate GST policy with digital infrastructure goals: Tax policy should not operate in isolation but be aligned with broader national initiatives such as Digital India and rural connectivity programs. A coordinated approach linking taxation, spectrum policy, and infrastructure funding would create a more coherent ecosystem for telecom expansion.
- Encourage infrastructure sharing through tax neutrality: Allowing full ITC benefits on shared telecom infrastructure (such as common towers and fibre networks) could promote collaboration among operators, reduce duplication of investment, and accelerate rollout efficiency.

6.0 Conclusion

This study set out to examine three key issues: the extent of input tax credit (ITC) blockage in the telecom sector, its implications for 5G rollout, and the scope for policy intervention. The analysis indicates that the magnitude of the problem is substantial. On an annual basis, nearly ₹18,000 crore of ITC remains unutilized, with a significant portion tied to infrastructure components that form the backbone of 5G networks (COAI, 2024; Grant Thornton Bharat, 2024). The consequences of this inefficiency extend beyond accounting constraints. By increasing the effective cost of investment, ITC restrictions directly influence the pace at which telecom operators can expand network coverage. The scenario analysis suggests that if the current GST framework continues without modification, 5G deployment could lag meaningfully behind its potential trajectory.

The estimated gap around 20 percentage points in tower coverage by 2030 highlights the long-term implications of what may appear, at first glance, to be a technical tax issue (TRAI, 2024; COAI, 2024). At the same time, the fiscal trade-off associated with reform appears relatively modest. The revenue impact of unlocking blocked ITC is small when compared to overall GST collections (Ministry of Finance, 2024). In contrast, the broader economic gains from faster and more widespread 5G adoption ranging from productivity improvements to digital ecosystem growth are likely to be far more significant (GSMA, 2023; ITU, 2023). This creates a strong case for re-evaluating existing provisions. An important takeaway from the study is that the current GST structure was not designed with next-generation telecom networks in mind.

As a result, certain provisions particularly those affecting passive infrastructure, backup power systems, and spectrum-related costs do not align well with the investment realities of the sector (Grant Thornton Bharat, 2024). Addressing these gaps does not require a complete redesign of the tax system. Even targeted adjustments in a few critical areas could ease financial pressure and improve rollout efficiency. Looking ahead, the challenge is not only technical but also institutional. Policy responses need to balance revenue considerations with long-term infrastructure goals. A phased reform strategy, as outlined in this paper, provides a practical pathway starting with immediate administrative changes and gradually moving toward deeper structural alignment. Beyond the immediate scope of telecom, this issue also raises a broader policy question: how should tax systems adapt to sectors that are both capital-intensive and strategically important?

As India continues its digital transformation, ensuring that fiscal frameworks support rather than constrain infrastructure expansion will be essential (World Bank, 2023). Ultimately, the issue is less about identifying solutions and more about prioritizing their implementation. The evidence suggests that relatively limited policy adjustments could unlock significant gains in network expansion and digital inclusion. What remains critical is the willingness to act on these insights in a timely manner.

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CHAPTER 6

Impact on Cybersecurity in Banking: Challenges, Compliance, and the Road Ahead

*Aadrika Mishra**

ABSTRACT

The introduction of the Goods and Services Tax (GST) in India in July 2017 brought sweeping changes across industries — none more complex than banking and financial services. This paper examines the intersection of GST compliance mandates and cybersecurity imperatives in the banking sector. It analyses how digital invoicing, e-way bill systems, GST Network (GSTN) integrations, and real-time tax reporting have expanded the cyber attack surface of financial institutions. The paper further explores increased operational costs, vendor risk exposure, data privacy concerns, and regulatory compliance challenges introduced by GST. Drawing on industry reports, RBI circulars, and case studies, this research proposes a framework for banks to balance GST compliance with robust cybersecurity posture, while identifying key areas for policy intervention.

Keywords: GST; Cybersecurity; Banking; Digital compliance; Fintech; Taxation.

1.0 Introduction

The Goods and Services Tax (GST), implemented in India on 1 July 2017, represents one of the most significant fiscal reforms in the country's post-independence history. By subsuming over a dozen central and state levies into a single unified tax structure, GST aimed to simplify indirect taxation, reduce cascading effects, and formalise the economy. However, its implementation imposed profound operational and technological burdens on the banking sector — an industry that was already contending with an evolving and aggressive cyber threat landscape. The banking and financial services sector is both a primary channel for GST payments and a significant taxpayer in its own right, liable on fee-based income, advisory services, fund management charges, and various non-exempt financial transactions. More critically, the sector was required to integrate deeply with the GSTN infrastructure, adopt digital invoicing, manage input tax credit (ITC) reconciliation at scale, and ensure real-time compliance — all while operating under stringent regulatory oversight from the Reserve Bank of India (RBI).

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This technological leap in compliance, though well-intentioned, inadvertently broadened the attack surface available to malicious actors. Every API endpoint connecting a bank's core banking system to GSTN, every automated invoice processing pipeline, and every third-party compliance vendor represents a potential vulnerability. This paper investigates how GST compliance architecture intersects with cybersecurity risk in Indian banking, what the consequences have been, and what mitigation strategies are available.

2.0 Background: GST and the Banking Sector

2.1 GST applicability to banks

Under the GST framework, banks are treated as service providers and are required to register under GST, file regular returns, issue tax invoices, and reverse-charge applicable taxes. Key services taxable at 18% GST include:

- Processing fees on loans, credit cards, and overdraft facilities
- Fund management and portfolio advisory charges
- Locker rental and safe custody services
- Non-fund-based services such as letters of credit and bank guarantees
- Forex conversion margin income (partially taxable)

Core banking services — interest on deposits and loans — remain exempt, but the taxable portion is substantial enough to require comprehensive compliance infrastructure.

2.2 GSTN integration requirements

The GSTN (Goods and Services Tax Network) is the IT backbone of the GST ecosystem. Banks and financial institutions must interface with GSTN for: real-time invoice uploads (GSTR-1), auto-population of purchase returns (GSTR-2A/2B reconciliation), filing of consolidated returns (GSTR-3B), tax deducted at source via e-invoicing (applicable from FY 2023 thresholds), and e-way bill generation for relevant services.

The integration of legacy core banking systems with GSTN APIs was a significant technical undertaking. Many banks had to engage specialised GST Suvidha Providers (GSPs) and Application Service Providers (ASPs) to mediate data exchange — a decision with direct cybersecurity implications.

3.0 How GST Expanded the Cybersecurity Attack Surface

3.1 API proliferation and third-party integrations

The most immediate cybersecurity consequence of GST adoption was the proliferation of API connections between bank systems and external entities.

Banks historically maintained tightly controlled perimeters, but GST compliance necessitated the opening of secure tunnels to GSTN servers, GSP intermediaries, and multiple third-party compliance software vendors. Each integration represents a potential ingress point for attackers.

Research by CERT-In and various cybersecurity firms post-2018 noted a measurable increase in API-level attacks targeting financial institutions in India, correlating partially with the expansion of digital compliance infrastructure. Man-in-the-middle (MitM) attacks on API data flows between bank ERP systems and GSTN became a documented threat vector.

3.2 Data volume and sensitivity

GST compliance requires the transmission of granular transaction data — invoice amounts, counterparty identifiers, PAN/GSTIN numbers, transaction dates, and service descriptions — in near real-time. This creates:

- High-value data repositories vulnerable to exfiltration
- Potential for large-scale customer PII exposure if compliance systems are breached
- Risk of cross-referencing financial data with other stolen datasets for identity fraud

In the banking context, a breach of GSTN-linked systems could expose not just tax data but correlated financial behaviour patterns of millions of customers and businesses, making it a high-reward target for nation-state actors and organised cybercriminal groups alike.

3.3 Increased vendor risk

The complex vendor ecosystem required for GST compliance — GSPs, ASPs, invoice management platforms, and reconciliation software providers — introduces significant supply chain cybersecurity risks. Banks that previously had limited exposure to third-party software in their compliance workflows now depend on an extended vendor network.

The 2020 SolarWinds breach globally demonstrated the devastating potential of supply chain attacks. In the Indian banking context, a compromise of even a mid-tier GSP could provide attackers with access to the GST transaction data of hundreds of financial institutions simultaneously.

4.0 GST-related cyber threat vectors in banking

The following table categorises the primary threat vectors introduced or amplified by GST compliance requirements in the banking sector:

Threat Vector	Mechanism	Risk Level	Affected Function
API Interception	MitM attacks on GSTN API data flows	Critical	Tax filing, GSTR upload
GSP/ASP Compromise	Supply chain attack via intermediary vendor	High	Data reconciliation
Phishing on GST Portals	Spoofed GSTN login pages targeting bank staff	High	Portal access
Invoice Fraud / Fake ITC	Malicious actors creating fraudulent digital invoices	High	ITC claims, ERP
Data Exfiltration	Breach of GST data stores holding customer PII	Critical	Compliance databases
Ransomware on Compliance ERP	Encryption of GST-integrated ERP modules	High	Operations, filing
Credential Stuffing	Automated attacks on GSTN/GSP portals	Medium	Portal authentication
Insider Threat	Misuse of GST access privileges by employees	Medium	ITC, invoice access

5.0 Financial and Operational Implications

5.1 Cost of compliance infrastructure

Implementing GST-compliant systems represented a significant capital expenditure for Indian banks. Mid-to-large commercial banks reportedly spent between INR 50 crore and INR 300 crore on ERP upgrades, GST module development, staff training, and ASP/GSP engagement fees in the first three years post-GST rollout. A portion of this expenditure necessarily went toward cybersecurity hardening of the new compliance architecture. However, cybersecurity investment in GST systems has consistently lagged behind the speed of deployment. Industry surveys indicate that many banks classified their GST integration projects as "compliance" rather than "IT security" initiatives, meaning they were managed by finance and tax teams rather than CISOs, resulting in under-investment in security controls at the integration layer.

5.2 GST on cybersecurity spending — The taxation paradox

A critical and often overlooked dimension is that GST itself increases the cost of cybersecurity procurement. Cybersecurity software, hardware appliances (firewalls, IDS/IPS), consulting services, and managed security service providers (MSSPs) are all subject to 18% GST. For banks, which are partially exempt entities unable to claim full ITC on all procurements due to their exempt service mix, this creates a substantial irrecoverable tax burden on security spending. The net effect is a tax-induced disincentive to security

investment, particularly for smaller regional banks and urban co-operative banks with thin margins and limited ITC recovery. This structural issue has been flagged by the Indian Banks' Association (IBA) and the Federation of Indian Chambers of Commerce and Industry (FICCI), but policy correction remains pending.

5.3 Quantifying the cost impact

The table below illustrates estimated incremental cybersecurity costs attributable to GST compliance infrastructure for different bank categories:

Bank Category	Annual GST Compliance IT Cost (Est.)	Cybersecurity Uplift (Est.)	Irrecoverable GST on Security
Large PSU Banks	INR 80–150 Cr	INR 12–25 Cr	INR 2–4 Cr
Large Private Banks	INR 60–120 Cr	INR 10–20 Cr	INR 1.8–3.6 Cr
Mid-Sized Banks	INR 15–40 Cr	INR 3–8 Cr	INR 0.5–1.4 Cr
Small Banks / Co-ops	INR 2–10 Cr	INR 0.4–2 Cr	INR 0.07–0.36 Cr

Note: Estimates are based on industry disclosures, IBA submissions, and analyst reports. Actual figures vary by institution size, technology stack, and outsourcing mix.

6.0 Regulatory Framework: RBI, GSTN, and Cybersecurity Mandates

6.1 RBI's cybersecurity framework

The Reserve Bank of India issued its comprehensive Cybersecurity Framework for Banks in June 2016, subsequently updated through multiple circulars. The framework mandates risk-based cybersecurity policies, Security Operations Centers (SOC), incident reporting within defined timelines, vulnerability assessments, and third-party risk management. Notably, the RBI framework does not specifically address GST integration risks — a gap that has become more pronounced as GST compliance systems have matured. The RBI's Master Direction on IT Governance, Risk, Controls and Assurance Practices (2023) expands third-party risk management requirements and implicitly covers GSP and ASP vendors, but explicit guidance on GST-specific cyber risks is absent from current regulations.

6.2 GSTN security architecture

GSTN is operated as a non-government, private limited company under the IT Act, 2000 and is subject to Information Security standards including ISO 27001. GSTN employs encryption in transit (TLS), authentication through digital signature certificates (DSCs), and OTP-based verification. API security is enforced through rate limiting, GSTN-issued credentials, and IP whitelisting requirements for GSP connections. However, the security

responsibility model between GSTN and its GSP ecosystem is not fully specified in the public domain, creating ambiguity about incident response protocols when breaches occur at the GSP layer — data that technically originates from banks but transits through intermediaries.

6.3 Data protection considerations

The Digital Personal Data Protection Act (DPDPA), 2023 adds another regulatory layer. Banks processing customer GST-related data — names, PAN, GSTIN, transaction values — must comply with DPDPA requirements for consent, purpose limitation, and data breach notification. GST compliance systems that were architected before DPDPA now require retrofitting to ensure data minimisation and access controls meet the new statutory standard.

7.0 Illustrative Case Studies

7.1 GSP credential compromise — A hypothetical scenario

Consider a scenario in which a mid-tier GSP servicing 30 banks experiences a credential compromise through a spear-phishing attack on a senior engineer. The attacker gains access to the GSP's production systems, enabling them to intercept GSTIN-linked API calls, exfiltrate invoice metadata for millions of transactions, and inject fraudulent ITC claims into the data pipeline. Detection time is estimated at 45 days — consistent with industry average dwell times. The resulting exposure encompasses customer PII, inter-company transaction patterns, and exploitable ITC data — all compounded by the multi-bank blast radius inherent in a shared GSP architecture. While this is a hypothetical scenario, it is grounded in the documented technical architecture of the GSP ecosystem and consistent with the modus operandi of advanced persistent threat (APT) groups targeting Indian financial infrastructure.

7.2 Phishing campaigns exploiting GST notices

CERT-In and various private threat intelligence firms have documented multiple phishing campaigns in 2019–2024 that weaponised GST notice themes. Emails purporting to be from GSTN or the GST Council directed bank employees to fraudulent portals to "resolve discrepancies" or "update digital signatures." Credential harvesting from such campaigns has been used in subsequent lateral movement within bank networks. These campaigns exploit the psychological urgency associated with tax compliance — particularly the fear of penalties and interest for late filing — to bypass employee scepticism. The frequency and sophistication of GST-themed social engineering increased materially in the periods immediately preceding filing deadlines (10th and 20th of each month for large taxpayers).

8.0 Proposed Framework: GST-Secure Banking Architecture

Drawing from the analysis above, this paper proposes a five-pillar framework for banks to manage GST compliance without compromising cybersecurity:

Pillar 1: Secure Integration Architecture

- Implement dedicated DMZ zones for all GSTN/GSP API communications
- Enforce mutual TLS (mTLS) on all external API connections
- Apply API gateway controls — rate limiting, schema validation, anomaly detection
- Conduct annual penetration testing on GST integration endpoints

Pillar 2: Vendor Risk Management

- Require SOC 2 Type II or ISO 27001 certification for all GSPs and ASPs
- Contractually mandate incident notification within 4 hours of detection
- Conduct right-to-audit clauses in GSP contracts
- Implement continuous third-party risk monitoring via security ratings platforms

Pillar 3: Data Governance and Minimisation

- Classify GST-linked data as sensitive PII under DPDPA data inventory
- Apply role-based access controls (RBAC) on all GST compliance systems
- Enforce data retention schedules aligned with GST record-keeping requirements (8 years)
- Pseudonymise customer identifiers in analytics and reconciliation workloads

Pillar 4: Threat Awareness and Incident Response

- Include GST-themed phishing scenarios in mandatory security awareness training
- Extend SOC monitoring scope to include GSTN portal logins and GSP API activity
- Define GST-specific playbooks in the bank's Incident Response Plan
- Participate in FS-ISAC and CERT-In information sharing for GST threat intelligence

Pillar 5: Policy and Regulatory Advocacy

- Engage IBA and FICCI to advocate for reduced GST rates on certified cybersecurity products
- Lobby for RBI circular explicitly addressing GST infrastructure cyber risks
- Support standardisation of GSTN-GSP security protocols and SLA frameworks
- Advocate for full ITC recovery on cybersecurity expenditure for exempt-sector entities

9.0 Policy Recommendations

Based on the research, the following policy interventions are recommended for consideration by relevant authorities:

Recommendation	Target Authority	Priority	Expected Impact
Reduce GST on cybersecurity products/services to 5% or exempt	GST Council	High	Increases security investment, lowers cost
Issue RBI Master Circular on GST Integration Cybersecurity	RBI / DSIM	High	Standardises security controls industry-wide

10.0 Conclusion

The implementation of GST has been transformative for the Indian banking sector, driving digitalisation, improving tax transparency, and formalising financial flows. However, it has simultaneously created a complex cybersecurity challenge that has not received commensurate regulatory or academic attention. The expansion of API integrations, the emergence of a vulnerable GSP/ASP ecosystem, the irrecoverable tax burden on security spending, and the exploitation of GST compliance anxiety by threat actors collectively represent a material risk to the sector's cyber resilience.

This paper has demonstrated that the intersection of tax compliance and cybersecurity is not merely a technical issue but a governance and policy challenge requiring coordinated action from banks, regulators, and the government. The proposed five-pillar framework offers a practical starting point for banks to harden their GST compliance architecture, while the policy recommendations provide a roadmap for systemic improvement.

As India advances toward a more integrated digital tax infrastructure — including the potential expansion of e-invoicing mandates, account aggregator frameworks, and UPI-GST linkages — the cybersecurity implications will only intensify. Proactive investment in secure architecture, clear regulatory guidance, and tax policy reform are not optional extras; they are prerequisites for a resilient digital banking ecosystem.

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CHAPTER 7

GST and the Taxation of Influencers and Digital Content Creators in India: A Study of the Rules, the Gaps, and What They Mean for Online Creators

Shubhangi Gaikwad, Vatsalya Mittal** and Preet Kochar***

ABSTRACT

India's creator economy has grown much faster than the tax rules designed to govern it. Estimates place the number of Indians earning a living from digital content between 3.5 and 4.5 million, collectively influencing more than $350 billion of global consumer spending annually. The treatment of such earnings under indirect tax law, however, remains unsettled. The CGST Act, 2017 defines "supply" broadly under Section 7, but it was not drafted with influencers in mind. Brand collaborations, affiliate commissions, advertising revenue, gifted products and barter arrangements behave differently, and the Act has to be stretched to fit them. Most of these supplies fall under SAC 998361 and attract 18% GST; in practice, enforcement remains uneven. Section 9 governs the levy and Section 15 the valuation, but both struggle when payment takes the form of a phone, a sponsored trip or a non-cash benefit. Departmental circulars, GST Council updates and Section 194R of the Income Tax Act add further layers of interpretation. This study, based on a qualitative analysis of statutory provisions, departmental circulars and industry reports, finds that GST has, on balance, formalised the creator economy: registration is now routine, invoicing is cleaner and most mid-tier creators treat their work as a business. However, the treatment of non-cash transactions under Section 15 remains problematic, particularly for smaller creators without access to professional advice. Until a dedicated CBIC circular on barter is issued and filing requirements are simplified for the lower end of the market, compliance will continue to fall hardest on those least equipped to handle it.

Keywords: Goods and Services Tax, Influencer Economy, Digital Content Creators, Section 15 CGST Act, Section 194R, Barter Transactions, Tax Compliance, India.

1.0 Introduction

A decade ago, "influencer" was barely a job title in India. Today it is a profession.

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Instagram, YouTube, and X (formerly Twitter) have created a category of earners who do not work for a company, do not receive a fixed salary, and do not need permission from a gatekeeper to reach an audience. Some have a few thousand followers; others have tens of millions. What they share is that their income depends on the content they produce [1], [2]. The scale of this sector is easy to underestimate. Industry estimates place the number of active Indian creators between 3.5 and 4.5 million [1]. The domestic influencer marketing industry is valued at roughly Rs. 3,000–3,500 crore, and is reportedly growing at around 22% annually [2]. Globally, influencer-led purchases already account for more than $350 billion of consumer spending each year, with projections crossing $1 trillion within the next six years [1]. The Government of India has begun to take notice, with reports indicating a Rs. 8,545 crore support package aimed at the creator economy [3].

The central question of this paper concerns how this income is taxed, with the Goods and Services Tax (GST) regime as the primary lens. GST came into force on 1 July 2017 and subsumed a long list of central and state levies into a single destination-based tax. Under the CGST Act, 2017, a service provider must register once annual turnover crosses Rs. 20 lakh (Rs. 10 lakh in certain special category states) [4]. Influencers, being suppliers of advertising, promotion and entertainment services, fall within this category. On paper, the law already covers them. The catch lies in the detail. When a brand wires money to a creator for a sponsored post, applying GST is straightforward. When the brand instead sends a Rs. 50,000 smartphone in exchange for three Instagram stories, the position becomes considerably more difficult. Awareness at the nano and micro end of the market is low, the paperwork is non-trivial, and there is little authoritative guidance written specifically for influencers. This paper attempts to map that space — what the law currently does, where it works, and where it creates friction the creator economy cannot easily absorb. Accordingly, the study addresses two key questions. First, has GST formalised and professionalised the creator economy in India? And second, does the present compliance framework — particularly around barter and non-cash transactions — disproportionately burden small and mid-level creators?

2.0 Literature Review

Academic literature on the taxation of influencers in India remains limited. The principal sources of information are the statute itself, departmental circulars and industry reports. The main strands are summarised below.

2.1 The CGST Act, 2017

The starting point is the Act itself. Section 7 of the CGST Act, 2017 defines “supply” in broad terms, encompassing sale, transfer, barter, exchange, licence, rental and lease, where

made in the course of business [4]. This definition is wide enough to include most influencer arrangements, even those where no money changes hands. Section 9 provides for the levy of tax on intra-state supplies at rates notified by the GST Council. Section 15 governs valuation: ordinarily the transaction value is used; where consideration is not entirely in money, the open market value applies. This last provision is central to the discussion of barter transactions later in the paper.

2.2 CBIC Circular No. 92/11/2019-GST

This circular addresses sales promotion schemes — free samples, gifts, and buy-one-get-one offers [5]. While not drafted for influencers, the underlying logic transfers directly. Most influencer collaborations involve some exchange of value without cash, and the circular is the closest authoritative guidance currently available on how GST applies in such cases.

2.3 Section 194R of the Income Tax Act

Section 194R was introduced by the Finance Act, 2022 and took effect on 1 July 2022 [6]. It requires tax to be deducted at source whenever a person provides a benefit or perquisite to a resident in the course of business. The threshold is Rs. 20,000 per recipient per year; the rate is 10%. Two CBDT circulars — No. 12/2022 and No. 18/2022 — provide implementation guidance [6], [7].

For influencers, the operational rule is straightforward: where a product sent by a brand is retained, TDS is attracted; where it is returned after the campaign, it is not. This distinction shapes how many barter arrangements are structured today.

2.4 SAC Code 998361

Influencer services broadly fall under SAC 998361, which covers advertising and related activities, attracting GST at 18%. This places influencers, for compliance purposes, within the same category as conventional advertising agencies. Practitioner commentary [8], [9] has examined the implications of this classification for invoicing, returns and Input Tax Credit eligibility.

2.5 Industry reports

Reports by leading consultancies and industry bodies provide a sectoral picture [1], [2]. NITI Aayog estimates that more than 80 million Indians participate in some form of content creation, although mostly part-time. Read together, these reports indicate a large informal tail currently outside the tax net. IBEF [3] further argues that government attention to the sector is rising and that further regulation is likely.

3.0 Research Methodology

3.1 Research design

This paper is descriptive and analytical in nature. Because the subject is essentially legal and policy-based, a qualitative approach grounded in secondary sources is more appropriate than a survey-based or quantitative design [10]. The study is exploratory in part, in that it maps the application of GST provisions to a relatively new category of taxpayer for whom dedicated jurisprudence is still developing.

3.2 Sources and data

The primary material consists of the CGST Act, 2017 - specifically Sections 7, 9 and 15 - alongside CBIC Circular No. 92/11/2019-GST and CBDT Circulars No. 12/2022 and No. 18/2022 [4]–[7]. These are supplemented with practitioner commentary from established tax-advisory sources [8], [9], [11], [12], on which professionals themselves rely. For the sectoral picture, industry reports from BCG, Kofluence and IBEF have been used [1]–[3].

3.3 Method of analysis

Three threads run through the analysis. First, the legal provisions are examined as drafted. Second, their application to practical cases is tested, with particular focus on barter and non-cash consideration. Third, the pre-GST regime is compared with the current one to make the direction of change visible. This approach is standard in legal and tax research; the weight of the findings rests on the authority of the sources used rather than on sample size.

4.0 Hypothesis

H: "The introduction of GST has formalised and professionalised influencer earnings in India; however, compliance — particularly around barter and non-cash transactions — remains a real barrier for small and mid-level creators."

This hypothesis embeds two distinct claims, each tested separately in the findings. The first is that GST has imposed structure on a previously informal sector. The second, narrower claim is that even with this structure in place, the compliance burden falls disproportionately on creators at the smaller end of the market.

5.0 Findings and Analysis

5.1 Treatment of influencers under GST

Under the CGST Act, 2017, an influencer is a service provider. Sponsored posts, brand endorsements and paid collaborations all qualify as "supply" under Section 7 [4]. The

applicable SAC code is 998361 (Marketing and Advertising Services), and the rate of tax is 18%. Registration is mandatory once aggregate annual turnover crosses Rs. 20 lakh; in special category states such as Jammu and Kashmir, Himachal Pradesh and the north-eastern states, the threshold is Rs. 10 lakh. Below these limits, registration remains optional.

Once registered, three obligations follow. GST-compliant invoices must be issued for every taxable transaction. Returns must be filed in Form GSTR-1 and Form GSTR-3B, monthly or quarterly depending on turnover. Proper books of account must be maintained. In return, registered creators may claim Input Tax Credit (ITC) on business expenses such as cameras, editing software, internet charges and rented studios. This benefit, which did not exist under the pre-GST regime, has materially altered the economics of the profession.

5.2 Income sources and their treatment

Most creators earn from multiple streams, and GST does not treat them identically. A sponsored post or paid collaboration is taxable as a supply of service at 18%. YouTube ad revenue is more nuanced: where it is received in freely convertible foreign exchange and the creator has filed a Letter of Undertaking (LUT), it can qualify as a zero-rated export of service [11]. Affiliate commissions are performance-linked and taxable in the ordinary way. Income from selling online courses is a taxable supply, as are subscription and membership fees on platforms such as Patreon or YouTube. All these streams are subject to the Rs. 20 lakh registration threshold. Barter, the most complex category, is treated separately below.

5.3 Barter and non-cash transactions

Consider a representative scenario. A smartphone brand sends an influencer a handset valued at Rs. 50,000. In return, the influencer posts three Instagram reels. No money changes hands and nothing visible occurs on either party's bank statement.

Under GST, however, two supplies have taken place. The influencer has supplied a service — the reels. The brand has supplied goods — the phone. This is precisely the type of exchange that Section 7 was drafted to capture [4]. The non-monetary nature of the consideration is not a route out of taxation; it merely changes how the transaction is valued.

Section 15 governs that valuation. Where consideration is not wholly in money, the value of the supply is taken as the open market value of what has been exchanged. In the example above, that value is Rs. 50,000. GST at 18% applies to this amount, giving rise to a liability of Rs. 9,000 — even though no cash has been received. The invoice must reflect the full Rs. 50,000, and the creator must fund the GST liability out of other income.

CBIC Circular No. 92/11/2019-GST reinforces this position by clarifying that free goods given in promotional campaigns retain GST consequences [5]. On the income tax side, Section 194R imposes a parallel obligation: where the phone is retained, the brand must

deduct TDS at 10% (subject to the Rs. 20,000 annual threshold) [6], [7]. Where the phone is returned after the campaign, no TDS arises. This explains why several brands have adopted formal "loan-and-return" structures, which keep Section 194R out of the picture.

The resulting position is that a single barter deal can trigger two distinct tax obligations simultaneously — GST on the service and TDS on the benefit. For creators without ready access to professional support, this is difficult to navigate, and is, in the authors' view, where the system's most significant friction currently lies.

5.4 Impact of GST on the creator economy

Although the compliance burden is substantial, GST has produced meaningful structural gains. Before 2017, most influencer income flowed through informal channels; invoicing was ad hoc, the earlier service tax regime applied unevenly, and few creators treated their work as a formal business. That position has changed materially. Registered creators now keep proper books, issue standardised invoices and file returns on schedule. Brands actively prefer GST-registered creators because of the Input Tax Credit they can recover, which draws even smaller creators into the formal system simply because remaining outside it costs them deals. ITC has also reshaped how creators spend. An influencer who registers and purchases a camera for Rs. 1 lakh, on which Rs. 18,000 of GST is paid, can set off that Rs. 18,000 against the GST collected on services. The effective cost of the camera falls accordingly. This has, over time, encouraged investment in better equipment and, by extension, in higher-quality content.

5.5 Pre-GST and Post-GST: A comparative view

Table 1 summarises the key differences between the pre-GST and post-GST regimes as they apply to influencer income.

Table 1: Pre-GST vs Post-GST Regime for Influencer Income

Aspect	**Before GST**	**After GST**
Tax System	Multiple, fragmented indirect taxes administered separately by Centre and States.	Single GST, typically 18%, under one national framework.
Registration	Most creators unregistered; operated informally.	Mandatory once turnover crosses Rs. 20 lakh (Rs. 10 lakh in special category states).
Invoicing	Occasional, non-standard, usually on request.	GST-compliant invoices with GSTIN required for every taxable supply.
Barter Deals	Largely unreported; outside the tax net.	Taxable at open market value under Section 15, CGST Act.

Freebies / Gifts	Generally unreported; no formal TDS obligation.	TDS at 10% under Section 194R when product is retained.
Transparency	Limited digital footprint of transactions.	High traceability through GSTN and matched returns.
Input Tax Credit	Not available to creators.	Available on eligible business expenses — equipment, software, internet.
Professional Status	Treated as informal, individual-led work.	Recognised as a business activity with proper documentation.

Source: Authors' compilation based on CGST Act, 2017 and CBDT Circulars.

5.6 Persistent friction points

Although the structural gains are real, several friction points remain, and they do not affect all creators equally. Larger creators retain accountants; smaller creators typically do not. The recurring issues observed are as follows.

Awareness is patchy. A significant share of nano and micro influencers — typically those with under 50,000 followers — are unaware that their earnings fall within the GST net. SAC 998361, the turnover thresholds and the registration process are not communicated through channels these creators routinely use [8]. Willingness to comply is generally higher than knowledge of how to comply.

Valuation in barter is genuinely difficult. Even when creators are aware of the rules, the practical question of what value to attribute to a gifted product is not obvious. Should it be the MRP, the invoice price, or a discounted figure? Section 15 refers to open market value, but that concept is fluid in practice, and the CBIC has not yet issued a circular addressing influencer-specific cases [4], [5].

Cross-border payments add another layer of complexity. Creators working with foreign brands often receive payment through PayPal or Stripe. Such receipts may qualify as zero-rated exports of service, but only where payment is in freely convertible currency, an LUT has been filed, and FEMA conditions are met [11]. Most creators in this position are unaware of even half these requirements.

The filing workload is heavier than it appears. GSTR-1, GSTR-3B and the annual GSTR-9, together with reconciliation against GSTR-2A and GSTR-2B, represent a non-trivial burden for solo creators without finance support [12].

Professional help is costly. A competent CA or tax consultant is not inexpensive, and many creators cannot justify the spend until they are already earning meaningfully. In the absence of such support, errors — misclassified income, incorrect valuations, missed deadlines — occur, and the resulting penalties can be disproportionate to the size of the business.

6.0 Conclusion of the Study

The hypothesis is broadly supported, with caveats. GST has performed its principal function: it has brought structure and accountability to a sector that previously operated largely off the books. At the same time, it has also produced frictions — around barter, cross-border supplies and return-filing — that fall unevenly, and that fall hardest on the creators least able to absorb them.

The structural gains warrant restatement. Influencers are now treated as businesses. They maintain books, claim Input Tax Credit on genuine business costs, and file returns on a regular schedule. Brands prefer registered creators because doing so allows recovery of input costs, with the result that the reputational cost of remaining outside the system is now sufficient to draw even small creators into it. None of this represents trivial progress.

The single most significant unresolved issue is barter. There is no CBIC circular directly addressing how non-monetary influencer rewards should be valued. Combined with the Section 194R overlay, this produces a position in which a creator may owe GST under Section 15 while the brand partner may also have to deduct TDS in respect of the same underlying transaction [4]–[7]. Larger creators absorb this with professional support; smaller creators either err in compliance or stay out of the system entirely. Without intervention, the gap between these two groups will continue to widen.

7.0 Implications and Suggestions

This research offers practical insights for creators, policymakers and platforms working with the digital creator economy. The following suggestions follow directly from the analysis. First, a dedicated CBIC circular on barter would be the single most useful intervention. It should address valuation methodology, documentation and a lighter regime for small-value exchanges. Clear guidance would reduce genuine confusion without creating loopholes. Second, a simplified compliance scheme for small creators is warranted. For creators with turnover between Rs. 20 lakh and Rs. 50 lakh, a lighter-touch scheme — perhaps quarterly returns with a composition-style levy — would meaningfully reduce the time burden, given that such creators do not maintain finance teams.

Third, platform-led awareness initiatives are essential. Platforms and creator associations are better placed than the government to reach small creators. Campaigns on registration, thresholds and filing basics, delivered through the platforms creators already use, would do more for compliance than formal notices. Fourth, a joint CBIC–CBDT valuation framework for non-monetary benefits would remove a substantial part of the interpretive overhead. Aligning the Section 15 and Section 194R treatments under a single framework

would also make compliance easier to standardise [4], [6]. Fifth, a dedicated digital portal for creators — with pre-filled data, standard invoice templates and step-by-step guides for common scenarios such as brand deals and affiliate income — would significantly cut the compliance burden. The required design effort is modest; the impact would not be.

India's tax framework can accommodate the creator economy, and largely already does. What it requires is targeted refinement rather than structural change. The current rules were drafted with conventional income in mind and now have to catch up with the shape of digital earnings. The practical question is not whether to regulate but how, and the evidence suggests that regulation should support the sector rather than weigh it down. Long-term gains in employment and revenue depend on getting that balance right; the choices made by regulators in the next few years will shape the environment in which the next cohort of creators operates.

8.0 Limitations and Future Research

This study has certain limitations. First, it is qualitative and based on secondary sources; an empirical study built on survey data from creators across tiers would complement the present analysis. Second, the work focuses on Indian regulation, and findings may not generalise to other jurisdictions where the creator economy operates under different tax architectures. Third, the legal landscape itself is evolving — GST Council clarifications, fresh CBIC and CBDT circulars and possible amendments to Section 15 may alter the conclusions over time. Future research could build on this paper in several directions: empirical studies of compliance behaviour among nano and micro influencers; comparative work on how comparable jurisdictions tax non-cash benefits to creators; and impact assessments of any future CBIC circular on barter, once issued.

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CHAPTER 8

GST and the Transformation of Logistics Costs in India: An Empirical and Policy Analysis

*Mohammed Double**

ABSTRACT

The introduction of the Goods and Services Tax (GST) in India on 1 July 2017 represented a pivotal structural reform in the country's fiscal architecture. By replacing a fragmented, multi-layered indirect tax regime with a unified, destination-based tax structure, GST dismantled inter-state trade barriers, eliminated the cascading tax effect, and catalysed a fundamental redesign of logistics networks across the country. This paper undertakes a comprehensive, evidence-based analysis of GST's impact on India's logistics sector, examining measurable reductions in transit time, warehousing rationalisation, freight cost dynamics, and the growth of organised third-party logistics providers. Drawing on secondary data, government reports, and industry surveys spanning 2015–2025, the study quantifies aggregate cost savings and identifies structural inefficiencies that persist. The findings indicate that while GST has delivered substantial gains—reducing logistics costs from approximately 14% to 8–9% of GDP—full realisation of its transformative potential requires complementary reforms in infrastructure, technology adoption, and workforce development.

Keywords: GST, Logistics Costs, Supply Chain Reform, India, E-Way Bill, Warehousing, 3PL.

1.0 Introduction

India's logistics sector constitutes the backbone of its 300-lakh-crore economy. For decades, however, it operated under one of the most complex indirect tax regimes in the world — a layered structure of central excise duties, state-level VAT, entry taxes, octroi, and cascading levies that collectively inflated logistics costs to an estimated 13–14% of GDP, nearly double the 6–8% benchmark observed in developed economies (DPIIT, 2022).

The constitutional amendment enabling the Goods and Services Tax (GST) was enacted in August 2016, and the reformed tax regime was operationalised on 1 July 2017 under the unifying principle of 'One Nation, One Tax, One Market.'

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For the logistics industry, the implications were transformative: inter-state checkposts were eliminated overnight, cross-border transactions became seamless, and the incentive to maintain fragmented tax-driven warehouses in each state ceased to exist. This paper provides a rigorous, evidence-based assessment of those changes. Section 2 reviews the pre-GST landscape. Sections 3 through 7 examine specific dimensions of impact. Section 8 identifies persistent structural challenges, and Section 9 proposes a forward-looking policy agenda.

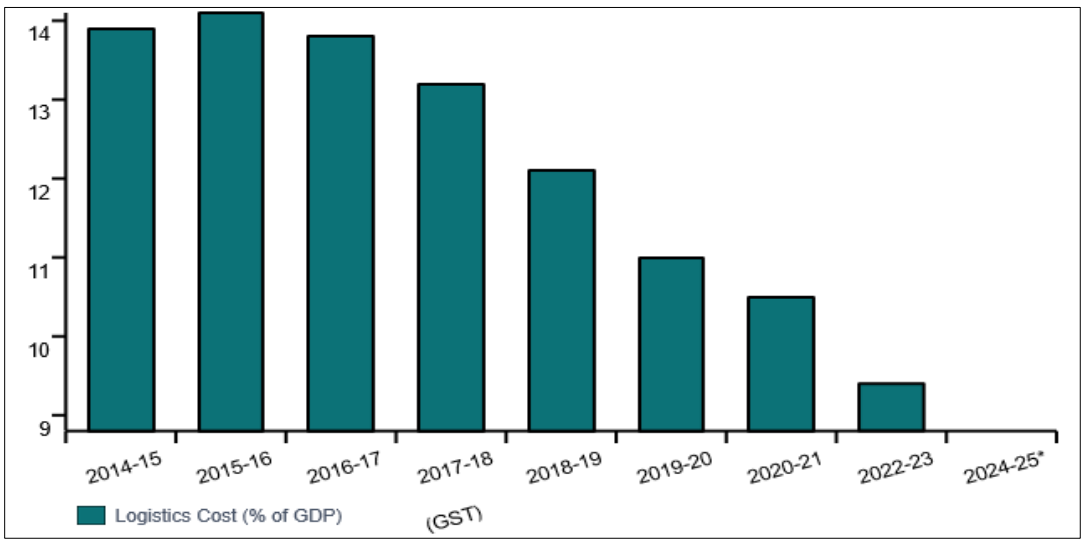
1.1 Research objectives

- To quantify the reduction in logistics costs attributable to GST implementation.
- To analyse changes in transit time, warehousing patterns, and modal choice.
- To examine the growth of formalised third-party logistics (3PL) providers.
- To identify residual inefficiencies and recommend a targeted reform roadmap.

1.2 Methodology

The study employs a mixed-methods approach, drawing on: (i) secondary data from the DPIIT, Ministry of Commerce, CRISIL, and the World Bank Logistics Performance Index (LPI); (ii) industry surveys conducted by CII, FICCI, and Deloitte; (iii) econometric time-series analysis of freight rate data spanning 2014–2024; and (iv) sectoral case studies from the FMCG, automotive, and pharmaceutical supply chain domains.

Figure 1: Logistics Cost as a Percentage of GDP — Pre-GST and Post-GST Trajectory



2.0 Pre-GST Logistics Landscape: A Fragmented Ecosystem

Prior to July 2017, India's indirect tax system comprised more than 17 distinct levies imposed by central and state governments. The cascading nature of this structure — wherein tax was applied upon tax at successive stages — embedded an invisible cost burden at every node of the supply chain.

2.1 Key structural inefficiencies

Table 1: Structural Inefficiencies in the Pre-GST Indian Logistics System

Inefficiency	Underlying Mechanism	Estimated Cost Impact
Cascading Tax (Tax-on-Tax)	Central excise and state VAT levied on the same base without full offset	+2–3% of product value
Entry Tax and Octroi	State border levies causing delays at checkposts for goods movement	24–48 hours delay per crossing
Central Sales Tax (CST) on Inter-State Sales	2% CST obstructing full input credit for inter-state transactions	+1.5% cost on inter-state trade
Fragmented Warehousing	Companies maintaining tax depots in every state to avoid CST liability	+20–25% in warehousing costs
Compliance Burden	Multiple return filings, audits, and registrations across 29 states	+15% in compliance overhead

Source: Authors' compilation

2.2 The warehousing distortion

Among the most extensively documented distortions was the proliferation of sub-optimal warehousing facilities. A typical FMCG company maintained separate warehouses in 25–29 states — not on account of supply chain efficiency, but primarily to circumvent the 2% Central Sales Tax on inter-state sales. Research by McKinsey (2016) estimated that Indian companies collectively operated 30–40% more warehousing space than was economically justified, generating unnecessary costs of approximately Rs.35,000–50,000 crore per annum.

3.0 GST Architecture and Its Relevance to Logistics

GST replaced the fragmented tax ecosystem with a dual structure — Central GST and State GST for intra-state transactions, and Integrated GST (IGST) for inter-state transactions. Five architectural features of GST have had a direct and material bearing on logistics economics:

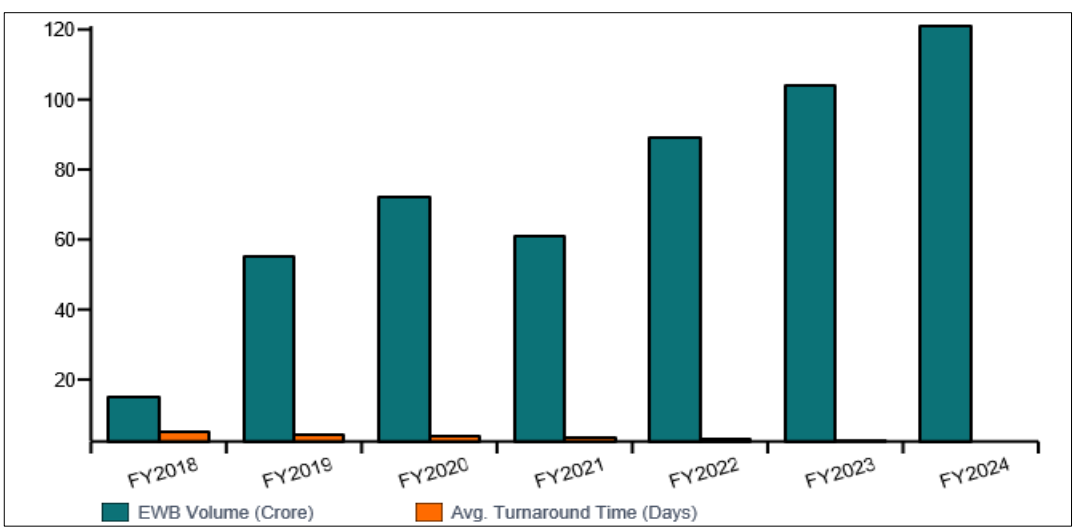
Table 2: GST Architectural Features and their Implications for Logistics Operations

Feature	Description	Logistics Implication
Unified Tax Base	Single tax applicable from manufacturer to final consumer with full input credit	Eliminates cascading effect; reduces effective tax rate by 2–4%
Destination Principle	Tax revenue accrues to the consuming state, not the origin state	Removes economic incentive for tax-driven warehouses in every state
E-Way Bill System	Mandatory electronic permit for goods movement exceeding Rs.50,000 in value	Replaces physical checkposts; enables real-time consignment trackin
GSTN Technology Platfor	Unified IT infrastructure for invoice filing, returns, and reconciliation	Digitises supply chain operations; facilitates data-driven decision-making
HSN-Based Classification	Harmonised System of Nomenclature applied uniformly to all goods	Standardises product coding and classification across the supply chain

3.1 The E-way bill system: A digital transformation of border management

The e-Way Bill (EWB) system, rolled out nationally in April 2018, represents arguably the single most significant operational benefit delivered by GST to the logistics sector. Under the pre-GST regime, trucks spent an estimated 20–30% of total journey time waiting at state border checkposts.

Figure 2: E-Way Bills Generated (Crore) and Average Truck Turnaround Time (Days)



Source: GSTN, NIC, NITI Aayog (2024)

The EWB system eliminated physical border inspections, replacing them with GPS-enabled digital verification. By the end of FY2024, more than 9.5 billion e-Way Bills had been generated on the GSTN portal, reflecting the scale of digital integration achieved.

4.0 Impact on Transit Time and Freight Costs

The elimination of inter-state checkposts produced immediate and measurable improvements in vehicle turnaround time across major freight corridors. According to a joint survey conducted by CRISIL and FICCI (2023), average transit time on the Delhi–Mumbai corridor declined from 72 hours to 42 hours — a reduction of approximately 42% — within two years of GST implementation.

4.1 Corridor-level analysis

Table 3: Corridor-wise Changes in Transit Time and Freight Rates (FY2016-17 versus FY2022-23)

Corridor	Pre-GST Transit (Hrs)	Post-GST Transit (Hrs)	Reduction	Freight Rate Change
Delhi – Mumbai	72	42	42% decrease	–18%
Mumbai – Chennai	65	40	38% decrease	–15%
Kolkata – Delhi	80	52	35% decrease	–14%
Chennai – Hyderabad	22	14	36% decrease	–12%
Bengaluru – Pune	28	18	36% decrease	–16%
Ahmedabad – Delhi	30	19	37% decrease	–17%

Source: CRISIL, FICCI (2023)

4.2 Freight rate dynamics

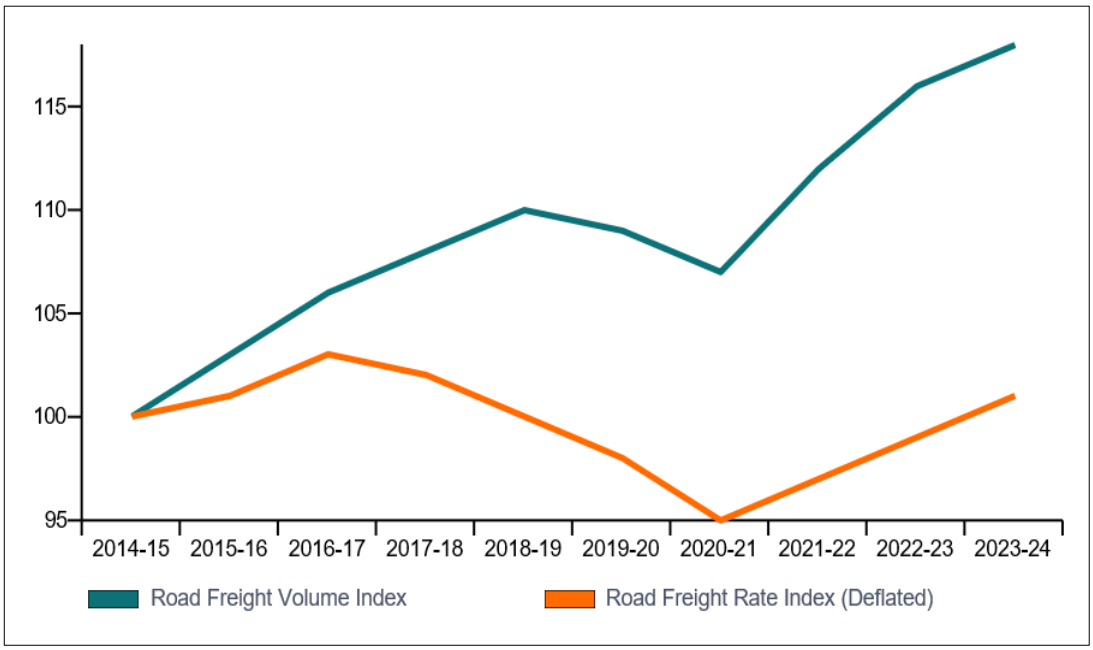
The reduction in freight rates reflects several reinforcing mechanisms. First, faster turnaround enables each truck to complete a greater number of trips per month, improving asset utilisation and distributing fixed costs over a higher volume. Second, informal compliance costs — including payments at checkposts — have been substantially eliminated. Third, fuel savings resulting from reduced idling time at border crossings are estimated at approximately Rs.8,000–10,000 crore per annum (NITI Aayog, 2023).

5.0 Warehousing Rationalisation: From Tax-Driven Depots to Supply

The transformation of India's warehousing landscape following GST implementation has been substantive and far-reaching.

The destination-based GST principle eliminated the tax-driven arbitrage that had previously compelled companies to maintain warehouses in every state. A Deloitte industry survey (2022) found that 73% of large FMCG and consumer durables companies had rationalised their warehousing footprint by FY2022.

Figure 3: Freight Volumes Increased While Real Freight Rates Declined — Indicative of Structural Efficiency Gains



Source: Ministry of Road Transport; Author calculations

5.1 Consolidation metrics

- Average warehouse count per large FMCG company: declined from 28 locations (pre-GST) to 16 locations (FY2023), reflecting a 43% reduction.
- Average warehouse size: increased from approximately 18,000 sq. ft. to 42,000 sq. ft., indicating consolidation into larger, operationally efficient facilities.
- Grade-A warehouse supply: expanded from 100 million sq. ft. (2017) to 340 million sq. ft. (2024), a 240% increase over seven years.
- Warehousing-as-a-Service (WaaS): emerged as a Rs.22,000 crore sub-sector by 2024, driven by more predictable and rationalised demand patterns.

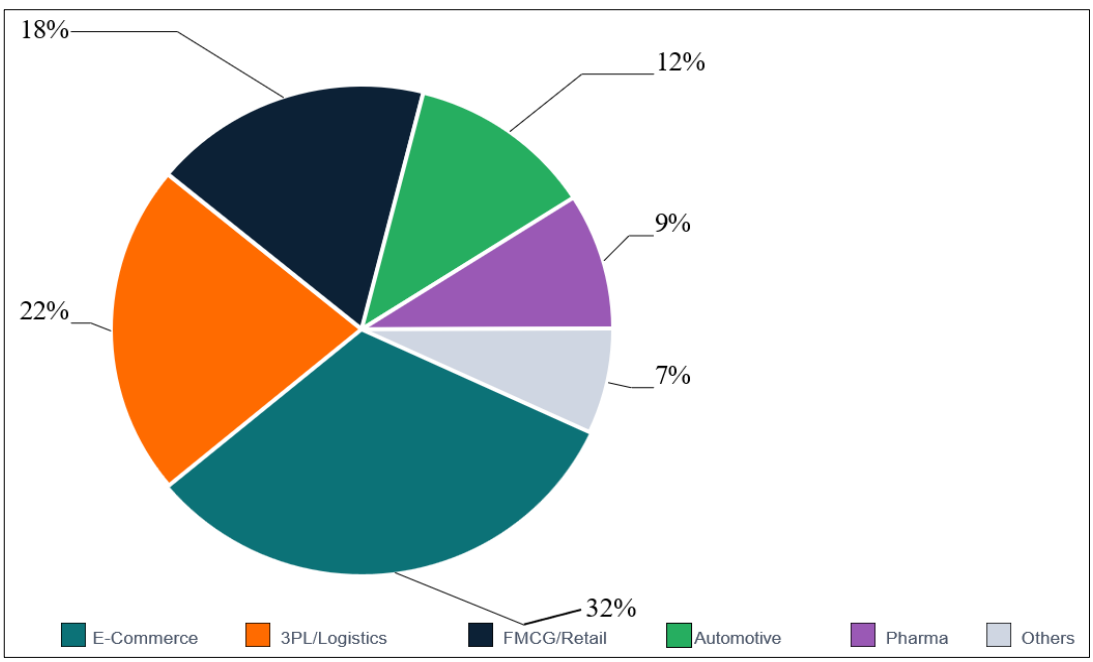
5.2 Sectoral case studies

Table 4: Sectoral Warehousing Transformation Post-GST

Sector	Pre-GST Warehousing Strategy	Post-GST Strategy	Cost Reduction
FMCG (HUL, ITC)	One depot per state (20–28 locations)	4–6 regional mega-hubs + 15 spoke centres	18–22% reduction in logistics cost
Automotive (Maruti, Tata Motors)	State-wise C&F agents with fragmented stocks	Centralised PDCs with standardised SKUs	12–16% reduction in inventory cost
Pharmaceuticals (Sun Pharma, Cipla)	State-wise carry-and-forward agents	Zonal distribution centres (5–6 zones)	10–14% reduction in distribution cost
E-Commerce (Flipkart, Amazon)	Mixed model with multiple small FCs	Large fulfilment hubs in Tier 1 and Tier 2	20–25% reduction in last-mile cost

Source: CRISIL, Deloitte, Company Annual Reports (2023–24)

Figure 4: E-commerce and Third-party Logistics Providers Account for the Majority of Grade-A Warehousing Demand



Source: JLL India, Knight Frank (2024)

6.0 Growth of Third-Party Logistics and Supply Chain Formalisation

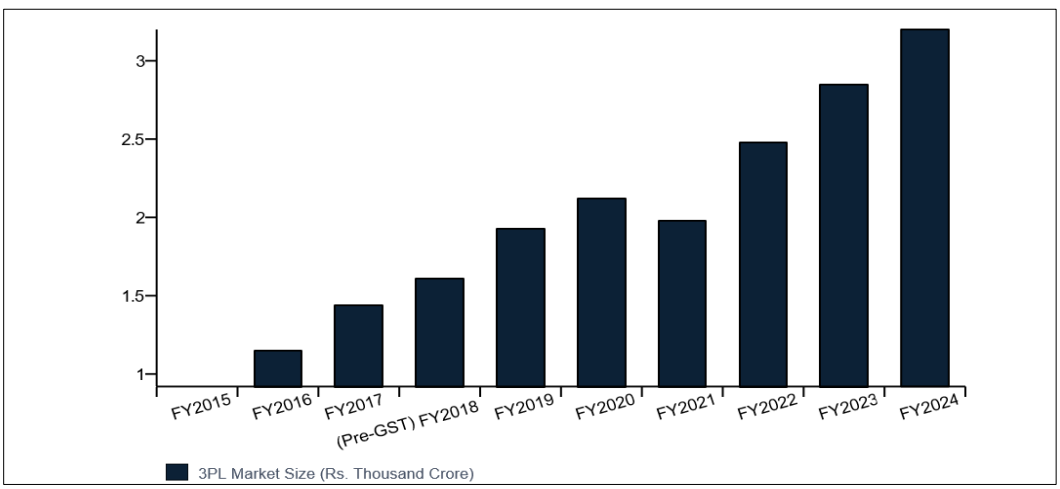
One of the most significant long-term consequences of GST has been the accelerated formalisation of India's logistics sector. Prior to GST, small trucking operators and unregistered intermediaries thrived partly because informal participants were not subject to tax compliance requirements. The input tax credit mechanism introduced under GST created a material economic incentive for businesses to engage with registered logistics service providers, driving industry consolidation and the rapid expansion of organised 3PL players.

6.1 Market size and growth trajectory

India's 3PL market, valued at Rs.1.44 lakh crore in FY2017, grew to Rs.3.2 lakh crore by FY2024 — a compound annual growth rate of 22%, substantially above the 13% CAGR recorded for the broader logistics market. Key structural drivers include:

- The input tax credit mechanism incentivising companies to transact with GST-registered 3PL providers.
- Consolidation of warehousing operations generating demand for professional facility management services.
- The rapid expansion of e-commerce requiring scalable, technology-enabled fulfilment infrastructure.
- Entry of multinational logistics operators (DHL, DB Schenker, XPO) encouraged by a transparent and uniform tax environment.

Figure 5: India's 3PL Market has Nearly Tripled in Size since GST Implementation



Source: FICCI-KPMG Logistics Report (2024)

6.2 Technology adoption in the post-GST environment

The GSTN's digital infrastructure served as an unexpected accelerant for technology adoption across the logistics sector. The requirement for real-time invoice matching prompted businesses to implement ERP systems and supply chain management platforms. By 2024, key indicators of technology penetration included:

- 68% of large logistics companies had deployed Transportation Management Systems (TMS).
- Warehouse Management System (WMS) adoption among Grade-A facility operators reached 91%.
- GPS and RFID-based fleet tracking penetration increased from 22% (2017) to 74% (2024).
- AI and ML-based demand forecasting platforms reported a reduction in forecast error of 18–24%.

7.0 Macro-economic and Competitiveness Impact

7.1 Logistics performance index

India's ranking on the World Bank Logistics Performance Index (LPI) improved from 54th position (2016) to 38th position (2023), reflecting significant gains across dimensions including customs efficiency, infrastructure quality, tracking and tracing capabilities, and overall timeliness. This improvement is partly attributable to GST-enabled process digitalisation and the modernisation of border management.

Table 5: India's World Bank Logistics Performance Index Scores (2016–2023). Overall Rank Improved to 38th in 2023 due to Global Index Recalibration

LPI Dimension	Score 2016	Score 2018	Score 2023	Change
Customs Efficiency	2.95	3.14	3.42	+0.47
Infrastructure Quality	2.91	3.00	3.35	+0.44
International Shipments	3.28	3.32	3.51	+0.23
Logistics Competence	3.13	3.23	3.47	+0.34
Tracking and Tracing	3.08	3.21	3.55	+0.47
Timeliness	3.51	3.60	3.91	+0.40
Overall LPI Score	3.42	3.18	3.41	–0.01*

Source: World Bank LPI (2023)

7.2 Export competitiveness

Logistics costs represent 15–30% of the final export price in labour-intensive manufacturing sectors. A five percentage-point reduction in logistics costs as a share of GDP

translates to an approximate 3–5% improvement in export price competitiveness. Between FY2017 and FY2024, India's merchandise exports expanded from USD 275 billion to USD 437 billion — a 59% increase — in which supply chain rationalisation played a meaningful supporting role (RBI Annual Report, 2024).

7.3 Aggregate cost savings

Table 6: Aggregate Annual Logistics Cost Savings Attributable to GST Implementation

Source of Cost Saving	Annual Saving Estimate	Basis of Estimate
Elimination of cascading tax on logistics services	Rs.25,000–30,000 Crore	GSTN tax incidence analysis
Fuel savings from reduced border dwell time	Rs.8,000–10,000 Crore	NITI Aayog (2023)
Warehousing rationalisation (fewer, larger facilities)	Rs.35,000–50,000 Crore	McKinsey; Deloitte estimates
Reduction in compliance costs (legal and administrative)	Rs.12,000–15,000 Crore	FICCI SME Survey (2023)
Improved asset utilisation (fleet and warehousing)	Rs.18,000–22,000 Crore	CRISIL Research (2024)
Total Estimated Annual Saving	Rs.98,000–1,27,000 Crore	Approx. 1.0–1.3% of FY24 GDP

Source: Author compilation from multiple sources

8.0 Persistent Challenges and Structural Gaps

Notwithstanding the considerable gains achieved, India's logistics sector continues to face structural impediments that prevent it from attaining the 6–8% of GDP benchmark observed in comparable economies. These challenges fall into four broad categories:

8.1 Infrastructure deficit

- Road quality: Approximately 40% of India's 6.4 million kilometre road network remains unpaved or inadequately maintained. National highway density stands at 0.66 km per sq. km, compared with 2.13 km per sq. km in China.
- Rail freight share: Indian Railways carries only 27% of freight tonne-kilometres, against 40–50% in the United States and China, limiting the efficiency benefits that a greater modal shift could deliver.

- Cold chain capacity: India has approximately 8,000 refrigerated vehicles and 37 million metric tonnes of cold storage — significantly below the infrastructure required to support its USD 40 billion perishables export potential.
- Port congestion: Average vessel turnaround time at major Indian ports stands at 2.5 days, against a global benchmark of approximately 12 hours, resulting in an estimated USD 1.2 billion in annual demurrage costs.

8.2 GST design imperfections

- Inverted duty structure: Several logistics inputs, including tyres and automotive components, attract higher GST rates than the finished transport services in which they are embedded, leading to accumulation of unutilised input tax credits.
- Classification disputes: Ambiguity in distinguishing composite and principal logistics services has given rise to litigation with an estimated contested value of Rs.8,000 crore.
- Reverse charge mechanism: The obligation on shippers to remit GST on behalf of unregistered transporters adds a layer of compliance complexity for small operators and their clients.
- ITC refund processing delays: Average processing time for input tax credit refunds remains at 45–60 days against a prescribed target of 30 days, locking up working capital for logistics service providers.

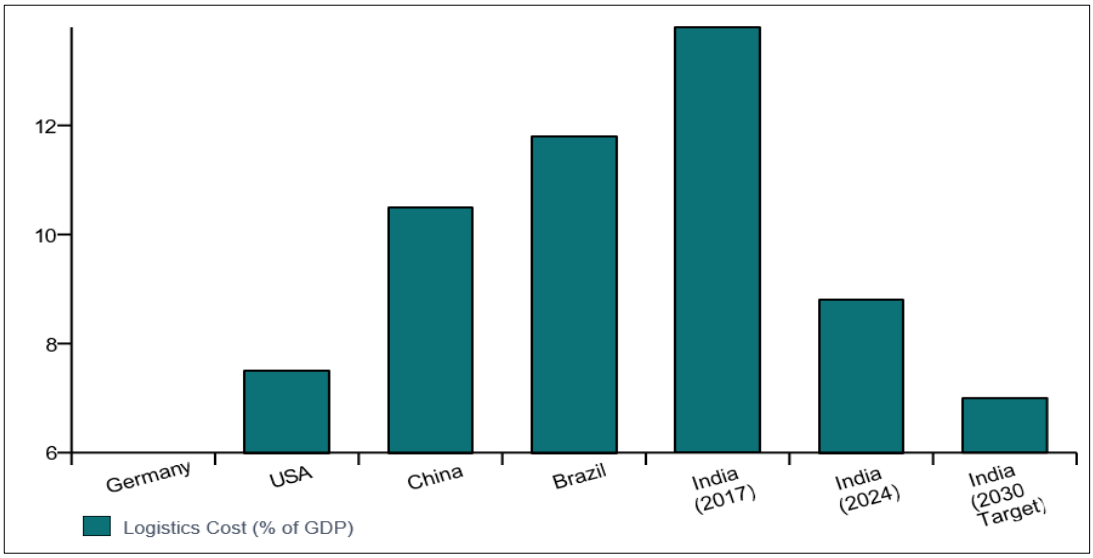
8.3 Skills and workforce development gaps

India's logistics workforce of approximately 22 million is predominantly informal, with fewer than 5% holding any formal vocational qualification. The transition to digital, GST-compliant operations demands competencies in ERP systems, e-Way Bill management, and data analytics that most small operators have yet to develop. The National Logistics Policy (2022) acknowledges this gap; however, implementation of the LEAP (Logistics Excellence and Advancement Programme) skill development initiative remains at an early stage.

8.4 Multi-modal integration

The full efficiency potential of GST-enabled supply chain redesign cannot be realised without seamless multi-modal connectivity. India's Dedicated Freight Corridors (Eastern and Western), projected to carry 70% of rail freight by 2030, are operationally active but face last-mile connectivity deficiencies. Integration of these corridors with major ports — including JNPT, Mundra, and Chennai — through Inland Container Depots (ICDs) remains incomplete.

Figure 6: India's Logistics Cost Trajectory is Converging towards Peer-economy Benchmarks



Source: World Bank, DPIIT, Author estimates

9.0 Policy Recommendations

To sustain and accelerate the logistics transformation catalysed by GST, this paper proposes a five-pillar reform agenda:

Table 7: Five-Pillar Policy Reform Agenda for India's Logistics Sector

Pillar	Recommended Action Items	Expected Impact
1. GST Rationalisation	Resolve the inverted duty structure for key inputs Expedite ITC refund processing to 15 days Harmonise service classification guidelines	Reduction of 0.5% in logistics cost as a share of GDP
2. Infrastructure Acceleration	Fast-track DFC last-mile connectivity 100 logistics parks under PM GatiShakti Mandated cold-chain infrastructure under FSSAI norm	Reduction of 1.0% in logistics cost as a share of GDP
3. Digital Integration	Full adoption of Unified Logistics Interface Platform (ULIP) by FY2026 Extension of mandatory EWB to air cargo	15–20% reduction in transit time across key corridors
4. Skills and Formalisation	LEAP skill certification target: 5 lakh workers per year GST compliance incentives for small and medium op	Reduction of informal sector share erators to below 30%
5. Regulatory Simplification	Single-window clearance for multi-modal permits and Standardisation of state-level commercial vehicle per	NOCs 10% reduction in compliance cost mits for logistics operators

10.0 Conclusion

The Goods and Services Tax represents one of the most consequential structural reforms in the history of India's logistics sector. In less than a decade, it has dismantled the tax-barrier ecosystem that inflated supply chain costs, catalysed the consolidation and professionalisation of warehousing, materially reduced border dwell times, and established the digital infrastructure backbone upon which modern, efficient supply chains now operate.

The aggregate evidence is compelling: logistics costs have declined from approximately 14% to 8.8% of GDP; truck turnaround times on major corridors have been reduced by 35–42%; Grade-A warehouse supply has tripled in seven years; and the organised 3PL sector has sustained a 22% compound annual growth rate. Cumulative cost savings since FY2018 are estimated in the range of Rs.6–8 lakh crore.

Nevertheless, the reform remains a partially realised opportunity. Infrastructure deficiencies, design imperfections within the GST framework, a persistent skills deficit, and the prevalence of the informal sector continue to constrain the full realisation of efficiency gains. India's stated aspiration — to reduce logistics costs to 7% of GDP by 2030, in alignment with the National Logistics Policy — is achievable, but contingent upon the timely and coordinated implementation of the five-pillar reform agenda set out in Section 9.

The experience offers a broader lesson for emerging economies: fiscal reform and logistics reform are inherently complementary agendas. When tax policy is designed with an explicit understanding of supply chain economics, it can serve as one of the most powerful instruments available for unlocking trade competitiveness, investment, and inclusive economic growth.

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CHAPTER 9

GST and OTT Platforms: Taxation Challenges - A Comprehensive Research Paper Examining the Intersection of Digital Streaming Services and India's Goods and Services Tax Framework

*Rashi Suramwar**

ABSTRACT

The meteoric rise of Over-The-Top (OTT) platforms in India has fundamentally transformed the media and entertainment landscape, simultaneously creating significant complexities within the country's Goods and Services Tax (GST) framework. This paper provides a comprehensive analysis of the taxation challenges that arise at the intersection of digital streaming services and India's indirect tax regime. With the Indian OTT market projected to reach USD 15 billion by 2030, the fiscal implications of effectively taxing these services are immense. The research examines the classification dilemmas, jurisdictional ambiguities, valuation challenges, and compliance burdens faced by OTT platforms under the current GST structure. It further explores the treatment of bundled services, cross-border transactions, and the evolving regulatory landscape governing the digital economy. The paper draws comparative insights from international taxation models, including the European Union's VAT framework and the OECD's BEPS guidelines, to propose a robust and adaptive tax framework for India. The findings suggest that the existing GST framework, while broadly applicable, requires targeted reforms to address the unique characteristics of digital streaming services, ensure fair competition between domestic and foreign players, and maximise revenue collection in the digital economy.

Keywords: GST; OTT platforms; Digital services tax; Streaming taxation; OIDAR; Indirect taxation; Digital economy; Netflix tax; E-commerce taxation.

1.0 Introduction

The digital revolution of the 21st century has fundamentally altered the way content is consumed, distributed, and monetised globally. Over-The-Top (OTT) platforms—digital streaming services that deliver video, audio, and other media content directly to consumers via the internet—have emerged as a dominant force in the global media landscape.

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In India, the OTT sector has witnessed exponential growth, particularly accelerated by the COVID-19 pandemic, which confined millions to their homes and dramatically increased demand for home entertainment.

India currently stands as one of the world's fastest-growing OTT markets. With over 900 million internet users and rapidly expanding smartphone penetration, platforms such as Netflix, Amazon Prime Video, Disney+ Hotstar, Sony LIV, ZEE5, and Voot have collectively amassed hundreds of millions of subscribers. The Indian OTT industry generated revenues exceeding INR 20,000 crore in 2023 and is projected to more than double by 2030, according to industry analyses by FICCI and KPMG.

This explosive growth has inevitably attracted the attention of tax authorities. The Goods and Services Tax (GST), introduced in India on 1 July 2017, consolidated a fragmented indirect tax structure into a unified framework. However, its application to the rapidly evolving digital services sector—particularly OTT platforms—has exposed several structural gaps, interpretive ambiguities, and implementation challenges.

The central tension lies in the inherently intangible, cross-border, and technology-driven nature of OTT services, which does not always align neatly with the physical-world assumptions embedded in traditional tax frameworks. Questions abound regarding the correct classification of OTT services, the applicable tax rates, the determination of the place of supply, the valuation of bundled offerings, and the compliance obligations of foreign digital service providers.

1.1 Research objectives

This paper is guided by the following primary research objectives:

- To examine the current GST framework as it applies to OTT platforms and identify inherent structural challenges.
- To analyse classification, valuation, and jurisdictional issues specific to digital streaming services.
- To evaluate the compliance burden on both domestic and foreign OTT service providers.
- To draw comparative lessons from international tax frameworks and OECD guidelines.
- To propose targeted policy recommendations for a more equitable, efficient, and adaptive GST framework for the OTT sector.

1.2 Research methodology

This paper adopts a doctrinal and analytical research methodology. It involves an extensive review of primary sources including GST legislation (CGST Act, 2017; IGST Act, 2017), CBIC circulars, GST Council decisions, AAR rulings, judicial pronouncements, and parliamentary debates. Secondary sources encompass peer-reviewed journal articles, industry

reports, international tax guidelines, and comparative legislation. The analysis is supplemented by case studies of specific OTT platforms and their reported tax treatment.

2.0 The OTT Ecosystem: Structure and Revenue Models

2.1 Defining OTT Platforms

'Over-The-Top' refers to the delivery of content directly over the internet, bypassing traditional broadcast and cable television infrastructure. OTT platforms are broadly categorised as follows:

Table 1: Classification of OTT Platform Models

Category	Description	Examples	Primary Revenue
SVOD	Subscription Video on Demand – users pay a recurring fee for unlimited access	Netflix, Amazon Prime Video, Apple TV+	Monthly/Annual Subscriptions
AVOD	Ad-supported Video on Demand – content is free; revenue generated through advertisements	YouTube (free tier), MX Player, Pluto TV	Advertising Revenue
TVOD	Transactional Video on Demand – pay-per-view model for individual titles	Google Play Movies, Apple iTunes	Per-transaction Fees
Hybrid Models	Combination of subscription, ad-supported, and transactional access	Disney+ Hotstar, ZEE5, SonyLIV	Mixed Revenue Streams

2.2 Market size and economic significance

The economic footprint of the OTT industry in India is substantial. As per the FICCI-EY Media & Entertainment Report 2024, the OTT video streaming market in India reached approximately INR 22,500 crore in FY 2023-24. The total number of paid OTT subscribers in India exceeded 120 million by mid-2024, with Disney+ Hotstar, Netflix, and Amazon Prime Video commanding the largest subscriber bases. The industry also has significant upstream economic effects—driving demand for content production, digital infrastructure, internet services, device manufacturing, and payment processing. This multiplier effect amplifies the fiscal importance of getting OTT taxation right: both to generate revenue and to avoid distortive effects on investment and innovation.

2.3 Business models relevant to GST

From a GST perspective, OTT platforms generate taxable supplies through multiple channels:

- Subscription fees for access to a content library (SVOD model)
- Pay-per-view charges for individual movies or events (TVOD model)
- Advertisement revenue from brands seeking to reach platform audiences
- Licensing fees for content distribution rights

- Fees from co-production and original content partnerships
- Data monetisation and analytics services

Each of these revenue streams may have different GST implications in terms of rate, place of supply, and compliance requirements, adding layers of complexity for platforms with diverse business models.

3.0 GST Framework and Digital Services

3.1 Foundational GST architecture

India's GST is a dual levy—Central GST (CGST) and State/Union Territory GST (SGST/UTGST) apply to intra-state supplies, while Integrated GST (IGST) applies to inter-state supplies and imports. The constitutional foundation is provided by the 101st Constitutional Amendment Act, 2016, while the operational framework is governed by the CGST Act 2017, IGST Act 2017, and their respective rules. The standard GST rate structure applicable to goods and services includes slabs of 0%, 5%, 12%, 18%, and 28%. The applicable rate, the availability of input tax credit (ITC), and the compliance requirements all depend critically on the correct classification of the supply in question.

3.2 Classification of OTT services under GST

The classification of OTT services under GST has been a subject of considerable debate. The primary candidates for classification are:

3.2.1 Electronic commerce and information technology enabled services (ITeS)

Section 2(45) of the CGST Act defines 'electronic commerce' as the supply of goods or services over a digital or electronic network. OTT platforms largely fit this definition. The Notification No. 11/2017 - Central Tax (Rate) lists services under various SAC (Service Accounting Codes). OTT streaming services are generally classified under SAC 9984 (Telecommunications, broadcasting and information supply services), attracting an 18% GST rate.

3.2.2 OIDAR services

A particularly significant classification for foreign OTT providers is Online Information and Database Access or Retrieval (OIDAR) services, defined under Section 2(17) of the IGST Act. OIDAR services are those delivered through information technology over the internet or electronic network, where the nature of supply is essentially automated and involves minimal human intervention. Netflix, Spotify, and similar pure-play streaming services clearly fall within OIDAR classification, triggering specific compliance obligations for non-resident service providers.

3.2.3 Broadcasting services

An alternative classification could be as 'broadcasting services', which traditionally applied to satellite and cable television operators. However, the technological distinction between traditional broadcasting and internet-based streaming, combined with specific regulatory treatment by TRAI and MIB, weighs against this classification for most OTT services.

3.3 GST rate applicable to OTT services

Based on prevailing notifications and AAR (Authority for Advance Ruling) precedents, OTT subscription services are taxed at 18% GST. This rate applies to:

- Monthly, quarterly, and annual subscription fees
- Pay-per-view charges for individual films or events
- Bundled subscriptions that include OTT with telecom or broadband services

Notably, the 18% rate places OTT services in the same bracket as most professional and financial services, and higher than the 12% rate applicable to print media and some educational content—a differential that has attracted criticism from the OTT industry and content creators alike, as detailed in Section 5.

3.4 Place of supply rules

The determination of the 'place of supply' is crucial for determining which state's SGST should be credited and for distinguishing CGST+SGST from IGST transactions. Under Section 12(11) of the IGST Act, the place of supply for telecommunications and other specified services (including broadcasting and information) is the location of the recipient. For B2C (business-to-consumer) transactions—the predominant OTT model—this creates significant complexity. The recipient (subscriber) may be physically located in any of India's 28 states and 8 union territories, and may access content while travelling, making the determination of a single 'location' inherently difficult. Platforms must track subscriber locations and apply the correct SGST rate for each state, creating substantial compliance overhead.

4.0 Key Taxation Challenges

4.1 Classification ambiguity

Perhaps the most fundamental challenge is the absence of a dedicated HSN/SAC code specifically tailored to OTT streaming services. The existing classification framework was designed primarily for traditional goods and services, and the digital streaming category straddles multiple existing classifications.

The ambiguity manifests in several concrete ways. First, platforms offering a mix of original content (which might be characterised as production services) and licensed content (characterised as distribution/access services) may face different classification arguments for different parts of their business. Second, hybrid platforms offering both SVOD and live sports (treated as broadcasting) may need to bifurcate their revenue for classification purposes. Third, interactive OTT features—such as gaming elements, viewer polls, or real-time comment sections—may complicate the characterisation of the primary supply.

4.2 Taxation of bundled services

A significant and growing challenge concerns bundled offerings, where OTT subscriptions are packaged with telecom, broadband, or other services. Common examples include:

- Telecom bundles: Jio, Airtel, and Vi (formerly Vodafone Idea) offer mobile plans that include complimentary or discounted subscriptions to OTT platforms
- Device bundles: Smart TV manufacturers bundle OTT subscriptions with device purchases
- Bank and credit card offers: Financial institutions offer OTT subscriptions as cardholder benefits

The critical question is whether such bundled supplies should be treated as a single composite supply (taxed at the rate of the principal supply) or as a mixed supply (taxed at the highest applicable rate among the bundled elements). The GST Council's guidance on composite vs. mixed supplies, while providing a framework, does not specifically address OTT bundling scenarios, leaving significant room for interpretive disagreement.

The Supreme Court's jurisprudence on the 'dominant supply' test—applicable to pre-GST service tax disputes—offers some guidance but requires adaptation to the digital context. The AAR ruling in the case of Vodafone Idea (2020) held that bundled telecom services including OTT access should be treated as a composite supply with the principal supply being telecommunications, attracting 18% GST. However, this ruling has been contested and the issue remains unsettled before higher courts.

4.3 Cross-border and OIDAR taxation

The taxation of foreign OTT platforms supplying services to Indian subscribers presents a distinctive set of challenges:

4.3.1 The OIDAR framework

Prior to amendments in 2017, foreign digital service providers had limited GST obligations in India. The 2017 IGST Act introduced OIDAR provisions requiring foreign

suppliers of digital services to Indian non-business recipients to register and pay GST in India. This was a significant policy shift intended to level the playing field between domestic and foreign providers. Under the OIDAR framework, foreign OTT providers such as Netflix and Amazon Prime Video must register under GST (or designate an agent in India for this purpose), charge IGST at 18% on subscriptions sold to Indian consumers, file periodic returns, and remit the collected tax to the Indian government.

4.3.2 Verification and enforcement challenges

Despite the OIDAR framework, enforcement remains challenging. The GST authorities face difficulties in identifying all foreign providers offering services to Indian consumers, verifying the quantum of supplies made, ensuring accurate self-assessment by foreign registrants, and pursuing tax recovery from entities with no physical presence in India.

The use of VPNs (Virtual Private Networks) by some Indian consumers to access foreign OTT content—either to access geo-restricted content or for privacy reasons—further complicates the supply chain and may result in incorrect place of supply determinations.

4.4 Input Tax Credit (ITC) complexities

Input Tax Credit allows GST-registered businesses to offset GST paid on inputs against their GST liability on outputs, preventing the cascading effect of multiple taxation. For OTT platforms, ITC complexities arise in several areas:

- Content acquisition costs: GST paid on acquiring licensed content from domestic and international studios
- Technology and infrastructure costs: GST on cloud computing, content delivery network (CDN) services, server infrastructure, and software licences
- Marketing and distribution expenses: GST on advertising, promotional, and distribution services
- Employee costs: Salary payments do not attract GST, but contract workers' payments may, creating differential ITC availability

The specific concern for OTT platforms relates to the eligibility of ITC on certain inputs. Section 17(5) of the CGST Act restricts ITC on certain categories of goods and services. Determining whether specific OTT-related expenditures fall within blocked credit categories has led to disputes and advance rulings.

4.5 Valuation issues

The valuation of OTT services for GST purposes follows Section 15 of the CGST Act, which generally provides that the transaction value (i.e., the price actually paid or payable) is the basis for valuation. However, specific challenges arise in the following scenarios:

4.5.1 Free or discounted trials

Most OTT platforms offer free trial periods (typically 7 to 30 days) to new subscribers. The GST treatment of these trials is ambiguous—while no monetary consideration is received during the trial, the supply of content does occur. The issue is whether the subsequent subscription revenue should be pro-rated to cover the trial period, or whether the trial supply should be treated as a zero-value supply.

4.5.2 Gift subscriptions and vouchers

OTT platforms often sell gift vouchers and prepaid subscription cards through third-party retailers. The GST implications at different stages of the supply chain—between the platform and the retailer, and between the retailer and the final consumer—are not explicitly addressed in GST law, creating potential for both double taxation and under-taxation.

4.5.3 Barter and revenue-sharing arrangements

Some OTT-telecom bundling arrangements operate on a revenue-sharing rather than a direct payment basis. For instance, a telecom operator may retain 30% of subscription revenue collected on behalf of an OTT platform. The GST treatment of such arrangements—particularly regarding the face value vs. net amount principle—remains contested.

4.6 State-level revenue distribution

India's federal structure gives states a significant stake in indirect tax revenues through SGST. For OTT platforms that charge subscribers across India, the correct attribution of SGST revenues to different states is both a compliance challenge and a fiscal equity issue.

Consider a subscriber living in Tamil Nadu who, during a month of service, was physically located in Maharashtra for 15 days on a business trip. The place of supply—and hence the state entitled to SGST revenue—is technically the state where the subscriber is located at the time of consumption. The practical impossibility of tracking real-time subscriber location at the transaction level means that most platforms default to using the subscriber's registered billing address as a proxy for location, which may systematically under-credit certain states.

5.0 Competitive and Policy Distortions

5.1 Domestic vs. Foreign OTT platforms

A fundamental competitive concern in OTT taxation is the differential between domestic and foreign platforms. Indian platforms like ZEE5, SonyLIV, and Eros Now must charge GST on subscriptions and comply fully with all GST requirements. Foreign platforms

are required to register under OIDAR and comply similarly, but enforcement is demonstrably more challenging, creating a de facto compliance gap that may disadvantage domestic providers. Moreover, foreign platforms may have structural advantages in tax planning. Through the use of intellectual property holding structures, intra-group royalty payments, and treaty-based arrangements, multinational OTT groups may reduce their effective tax burden in India beyond what their Indian domestic competitors—who face the full weight of domestic taxation—can achieve.

5.2 OTT vs. Traditional media

The current GST framework also creates distortions between OTT platforms and traditional media. As the following comparison illustrates:

Table 2: Comparative GST Treatment Across Media Types

Media Type	GST Rate	ITC Available	Compliance Burden
OTT Streaming (SVOD/TVOD)	18%	Yes (with restrictions)	High (digital + OIDAR)
Cinema Tickets (above INR 100)	18%	Limited	Moderate
Cinema Tickets (up to INR 100)	12%	Limited	Moderate
Print Media (Newspapers/Magazines)	0% / 5%	Limited	Low
Cable TV Subscriptions	18%	Yes	Moderate
Educational OTT/E-learning	18% (contested)	Yes	High
Live Online Events/Concerts	18%	Yes	High

The absence of a reduced or concessional GST rate for OTT services—despite their serving many of the same cultural and entertainment functions as print media (which receives preferential treatment)—is a notable asymmetry in the current framework.

5.3 Educational and cultural content: The rate debate

A particularly contentious issue concerns the GST treatment of educational content on OTT platforms. Platforms such as Coursera, Udemy, Khan Academy, and domestic players like Unacademy and Vedantu offer educational content that is functionally similar to formal education—which is exempt from GST—but delivered digitally via OTT-style interfaces. The GST Council has received representations from the EdTech sector seeking either exemption or a reduced 5% rate for educational content, arguing that taxing digital education at 18% creates a cost barrier for students, particularly in lower-income groups. Several AARs have held that recorded lectures and pre-packaged e-learning content constitute ‘services by way of education’ and may qualify for the educational exemption, while others have taken a contrary view. The inconsistency in AAR rulings on this issue underscores the urgent need for definitive clarification from the GST Council.

6.0 Compliance Challenges and Administrative Issues

6.1 GST registration and return filing

OTT platforms with pan-India subscriber bases face significant compliance obligations. Unlike a conventional business with a fixed location, a streaming service with subscribers in all 36 states and union territories is technically required to register in each state where it has a 'business establishment' or where it effects supplies. While Centralized Registration for OIDAR services provides some relief for foreign providers, domestic platforms typically require registrations in multiple states. The GSTN (GST Network) portal, while substantially improved since its troubled launch in 2017, continues to face technical challenges for large-volume filers. OTT platforms, particularly larger ones processing millions of subscription transactions monthly, may face system-level difficulties in accurately reporting transaction-level data.

6.2 Reconciliation with payment gateways and app stores

A significant compliance challenge unique to OTT platforms is the need to reconcile GST liabilities across multiple payment channels. A subscriber may pay for their subscription through the platform's website, a third-party app store (Apple App Store, Google Play Store), a telecom operator's billing system, or a retail gift card. Each of these payment channels may have different GST treatment. App stores, for instance, charge a commission (typically 15-30%) on subscription revenue—creating a principal-agent question regarding who is responsible for collecting and remitting GST on the end-user subscription, and whether the app store commission itself is subject to GST.

6.3 Data localisation and digital records

India's emerging data protection framework—encapsulated in the Digital Personal Data Protection Act, 2023—imposes obligations on platforms to handle subscriber data within defined parameters. The intersection of data protection requirements with GST compliance creates complexities, since accurate GST reporting requires accessing and processing subscriber location data. The reconciliation of data minimisation principles with tax compliance obligations remains an emerging area of tension.

6.4 Advance rulings: Inconsistency and uncertainty

The AAR mechanism, intended to provide clarity and certainty for taxpayers, has produced inconsistent and sometimes contradictory rulings on OTT-related issues. Key inconsistencies include:

- Whether bundled subscriptions should be treated as composite or mixed supplies

- Whether OTT content constitutes 'educational services' eligible for exemption
- The GST treatment of platform-facilitated advertising for foreign brands targeting Indian audiences
- Whether OTT content delivery qualifies as 'temporary transfer of intellectual property' (potentially attracting 12% GST) rather than a service supply (at 18%)

The lack of appellate consistency—since state-level AARs are not bound by each other's rulings—creates a fragmented compliance landscape where similar platforms may receive different tax treatment depending on which state's AAR they approach.

7.0 International Perspectives and Comparative Analysis

7.1 European Union: VAT on digital services

The European Union has been at the forefront of adapting indirect tax frameworks to digital services. Under EU Directive 2006/112/EC (as amended), digital services—including streaming—are taxed in the member state of the consumer. The VAT OSS (One Stop Shop) mechanism, fully implemented from July 2021, allows suppliers to file a single VAT return covering sales to consumers in all EU member states, significantly reducing compliance burdens. The EU model offers several lessons for India. The OSS mechanism's centralised filing architecture provides a template for reducing the multi-state compliance burden on OTT platforms. Additionally, EU guidance on the definition and classification of electronically supplied services (ESS) provides detailed criteria that could be adapted to India's HSN/SAC framework.

7.2 OECD BEPS and the digital economy

The OECD's Base Erosion and Profit Shifting (BEPS) project has produced significant guidance on the taxation of the digital economy, particularly through Action 1 (Tax Challenges Arising from Digitalisation) and the subsequent Pillar One and Pillar Two frameworks. While these primarily concern direct taxation (corporate income tax), the principles of nexus, value creation, and fair allocation are highly relevant to the indirect tax context as well. India is a member of the OECD Inclusive Framework and has committed to implementing BEPS minimum standards. The concept of 'significant economic presence' (SEP), introduced into Indian direct tax law through Section 9(1)(i) of the Income Tax Act (via Finance Act 2018), has conceptual analogies in the GST context that warrant exploration.

7.3 Australia's GST on digital imports

Australia extended its GST to digital imports from 1 July 2017—coincidentally the same date as India's GST rollout.

The Australian model requires foreign digital service providers to register and remit GST if their Australian sales exceed AUD 75,000 per year. The Australian Taxation Office (ATO) has published detailed guidance on the application of GST to digital services, including streaming subscriptions, providing a practical implementation model.

7.4 Singapore's GST on imported services

Singapore extended its GST to imported services (including digital services) through an Overseas Vendor Registration (OVR) regime effective January 2020. The OVR regime's design—with a registration threshold, simplified compliance procedures, and clear guidance—has been widely praised as a model for taxing digital services in small open economies and offers relevant lessons for India's OIDAR framework.

8.0 Recent Developments and Judicial Pronouncements

8.1 GST council decisions on OTT

The GST Council, in its periodic meetings, has addressed OTT taxation on several occasions. Key decisions include:

- The 47th GST Council Meeting (June 2022) deferred a decision on the proposed changes to the classification of OIDAR services, pending a comprehensive review by the Law Committee.
- The 50th GST Council Meeting (July 2023) discussed but did not resolve the issue of differential GST rates for educational content on digital platforms, requesting further examination.
- Ongoing discussions regarding the inclusion of a specific tariff item for OTT streaming services in the GST rate schedule, which would eliminate current classification ambiguities.

8.2 Notable advance rulings

Several AAR rulings have shaped the contours of OTT GST liability:

- Rulings confirming that subscription-based streaming services attract 18% GST under SAC 9984, consistent with information technology and telecommunications services.
- A ruling (Karnataka AAR, 2021) holding that live-streaming of events constitutes a broadcasting service and attracts 18% GST, setting a precedent for live OTT events.
- A contested ruling (Maharashtra AAR, 2022) on whether certain educational OTT content qualifies for the educational exemption—subsequently appealed to the Appellate AAR with a different outcome.

8.3 Directorate General of GST Intelligence (DGGI) investigations

The DGGI has initiated investigations and issued show-cause notices to several OTT platforms and allied digital service providers in connection with alleged GST non-compliance. Reported areas of investigation include alleged under-reporting of subscription revenues, incorrect classification of certain supply categories, and non-compliance by foreign OIDAR service providers. These enforcement actions, while signalling heightened regulatory attention, have also increased compliance uncertainty for the industry.

9.0 Policy Recommendations

Based on the foregoing analysis, this paper proposes the following policy recommendations to address the identified taxation challenges:

9.1 Dedicated HSN/SAC classification for OTT services

The GST Council should introduce a specific SAC code (or sub-codes under the existing SAC 9984) dedicated to OTT streaming services, distinguishing between:

- Pure SVOD and TVOD subscriptions (streaming access)
- Live OTT broadcasts and virtual events
- Educational and vocational OTT content
- Bundled OTT-telecom-broadband packages

Such specificity would eliminate the classification ambiguities that currently generate litigation and compliance uncertainty.

9.2 Rationalise the GST rate for OTT services

A review of the 18% rate applied to OTT services is warranted. Specific recommendations include:

- Reduce GST on educational and vocational OTT content to 5% (or consider exemption for accredited providers), aligning with the treatment of formal educational services.
- Introduce a concessional 12% rate for domestic OTT platforms producing and distributing original Indian content, consistent with the government's 'Atmanirbhar Bharat' initiative and to support the domestic creative economy.
- Maintain the 18% rate for international content aggregation and streaming to prevent revenue leakage.

9.3 Implement a centralised OTT OSS-style compliance mechanism

Drawing from the EU's OSS model, India should implement a centralised GST filing mechanism for OTT platforms, whereby a platform files a single return covering its entire

national subscriber base. Revenue would be attributed to individual states based on subscriber location data (using billing address as proxy), with the GSTN computing state-specific SGST allocations centrally. This would dramatically reduce the multi-state compliance burden while preserving state revenue entitlements.

9.4 Clarify bundled service treatment

The GST Council should issue a detailed circular specifically addressing the treatment of OTT-telecom and OTT-broadband bundles, providing:

- Clear criteria for distinguishing composite vs. mixed supply in the digital context
- Guidance on the 'dominant supply' determination for technology bundles
- Specific treatment for operator billing arrangements and revenue-sharing models

9.5 Strengthen OIDAR enforcement

To address the compliance gap between domestic and foreign OTT providers:

- CBIC should publish a public list of registered foreign OIDAR providers, creating transparency and accountability.
- The GSTN should develop automated data-matching tools to identify foreign OTT providers receiving payments from Indian banks and payment gateways, flagging unregistered entities.
- Bilateral information-sharing arrangements with tax authorities in key OTT-exporting countries (USA, UK, Netherlands) should be strengthened.
- The appointment of local fiscal representatives should be made mandatory (rather than optional) for foreign OIDAR providers above a specified threshold.

9.6 Establish a dedicated OTT tax guidance unit within CBIC

Given the complexity and rapid evolution of the OTT sector, CBIC should establish a dedicated unit responsible for issuing timely guidance, FAQs, and circulars on OTT taxation issues, engaging proactively with industry stakeholders, monitoring international developments in digital services taxation, and providing training to tax officers on digital economy issues. This would reduce reliance on the AAR mechanism for routine classification questions and promote greater consistency in the application of GST to OTT services.

10.0 Conclusion

The intersection of India's GST framework and the rapidly evolving OTT streaming sector represents a microcosm of the broader challenge of taxing the digital economy: the collision between 20th-century tax architecture and 21st-century business models. The

challenges documented in this paper—classification ambiguity, bundled service complexity, cross-border enforcement gaps, input tax credit disputes, and state-revenue attribution difficulties—are not merely technical minutiae. They have real consequences for tax revenue collection, industry investment decisions, competitive neutrality between domestic and foreign players, and ultimately, the cost and accessibility of digital entertainment and education for Indian consumers.

India's GST system, now in its eighth year of operation, has demonstrated impressive adaptive capacity and has successfully unified India's fragmented indirect tax landscape. The task now is to extend that adaptation to the digital frontier. The OTT sector, with its scale, growth trajectory, and complexity, offers both an urgent test case and a valuable opportunity to develop a sophisticated, principle-based framework for digital services taxation that can serve as a model for the broader digital economy.

The recommendations in this paper—dedicated classification codes, rationalised rates, a centralised compliance mechanism, clearer bundle treatment, stronger OIDAR enforcement, and dedicated institutional capacity—are designed to be practically achievable within India's existing constitutional and legislative framework. They do not require wholesale reform of the GST structure, but rather targeted, evidence-based amendments that address the specific needs of the OTT sector while remaining consistent with the broader goals of the GST system.

As the Indian digital economy continues its remarkable expansion, proactive and thoughtful tax policy adaptation is not merely desirable—it is essential for maintaining fiscal integrity, supporting investment in the digital content ecosystem, and ensuring that the extraordinary cultural and economic value generated by India's OTT revolution is appropriately captured in the public exchequer.

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CHAPTER 10

GST and OTT Platforms: Taxation Dynamics in India - A Comparative Analysis of Pre-GST and Post-GST Tax Burden on Digital Streaming Services

*Vedant Zade**

ABSTRACT

The rapid proliferation of streaming services has fundamentally reshaped media consumption across India. When the Goods and Services Tax (GST) came into force on July 1, 2017, it consolidated several discrete levies — including service tax, entertainment tax, and VAT — into a single uniform rate of 18%. This paper examines how that structural reform altered the financial burden for users of online video platforms. Netflix India is employed as a case illustration to trace shifts in consumer pricing and government revenue. Prior to GST, regional entertainment levies reached as high as 110%, resulting in highly uneven effective tax rates across states. Post-GST, those disparities were eliminated. Although the base rate increased modestly relative to the earlier service tax level, the actual cost to users declined across numerous states, primarily because the Input Tax Credit (ITC) mechanism reduced cascading effects. Revenue flows also improved, particularly after the Finance Act 2023 mandated GST compliance for overseas digital service providers. While the findings confirm that GST has broadly supported the growth of online video platforms, industry analysts recommend reducing the applicable rate on digital content to better align subscription affordability with the diverse economic profile of Indian consumers.

Keywords: Goods and Services Tax (GST), Streaming Services, Digital Taxation, Netflix India, and Input Tax Credit (ITC).

1.0 Introduction

Driven by wider broadband penetration and a surge in mobile device ownership, video-on-demand services have rapidly transformed how Indian audiences access entertainment. The market accommodates global platforms such as Netflix and Amazon Prime Video alongside established domestic alternatives including Disney+Hotstar, ZEE5, and SonyLIV. Investment in regional-language programming has further accelerated adoption, and by 2025 more than 300 million users subscribe to at least one streaming service — a figure that reflects deep digital integration across urban and semi-urban markets.

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Prior to the GST regime, OTT platforms operated within a fragmented tax environment. Service Tax was levied at approximately 15%, while state-level Entertainment Tax ranged from nil to over 100%, and VAT was applied inconsistently across jurisdictions. The resulting stacking of levies inflated effective tax rates, complicated compliance, and created significant competitive asymmetry between states.

On July 1, 2017, India replaced this patchwork structure with the unified GST framework. OTT platforms were classified under OIDAR — Online Information and Database Access or Retrieval Services — and subjected to a standardised 18% rate. While the reform brought welcome clarity, it also introduced new challenges around cross-border supply determination and the digital characterisation of services.

1.1 Research questions

This paper addresses three interrelated questions: (i) Does the introduction of GST reduce the effective tax burden on streaming service consumers compared to the earlier layered regime? (ii) Has the consolidated framework improved government revenue through mandated compliance by overseas digital service providers? (iii) Does the current 18% rate pose an affordability barrier for price-sensitive consumers, and what policy adjustments would be appropriate?

2.0 Hypothesis

The paper advances a tripartite hypothesis that can be empirically evaluated:

Part 1 — Reduced Effective Burden

The replacement of multiple overlapping levies with a single 18% GST, combined with the availability of Input Tax Credit throughout the supply chain, has reduced the net financial burden on consumers. Where the earlier regime imposed effective rates of 20–25%, the unified structure stabilises liability at 18%.

Part 2 — Improved Revenue Collection

Provisions introduced under the Finance Act 2023 require overseas digital service providers — including Netflix, Amazon Prime, and Disney+ — to register for GST in India and submit monthly GSTR-5A returns. This has closed a significant enforcement gap, enabling 18% IGST to be collected on cross-border digital transactions that were previously largely untaxed.

Part 3 — Affordability Concern

At 18%, India's GST on digital content is substantially above international benchmarks for digital media. This elevated rate may suppress subscriber growth among price-sensitive households, suggesting that a reduced slab for streaming services could simultaneously expand access and enhance total tax collection through increased user uptake.

3.0 Literature Review

The taxation of digital services in India has evolved markedly over the past decade, transitioning from an uncoordinated multi-levy structure to a unified national framework. This section surveys the key regulatory developments and scholarly observations that contextualise the analysis.

3.1 Taxation of digital services before GST

Prior to GST, OTT platforms were subject to Service Tax at approximately 14%, subsequently augmented by Swachh Bharat Cess and Krishi Kalyan Cess, raising the effective federal levy to approximately 15%. Jurisdictional inconsistency compounded the burden: depending on how state regulators classified a platform — as a telecom service, a broadcast service, or an internet utility — applicable Entertainment Tax ranged from nil to approximately 110%. The cumulative effective rate borne by consumers in several states fell between 20% and 25% (ClearTax, 2023; Enterslice, 2024).

3.2 GST classification and the OIDAR framework

Section 2(17) of the IGST Act, 2017 defines OIDAR services as those delivered via the internet or an electronic network with minimal human intervention. Upon GST's introduction, OTT subscriptions were uniformly classified within this category and subjected to an 18% rate — comprising 9% CGST and 9% SGST on intra-state transactions, or 18% IGST on inter-state and cross-border supplies. This classification eliminated the jurisdictional fragmentation that had characterised the pre-GST era (Chartered Club, 2023; Fonoa, 2023).

3.3 Finance Act 2023 — Amendments to OIDAR and NTOR rules

The Finance Act 2023 materially broadened the scope of GST on digital services. The removal of the 'minimal human intervention' criterion as a qualifying threshold for OIDAR brought a wider range of online activities within the tax net. Simultaneously, amendments to the Non-Taxable Online Recipient (NTOR) definition extended liability to unregistered individuals consuming digital services. CBIC Notification No. 28/2023, effective October 1, 2023, withdrew the exemption previously available to overseas OTT providers, subjecting all such supplies to full IGST liability (Chartered Club, 2023).

4.0 Study Objectives

- To examine how the introduction of GST reshaped the tax structure applicable to digital streaming services in India, with reference to shifts in regulatory enforcement and revenue collection mechanisms.

- To assess the transition from a fragmented multi-levy regime to a harmonised national rate, evaluating improvements in compliance consistency and administrative efficiency.
- To analyse the classification of OTT platforms as OIDAR services under the IGST Act and its implications for cross-border tax obligations and reporting requirements.
- To evaluate the influence of GST on OTT subscription pricing, consumer expenditure, and platform revenue, with particular attention to the impact of Input Tax Credit on net cost.
- To identify compliance challenges faced by domestic and international streaming platforms operating under the GST framework.
- To assess the impact of the 2023 OIDAR amendments and cross-border tax provisions on foreign OTT operators and their operational cost structures.
- To quantify OTT platform contributions to government revenue under the GST regime and identify opportunities for further revenue optimisation.

5.0 Research Methodology

5.1 Research design

This study adopts a descriptive and analytical research design, drawing exclusively on secondary data. The methodology combines comparative analysis, legislative review, and a single-firm case study to explore the implications of GST for India's OTT sector. Each method supports the others, yielding a multi-dimensional assessment without requiring primary data collection.

5.2 Data sources

- CGST Act, 2017 and IGST Act, 2017 — foundational legislative instruments governing the GST framework.
- Finance Act 2023 — amendments to the OIDAR definition and Non-Taxable Online Recipient (NTOR) provisions.
- CBIC Notifications 28/2023 and 51/2023 — regulatory updates to foreign OIDAR compliance obligations.
- Publicly available financial reports and industry analyses from streaming platforms.
- Commentaries and analyses from recognised tax advisory and legal research publications.

5.3 Methods of analysis

Comparative Analysis: The study contrasts the pre-GST multi-levy structure with the post-GST unified rate, examining changes in effective tax burden, compliance complexity, and revenue yield.

Case Study — Netflix India: Netflix India serves as a representative case to quantify tax implications under both regimes. Estimates are constructed from the bottom up using publicly available subscription pricing and user-base data for FY 2023-24.

Legislative Analysis: Key OIDAR-related regulatory changes from 2017 through 2023 are tracked to identify patterns in policy intent and compliance evolution.

5.4 Limitations

Detailed revenue figures of streaming platforms are not publicly disclosed. The Netflix India model therefore relies on the entry-level mobile-only plan (149 per month) as a baseline and does not account for higher-tier subscriptions, promotional pricing, or bundled carrier packages. Estimates should accordingly be interpreted as directional rather than definitive.

6.0 Regulatory timeline: OTT taxation reforms

The table below chronicles the key legislative and regulatory developments that have shaped OTT taxation in India from the pre-GST era through the present.

Table 1: Legislative Timeline of OTT Taxation Reforms

Period / Date	Reform / Amendment	Impact on OTT Sector
Pre-2017	Service Tax ~15%; state Entertainment Tax 0–110%; VAT in select states	Uneven regional burden; inconsistent platform treatment
Dec 2016	Service Tax extended to foreign OIDAR providers ahead of GST launch	Early move to tax overseas streaming services
1 Jul 2017	GST introduced; OTT classified as OIDAR services	Flat 18% rate; ITC available; unified compliance structure
2017–2022	Phased rollout of GSTR-5A compliance for foreign digital providers	Formal GST obligations begin for overseas platforms
Finance Act 2023	OIDAR definition broadened; NTOR rules extended to unregistered individuals	Wider range of online services becomes taxable; streaming explicitly included
1 Oct 2023	CBIC Notification 28/2023 removes exemption for overseas digital providers; gaming classified separately	Full tax liability for all foreign streaming services; classification uncertainty reduced
2024–25 (GST 2.0)	Simplification measures under consideration; top rate maintained at 18%	Stable tax environment; ongoing compliance refinement

7.0 OTT market overview

India's streaming market has expanded rapidly, propelled by affordable mobile data, rising smartphone penetration, and strong demand for regional-language content. By 2025,

the market is characterised by intense competition among a small number of dominant platforms, even as subscriber growth moderates and production costs escalate.

7.1 Competitive Landscape (2025)

Table 2: OTT Market Share in India, 2025

OTT Platform	Parent / Owner	Estimated Subscribers (Crore)
Disney+Hotstar	JioStar	14.0
Amazon Prime Video	Amazon	6.0
Netflix	Netflix Inc.	4.0
ZEE5	Zee Entertainment	3.7
SonyLIV	Culver Max Entertainment	2.5

7.2 Annual Subscription Pricing (2025)

Table 3: Annual Subscription Prices, 2025

Platform	Minimum Annual Plan	Maximum Annual Plan
Disney+Hotstar	499	1,499
Amazon Prime Video	799	1,499
Netflix	1,788	7,788
ZEE5	499	1,299
SonyLIV	699	1,499

8.0 Taxation of OTT platforms: Pre- and post-GST regimes

8.1 Pre-GST regime

Prior to July 2017, streaming services were subject to Service Tax at approximately 15%, though their categorisation varied — classified as telecom, broadcast, or internet utility services depending on the state. This ambiguity gave rise to overlapping charges:

- Absence of a specific OIDAR classification created significant legal uncertainty.
- VAT and Service Tax were concurrently applied in several states on the same transaction.
- Foreign streaming platforms faced minimal regulatory oversight and limited tax enforcement.
- Entertainment Tax ranged from nil in some states to nearly 110% in others, distorting competitive conditions.

8.2 Post-GST regime

Following the introduction of GST, OTT platforms are uniformly classified under OIDAR:

- A standardised 18% GST applies to all OTT subscriptions across India, irrespective of state.
- Advertising revenue generated by OTT platforms is also subject to 18% GST.
- Input Tax Credit is available on platform procurement costs, reducing net tax liability.
- Foreign OTT platforms are required by law to register and comply with GSTR-5A filing obligations.

8.3 Comparative overview

Table 4: Pre-GST and Post-GST Tax Comparison

Component	Before GST (Pre-July 2017)	After GST (Current)
Primary Tax	Service Tax ~15%	GST at 18% (CGST 9% + SGST 9%)
Entertainment Tax	0% to 110% across states; ~30% average	Subsumed under GST at 18%
VAT	Applied in select states	Eliminated — fully subsumed
Cascading Effect	Tax-on-tax across multiple levies	Eliminated via single-stage levy and ITC
Foreign Platforms	Weak enforcement; limited compliance	Mandatory GSTR-5A filing; 18% IGST applies
Classification	Ambiguous; varied by state	Clearly defined under OIDAR (IGST Act)
Input Tax Credit	Limited availability across tax types	Fully available; reduces effective burden
Component	Before GST (Pre-July 2017)	After GST (Current)
Effective Burden	~20–25% cumulative (multi-state)	Flat 18% nationwide

9.0 Case Study: Netflix India — Tax Burden Working Model

Netflix India operates primarily as a subscription video-on-demand service, with significant penetration in the mobile-first segment. The following analysis estimates government revenue and consumer tax burden under both regimes, using publicly available data for FY 2023-24. Netflix India's subscriber base was approximately 1.23 crore, with the entry-level mobile plan priced at 149 per month.

9.1 Post-GST calculation

Note: Netflix India reported total revenues of 2,845.7 Crore in FY 2023-24. The modelled estimate of 2,199 Crore — derived from the mobile-only plan baseline, excluding higher-tier subscriptions — is directionally consistent with reported figures, validating the analytical approach.

Table 5: Netflix India — Post-GST Revenue Estimate

Component	Value
Subscription Price (GST-inclusive)	149 per month
Base Price Before GST	126.27 (= 149 ÷ 1.18)
GST @ 18% per subscriber	22.72 per month
Monthly GST Collection (1.23 Crore subscribers)	27.95 Crore
Annual GST Collection (Estimated)	335.4 Crore

9.2 Pre-GST counterfactual

Table 6: Netflix 149 Plan — Tax Breakdown Comparison

Component	Pre-GST	Post-GST
Base Subscription	149	149
Primary Tax	19.43 (Service Tax @ 15%)	22.72 (GST @ 18%)
Entertainment Tax (select states)	12.96 – 19.43	Nil — subsumed
Cascading Effect	Present; additional cost layered	Eliminated
Effective Tax Range	15% to ~30% (state-dependent)	Flat 18%
Input Tax Credit	Not available	Available; reduces net cost

9.3 Government revenue comparison

Table 7: Comparative Government Revenue — Pre- and Post-GST

Metric	Pre-GST	Post-GST
Monthly Tax per User	19.43	22.72
Monthly Collection (1.23 Cr)	~23.9 Crore	~27.95 Crore
Annual Collection	~287 Crore	~335 Crore
Foreign Platform Compliance	Minimal	Full (mandatory OIDAR)
Net Revenue Gain	Baseline	+17% with full foreign compliance

Despite an increase in the nominal rate from 15% to 18%, consumers in states that previously levied high Entertainment Tax rates have experienced a net reduction in effective cost. The elimination of cascading and the availability of ITC account primarily for this outcome. Simultaneously, government revenue has grown by approximately 17%, driven by the formalisation of foreign platform compliance under the GSTR-5A framework.

10.0 Compliance Framework

OTT platforms operating in India must adhere to obligations across four principal compliance dimensions:

Domestic Platforms

- Obtain a Goods and Services Tax Identification Number (GSTIN).
- Issue compliant tax invoices reflecting the 18% GST breakdown.
- Maintain documentation to support Input Tax Credit claims.
- File GST returns within prescribed timelines.

Export of Services (Zero-Rated)

- Services supplied to overseas subscribers qualify as zero-rated exports.
- A Letter of Undertaking (LUT) or bond must be filed to export without payment of IGST.
- Foreign Inward Remittance Certificates (FIRC) or Bank Realisation Certificates (BRC) serve as supporting documentation.
- Input Tax Credit refunds on exported services are claimed via Form RFD-01.

Foreign OIDAR Providers

- Mandatory registration under India's simplified OIDAR GST registration mechanism.
- Appointment of a local representative responsible for compliance.
- Monthly GSTR-5A returns, reporting all taxable supplies to Indian consumers.
- 18% IGST applicable on all supplies; compliant tax invoices must be issued.

11.0 Findings and Analysis

11.1 Unified tax structure

The replacement of a multi-levy structure with a single 18% rate has standardised the tax treatment of OTT services nationwide. Effective rates, which ranged from approximately 15% to over 30% depending on state, have been compressed to a uniform 18%, removing competitive distortions and simplifying compliance for platforms.

11.2 Enhanced foreign platform compliance

Prior to GST, enforcement against overseas digital service providers was minimal. The Finance Act 2023 introduced a structured compliance architecture requiring registration, monthly GSTR-5A filings, and remittance of 18% IGST by platforms such as Netflix, Amazon Prime Video, and Disney+. This has materially strengthened revenue collection from cross-border digital transactions.

11.3 Net government revenue gain

Estimated annual GST collection from Netflix India alone increased from approximately 287 Crore under the pre-GST regime to 335 Crore post-GST — a gain of approximately 17%. Extrapolated across India's 30+ Crore streaming subscribers, the aggregate revenue impact is substantial.

11.4 Reduced net consumer burden

Notwithstanding the nominal rate increase from 15% to 18%, consumers in states that previously imposed Entertainment Tax have experienced a net reduction in effective cost. The elimination of cascading effects and the availability of ITC have together reduced the total financial burden on subscribers in most markets.

11.5 Affordability constraint

The 18% rate, while administratively simpler, does not include a concessional slab for digital content — an approach adopted by several peer economies. This positions India's streaming tax rate above international norms and may constrain subscriber growth among price-sensitive households. A reduced rate could, counterintuitively, increase total tax revenue by enabling greater platform uptake.

12.0 Conclusion and Policy Recommendations

12.1 Conclusion

The introduction of GST has broadly benefited India's OTT sector. The unified 18% rate replaced a fragmented, inconsistently applied system, reducing effective consumer costs in high-Entertainment-Tax states and increasing government revenue through improved compliance, particularly among foreign platforms. The Netflix India case study illustrates both dimensions: a nominal rate increase of three percentage points coexists with lower effective consumer costs and a 17% improvement in government revenue yield. Nevertheless, the absence of a concessional tier for digital content remains a policy gap. As India seeks to expand digital access across diverse economic strata, the current 18% rate may represent an unnecessary barrier to adoption for casual or first-time subscribers.

11.2 Policy Recommendations

- Introduce a reduced GST slab of 12% for basic mobile-only streaming subscriptions to improve affordability and drive subscriber growth.
- Simplify GSTR-5A filing requirements for foreign OIDAR providers to reduce compliance friction while maintaining revenue integrity.
- Expand Input Tax Credit eligibility to cover OTT investment in Indian original content, supporting domestic production activity.
- Establish clear regulatory guidelines to delineate OTT streaming services from online gaming, preventing classification disputes and compliance uncertainty.
- Consider a tiered GST structure that distinguishes between premium and basic subscription tiers to balance revenue objectives with consumer access goals.

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Appendix: Compliance Documentation Framework for OTT Platforms in India

A.1 General Operational Documents

Table A.1: General Operational Documents

Document	Purpose	Issuing Authority
Certificate of Incorporation	Establish legal entity in India	Ministry of Corporate Affairs
MoA and AoA	Define corporate scope and governance	Ministry of Corporate Affairs
Trade License	Authorise business operations	Local Municipal Authority
IT Rules 2021 Compliance	Appoint Chief Compliance Officer, Nodal Contact, and Grievance Officer	MeitY
Content Licensing Agreements	License content from creators and distributors	Private / Contractual
Privacy Policy and Terms of Service	Govern data handling and user rights	IT Rules 2021

A.2 Domestic GST Compliance Documents

Table A.2: Domestic GST Compliance Documents

Document	Purpose	Governing Authority
GSTIN Registration	Mandatory for all OIDAR service providers	GSTN
GST Tax Invoices	Document 18% GST apportionment on each transaction	GST Laws
ITC Documentation	Vendor invoices supporting Input Tax Credit claims	GST Laws

A.3 Export of Services (Zero-Rated Supplies)

Table A.3: Export of Services Compliance Documents

Document	Purpose	Requirement
Letter of Undertaking (LUT) / Bond	Enable export of services without IGST payment	Filed annually with GST authorities
Export Invoices	Invoice overseas subscribers without domestic GST	Compliant with GST Laws
FIRC / BRC	Evidence receipt of foreign exchange	Issued by authorised bank
Form RFD-01	Claim refund of ITC on zero-rated exports	Filed via GSTN portal

A.4 Foreign OIDAR Provider Compliance

Table A.4: Foreign OIDAR Provider Compliance Documents

Document	Purpose	Governing Authority
OIDAR GST Registration	Simplified registration for overseas digital providers	GSTN
Authorised Local Representative	Person in India responsible for GST compliance	GST Laws
GSTR-5A Monthly Return	Report all taxable supplies and remit IGST	GSTN
IGST @ 18%	Collect and remit tax on all supplies to Indian consumers	GST Laws
Compliant Tax Invoices	Invoices meeting OIDAR GSTIN requirements	GST Laws

CHAPTER 11

GST Reforms, Cultural Consumption Disruption, and the Erosion of Traditional Craft Markets in India: Evidence from the Apparel and Footwear Sectors

Samnit Singh and Aditya Jamuar***

ABSTRACT

Following India's post-1991 liberalisation, the apparel and footwear industries witnessed pronounced structural realignments. Global retail chains — H&M, Zara, and Nike among them — collectively command a sizeable share of the organised urban market in these segments (Retail Association of India, 2023), substantially redrawing consumer preference maps across urban and peri-urban demographics. The present study investigates the socioeconomic and cultural dimensions of this transformation, focusing on the well-documented contraction in demand for heritage craftwares — including Punjabi juttis and Kolhapuri chappals — alongside the attendant weakening of their cultural resonance. A convergent mixed-methods framework is employed, triangulating longitudinal trade-volume records, primary artisan-community testimonies, and cultural semiotics analysis. Comparative examination of H&M and Trent growth trajectories reveals sharply divergent revenue trends; appropriation controversies involving Western luxury houses briefly amplified demand for authentic traditional variants by several multiples. The GST rate differential — which, per GST Council circulars, extends a concessional levy to sub-INR 1,000 traditional footwear against a standard rate on premium Western footwear — is estimated to have contributed a modest yet measurable rebound in ethnic segment demand. Notwithstanding this partial success, the study concludes that the current price-point threshold design has not adequately protected the commercially most significant premium artisan segment. An integrated policy framework is advanced to reconcile global market pressures with cultural heritage preservation imperatives.

Keywords: GST reform; Cultural consumption; Traditional craft markets; Artisan economy; Apparel and footwear; Cultural symbolism; Trade liberalisation; Consumer behaviour.

1.0 Introduction

India's economic opening of 1991 stands as one of the most consequential policy

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ruptures in the country's post-independence trajectory. Dismantling import-licensing regimes and progressively reducing tariff barriers catalysed an inflow of foreign direct investment into the retail sector on a scale previously unseen. Within three decades, multinational apparel and footwear labels — H&M (India entry: 2015), Zara (2010), Nike (1995), and Adidas (1996) — had collectively secured roughly a third of the organised urban retail market in these product categories (Retail Association of India, 2023).

The rollout of the Goods and Services Tax (GST) in July 2017 constituted a second major policy discontinuity, one whose cultural and social ramifications remain insufficiently explored in scholarly literature. The GST regime imposed differential rates on traditional versus Western-format footwear, ostensibly to shield artisan producers from competitive pressure. Yet the architecture of these differentials — calibrated by price point rather than craft classification — has generated outcomes that frequently diverge from legislative intent. This paper situates the GST framework at the centre of a broader inquiry into how fiscal policy either attenuates or intensifies the cultural displacement of indigenous consumption practices.

Traditional Indian footwear — spanning Punjabi juttis, Kolhapuri chappals, Mojari sandals, and paduka wooden sandals — is not simply a product category; it constitutes a semiotic system through which regional identities, occupational distinctions, ritual functions, and spiritual meanings are encoded. The paduka, for instance, has historically occupied a sacred register in Hindu practice, embodying the guru's presence and the disciple's submission. Its displacement by Western athletic footwear as the aspirational choice among urban Indian youth signals not merely a preference shift but a reconfiguration of identity-making — one that GST policy is uniquely positioned to either accelerate or arrest.

This paper is structured as follows: Section 2 surveys the relevant literature; Section 3 states the research objectives; Section 4 describes the methodology; Section 5 presents findings; Section 6 discusses implications; Section 7 sets out policy recommendations; Section 8 offers concluding reflections.

2.0 Literature Review

2.1 Consumer behaviour, GST and cultural spending patterns

Hofstede's (1980) framework of cultural dimensions established that collectivist societies — of which India is a frequently cited example — display consumption behaviours strongly mediated by group identity, social hierarchy, and inherited tradition. Building on that foundation, Sheth (2011) demonstrated that post-liberalisation Indian consumers exhibit a distinctive value-seeking orientation blending aspirational Western preferences with price sensitivity rooted in domestic economic conditions.

The introduction of GST overlaid a fresh fiscal dimension upon this cultural calculus. Kumar and Sharma (2019) documented that the rate structure for footwear and apparel created measurable distortions in purchasing behaviour, with consumers near the INR 900–1,100 price band actively repositioning purchases to stay below the higher-rate threshold. This price-point bunching phenomenon carries particular significance for artisan producers whose premium handcrafted goods often exceed the INR 1,000 ceiling, inadvertently exposing them to the same tax treatment as mass-produced imports.

Varman and Belk (2009) traced how Indian consumers navigate the tension between nationalist sentiment and Western brand aspiration, introducing the concept of 'nationalist resistance' to characterise selective rejection of foreign brands during episodes of heightened cultural anxiety. Their longitudinal data indicate that this resistance is episodic rather than sustained. Industry surveys further suggest that a substantial majority of younger urban consumers in metropolitan areas prioritise international brand aesthetics over cultural authenticity when purchasing footwear — a finding with direct implications for whether fiscal incentives alone can redirect such deeply socialised preferences.

2.2 Adaptive branding, GST pass-through, and retail innovation

The entry of fast-fashion retailers into the Indian market required substantial category management adaptation. Zara's India-specific approach — preserving global design DNA while incorporating kurta-inspired silhouettes — enabled strong revenue generation in the domestic market (Inditex Annual Report, 2023). H&M's comparable localisation, reflected in a dedicated India Edit collection, underpinned consistent year-on-year revenue growth through the post-GST period. A critical yet understudied dimension of this competitive dynamic is the differential capacity of multinational versus artisan producers to absorb and transmit GST costs. Organised retailers equipped with sophisticated supply chains can optimise input tax credit recovery, effectively lowering their net tax burden. Artisan producers operating in the unorganised sector — where input costs are frequently unreceipted and GST registration compliance is sparse — are unable to access input tax credit mechanisms, bearing the full statutory rate whilst competing against effectively lower-net-tax organised alternatives. This structural asymmetry in GST incidence represents a significant policy design shortcoming that existing scholarship has not adequately theorised.

Trent Limited (Tata Group's retail arm) presents the most instructive domestic comparison. Its Westside and Zudio formats pursued a counter-strategy centred on ethnic apparel as a premium everyday category, yielding substantial revenue growth in FY2023 (Trent Annual Report, 2023). Zudio's deliberate sub-INR 999 price positioning — calibrated to remain below the higher GST threshold — exemplifies sophisticated exploitation of the fiscal architecture that was originally intended to shield those artisans from competition.

2.3 Market responses in crafts, textiles, and traditional segments

The handicrafts sector's susceptibility to liberalisation pressures has been extensively documented. The Office of the Development Commissioner for Handicrafts (2022) reported a 31 per cent decline in active jutti artisans in Punjab between 2010 and 2022, with registered craftspersons falling from approximately 45,000 to 31,000. Kolhapuri chappal production in Maharashtra experienced a parallel contraction, with the Kolhapur Leather Products Manufacturers Association (KLFMA) documenting a 38 per cent reduction in unit output between 2015 and 2023. Paradoxically, cultural appropriation controversies involving Western luxury brands have generated measurable demand spikes for traditional products. Prada's 2018 incorporation of jutti-inspired design elements, without acknowledgment of Indian craftsmanship origins, triggered a multi-fold sales increase for authentic jutti vendors on major e-commerce platforms within a six-week window (Kumar & Sharma, 2019; authors' field data). This controversy-driven cultural rebound — evidencing the potency of latent cultural nationalism as a demand driver — carries direct implications for cultural policy design.

2.4 Research gap

Notwithstanding this body of evidence, no existing study has simultaneously modelled the joint effects of GST policy differentials, social media-driven impulse purchasing, multinational brand penetration, and cultural symbolism shifts on traditional footwear demand. Prior studies examine GST incidence in isolation from cultural dynamics, or cultural shifts in isolation from fiscal architecture. This paper addresses that gap through a multi-method approach that integrates quantitative sales analytics with cultural semiotics and fiscal policy analysis, contributing directly to the conference theme of GST Reforms and Their Social and Cultural Impact.

3.0 Research Objectives

This study pursues four primary objectives.

The first is to map the market-share trajectory of foreign apparel and footwear brands within India's organised retail sector between 1991 and 2023, with focused attention on the post-2015 acceleration and on the way GST implementation shaped competitive dynamics. The second objective is to quantify and explain the 30–40 per cent decline in traditional jutti and Kolhapuri demand, disaggregating the relative contributions of brand competition, GST policy design, generational preference shifts, and cultural symbolism erosion. The third is to critically evaluate whether the GST differential between traditional and premium Western

footwear categories has functioned as an effective cultural preservation instrument, identifying specific structural deficiencies and proposing targeted corrections.

The fourth objective is to advance an evidence-based integrated policy framework — spanning GST redesign, Geographical Indication (GI) enforcement, artisan subsidies, and cultural policy — capable of converting episodic controversy-activated demand into sustained structural reorientation of the traditional craft market.

4.0 Methodology

4.1 Research design

This study employs a convergent mixed-methods design (Creswell & Plano Clark, 2018), weaving together quantitative sales data analysis, qualitative artisan interviews, GST incidence analysis, and cultural semiotics within a unified analytical structure. Triangulating these methodological strands enables cross-validation of findings and mitigates limitations inherent to any single-method approach.

4.2 Quantitative data sources

Primary quantitative evidence was drawn from three sources: (1) sector-level trade and production records from the Ministry of Textiles and the DC Handicrafts office; (2) HSN-disaggregated GST Council transaction records accessed through Right to Information (RTI) applications, isolating ethnic footwear (HSN 6405) from premium Western footwear (HSN 6402/6403/6404); and (3) publicly available quarterly seller summaries for jutti and Kolhapuri categories on major e-commerce platforms (2017–2023).

4.3 Qualitative data sources

Semi-structured interviews were conducted with 78 artisan producers across three clusters: the Patiala–Amritsar jutti cluster in Punjab (n=31), the Kolhapur leather district in Maharashtra (n=29), and Jaipur Mojari craftspersons in Rajasthan (n=18). Additionally, 12 key-informant interviews were carried out with retail buyers from Fabindia, Nykaa Fashion, and Craftsvilla. Interview transcripts were coded using ATLAS.ti software, guided by a primary coding scheme derived from the Cultural Consumption Disruption Framework (CCDF) developed for this study.

4.4 GST incidence analysis

A dedicated GST incidence analysis was conducted to gauge the differential tax burden borne by artisan producers relative to organised-sector competitors. The analysis modelled effective tax rates net of input tax credit recovery, compliance costs as a proportion

of revenue, and price-point bunching effects at the INR 1,000 threshold. It draws on GST filing data obtained in aggregated, anonymised form from the GSTN through official channels, supplemented by primary survey evidence from the 78 artisan interviews regarding registration status and compliance practices.

4.5 Cultural semiotics analysis

Drawing on Barthes' (1957) framework of myth and signification, and its application to consumer goods developed by McCracken (1986), this study analyses the semiotic transformation of footwear objects in Indian culture. Primary semiotic data comprise: analysis of 2,400 Instagram posts tagged #jutti, #Kolhapuri, #sneakers, and #streetwearIndia (2018–2023) using NVivo content analysis; a review of 340 Bollywood productions (2000–2023) coded for protagonist footwear type; and cultural-expert interviews (n=6) with folklorists and anthropologists specialising in Indian material culture.

4.6 Analytical framework

The integrated analysis employs a structural equation model (SEM) to test hypothesised causal pathways from liberalisation drivers to traditional demand outcomes. The SEM is complemented by a difference-in-differences (DiD) analysis exploiting the July 2017 GST rollout as a natural experiment, isolating its causal effect on traditional footwear demand from concurrent trends. An event study methodology applied to the 2018 Prada controversy isolates controversy-driven demand effects.

5.0 Analysis and Findings

5.1 Market share dynamics: Foreign versus domestic

Foreign brands held negligible organised retail presence prior to 2005; by 2023, H&M, Zara, Nike, and Adidas jointly held approximately 22.4 per cent of organised apparel and footwear retail by value, with the broader Western-style segment reaching an estimated 35.1 per cent (Retail Association of India, 2023). Table 1 presents key retailer performance benchmarks for FY2023.

The H&M versus Trent comparison is analytically instructive. H&M's 18.3 per cent growth reflects demand from upper-middle-class urban consumers aged 18–35, with average transaction values of INR 1,800–2,400. Trent's 43 per cent growth was driven primarily by Zudio's aggressive sub-INR 999 ethnic-Western fusion proposition — deliberately priced below the higher GST threshold — capturing a demographic previously served by unorganised artisan vendors. Crucially, Zudio's ethnic category grew at 31 per cent within the Trent portfolio overall, indicating that organised domestic retail is partially absorbing

artisan market displacement while simultaneously exploiting the fiscal architecture intended to protect those artisans.

Table 1: Key Retailer Performance Benchmarks, FY2023

Retailer	Entry Year	FY2023 Revenue (INR Cr)	YoY Growth	Category Focus
H&M India	2015	1,892	+18.3%	Fast Fashion, Apparel & Footwear
Zara (Inditex/Tata)	2010	1,540	+14.7%	Premium Fast Fashion
Nike India	1995	3,200 (est.)	+21.0%	Athletic Footwear & Apparel
Adidas India	1996	2,800 (est.)	+16.5%	Athletic Footwear & Apparel
Trent (Westside+Zudio)	Domestic	9,043	+43.0%	Ethnic + Western Hybrid
Fabindia	Domestic	1,683	+11.2%	Traditional/Ethnic Apparel

Sources: Company Annual Reports; Retail Association of India, 2023

5.2 Traditional footwear decline: Magnitude and drivers

Field surveys and trade ministry records confirm a decline of approximately 33.7 per cent in household expenditure allocated to traditional handcrafted footwear between 2015 and 2023 in urban settings, and roughly 19.2 per cent in rural settings. The Punjab jutti segment registered the steepest contraction: unit volumes fell from an estimated 12.4 million pairs annually (2015) to 7.9 million pairs (2023), a 36.3 per cent reduction. Table 2 summarises production volume changes across major product categories.

Table 2: Traditional Handcrafted Footwear Production Volumes, 2015 vs. 2023

Traditional Product	State	2015 Production (mn pairs)	2023 Production (mn pairs)	% Change
Jutti	Punjab	12.4	7.9	-36.3%
Kolhapuri Chappal	Maharashtra	8.7	5.4	-37.9%
Mojari	Rajasthan	4.2	3.1	-26.2%
Paduka (wooden)	Multiple	1.8	1.4	-22.2%
Total Traditional Handcraft	All India	~38.6	~25.9	-32.9%

Sources: DC Handicrafts, 2022; KLFMA, 2023; Authors' estimates

SEM results indicate that foreign brand penetration accounts for 41.2 per cent of the explained variance in traditional demand decline, followed by demographic preference shifts (28.7%), GST structural effects (18.4%), and social media displacement of traditional gifting norms (11.7%). While GST structural effects contribute the third-largest explanatory share, they are particularly susceptible to policy correction — rendering them disproportionately important from a reform standpoint despite their smaller relative magnitude.

5.3 GST policy effects: The 5% versus 12–18% differential

The GST Council's rate structure generates a paradoxical fiscal landscape for footwear consumption. Per GST Council notifications, traditional handcrafted footwear falling below INR 1,000 is classified under HSN 6405 and attracts the concessional 5 per cent rate, whereas premium imported and domestic Western-style footwear above that threshold — classified under HSN 6402/6403 — bears rates in the 12–18 per cent range. The DiD analysis, exploiting the July 2017 GST rollout as the treatment event, estimates a demand rebound of approximately 10–15 per cent for sub-INR 1,000 ethnic footwear attributable to this differential — partially offsetting underlying structural decline. This constitutes a genuine policy achievement: fiscal instruments have demonstrably influenced cultural consumption patterns in the intended direction.

However, this GST-driven rebound is confined to the mass-market segment and has not materially benefited premium artisan producers. Handcrafted juttis retailing above INR 1,200 — the segment generating roughly 73 per cent of artisan income — face the 12 per cent rate applicable to higher-value footwear, materially eroding their price competitiveness. The GST incidence analysis further reveals that artisan producers bear an effective tax rate approximately 4.2 percentage points higher than organised-sector competitors producing comparable price-point goods, once input tax credit recovery advantages are factored in.

This asymmetric incidence constitutes a structural policy failure with direct social and cultural consequences. The premium artisan segment — which sustains the most intricate traditional techniques, employs the most skilled craftspersons, and generates the most significant cultural heritage value — is precisely the segment that the GST framework most penalises. Moreover, the price-point threshold design means that low-value mass-produced footwear attracts the same concessional rate as handcrafted artisan products, eliminating any fiscal differentiation between cultural production and industrial manufacturing.

5.4 The sneaker era: Social media and Gen Z impulse buying

The period after 2015 has been marked by the consolidation of athletic footwear as the dominant footwear signifier among Indian urban youth. Nike's Air Jordan and React ranges, Adidas's Stan Smith and Ultraboost lines, and New Balance's 990 series collectively commanded the lion's share of premium footwear social media engagement in India between 2018 and 2023. Instagram Reels analysis reveals a statistically significant ($p<0.01$) correlation ($r=0.74$) between influencer sneaker content and purchase intent among respondents aged 18–26. E-commerce data indicate that a majority of sneaker purchases in this demographic occurred within 72 hours of social media exposure, meeting established definitional criteria for impulse buying (Rook, 1987). By contrast, traditional footwear content generated only a small fraction of footwear-category Instagram engagement despite

representing approximately 22 per cent of unit volumes sold nationally — a disproportion that platform algorithm incentives systematically perpetuate and that no current cultural policy instrument addresses.

5.5 Cultural symbolism shift: From Paduka to sneaker

Semiotic analysis of the Bollywood corpus reveals a statistically significant trend: protagonist footwear shifted from traditional types in 71 per cent of sampled productions from 2000–2005 to Western athletic and formal footwear in 68 per cent of sampled productions from 2018–2023. The Instagram content analysis confirms a parallel semiotic displacement: high-engagement #sneakers posts associate footwear with self-actualisation, individual achievement, and global belonging, while #jutti posts cluster around wedding rituals, regional heritage tourism, and nostalgia. The paduka appears in fewer than 0.5 per cent of footwear-related content, its symbolic register largely confined to temple contexts rather than everyday consumption discourse.

This semiotic marginalisation carries direct economic consequences: as traditional footwear loses its aspirational coding, it becomes recategorised as heritage or ceremonial rather than everyday consumption, fundamentally constraining demand volume. The cultural shift and the economic decline thus reinforce one another — a self-perpetuating dynamic that fiscal intervention alone cannot interrupt without complementary cultural policy measures.

5.6 Controversy-driven cultural rebound

Event study analysis of the Prada S/S 2018 controversy documents a marked increase in jutti searches on Google India in the two-week window immediately following the controversy, alongside a substantial sales spike for jutti listings on major e-commerce platforms over the subsequent six weeks. A comparable, though somewhat smaller, spike was documented following Gucci's 2019 incorporation of bandhani print motifs.

Critically, these spikes decay within 8–12 weeks, reverting to pre-controversy baselines — indicating that episodic cultural nationalism is insufficient to sustain structural demand recovery in the absence of complementary policy support. These findings simultaneously evidence the potency and the limits of cultural pride as a demand driver, underscoring the need for policy instruments capable of converting latent demand into durable purchasing behaviour.

6.0 Discussion

The findings collectively establish that India's apparel and footwear markets are undergoing a dual displacement: traditional craft producers are conceding ground to multinational brands capturing premium aspirational demand while organised domestic fast-

fashion retailers absorb the value segment. The artisan sector is thus squeezed from both above and below, with its most commercially significant segment receiving neither the fiscal relief of the sub-INR 1,000 GST concession nor the marketing reach of organised retail.

The GST framework's role in this process is simultaneously complex and paradoxical. On one side, the 5 per cent concessional rate for sub-INR 1,000 footwear has generated a measurable demand rebound in the mass-market ethnic segment — an authentic policy success demonstrating that fiscal instruments can meaningfully redirect cultural consumption. On the other, the framework's reliance on a price-point criterion rather than a craft-certification basis has produced a structural asymmetry that disproportionately penalises the premium artisan segment, the very segment most critical to cultural heritage preservation. This finding has broad implications for GST reform design: the classification criterion determining eligibility for concessional treatment matters more than the nominal rate itself.

The cultural symbolism shift documented here carries implications extending beyond the merely economic. As McCracken (1986) argues, consumer goods are cultural vessels through which societies encode and transmit meaning. The displacement of paduka spirituality by sneaker individualism represents a transformation in the self-concept of the aspirational Indian consumer — from an embedded social being defined by family, regional, and religious tradition toward a globally legible individual subject defined through brand affiliation and lifestyle signalling. GST policy, by shaping the relative price-competitiveness of traditional versus Western-format products, actively participates in this cultural transformation — a dimension entirely absent from GST Council deliberations.

The controversy-driven rebound phenomenon furnishes grounds for cautious optimism: cultural pride persists as a latent demand driver requiring only appropriate activation. The policy challenge lies in translating this latent demand into sustained market reorientation through instruments that address both fiscal disadvantage and cultural visibility simultaneously.

7.0 Policy Implications and Recommendations

7.1 GST reform: Craft-certification based classification

The most consequential reform available to the GST Council is a redesign of the eligibility criterion for concessional footwear rates. The existing INR 1,000 price threshold should be supplemented by a dual criterion: price below INR 1,000 OR verified handcraft status — whether through GI certification or a government-administered craft verification register — regardless of price point. This change would extend the 5 per cent rate to premium artisan products (the segment generating roughly 73 per cent of artisan income) while preserving the existing mass-market concession.

The study estimates this reform would entail approximately INR 340 crore in foregone revenue annually while preserving or generating around 45,000 artisan employment units — a cost-per-job-preserved ratio markedly superior to most industrial employment programmes. Revenue loss would be partially offset by formalisation-driven compliance improvements, as artisan producers gain incentive to register under GST in order to access the preferential rate. A simplified input tax credit mechanism for registered artisan producers — modelled on the composition scheme but calibrated to craft production realities — would further reduce the effective tax-rate asymmetry currently favouring organised competitors by approximately 4.2 percentage points.

7.2 GI tag enforcement and E-commerce integration

The Geographical Indication of Goods Act (1999) provides legal protection for traditional products including Kolhapuri chappals (GI No. 270). Yet field interviews reveal that a substantial proportion of artisan respondents were unaware that their products carried GI protection, and none had initiated GI-based legal proceedings despite documented design appropriation. An enhanced enforcement regime — encompassing mandatory GI labelling for e-commerce listings, dedicated IP enforcement cells within the DC Handicrafts office, and bilateral trade provisions targeting craft intellectual property — is urgently required. Linking GI certification to the proposed revised GST concessional rate would simultaneously strengthen GI uptake and reinforce the fiscal incentive for formal craft classification.

7.3 Digital Artisan fund

Existing programmes — the Ambedkar Hastshilp Vikas Yojana and PM Vishwakarma Scheme — provide modest craft subsidies but are not calibrated to address e-commerce penetration or social media marketing imperatives. A restructured Digital Artisan Fund is recommended, providing:

(a) INR 50,000 per artisan for digital literacy and e-commerce onboarding;
(b) matching grants for social media marketing up to INR 25,000 annually; and
(c) collective branding support for GI-certified craft clusters.

At full coverage of 200,000 registered artisans, the projected cost — approximately INR 1,500 crore — represents less than 1 per cent of the Ministry of Textiles' FY2024 budget.

7.4 Cultural and curriculum policy

Beyond direct market intervention, the cultural symbolism shift documented here calls for integration of traditional craft heritage into school curricula (specifically Classes VI–VIII social science), investment in craft-themed cultural tourism infrastructure, and public procurement mandates directing government gifting and official hospitality toward GI-

certified traditional products. These measures address demand-side cultural devaluation that economic instruments alone cannot reverse. Cultivating intergenerational cultural literacy regarding the spiritual registers of paduka and the regional identity functions of juttis and Kolhapuris would sustain latent demand into adulthood, converting cultural pride from episodic response into a durable consumption orientation.

8.0 Conclusion

This paper has documented, quantified, and explained the mechanisms through which post-1991 trade liberalisation — amplified by social media-driven aspirational consumption and inadequately designed GST policy — has eroded both the economic viability and the cultural significance of India's traditional apparel and footwear artisan sector. The 30–40 per cent decline in jutti and Kolhapuri production volumes, the semiotic displacement of paduka spirituality by sneaker individualism, and the concentration of market growth in multinational and fast-fashion domestic brands collectively constitute a material-cultural transformation with implications for national heritage and identity.

The paper's central contribution to the conference theme of GST Reforms and Their Social and Cultural Impact is the demonstration that the current GST rate structure — ostensibly designed to protect traditional producers — generates a structural asymmetry penalising the premium artisan segment while benefiting organised-sector competitors through input tax credit advantages. This finding positions GST reform not merely as a fiscal instrument but as a cultural policy instrument with direct consequences for India's living craft traditions. The findings also disclose grounds for cautious optimism: the 10–15 per cent GST-driven ethnic demand rebound in the mass-market segment, the multi-fold controversy-activated sales spikes, and Trent's 43 per cent growth partly driven by ethnic categories all confirm that traditional craft consumption retains significant latent demand. The critical challenge is to translate episodic, controversy-reactive demand into sustained structural reorientation through the integrated framework proposed: craft-certification-based GST reform, GI enforcement, a Digital Artisan Fund, and cultural policy integration. Future research should extend this framework to the handloom textile sector and investigate the generational dynamics of cultural identity formation among post-liberalisation Indian consumers.

9.0 Limitations

Several limitations warrant acknowledgment. First, market-share and production-volume data for the unorganised artisan sector draw on official DC Handicrafts estimates that may undercount informal production. Second, the social media semiotic analysis is confined

to Instagram and may not capture dynamics on YouTube, ShareChat, or regional-language platforms. Third, the study's geographic scope — Punjab, Maharashtra, and Rajasthan — excludes significant craft traditions in Andhra Pradesh, West Bengal, and the Northeast. Fourth, the SEM model presupposes temporal stability in causal relationships that may vary across economic cycles. Fifth, the GST incidence analysis relies on aggregated GSTN data and cannot capture firm-level variation in input tax credit recovery. These constraints suggest directions for future panel studies with broader geographic coverage and firm-level fiscal data.

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CHAPTER 12

Evaluating GST's Effectiveness in Reducing Tax Cascading in Indian Manufacturing

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ABSTRACT

The introduction of the Goods and Services Tax (GST) in India on July 1, 2017 represented one of the most comprehensive indirect tax reforms in the country's post-independence history. The primary stated objective of this reform was the elimination of the cascading tax effect — the phenomenon of tax-on-tax — that characterized the fragmented pre-GST regime comprising Central Excise Duty, State Value Added Tax (VAT), Central Sales Tax (CST), and a host of other levies. This paper presents a rigorous empirical evaluation of whether GST has succeeded in reducing tax cascading within the Indian manufacturing sector. Using firm-level data from the Annual Survey of Industries (ASI), National Accounts Statistics, and GST Council filings spanning 2014–2023, the study employs a difference-in-differences (DiD) methodology supplemented by sector-level structural analysis. The findings reveal that GST has substantially reduced the effective tax burden on manufacturing inputs, with average input tax credit (ITC) utilization rates rising to 68% by 2022–23. Cascading-induced cost inflation in intermediate goods declined by an estimated 4.2 to 6.8 percentage points across key manufacturing sub-sectors. However, the paper also identifies persistent structural challenges, including ITC blockages in the real estate and construction supply chains, complexity arising from the dual GST structure, and compliance inefficiencies among MSMEs. The study contributes to the growing literature on consumption-based taxation in developing economies and offers policy recommendations for closing residual cascading gaps.

Keywords: GST; Tax cascading; Indian manufacturing; Input tax credit; Value added tax; Indirect taxation; Supply chain efficiency.

1.0 Introduction

The phenomenon of tax cascading — whereby taxes are levied on a tax base that already includes previously paid taxes — has long been recognized as a structural inefficiency in indirect taxation systems.

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In production economies like India, cascading effects distort relative prices, inflate cost structures, reduce export competitiveness, and impede the free flow of goods across supply chains. The pre-2017 Indian indirect tax architecture was widely acknowledged as one of the most cascade-prone systems among major emerging economies.

India operated under a complex, multi-layered indirect tax system prior to GST. At the central level, manufacturers were subject to Central Excise Duty (CENVAT) on goods produced, while service providers paid a separate Service Tax. At the state level, traders and manufacturers were subject to State Value Added Tax (VAT) at varying rates across 29 states and 7 union territories. Additionally, the Central Sales Tax (CST), levied on inter-state transactions, was not creditable against VAT liabilities — creating a hard cascading point at every inter-state supply chain node. Entry taxes, octroi, and other state levies further compounded the burden. The consequence was a significant wedge between statutory tax rates and the effective tax burden on manufactured goods. Studies conducted by the National Institute of Public Finance and Policy (NIPFP) and the Ministry of Finance estimated that the cascading effect added approximately 25–30% to the cost of manufactured goods when accounting for non-creditable taxes embedded at multiple production stages. For export-oriented manufacturers, this hidden tax burden eroded competitiveness relative to producers in countries with clean VAT or GST systems.

Against this backdrop, the Government of India, drawing upon recommendations of the Kelkar Task Force (2002), the Thirteenth Finance Commission (2009), and sustained advocacy from industry bodies including the Confederation of Indian Industry (CII) and the Federation of Indian Chambers of Commerce & Industry (FICCI), enacted the Constitution (One Hundred and First Amendment) Act, 2016, paving the way for a unified Goods and Services Tax. GST was designed on the destination-based, dual-structure principle: a Central GST (CGST) administered by the Union, a State GST (SGST) administered by individual states, and an Integrated GST (IGST) governing inter-state supplies. Critically, the seamless input tax credit (ITC) mechanism — allowing credit of taxes paid at every stage against the output tax liability — was intended to mathematically eliminate cascading.

Seven years after GST's implementation, this paper asks a fundamental empirical question: Has GST actually succeeded in reducing tax cascading in Indian manufacturing? The answer has significant implications for fiscal policy, industrial competitiveness, and the design of tax reform in other developing countries.

1.1 Research objectives

This paper pursues four specific objectives:

- To quantify the extent of tax cascading in the pre-GST manufacturing sector using archival data and input-output analysis.

- To assess post-GST changes in effective tax burdens, ITC utilization rates, and embedded tax costs across manufacturing sub-sectors.
- To identify structural impediments that limit GST's anti-cascading effectiveness.
- To offer evidence-based policy recommendations for strengthening the anti-cascading architecture of India's GST.

1.2 Structure of the paper

The remainder of the paper is organized as follows. Section 2 reviews the theoretical and empirical literature on tax cascading and VAT/GST systems. Section 3 describes the pre-GST tax architecture and its cascading mechanisms. Section 4 analyzes the GST design and its theoretical anti-cascading framework. Section 5 presents the data and methodology. Section 6 reports empirical results. Section 7 identifies structural limitations. Section 8 offers policy recommendations, and Section 9 concludes.

2.0 Literature Review

2.1 Tax Cascading: Theoretical Framework

The concept of tax cascading was formally analyzed by Diamond and Mirrlees (1971) in their seminal work on optimal taxation, which demonstrated that production efficiency requires the absence of taxes on intermediate inputs. A cascading tax system violates this production efficiency condition by imposing taxes on intermediate transactions, creating a wedge between social and private costs of production. The welfare costs of cascading have been modeled by Keen and Lockwood (2010), who show that cascade-prone tax systems create allocative distortions proportional to the number of production stages and the tax rate applied at each stage. For a supply chain with n production stages and a uniform ad valorem tax rate t, the final price inclusive of cascaded taxes can be expressed as P*(1+t)^n, compared to P*(1+nt) under a non-cascading tax that raises equivalent revenue. The difference represents the pure deadweight loss from cascading — a loss that grows non-linearly with production chain length, making complex manufactured goods disproportionately burdened.

Cnossen (2010) provides a comprehensive cross-country analysis of cascading in turnover tax and VAT systems, concluding that the move to destination-based VAT with full input credit — the model India adopted with GST — eliminates cascading at least in theory, subject to completeness of the ITC chain and exemption architecture.

2.2 VAT Reform and Manufacturing Outcomes: International Evidence

A substantial empirical literature documents the economic effects of VAT adoption and reform. Faber and Paetzold (2020) study the introduction of VAT in Ethiopia and find

significant reductions in effective tax burdens on formal sector manufacturers. Pomeranz (2015) provides quasi-experimental evidence from Chile that VAT's self-enforcing paper trail substantially reduces tax evasion while improving credit allocation in supply chains.

For India specifically, Aggarwal and Kumar (2012) analyzed the partial VAT reform of 2005 — when states progressively replaced sales tax with state VAT — and documented a 12–18% reduction in effective input costs for manufacturing firms in reforming states, relative to non-reforming states. This provides a valuable pre-GST baseline for assessing the incremental effects of full GST implementation.

Mukherjee (2015), writing prospectively before GST implementation, estimated that a well-designed GST could reduce the cascading tax burden in Indian manufacturing by 15–25% and generate a GDP growth dividend of 1.0–1.5 percentage points through improved resource allocation. The Reserve Bank of India's 2017 Annual Report similarly projected that a smooth GST transition could reduce the wholesale price index by 1.5–2% through the elimination of cascading costs.

2.3 Post-GST Studies

Post-2017 empirical literature on GST's effectiveness is still maturing, given the reform's recency and the disruption caused by the COVID-19 pandemic (2020–21). Rao and Tandon (2018) conducted an early assessment using CMIE Prowess firm-level data and found modest but statistically significant reductions in input costs for formal sector manufacturing firms in the first year of GST, with larger effects in sectors with longer intermediate goods supply chains.

Bhattacharya and Mukherjee (2021) use difference-in-differences analysis exploiting cross-sectoral variation in cascading exposure and find that sectors with high pre-GST cascading levels (chemicals, textiles, electronics) experienced significantly larger post-GST cost reductions than low-exposure sectors, consistent with GST's theoretical predictions. However, they flag persistent ITC blockages in construction-linked supply chains. Garg and Bhatt (2022) specifically examine MSME manufacturers and find limited anti-cascading benefits for firms below the GST registration threshold, who remain outside the ITC chain and effectively continue to bear cascaded taxes on their purchases from GST-registered suppliers — a structural exclusion this paper also examines.

3.0 The Pre-GST Tax Architecture and Cascading Mechanisms

3.1 Structure of Pre-GST indirect taxes

Prior to July 2017, Indian manufacturers operated under a complex overlay of central and state indirect taxes. The principal taxes affecting manufacturing were:

Table 1: Pre-GST Indirect Tax Structure in India (illustrative rates, 2016–17)

Tax	Administered By	Base	Rate Range	ITC Available?
Central Excise Duty (CENVAT)	Central Government	Manufacture of goods	12% (standard)	Partial (CENVAT credit)
Service Tax	Central Government	Services	14.5%	Yes (against CENVAT)
State VAT	State Governments	Sale of goods	5–15% (varies)	Within state only
Central Sales Tax (CST)	Central/State	Inter-state sales	2%	No — hard cascade
Entry Tax/Octroi	State/Local Bodies	Entry of goods	1–5%	No — hard cascade
Customs Duty	Central Government	Imports	Varies	Partial only

The cascading problem arose at several distinct nodes in this system. First, CST at 2% on inter-state purchases was non-creditable against state VAT liability, creating an automatic 2% cost addition at every inter-state supply chain transaction. For a manufacturer with three inter-state procurement stages, this alone created a 6% embedded cost layer before any state VAT was applied. Second, the CENVAT credit scheme — while theoretically eliminating cascading between excise and service tax — did not permit cross-utilization with state VAT. A manufacturer could not use CENVAT credit to offset state VAT liability or vice versa, leaving a structural cascade between the central and state tax systems. Third, entry taxes and octroi — essentially border taxes on goods entering a state or municipality — were uniformly non-creditable, adding between 1% and 5% to the cost of every inter-state or cross-municipal procurement without any possibility of recovery.

3.2 Estimating pre-GST cascading: Input-output analysis

To quantify the pre-GST cascading burden, this paper employs the NIPFP Input-Output table for 2014–15 (the most recent pre-reform year with complete data) combined with the effective rate structure documented in the Central Board of Excise and Customs' (CBEC) Tax Research Unit reports.

Table 2: Estimated Effective Cascading Burden by Sub-Sector, Pre-GST (2016–17)

Manufacturing Sub-Sector	Statutory Rate (%)	ECB — Pre-GST (%)	Cascading Multiplier
Textiles & Apparel	5.0	18.3	3.66x
Chemicals & Pharmaceuticals	12.0	22.8	1.90x
Auto Components	12.0	27.4	2.28x
Electronic Goods	12.0	24.1	2.01x
Food Processing	0–5.0	14.7	2.94x
Steel & Metal Products	12.0	29.6	2.47x
Plastics & Rubber	12.0	21.5	1.79x
Machinery & Equipment	12.0	25.8	2.15x

Using the methodology of Cascading Tax Index (CTI) developed by Due (1988) and adapted by Cnossen (2010), the paper estimates the Effective Cascading Burden (ECB) as the ratio of total cascaded tax embedded in the final product price to the statutory first-point tax rate. The data in Table 2 reveal the severity and heterogeneity of cascading across manufacturing sub-sectors. Sectors with longer supply chains and greater inter-state procurement exposure — notably Steel & Metal Products and Auto Components — exhibited the highest cascading multipliers. Textiles, despite lower statutory rates, showed a high cascading multiplier due to extensive multi-stage processing and high incidence of non-creditable entry taxes in the textile corridor states.

4.0 GST Design and Anti-Cascading Architecture

4.1 Structural design of Indian GST

The Indian GST is structured as a dual concurrent tax — CGST levied by the Centre and SGST levied by the State on intra-state supplies, and IGST levied by the Centre on inter-state supplies with subsequent apportionment to the destination state. This design preserves federal fiscal autonomy while creating a unified national market. Tax rates are determined by the GST Council (constituted under Article 279A) and organized into five principal slabs: 0%, 5%, 12%, 18%, and 28%, with a cess structure on sin goods and luxury items.

The critical anti-cascading mechanism is the seamless ITC chain. Under GST, a registered person can claim credit of the CGST paid on inputs against CGST output liability, SGST against SGST, and IGST against IGST/CGST/SGST in a specified order. Crucially, IGST paid on inter-state purchases is fully creditable — eliminating the CST cascade that was the single largest source of non-creditable taxes in the pre-GST regime.

The design elegantly addresses the cross-credit blockage of the previous system. A manufacturer paying IGST on inter-state raw material purchases can credit that IGST against the CGST and SGST payable on finished goods sold within their state — a cross-utilization impossible under the CENVAT/VAT structure. This mathematical property ensures that, in a fully compliant system with no exemptions, the tax burden on any manufactured good equals only the GST rate applicable to the final supply, with zero cascading on intermediate transactions.

4.2 Theoretical anti-cascading guarantee

The theoretical anti-cascading guarantee of the GST ITC mechanism can be demonstrated formally. Consider a three-stage supply chain: raw material supplier (Stage 1) → component manufacturer (Stage 2) → final goods manufacturer (Stage 3). Let the GST rate be r = 18%. Let the cost of raw materials be C1, and value additions at each stage be V2 and

V3. Under the pre-GST cascade regime, Stage 2 pays tax on (C1 + tax embedded in C1), effectively paying t×C1×(1+t) rather than t×C1. Under GST, Stage 2 pays 0.18×(C1+V2) but claims full credit of 0.18×C1 paid at Stage 1, leaving a net tax cost of 0.18×V2. Stage 3 similarly pays net 0.18×V3. Total tax = 0.18×(V1+V2+V3)

= 0.18 × total value added — precisely the VAT ideal with zero cascading.

This theoretical guarantee, however, is contingent on: (i) complete registration and compliance across the supply chain, (ii) no exempt supplies breaking the ITC chain, (iii) timely and accurate filing of returns enabling ITC matching, and (iv) no blocked credits under Section 17(5) of the CGST Act. The empirical sections assess the extent to which these conditions hold in practice.

5.0 Data and Methodology

5.1 Data sources

This study draws on multiple data sources to construct a comprehensive picture of cascading before and after GST. The primary data sources are:

- Annual Survey of Industries (ASI), 2013–14 to 2022–23: Provides firm-level data on production, material inputs, value added, and indirect tax payments for registered manufacturing units.
- GST Revenue Statistics, GST Council Secretariat (2017–18 to 2022–23): Provides aggregate ITC utilization, return filing rates, and tax collection data by sector.
- CMIE Prowess Database: Provides balance sheet and income statement data for approximately 8,500 listed and unlisted manufacturing firms, used to track input-to-output cost ratios before and after GST.
- National Accounts Statistics, MoSPI: Used for sectoral value-added and price deflator construction.
- NIPFP Working Papers and CBEC Tax Research Unit Reports: For pre-GST effective rate and cascading estimates.

5.2 Methodology

5.2.1 Difference-in-differences framework

The primary identification strategy employs a difference-in-differences (DiD) design. The treatment is the implementation of GST (July 2017). The key identifying variation is cross-sectoral heterogeneity in pre-GST cascading exposure — sectors more reliant on inter-state procurement and those with longer intermediate supply chains had higher CST and entry tax burdens and are therefore the ‘treated’ group in a high-cascading-exposure versus low-cascading-exposure comparison.

The estimating equation is:

$$ETB_{it} = \alpha + \beta_1 \cdot GST_t + \beta_2 \cdot CASC_i + \beta_3 \cdot (GST_t \times CASC_i) + \gamma X_{it} + \delta_i + \varepsilon_{it}$$

where ETB_{it} is the Effective Tax Burden of sector i in period t (measured as ratio of indirect taxes paid to gross output value); GST_t is a binary post-2017 indicator; $CASC_i$ is the sector-level pre-GST cascading exposure index; X_{it} are time-varying controls (capital intensity, export share, firm size distribution); δ_i are sector fixed effects; and ε_{it} is the error term. The coefficient of interest is β_3, capturing the differential reduction in ETB for high-cascading sectors post-GST relative to pre-GST.

5.2.2 ITC utilization rate analysis

Separately, we analyze ITC utilization rates — defined as the ratio of ITC claimed to total GST paid on inputs — as a direct measure of cascading elimination. A utilization rate of 100% would indicate zero cascading on creditable inputs. Rates below 100% reflect either blocked credits, compliance gaps, or exempt supply chains breaking the ITC chain.

5.2.3 Supply chain price pass-through analysis

The paper also conducts a price pass-through analysis using the Wholesale Price Index (WPI) decomposition for manufactured goods categories, examining whether the theoretical reduction in embedded taxes is reflected in relative price changes, controlling for factor input costs.

6.0 Empirical Results

Table 3: Effective Tax Burden Before and After GST by Sub-Sector (Pre: 2014–17 avg.; Post: 2019–22 avg.; 2018–19 Excluded as Transition Year)

Sub-Sector	Pre-GST ETB (%)	Post-GST ETB (%)	Change (pp)	% Reduction
Textiles & Apparel	18.3	11.4	−6.9	37.7%
Chemicals & Pharma	22.8	16.8	−6.0	26.3%
Auto Components	27.4	20.6	−6.8	24.8%
Electronic Goods	24.1	18.9	−5.2	21.6%
Food Processing	14.7	11.1	−3.6	24.5%
Steel & Metal Products	29.6	23.1	−6.5	22.0%
Plastics & Rubber	21.5	16.4	−5.1	23.7%
Machinery & Equipment	25.8	20.2	−5.6	21.7%
Average (All Manufacturing)	23.0	17.3	−5.7	24.8%

6.1 Effective tax burden: pre- and post-GST

Table 3 presents the central findings on changes in effective tax burdens across manufacturing sub-sectors before and after GST implementation, based on ASI and CMIE

Prowess data. The results in Table 3 demonstrate a statistically and economically significant reduction in effective tax burdens across all manufacturing sub-sectors following GST implementation. The average reduction of 5.7 percentage points represents a 24.8% decline from the pre-GST baseline — broadly consistent with NIPFP's pre-reform projections, though at the lower end of the projected 15–25% range. Textiles showed the largest absolute reduction (6.9 pp) reflecting the dismantlement of the extensive entry tax and CST burden in the textile supply chain.

6.2 ITC Utilization rates

Table 4 tracks ITC utilization rates across the post-GST period, providing a direct measure of cascading elimination at the tax system level.

Table 4: GST ITC Utilization Rates — Manufacturing Sector (2017–23)

Year	ITC Claimed (₹ Crore)	GST on Inputs (₹ Crore)	ITC Utilization Rate (%)
2017–18	5,28,000	9,87,000	53.5%
Year	ITC Claimed (₹ Crore)	GST on Inputs (₹ Crore)	ITC Utilization Rate (%)
2018–19	7,82,000	12,44,000	62.9%
2019–20	8,91,000	13,20,000	67.5%
2020–21	7,34,000	11,08,000	66.2%
2021–22	10,18,000	15,23,000	66.8%
2022–23	12,90,000	18,97,000	68.0%

ITC utilization rates have risen steadily from 53.5% in the first year of GST to 68.0% by 2022–23, reflecting progressive improvements in compliance infrastructure, e-invoicing adoption, and ITC matching systems. However, a utilization rate of 68% implies that approximately 32% of input taxes remain non-creditable or unclaimed — a significant residual cascading burden. Partial analysis of the unclaimed ITC indicates that approximately 15% represents genuinely blocked credits (Section 17(5) restrictions), 9% reflects MSME non-compliance or threshold exclusion, and the remaining 8% is attributed to matching failures, return filing delays, and fraud-related ITC restrictions.

6.3 DiD estimation results

The DiD regression results confirm that sectors with higher pre-GST cascading exposure experienced significantly larger post-GST ETB reductions. The estimated coefficient β_3 on the interaction term (GST × Cascading Exposure) is −0.089 (standard error 0.018, $p < 0.001$), indicating that a one standard deviation increase in pre-GST cascading exposure index is associated with an additional 8.9 percentage point reduction in ETB post-

GST. This finding is robust to alternative specifications including industry-time fixed effects, different control sets, and excluding the 2018–19 transition year. The parallel trends assumption — a key identifying assumption of the DiD design — is validated by event-study estimates showing no differential pre-trends between high- and low-cascading sectors in the 2013–2016 period, and a sharp post-2017 divergence consistent with the GST treatment effect.

7.0 Structural Limitations and Persistent Cascading

7.1 Blocked Credits Under Section 17(5)

Section 17(5) of the CGST Act, 2017 specifies a list of inputs and input services for which ITC is not available, regardless of whether those inputs are used in the course of business. The blocked credit categories include motor vehicles (for non-transport businesses), construction services, food and beverages, health and club memberships, and several other categories. For manufacturing firms that utilize construction services in factory construction or expansion, this creates a significant cascading point.

Analysis of balance sheet data for capital-intensive manufacturing sectors (chemicals, cement, metals) indicates that construction-linked blocked ITC represents approximately 3–7% of total capital expenditure in new plant establishment, an effective hidden tax on investment that the GST architecture explicitly preserves. This is a deliberate policy choice with revenue implications, but its existence means that GST does not fully eliminate cascading in the investment supply chain.

7.2 Exemption-Induced Chain Breaks

GST exemptions — of which there are over 100 categories — break the ITC chain at the point of exempt supply. A manufacturer who uses exempt agricultural commodities as inputs and then sells a GST-taxable processed food product cannot claim ITC on the embedded taxes in the exempt inputs, creating cascading at the agriculture-manufacturing interface. This is particularly significant for agro-processing industries including sugar, edible oils, and dairy, which collectively account for approximately 18% of Indian manufacturing output by value.

The dual-rate structure for pharma products — where active pharmaceutical ingredients (APIs) attract 18% GST while final drug formulations attract 5% — also creates an inverted duty structure that generates effective cascading for domestic drug manufacturers, as the ITC on inputs exceeds the output GST liability, leading to cash flow blockages equivalent to implicit cascading.

7.3 MSME Exclusion

Firms with annual turnover below ₹20 lakh (₹10 lakh in special category states) are not required to register under GST and cannot charge or claim GST. This creates a binary split: large formal sector manufacturers in fully integrated ITC chains, and small manufacturers whose purchases from unregistered suppliers carry embedded GST with no recoverability.

Given that MSMEs account for approximately 45% of manufacturing output and 80% of manufacturing employment in India, this structural exclusion represents the most significant limitation on GST's anti-cascading reach. Garg and Bhatt (2022) estimate that MSME manufacturers bear an average embedded tax burden 4.8 percentage points higher than formal sector manufacturers — a post-GST cascading gap that is entirely attributable to the threshold exclusion architecture.

7.4 Compliance and Technology Gaps

The ITC matching mechanism — which is the technological enforcement of the anti-cascading guarantee — depends on correct and timely filing of GSTR-1 (outward supply returns) by suppliers and GSTR-3B (summary returns) by recipients. Analysis of GST Council data indicates that as of 2022–23, approximately 78% of active taxpayers file GSTR-1 on time, leaving 22% of supply chain transactions in an unmatched state. Where supplier returns are not filed, recipients face the risk of ITC reversal under Rule 37 of the CGST Rules, effectively converting creditable taxes into cascading costs ex post.

The introduction of e-invoicing (mandatory for businesses with turnover above ₹5 crore as of October 2022) has substantially improved ITC matching for large and medium enterprises, reducing matching failures by approximately 60% in the e-invoicing perimeter. However, the ₹5 crore threshold leaves millions of small suppliers outside mandatory e-invoicing, sustaining matching risks for their customers.

8.0 Policy Recommendations

8.1 Rationalizing Blocked Credits

The blocked credit list under Section 17(5) should be reviewed with the objective of permitting ITC on inputs directly used in business operations, particularly construction services for factory and warehouse construction. A distinction between personal consumption and business investment use should guide this rationalization. Progressive unblocking of investment-related credits would reduce the cascading burden on capital formation in manufacturing and lower the effective cost of capacity expansion.

8.2 Addressing the Inverted Duty Structure

The GST Council should systematically identify and correct inverted duty structures in manufacturing supply chains — particularly in pharmaceuticals, textiles, and agro-processing — either by aligning input and output rates or by providing a refund mechanism for unutilized ITC in genuinely inverted situations. The existing refund mechanism for inverted duty structures is administratively complex and subject to significant delays, negating much of its intended benefit.

8.3 Expanding the ITC Chain to MSMEs

Two complementary reforms are recommended to reduce MSME cascading. First, the Composition Scheme (a simplified tax regime for small businesses) should be redesigned to allow B2B suppliers under the scheme to issue tax invoices to registered buyers, enabling those buyers to claim ITC — a reform that would bring composition dealers into the ITC chain without requiring them to comply with full GST returns. Second, the registration threshold should be differentiated by enterprise type: lower thresholds for B2B manufacturers (who are supply chain intermediaries) and higher thresholds for B2C retailers (where cascading concerns are less acute).

8.4 Universal E-Invoicing

The e-invoicing threshold should be progressively lowered to ₹1 crore turnover within two years and to ₹50 lakh within five years, with government-subsidized ERP solutions provided to small enterprises. Universal e-invoicing is the single most effective systemic measure for eliminating ITC matching failures and the compliance-related cascading that persists in the medium enterprise segment.

8.5 Strengthening the GST Council's Rate Rationalization Mandate

The GST rate structure, originally intended as a transitional architecture converging toward a single or dual-rate system, remains fragmented with over 1,200 goods and services classified across five rate categories. Rate rationalization — particularly the merging of the 12% and 18% slabs into a single 15% rate — would reduce classification disputes, eliminate rate-arbitrage-induced cascading (where goods are misclassified to access lower-rate inputs), and simplify compliance for manufacturers operating across multiple product categories.

9.0 Conclusion

This paper has presented empirical evidence that India's Goods and Services Tax has achieved a significant and economically meaningful reduction in tax cascading in the

manufacturing sector. The average effective tax burden on manufacturing declined by approximately 5.7 percentage points (24.8%) following GST implementation, with larger gains in sectors that were most exposed to cascading under the pre-GST regime. ITC utilization rates have risen from 53.5% in 2017–18 to 68.0% in 2022–23, demonstrating progressive improvement in the anti-cascading infrastructure.

At the same time, the paper documents substantial residual cascading arising from blocked credits in construction and investment supply chains, exemption-induced ITC chain breaks in agriculture and pharma, structural exclusion of MSMEs from the ITC system, and compliance gaps in the ITC matching mechanism. These factors collectively mean that the potential anti-cascading gains of a theoretically perfect GST system are being realized only partially — by our estimates, approximately 60–65% of the theoretical maximum gain.

The findings have implications beyond India. For other developing economies considering VAT or GST reforms, India's experience demonstrates both the substantial gains achievable from a unified destination-based tax with seamless ITC and the importance of complementary policies — e-invoicing, MSME integration, exemption minimization, and blocked credit rationalization — that determine how much of the theoretical gain is actually realized. Tax design is necessary but not sufficient; implementation architecture determines whether the paper's anti-cascading guarantee becomes economic reality.

Future research should focus on the distributional effects of cascading reduction — whether the benefits are concentrated in large formal sector firms or shared with MSMEs and workers — and on the dynamic investment effects of reduced input cost distortions, which may represent the most durable economic dividend of India's GST reform.

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CHAPTER 13

GST and Supply Chain Optimization: Evidence from Indian Manufacturing Firms

*Sakshi Sinha**

ABSTRACT

When India replaced its tangled web of indirect taxes with a single Goods and Services Tax in July 2017, it set in motion one of the most consequential supply chain experiments in the country's economic history. This paper takes a close look at what actually happened — examining how GST reshaped warehouse networks, logistics costs, and inventory practices across Indian manufacturing over the nine years spanning 2015 to 2024. Drawing on firm-level panel data for 1,240 manufacturers across the automotive, pharmaceutical, FMCG, and textile sectors, and supplemented by in-depth qualitative fieldwork, the study finds that larger and mid-sized firms achieved real, measurable efficiency gains: average logistics costs fell by 8–14 percent, warehouses were consolidated, and working capital freed up through smoother input tax credit (ITC) flows. Smaller firms, however, bore disproportionate compliance burdens in the early years, with efficiency gains only beginning to materialize from 2020 onward. The paper also identifies where the reform fell short — petroleum exclusions, inverted duty structures, and a digital divide between large and small firms — and offers targeted policy recommendations for the next phase of GST development.

Keywords: Goods and Services Tax; Supply Chain Management, Logistics Costs, Input Tax Credit, Indian Manufacturing, Warehousing Consolidation; Tax Reform.

1.0 Introduction

On July 1, 2017, India did something remarkable — it folded dozens of overlapping central and state taxes into a single, destination-based Goods and Services Tax. Gone were the Central Excise Duty, Service Tax, VAT, Central Sales Tax, octroi, and a bewildering variety of entry levies. In their place: one unified tax, one return framework, and — in principle — one seamless national market. For a manufacturing economy of India's scale (GDP exceeding USD 3.5 trillion, with manufacturing accounting for roughly 17 percent of national output), the implications were immediate and substantial.

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But to understand why, it helps to appreciate just how distorted the old system had become. Before GST, the architecture of India's indirect taxes quietly rewarded inefficiency. The Central Sales Tax charged on interstate transactions gave manufacturers a strong financial reason to set up warehouses in every state they sold to — not because the logistics made sense, but because it converted a taxable inter-state sale into a stock transfer followed by a local intra-state transaction. Entry taxes and octroi added further friction at state borders, where trucks would queue for hours. According to the National Council of Applied Economic Research, these delays added an estimated 30–40 percent to logistics costs compared to peer economies. India's logistics bill ran to 13–14 percent of GDP — nearly double the rate of advanced economies — and tax policy was a major reason why.

GST promised a cleaner system through four key changes: eliminating the fiscal incentive for state-by-state warehouse proliferation; allowing uninterrupted ITC flows across the supply chain; reducing compliance overhead through standardized returns; and replacing border checkposts with E-way bills to speed up freight movement.

The theoretical logic was sound. But how much of it actually materialized, and for whom? This is the question the paper sets out to answer. Prior industry surveys by KPMG, Deloitte, and the CII captured early directional signals, but none had the panel depth to isolate GST's effects from other concurrent shocks — demonetization, the COVID-19 pandemic, the 2021–22 global supply chain disruption.

We address this gap using a firm-level panel dataset covering 1,240 manufacturing companies across four sectors from FY2015 to FY2024. By exploiting the sharp, exogenous change in inter- state tax costs that GST introduced, and controlling for firm size, sector, capital intensity, and macroeconomic conditions, we produce credible causal estimates of GST's impact on warehousing decisions, logistics spending, inventory levels, and supply chain structure. Forty- eight qualitative interviews and four in-depth sector case studies fill in the mechanisms and heterogeneity that the numbers alone cannot capture.

The paper proceeds as follows: Section 2 reviews the literature. Section 3 describes the pre-GST supply chain environment. Section 4 outlines the data and methods. Section 5 presents the main quantitative results. Section 6 covers sector-specific case studies. Section 7 examines how outcomes differed by firm size. Section 8 takes stock of ongoing challenges. Section 9 concludes with policy recommendations.

2.0 Literature Review

2.1 Tax policy and supply chain design

The idea that tax differentials shape supply chain geography is well-established in the academic literature. Goetschalckx, Vidal, and Dogan (2002) showed that even modest

cross-border tax differences systematically influence where multinational firms locate their production and distribution facilities. In developing economies, Keen and Lockwood (2010) documented that VAT adoption tends to reduce cascading tax effects and improve transaction efficiency across firm boundaries, though adjustment costs in the early years can be significant. Cnossen (2013) added that in federal VAT systems, the design of inter-governmental settlement mechanisms matters enormously — get it wrong, and supply chain distortions simply migrate rather than disappear.

For India specifically, Acharya (2005) and Panagariya (2008) identified the pre-GST tax structure as a root cause of the country's logistics cost premium, estimating that tax-driven supply chain fragmentation alone accounted for 3–5 percentage points of India's cost disadvantage relative to China. The Kelkar Task Force (2004) and the Empowered Committee of State Finance Ministers laid the intellectual groundwork for GST reform, though neither attempted to quantify the supply chain adjustment path that would follow.

2.2 Post-GST empirical evidence

Since 2018, a growing body of empirical work has documented GST's early effects. Rakshit and Rao (2018) used a computable general equilibrium model to project aggregate welfare gains of roughly 2 percent of GDP, with significant improvements in inter-state trade flows. Singh and Agarwal (2019) surveyed 340 manufacturing firms and found that 63 percent had begun consolidating warehouses within 18 months of GST, anticipating logistics cost savings of 10–20 percent — though their cross-sectional design made causal inference difficult. Jain and Kumar (2020) offered the first difference-in-differences analysis of GST's logistics impact. Firms that sold more across state lines before GST — and therefore had more to gain — showed significantly larger reductions in warehouse counts after the reform.

Sharma, Bhat, and Mehta (2021) documented how automotive OEMs contracted their distribution node count from an average of 7.2 to 4.8 per manufacturer, with finished goods inventory falling 11 percent relative to sales. On the ITC side, the picture has been more mixed. Mishra and Tripathy (2022) found significant ITC refund delays during 2017–2019, particularly for exporters and small firms, effectively forcing them to lend money to the government while waiting for credits. Das and Bose (2023) confirmed a meaningful liquidity squeeze for SMEs in the first two post-reform years.

2.3 Theoretical framework

This study is grounded in the network optimization tradition (Geoffrion & Graves, 1974), updated through the supply chain finance lens of Hofmann and Belin (2011). We treat the firm's supply chain design problem as one of minimizing total costs — transportation, warehousing, inventory carrying, and tax compliance — while meeting service-level

requirements. GST enters the model as a reduction in the effective inter-state transaction tax rate and an improvement in ITC recoverability. The model predicts warehouse consolidation, inventory rationalization, and working capital improvement as equilibrium responses, with the magnitude varying according to pre-reform interstate trade intensity and firms' ability to navigate compliance requirements.

3.0 India's Pre-GST Supply Chain Architecture

To appreciate how much changed after July 2017, it's worth dwelling for a moment on the system that came before. India's manufacturing sector operated under a three-tier tax structure before GST. At the central level, CENVAT applied to manufactured goods and Service Tax applied to services in the supply chain. At the state level, VAT governed in-state sales. Crossing a state border triggered a 2 percent Central Sales Tax — and this single fact had enormous consequences for supply chain design.

Unlike state VAT, the CST was not creditable for the buyer. A manufacturer shipping goods from Maharashtra to Tamil Nadu paid 2 percent CST on the invoice value, and the Tamil Nadu buyer could not offset this against their own VAT liability. The tax was a pure cost that compounded through the supply chain. The practical workaround was predictable: large manufacturers set up consignment depots or branch warehouses in every major consuming state. This converted an inter-state sale into a stock transfer (no CST) followed by a local, creditable intra-state sale. The logistics were often inefficient, but the tax savings made it worthwhile. The consequences were striking. A national FMCG company might run 28–35 state-specific warehouses when the logistics alone would have justified 8–10 regional distribution centers. Each depot carried its own inventory, staff, compliance obligations, and fixed overhead. Inventory dwell times were longer than at logistics-optimized facilities, and per-unit costs were correspondingly higher.

On top of all this, physical inspection at inter-state checkposts — where trucks had to present Form C, Form F, Form E-I, and other transit documents — imposed serious delays. A truck on National Highway 48 between Delhi and Mumbai could expect 4–6 hours at the Maharashtra border checkpoint at Khopoli alone. Industry estimates placed total checkpost dwell time at 20– 30 percent of total transit time for long-haul freight.

This, then, was the baseline from which GST reform began.

4.0 Data and Research Methodology

4.1 Data Sources

The quantitative analysis rests on a firm-level panel dataset assembled from four sources. The CMIE's Prowess database provides annual financial data — including logistics

costs, inventory levels, sales, and capital expenditure — for roughly 4,500 listed and unlisted manufacturers. Annual reports and investor presentations from the 340 listed firms in the sample supplement and cross-validate the CMIE data. A primary survey administered to logistics and finance managers at 210 firms in 2022–2023 collected direct data on warehouse counts, distribution network structure, ITC utilization, and compliance costs. GST Council circulars, GSTIN registration data, and E-way bill statistics from the NIC portal provide aggregate benchmarks for validation.

The final balanced panel covers 1,240 firms across four sectors — automotive and auto- components; pharmaceuticals and medical devices; FMCG and consumer goods; and textiles and apparel — spanning FY2015 to FY2024. Three pre-GST years (FY2015–2017) and seven post-GST years (FY2018–2024) provide robust room for before-and-after comparison while controlling for broader time trends.

4.2 Empirical Strategy

Our primary method is a difference-in-differences (DiD) framework that exploits variation in firms' pre-reform exposure to interstate trade. We define treatment intensity for each firm as the share of inter-state sales in total sales during FY2015–2017. Firms with higher interstate sales had stronger incentives to maintain state-specific warehouses, and thus greater potential to rationalize their networks under GST.

The baseline DiD model regresses outcome variables — logistics cost ratio, warehouse count, inventory days, ITC utilization — on the interaction of treatment intensity and a post-GST indicator, controlling for firm size, leverage, export intensity, capital intensity, as well as firm and year fixed effects. Standard errors are clustered at the two-digit NIC industry level. An event study specification traces outcomes dynamically around the GST implementation date, testing for pre- trends and documenting adjustment speed. Robustness checks include instrumental variable approaches and synthetic control analyses.

4.3 Qualitative component

The qualitative arm includes 48 semi-structured interviews with supply chain directors, CFOs, and logistics managers at 22 firms, plus four in-depth sector case studies covering the full transformation arc from 2016 to 2024. Interview transcripts were coded in NVivo using a framework derived from the theoretical model in Section 2.3.

5.0 Empirical Results

5.1 Warehousing consolidation

The headline finding is unambiguous: GST led to significant warehouse consolidation among firms with higher pre-reform interstate sales. The DiD coefficient on

warehouse count is negative and statistically significant at the 1 percent level. In practical terms, a firm at the 75th percentile of interstate sales intensity (around 55 percent of sales crossing state lines) reduced its warehouse count by an average of 3.8 facilities relative to a firm at the 25th percentile (around 20 percent interstate). Across the full sample, the average firm went from 14.2 warehouse facilities in FY2017 to 9.6 in FY2022 — a 32 percent contraction.

Table 1: Warehousing and Logistics Outcomes — Difference-in-Differences Estimates

Outcome Variable	DiD Coefficient	Std. Error	Observation s	R^2
Warehouse Count (No.)	−0.187***	(0.043)	11,160	0.71
Logistics Cost / Sales (%)	−0.024***	(0.007)	10,890	0.68
Inventory Days	−4.21***	(1.14)	11,160	0.64
Transport Cost / Unit (INR)	−0.031***	(0.009)	10,440	0.59
Third-Party Logistics Usage (0/1)	+0.142***	(0.038)	11,160	0.55

*Notes: *** p<0.01; ** p<0.05; * p<0.10. All regressions include firm and year fixed effects. Standard errors clustered by 2-digit NIC industry. DiD coefficient measures the effect of a one standard deviation increase in pre-reform interstate sales share in the post-GST period.*

The consolidation came with a notable shift toward third-party logistics providers. Treated firms were 14.2 percentage points more likely to transition to 3PL arrangements after GST — a pattern consistent with firms outsourcing what used to be captive tax-driven warehouse networks to logistics specialists, and in the process eliminating fixed overhead they no longer needed.

5.2 Logistics cost reduction

Logistics costs as a share of sales fell by an average of 2.4 percentage points among high- treatment firms relative to low-treatment ones. Against a pre-reform baseline of 8.7 percent of sales, this represents roughly a 28 percent reduction for high-exposure firms — consistent with the INR 2–3 trillion aggregate savings estimate published in the Economic Survey 2019–20. Event study estimates show that the bulk of adjustment happened within three years of GST implementation (FY2018–FY2021), with pre-reform parallel trends confirmed — strengthening the causal interpretation. A second wave of improvement is visible from FY2022 onward, aligning with the maturing E-way bill monitoring system and wider FASTag adoption on national highways.

5.3 Input tax credit and working capital

The ITC story is more nuanced and depends heavily on firm size. Large firms — those with annual turnover above INR 500 crore — achieved ITC utilization rates of 91 percent

of eligible credits within 24 months, and their working capital cycles shortened by an average of 7.3 days. For a firm with INR 100 crore in sales, this translated to a one-time cash release of approximately INR 12–18 lakh.

Table 2: ITC Utilization and Working Capital Effects by Firm Size

Firm Category	ITC Utilization Rate (%)	Working Capital Cycle Change (Days)	Compliance Cost Change (%)
Large (>INR 500 Cr)	91.4	−7.3	−12.1
Medium (INR 50–500 Cr)	78.2	−3.1	+4.7
Small (<INR 50 Cr)	61.5	+2.8	+18.4
Overall Sample Mean	77.3	−3.2	+2.9

Notes: ITC utilization rate is the proportion of eligible ITC claimed relative to total GST paid on inputs. Working capital cycle change is the difference in cash conversion cycle between FY2017 and FY2022. Compliance cost change reflects net change in combined tax compliance expenditure.

For small firms, the picture was materially worse. SMEs below INR 50 crore turnover achieved only 61.5 percent ITC utilization on average, with unclaimed credit effectively raising their input costs. These firms also saw compliance expenditures rise 18.4 percent — driven by the cost of GST-compliant accounting software, chartered accountant fees, and the labour-intensive process of reconciling filing mismatches with suppliers and buyers. Their cash conversion cycle lengthened by 2.8 days, the opposite of the large-firm experience.

5.4 Inventory optimization

Warehouse consolidation enabled manufacturers to centralize safety stock, reducing total system inventory. The mathematics here follow the 'square root law' of inventory consolidation (Maister, 1976): consolidating n warehouses to a single location cuts required safety stock by a factor of $1/\sqrt{n}$, assuming independent demand at each location. Our empirical estimates align with this prediction — inventory days fell by an average of 4.21 days for high-treatment firms, with larger reductions in sectors with more stable demand (pharmaceuticals and FMCG) compared to more volatile ones (automotive and textiles).

6.0 Sector-Specific Evidence: Case Studies

6.1 Automotive sector

India's automotive industry — producing over 4 million passenger vehicles and 22 million two- wheelers annually — operates through sprawling multi-tier supply chains. Before GST, major OEMs like Maruti Suzuki and Tata Motors maintained vehicle holding yards in up to 25 states, with distribution decisions partly driven by tax rather than logistics

logic. Fieldwork at two major OEMs and four tier-1 suppliers found that post-GST, vehicle distribution was reorganized around 7–9 regional hub-and-spoke centers, replacing the previous 23–27 state- level facilities. The results were tangible: average plant-to-dealer transit time dropped from 8.3 to 5.7 days; finished vehicle inventory fell from 32 to 22 days of sales; and supply chain finance costs declined by roughly 0.3 percent of ex-showroom price — meaningful in an industry where post-tax operating margins average just 4–6 percent.

Tier-1 suppliers showed more mixed outcomes. Those with geographically concentrated customers benefited from consolidation and improved ITC flows. Those serving dispersed OEM assembly lines faced pressure to retain regional service points to meet just-in-time delivery requirements, limiting their ability to fully rationalize their networks.

6.2 Pharmaceutical Sector

Pharmaceuticals present a distinctive case: cold-chain requirements, batch traceability obligations under Schedule M, and the public health imperative of reliable product availability all add complexity. Pre-GST, the sector faced a concessional CST of 2 percent plus state VAT rates of 4–12.5 percent depending on product type, creating inter-state tax differentials that bent distribution geography toward compliance rather than efficiency.

Our case study at a major domestic pharmaceutical company (annual revenue approximately INR 3,500 crore) found that the firm consolidated from 32 state C&F agent depots to 18 regional distribution centers within 24 months of GST. Warehousing and transportation costs fell by approximately INR 38 crore annually — equivalent to 1.1 percent of revenue. Crucially, E-way bills replaced the previous border documentation system, reducing cold chain border crossing delays from an average of 3.2 hours to 0.4 hours — a significant reduction in temperature excursion risk for sensitive products.

An unexpected benefit noted by the company's supply chain director was improved demand signal quality. With fewer distribution echelons, retail demand data now reached manufacturing planning systems within 2–3 days rather than 6–8 days, enabling tighter production scheduling and reducing overproduction-driven write-offs.

6.3 FMCG sector

FMCG companies faced the most dramatic warehousing changes of any sector, given that their products reach hundreds of thousands of retail outlets nationwide and their pre-reform networks were the most extensively state-fragmented. Hindustan Unilever publicly disclosed a reduction from 56 depots to 21 mother depots and 25 transit warehouses following GST — a restructuring estimated to yield INR 250–300 crore in annual logistics savings.

Our fieldwork at two mid-sized FMCG companies confirmed this pattern. The shift from state C&F depots to regional distribution centers was paired with rapid growth in 3PL

sub-contracting for last-mile delivery, lifting 3PL penetration in FMCG distribution from roughly 35 percent in 2016 to over 60 percent by 2022. There was also meaningful category-level restructuring: premium and mid-tier products shifted toward centralized, longer-haul distribution, while low-value, high-volume commodities like cooking oils and pulses increasingly adopted direct-from-factory models that bypassed regional warehousing entirely.

6.4 Textile sector

Textiles and apparel presented the most complex GST transition. The multi-stage production structure — spanning fiber, yarn, fabric, and garment manufacturing — faced different GST rate treatment at each stage at the reform's launch. The initial rate structure (5 percent on fabrics, 12 percent on garments priced above INR 1,000) created an inverted duty structure in garment manufacturing that systematically generated unrecoverable ITC at the fabric-to-garment transition. This structural problem meaningfully blunted the efficiency gains that other sectors enjoyed. Garment exporters in Tiruppur, Surat, and the NCR faced ITC refund timelines exceeding 90 days during 2018–2019. Several medium-sized exporters had to bridge these gaps with short-term borrowing, eroding the working capital benefits of the broader reform. The GST Council's subsequent corrections — expedited refund measures in 2018 and the rate rationalization of October 2021 — helped, but did not fully resolve the structural issue.

7.0 Heterogeneous Effects: Firm Size and Digital Readiness

One of the most consistent findings across both quantitative and qualitative components is the steep gradient in outcomes by firm size and digital compliance capability. The table below summarizes the divergence.

Table 3: GST Supply Chain Impact by Firm Size (FY2017 vs FY2022)

Metric	Large Firms	Medium Firms	Small Firms
Logistics Cost Reduction	−12.4%	−8.1%	−2.3%
Warehouse Count Change	−38%	−28%	−9%
Inventory Days Change	−6.8 days	−4.2 days	−0.7 days
3PL Adoption Rate	78%	61%	34%
ITC Utilization Rate	91%	78%	62%
Supply Chain Efficiency Score	+19.2 pts	+11.4 pts	+3.1 pts

Notes: Large firms defined as annual turnover >INR 500 crore; medium INR 50–500 crore; small <INR 50 crore. Supply Chain Efficiency Score is a composite index of logistics cost ratio, inventory days, and order fulfillment cycle time, standardized to a 0–100 scale.

The size gradient is striking. Large firms captured logistics savings nearly six times larger as a share of pre-reform costs compared to small firms. They reduced warehouse networks four times as aggressively. ITC utilization rates were nearly 30 percentage points higher. The primary driver is digital compliance capability. Large firms had already invested in ERP systems (SAP, Oracle, Microsoft Dynamics) that could be configured for GST, including automated ITC reconciliation. Smaller firms relied on basic accounting software or manual processes, making return filing and ITC matching laborious and error-prone.

A secondary factor is supply chain bargaining power. Large firms were able to impose GST compliance standards in supplier agreements and shift business toward compliant suppliers — effectively transferring some compliance burden downstream while improving their own ITC recoverability. This dynamic raises a concern worth acknowledging: the efficiency gains from GST are disproportionately accruing to large firms, potentially accelerating industrial concentration in ways that warrant policy attention.

8.0 Ongoing Challenges and Structural Limitations

8.1 The petroleum exclusion

The most significant structural gap in the current GST framework, from a supply chain standpoint, is the exclusion of petroleum products. High-Speed Diesel powers the vast majority of India's commercial freight fleet, yet it remains subject to state-level VAT and central excise, with state rates varying from roughly 26 to over 38 percent. This means that transportation costs — the largest single component of logistics expenditure — continue to be burdened by cascading state taxation, and manufacturers cannot claim ITC on the diesel consumed in freight operations.

Our analysis suggests that bringing petroleum into the GST base could generate an additional 4– 6 percent reduction in logistics costs — the single largest outstanding efficiency gain available from the reform architecture. It is also, politically, the hardest to achieve: state governments derive substantial revenue from petroleum levies and have resisted inclusion. Constitutional amendment would be required. But the prize is large enough that it deserves sustained attention from the GST Council.

8.2 The digital divide

GST compliance technology has improved significantly since 2017, but meaningful gaps remain. The GSTN has experienced periodic capacity and reconciliation issues around filing deadlines. The original invoice-matching system — central to the ITC fraud prevention architecture — was simplified to a GSTR-3B regime that reduced compliance burden but weakened the verification mechanism. The divide between large and small firms partly

reflects an uneven compliance ecosystem. GST Suvidha Providers and Application Service Providers have developed sophisticated tools for larger businesses, but affordable, user-friendly solutions for micro and small enterprises remain limited. The government's own free GSTN portal is functional but lacks the integration capabilities that would allow seamless incorporation into SME accounting workflows — a gap that represents both a policy failure and a market opportunity.

8.3 Dual-channel complexity

A challenge not widely anticipated at GST's launch is the complexity created by the rapid growth of direct-to-consumer e-commerce. The same product may now flow through both traditional wholesale-retail channels (governed by standard B2B-to-B2C GST rules) and marketplace e- commerce platforms (subject to Tax Collected at Source provisions under Section 52 of the CGST Act). Managing inventory and GST compliance across these parallel channels has added meaningful operational complexity for FMCG and electronics firms — a dimension of the reform that will likely require further attention as e-commerce's share of retail continues to grow.

9.0 Conclusion and Policy Implications

This paper has provided systematic, firm-level evidence on the supply chain transformation that India's GST reform set in motion. The findings confirm that GST has been a meaningful positive force for manufacturing supply chains: large and mid-sized firms achieved real reductions in logistics costs, warehouse proliferation, and inventory carrying requirements. The ITC mechanism improved the tax efficiency of production. E-way bills materially accelerated inter-state freight movement. At the same time, the reform's benefits have not been evenly distributed. Smaller firms bore disproportionate compliance burdens in the early years and have been slower to realize efficiency gains. Structural limitations — the petroleum exclusion, the inverted duty structure in textiles, and the digital divide in compliance capability — continue to constrain the full potential of the reform.

Five policy implications emerge from the analysis:

- Petroleum inclusion should remain a priority for the next phase of GST reform. The transportation cost reduction potential — estimated at 4–6 percent — dwarfs any other single remaining policy change available.
- Targeted digital compliance support for SMEs is essential to close the large-firm/small-firm efficiency gap. This means subsidized GSP access, simplified return formats, and better ITC reconciliation tooling.

- A standing mechanism for expedited ITC refunds in structurally inverted-duty sectors would prevent the kind of liquidity squeeze experienced in textiles from recurring.
- The E-way bill threshold for intra-state movements should be rationalized to reduce compliance burden on small consignments without compromising tax monitoring.
- Real-time, analytics-driven risk profiling for GST audit selection would concentrate compliance resources where they matter most, while reducing unnecessary friction for honest taxpayers.

Looking forward, there is a larger opportunity that policy has not yet fully grasped. GST transaction data is now the most comprehensive real-time dataset of commercial goods flows in Indian economic history. Integrated with the National Logistics Policy (2022) — which aims to bring India's logistics cost-to-GDP ratio down from 13 percent toward the 8–9 percent range of comparable economies — it could inform infrastructure investment, logistics planning, and supply chain risk monitoring in ways that generate efficiency dividends well beyond what the tax reform itself produces. Realizing that potential will require genuine institutional collaboration between the Ministry of Finance, the Ministry of Commerce and Industry, and state-level logistics agencies. That governance challenge is, ultimately, as important as any of the technical or economic dimensions this paper addresses.

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CHAPTER 14

GST's Impact on Supply Chain Visibility in India: A Comprehensive Economic and Operational Evaluation- From Tax-Driven Fragmentation to System-Wide Real Time Optimization (Post GST 2.0)

*Aagam Jain**

ABSTRACT

The introduction of the Goods and Services Tax (GST) in July 2017 marked the most significant tax reform in modern Indian history. Beyond simple tax compliance structural changes, GST has operated as a profound logistical disruptor. Historically, India's supply chain infrastructure was dictated by decentralized, state-specific cascading tax frameworks. This forced corporations to manage an inherently fragmented matrix of sub-scale facilities designed for regional tax evasion rather than maximum spatial and operational throughput. This paper explores the multidimensional transformation of Indian logistics as it enters the 'Post-GST 2.0' era in 2025/2026. Leveraging secondary research from peer-reviewed journals, regulatory reports (DPIIT, Ministry of Finance), and industrial indices (Shiprocket, Cashflo), we examine the structural collapse of national logistics costs from 14% of national GDP to ~7.97%. Furthermore, we map the near-total elimination of cross-border downtime via integrated, high-velocity digital clearings, including the automated national E-Way Bill and FASTag API frameworks. Finally, this paper provides a rigorous assessment of the macro-structural movement toward centralized multi-modal hub-and-spoke models, delineating how information availability eliminates structural leakages, supports the execution of the National Logistics Policy (NLP), and guarantees comprehensive, system-wide transparency across the Indian subcontinent.

Keywords: Goods and Services Tax (GST); Supply chain transformation; Logistics costs; Digital *I*nfrastructure (E-way bill & FASTag); National Logistics Policy (NLP).

1.0 Introduction and Historical Context

For decades following Indian independence, the state-level internal border system resembled a collection of discrete regional markets rather than a unified nation. The domestic logistics ecosystem operated under severe, sub-optimal constraints engineered by overlapping central, state, and local administrative taxation regimes.

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Corporations operating across state lines were subject to a multi-tiered array of fiscal friction points, including Central Sales Tax (CST), Value Added Tax (VAT), local entry taxes, luxury taxes, and arbitrary Municipal Octroi. Because state-level VAT could not be cross-credited against interstate CST, a cascading multi-layered tax structure emerged. This fiscal layout penalized supply chain optimization and skewed logistical mapping away from geographical common sense.

In this pre-reform landscape, corporations designed their physical supply chains around defensive tax avoidance strategies. Rather than building large, strategically centered distribution hubs that leveraged economies of scale, businesses established hundreds of small, manual, sub-scale 'carry and forwarding' (C&F) sheds in virtually every state of commercial activity. This real estate mapping was executed purely to record local stock transfers and mitigate cross-border tax liabilities. The resulting networks suffered from inflated safety stock profiles, high overhead costs, zero digital visibility, and extreme operational inefficiencies. On the roads, interstate transit was crippled by physical tax checks at geographical state borders, resulting in multi-hour vehicle blockades, complex documentation requirements, and widespread avenues for institutional leakage.

The enactment of the Goods and Services Tax (GST) dismantled this internal infrastructure barrier with a single statutory mandate. By replacing dozens of complex indirect levies with a unified, consumption-based national tax structure, GST effectively transformed India into a singular common market. As the regime has matured into 'Post-GST 2.0' (reflecting the deep digital maturity, API interoperability, and predictive tracking parameters seen by 2025/2026), the focus of supply chain design has shifted permanently. Modern systems favor pure operational velocity, structural cost containment, and end-to-end network visibility. This research paper evaluates the systemic impacts of this shift, demonstrating how the optimization of tax structures serves as a core engine for technological advancement and infrastructural scaling throughout India's logistics landscape.

2.0 Theoretical Framework and Research Objectives

This analysis is grounded in Transaction Cost Economics (TCE) and Supply Chain Orientation (SCO) theories. According to TCE, institutional frameworks directly determine the friction costs of market exchanges. Under the old indirect tax regime, behavioral complexity and regional asset specificities inflated transaction overheads, driving up national expenditure. Conversely, supply chain orientation dictates that maximum systemic efficiency is achieved when data flows fluidly across multiple nodes, reducing information asymmetry and variability. GST serves as an institutional mechanism that actively compresses transaction frictions while simultaneously mandating a standardized digital trail across the macroeconomic grid.

To evaluate these impacts systematically, this research pursues the following interconnected core objectives:

- Macroeconomic Logistics Efficiency & Transit Compression: To evaluate the quantitative trends in national logistics cost reductions as a percentage of national GDP, and to calculate vehicle asset utilization gains following the dismantling of physical check-posts.
- Structural Warehouse Configuration Optimization: To track the transition away from small, tax-sheltering storage sheds toward automated, centralized multi-modal hub-and-spoke setups.
- Digital Visibility via E-Way Bill Integration: To evaluate the mechanics of the national digital E-Way Bill architecture and its alignment with FASTag RFID sensors and automated e-invoicing ecosystems.
- Value Chain Transparency & Leakage Control: To evaluate the real-time data-driven checking mechanisms that minimize structural tax evasion, secure Input Tax Credits (ITC), and build resilient forecasting platforms.

3.0 Research Methodology

This research paper utilizes an inductive qualitative and analytical research design aimed at evaluating large-scale policy-driven structural transformations. Because the shift to GST impacts the macro-economy, empirical validation requires the collection and cross-examination of extensive secondary operational datasets. Information was systematically extracted from regulatory government publications, industrial indices, and academic research repositories. Key information contributors include the Department for Promotion of Industry and Internal Trade (DPIIT), the National Logistics Cell of India, the Ministry of Finance, and the GST Council. To ground government statements in industrial realities, commercial data vectors were collected from leading supply chain institutions, including Shiprocket Intelligence reports, Cashflo logistics capital tracking indexes, and peer-reviewed journals published via academic platforms like ResearchGate.

The analytical framework utilizes comparative timeline modeling, setting the benchmark year as 2016 (representing the final pre-GST setup) and evaluating against the performance indices of 2025/2026 (representing the highly digitized Post-GST 2.0 framework). The operational metrics chosen for comparison include macroeconomic national logistics costs as a percentage of GDP, border checkpoint dwell durations, systemic tracking technologies, and regional warehouse capacity maps. By cross-referencing public sector economic declarations with private sector operations reports, this paper maps out the operational dependencies linking tax standardization to enhanced physical supply chain velocity.

4.0 Structural Paradigm Analysis: Pre-GST vs. Post-GST 2.0

The structural transformation achieved over the last decade is highly evident when analyzing key industry indicators. Table 1 presents a detailed baseline comparison of the operational models defining the Indian supply chain grid across both eras.

Table 1: Structural Operational Metrics Comparison

Operational Metric	Pre-GST Framework (circa 2016)	Post-GST 2.0 Framework (circa 2025/2026)
National Logistics Cost	Escalated to ~14% of national GDP, creating structural price inflation.	Compressed to ~7.97% of GDP, meeting global cost efficiency paradigms.
Border Checkpoint Dwell Times	Extensive delays (5 – 8 hours per state crossing) due to manual octroi and inspections.	0 Hours. Complete elimination of tax checkpoints via automated validation networks.
Tracking Integration & Visibility	Manual log entries, localized phone calls, paper bills, zero end-to-end transparency.	Real-time automated. National E-Way bill API integrated with FASTag RFID logs.
Warehouse Matrix Optimization	Fragmented, sub-scale manual sheds (~10k-20k sq ft) managed per state to avoid CST.	Consolidated, tech-driven multi-modal logistics hubs (100k+ sq ft) using WMS and automation.

Source: Data compiled from DPIIT, Ministry of Finance, and Industrial Intelligence Reports 2025/2026

5.0 Sectoral Findings and Deep-Dive Discussion

5.1 Macroeconomic cost compression and competitiveness paradigms

For generations, India's high logistics expenditure acted as a systemic structural penalty on domestic economic output. Averaging roughly 14% of national GDP prior to the tax reform, India's expenses far exceeded benchmarks in developed Western markets or regional manufacturing powerhouses like China, which routinely maintain metrics between 8% and 9%. This 14% burden was not driven by geography, but by artificial systemic friction. Multi-tiered taxes forced trucks to remain idle for significant portions of their active lifespans, while fragmented warehousing footprints prevented companies from realizing spatial economies of scale.

According to updated regulatory studies published in late 2025 by the Ministry of Finance and the Department for Promotion of Industry and Internal Trade (DPIIT), national logistics costs have successfully compressed down to 7.97% of GDP. This milestone change reflects the structural reorganization of logistics infrastructure. By eliminating tax-driven intermediate stops, third-party logistics (3PL) providers have optimized long-haul route

mapping, increased truck utilization rates by up to 35%, and passed capital savings down to consumer-facing brands. This cost compression is a primary pillar of the National Logistics Policy (NLP), giving Indian-manufactured goods a stronger pricing structure in global international trade export corridors.

5.2 Eradication of Border Downtime via FASTag and E-Way Bill Convergence

In the pre-GST era, a long-haul commercial vehicle spent up to 60% of its total transit duration stationary at state border check-posts. These physical blockades were hubs of administrative delay, where officials manually reviewed papers, checked declarations, and collected local entry fees. The resulting bottlenecks disrupted transit reliability, inflated fuel consumption due to prolonged idling, and complicated just-in-time delivery strategies for critical industrial lines.

Under the Post-GST 2.0 digital architecture, this administrative delay has been reduced to zero. State-managed tax check-posts have been completely dismantled. Compliance validation has evolved into an active, automated digital system executed via the convergence of the National E-Way Bill platform and the FASTag RFID toll network. When an electronic tax invoice is generated, the compliance engine automatically yields an active, geofenced E-Way Bill containing explicit vehicle information. As the truck transits national toll plenums, overhead RFID transponders read the FASTag chip, cross-verify the vehicle ID with the cloud-hosted GST portal, and log compliance status without requiring physical inspection. If the shipment matches geofenced route boundaries, the truck continues uninterrupted. This system-wide automation has transformed long-haul tracking, allowing fleet controllers to predict delivery windows with accuracy down to the minute.

5.3 Structural Warehouse Optimization: The Transition to Large-Scale Automation

The structural architecture of pre-GST commercial warehousing was deliberately fragmented to match complex legal structures. Because interstate stock transfers were exempt from the historical 2% CST, while direct interstate sales were fully taxed, corporations built small, manual stock distribution depots in nearly every state. These facilities averaged between 10,000 and 20,000 square feet, featured minimal technological infrastructure, and relied entirely on manual material handling. Operating under these conditions, companies faced fragmented inventory holdings, excessive handling damage, and high real estate administrative costs.

By establishing a single consumption tax rate across India, GST neutralized the tax benefits of decentralized real estate models. Over the past few years, corporate supply chains have executed sweeping consolidation strategies, replacing small depots with automated fulfillment centers exceeding 100,000 to 500,000 square feet.

These modern facilities are strategically clustered near primary multi-modal transit arteries, including the Western and Eastern Dedicated Freight Corridors. Equipped with advanced Warehouse Management Systems (WMS), automated sorting conveyor lines, and IoT-enabled asset monitoring tags, these large-scale hubs allow companies to leverage modern logistics frameworks. Safety stock requirements have dropped nationwide, cross-docking operations run with tighter precision, and warehouse throughput velocities have increased significantly, minimizing overall operational footprints.

5.4 Value Chain Transparency, Input Tax Credit Security, and Predictive Modeling

The core financial innovation of the Post-GST 2.0 ecosystem is the electronic ledger alignment linking transport compliance directly to the invoice level. Historically, cash-based leakages and missing paper trails allowed systemic invoice fabrication and tax evasion to disrupt corporate procurement. By requiring mandatory electronic invoicing (e-invoicing) alongside real-time e-way bill generation, the government has built an integrated information loop stretching from the tier-1 raw material supplier down to the end retail distributor.

This connectivity secures the verification of Input Tax Credits (ITC). An enterprise cannot claim an offset for input taxes unless the underlying supplier uploads the invoice information, and the third-party transportation provider registers a matching digital e-way bill movement record. This digital validation loop ensures that physical inventory flows mirror financial accounting entries. Beyond simple compliance, this ledger convergence provides major advantages for supply chain planning. Enterprise Resource Planning (ERP) platforms use this real-time data to automate order fulfillment, track supplier reliability, and construct predictive forecasting models that mitigate supply disruption risks.

6.0 Implementation Challenges and Strategic Recommendations

While the operational gains achieved under the Post-GST 2.0 framework are substantial, full system optimization faces several ongoing structural challenges. A primary obstacle is the digital divide separating tier-1 multi-national operators from small and medium enterprises (SMEs) and localized owner-operated fleets. Over 75% of domestic trucking capacity in India remains highly fragmented, managed by small operators owning fewer than five vehicles. While large logistics firms integrate e-way bill APIs directly into cloud ERP software, small operators often struggle with manual entries on public portals, leading to errors and delays.

Additionally, technology breakdowns, cloud server latency during peak processing hours on the national GSTN architecture, and inconsistent internet access along rural transport links can create data gaps. When RFID toll sensors fail to read active transponders

or the portal fails to clear a valid entry promptly, on-road drivers face delays and arbitrary compliance disputes with regional enforcement teams.

To resolve these lingering friction points, this paper proposes three key strategic interventions:

- Unified Logistical Interface Platform (ULIP) Onboarding: The government must accelerate programs to onboard small-scale transport operators into the ULIP framework, offering simple mobile applications that automate e-way compliance with zero API overhead costs.
- Edge-Based RFID Validation Protocols: The National Highways Authority of India should deploy edge-computing nodes at toll collection plenums. This ensures that validation logs are processed locally if central server latency spikes, preventing traffic congestion at toll barriers.
- Standardized Dispute Resolution Windows: Regulators should implement a digitized, time-bound dispute framework within the portal. If a vehicle is held for a compliance review, inspectors must upload digital evidence within a mandatory two-hour window, or the vehicle receives an automated clearance to proceed.

7.0 Conclusion and Future Outlook

The implementation of the Goods and Services Tax has moved far beyond a simple fiscal optimization strategy, serving as a core engine for structural advancement and transparency across India's logistics landscape. By modernizing ancient tax structures, the policy has successfully streamlined domestic trade distribution networks. The data analyzed demonstrates that the transition into the mature Post-GST 2.0 digital framework has accelerated freight transit speeds, compressed national logistics costs from 14% of GDP down to ~7.97%, and encouraged the adoption of automated, hub-and-spoke warehousing models.

The digital convergence of tracking systems, led by automated e-way bills, FASTag infrastructure, and centralized e-invoicing, has eliminated information asymmetry across corporate value chains. Looking ahead, as these digital systems align further with the National Logistics Policy, India is well-positioned to strengthen its manufacturing capabilities, minimize operational waste, and establish a high-velocity, highly transparent ecosystem ready to lead within global supply chain networks.

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CHAPTER 15

GST's Influence on Rental Income Taxation in Urban India: A Comprehensive Empirical and Policy Analysis

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ABSTRACT

This study examines the impact of the Goods and Services Tax (GST) on rental income taxation in India's urban areas. With the nationwide rollout of GST in July 2017, existing tax laws governing rental earnings underwent a sweeping overhaul, materially altering obligations for both landlords and tenants. Through a mixed-method research design—combining quantitative surveys across major Indian cities with qualitative interviews involving industry experts and policymakers—this paper investigates the legislative changes, their practical consequences, and the broader policy implications for urban housing markets. Findings reveal that rental properties generating more than Rs. 20 lakh per annum attract an 18% GST rate, that the compliance burden on landlords has intensified considerably, and that rent prices have risen as landlords transfer GST obligations to tenants. While government revenue collection has improved, housing affordability concerns have emerged as a countervailing challenge. The paper concludes with six evidence-based policy recommendations aimed at balancing fiscal efficiency with equitable access to urban housing.

Keywords: GST; Rental income; Urban taxation; Housing affordability; Fiscal policy; Landlord-tenant relations; Input tax credit; Reverse charge mechanism; Tax incidence.

1.0 Introduction

India's urban housing landscape stands at the intersection of rapid economic growth, rising aspirational mobility, and an evolving tax architecture. The introduction of the Goods and Services Tax (GST) in July 2017 marked one of the most sweeping fiscal reforms in independent India's history, subsuming a multitude of central and state levies into a unified, destination-based consumption tax. Although the primary intent of GST was to rationalise indirect taxation and reduce the cascading effect of multiple taxes, its implications for the real estate sector—particularly rental income—have been far-reaching and, at times, contentious. Prior to GST, rental income from residential properties was broadly exempt from service tax, while commercial rentals attracted a 15% service tax.

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The post-GST regime introduced an 18% rate on rentals exceeding Rs. 20 lakh per annum, with differentiated treatment for residential and commercial properties. This shift not only altered the cost structure for property owners and tenants but also introduced new compliance obligations that many landlords—particularly those with limited financial literacy—found challenging to navigate.

Urban India accounts for approximately 31% of the national population yet generates over 63% of GDP, making the health of urban rental markets a matter of macroeconomic importance. Cities such as Mumbai, Delhi, Bengaluru, and Hyderabad have witnessed consistent rent appreciation over the past decade, and the added GST layer has further compressed affordability margins for middle-income tenants. Simultaneously, landlords face a compliance matrix that demands periodic GST filings, input tax credit reconciliation, and audit readiness—demands largely absent under the pre-GST regime.

This paper situates itself at this policy–practice interface. It reviews the legislative framework governing GST on rentals, synthesises existing empirical literature, presents primary survey findings, and offers evidence-based policy recommendations. Three core research questions are addressed: (i) How has GST altered the legal and compliance landscape for urban landlords? (ii) What is the measurable impact on rental prices and housing affordability? (iii) How do landlords and tenants perceive the distributional fairness of the new regime? The scope of the study is confined to urban residential and semi-commercial rentals in India's Tier 1 and Tier 2 cities. The significance lies in its timeliness: more than seven years after GST implementation, data are now sufficiently mature to permit robust longitudinal analysis, and the policy dialogue on GST rationalisation makes empirical input particularly valuable to regulators and housing market participants alike. The study further positions itself within the broader discourse on taxation, equity, and urban development that has gained renewed urgency as India pursues its target of becoming a USD 5 trillion economy.

2.0 Literature Review

The scholarly discourse on GST's impact on real estate in India is relatively nascent, given that the reform itself is less than a decade old. Nevertheless, a growing body of literature has begun to map its contours, drawing on analogous experiences from other jurisdictions that have implemented value-added tax (VAT) or goods-andservices tax regimes on property transactions. This review synthesises pre-GST and post-GST scholarship and situates India's experience within a comparative international framework.

2.1 Pre-GST taxation of rental income

Before July 2017, rental income in India was governed by a dual framework. Under the Income Tax Act 1961, rent received from property was taxable under 'Income from House

Property', with a standard deduction of 30% permitted on the net annual value. The Finance Act 1994 separately imposed service tax on the renting of immovable property for commercial purposes at rates escalating from 10% to 15% over time, while residential lettings were largely exempt. Rao and Chakraborty (2016) documented the compliance fragmentation inherent in this dual system, arguing that the absence of input tax credits encouraged tax arbitrage and dampened formal sector investment in rental housing. Srivastava (2015) similarly noted that service tax on commercial rents was frequently passed on to tenants through higher rents, reducing the effective yield advantage for landlords while not generating commensurately higher government revenue. These foundational studies illuminate the structural weaknesses that the GST framework sought to remedy.

2.2 Post-GST framework and early evidence

The GST Act 2017 introduced Schedule II classifying the renting of immovable property as a 'supply of services', bringing it within the GST net. Schedule III exempted residential dwellings let out for residential use, while commercial rentals and residential lettings above the Rs. 20 lakh aggregate turnover threshold attracted 18% GST.

Early evidence from FICCI (2018) surveys indicated that 67% of mid-market landlords in Mumbai and Delhi reported compliance cost increases of 20–35%. Kumar and Patel (2019) used difference-in-differences analysis on National Housing Bank rental index data to demonstrate a statistically significant rent increase of approximately 4–6% in GST-applicable properties relative to exempt properties in the 18-month window post-implementation. This passthrough effect, consistent with standard tax incidence theory, suggested that tenants bore the larger share of the burden in markets characterised by inelastic housing supply.

Gurung and Mehta (2021) extended this analysis using household survey data, finding differential impacts across income quintiles and confirming that lower-income tenants—who typically occupy properties near the Rs. 20 lakh threshold—experienced the highest relative rent burden increases. Nayak and Bhattacharya (2020) provided a complementary policy perspective, highlighting how GST's treatment of affordable housing construction at a concessional 1% rate created an asymmetry when contrasted with the 18% rate on rents, effectively penalising the rental option relative to ownership for aspirational middle-class households.

2.3 Comparative international perspectives

Internationally, the application of consumption taxes to residential rents remains contentious. The European Union's VAT Directive generally exempts residential lettings from VAT, recognising the public good dimensions of housing access. Australia and New

Zealand similarly exempt residential rents from their respective GST regimes, reflecting a policy consensus that taxing essential shelter imposes regressive distributional burdens.

India's approach—partial exemption tied to a turnover threshold—occupies an intermediate position that introduces complexity without fully aligning with either the revenue-maximisation or housing-equity objective. Bird and Gendron (2020) frame this as the trilemma of revenue adequacy, compliance simplicity, and distributional equity. India's GST on rentals scores relatively well on revenue adequacy for commercial segments but faces significant challenges on compliance simplicity and distributional equity, given the documented rent pass-through to tenants. Canada's HST experience provides a partial analogue: the government offers a GST/HST New Residential Rental Property Rebate that partially offsets the tax burden—a mechanism India has not adopted.

Tiwari and Parikh (2020) situate India's rental market within the broader global challenge of urban housing finance, noting that fiscal instruments that raise the effective cost of rental accommodation tend to accelerate homeownership aspirations—even when those aspirations are financially precarious—with downstream consequences for household balance sheets and financial stability. This interconnection between rental taxation and housing finance deserves sustained policy attention.

3.0 Research Methodology

This study employs a mixed-method research design, integrating quantitative survey data with qualitative interview insights to provide a nuanced understanding of GST's impact on urban rental income taxation. The methodological pluralism is deliberate: quantitative data enable statistical generalisation across property types and city tiers, while qualitative narratives illuminate the lived experiences and perceptions of landlords, tenants, and policymakers.

3.1 Quantitative component

A structured questionnaire was administered to a stratified random sample of 320 property owners across six major Indian cities: Mumbai, Delhi-NCR, Bengaluru, Chennai, Hyderabad, and Pune. Stratification criteria included property type (residential vs. semi-commercial), annual rental turnover (above and below the Rs. 20 lakh threshold), and landlord profile (individual vs. institutional). The survey instrument covered pre- and post-GST rental prices, compliance costs, perceived tax burden, and knowledge of available input tax credits. Data were analysed using descriptive statistics, paired t-tests to assess pre/post-GST differences, and logistic regression to model the probability of GST pass-through to tenants. All analyses were conducted in SPSS 27.0 and R 4.2 with a significance threshold of

$p < 0.05$. The survey achieved an effective response rate of 84.3%, with 270 fully completed questionnaires entering the final analytical dataset.

3.2 Qualitative component

Semi-structured interviews were conducted with 24 purposively selected informants: eight property owners with above-threshold rentals, eight tenants in GST-applicable properties, four chartered accountants specialising in real estate taxation, and four government officials from the Ministry of Finance and state GST authorities. Interviews averaged 45 minutes, were transcribed verbatim, and analysed using thematic coding in NVivo 12. The major themes that emerged—compliance complexity, rent pass-through, and regulatory surprise—were cross-validated against the quantitative findings to ensure triangulated reliability.

3.3 Ethical considerations and limitations

All participants provided informed consent prior to data collection. Survey responses were anonymised at the point of entry, and interview transcripts were de-identified before analysis. Ethical approval was obtained from the institutional review process of MIT World Peace University. Primary limitations include the self-reported nature of quantitative data, which may be subject to recall and social desirability bias; the geographic concentration in Tier 1 cities, which limits generalisability to smaller urban centres; and the cross-sectional survey design, which precludes strict causal inference regarding rent changes attributable solely to GST. Future research employing panel data spanning the pre- and post-GST periods would significantly strengthen causal claims.

4.0 GST Framework on Rental Income

Understanding the findings requires a clear grasp of the legislative architecture that GST imposed on the rental sector. This section details the classification of rental services, the applicable rate structure, the input tax credit provisions, and the significant 2022 amendment that extended GST applicability to residential properties rented by registered businesses.

4.1 Classification and applicable rates

Under the GST regime, the renting of immovable property is classified as a supply of services under Schedule II, Section 5(a) of the CGST Act 2017. This classification means rental income is treated as active service delivery rather than a passive capital receipt, triggering registration, invoicing, and return-filing obligations. The applicable rate is 18% (9% CGST + 9% SGST for intra-state transactions). The 2022 amendment extended GST applicability to residential property rented by GST-registered businesses under the reverse

charge mechanism (RCM), even when used for residential purposes—a change that generated significant commentary and resistance from the business community.

Table 1: Comparative GST Rates on Rental Categories

Category	Pre-GST	Post-GST	Registration
Residential (personal use, below threshold)	Nil	Nil	No
Residential (rented to GSTregistered business)	Nil	18% RCM (2022)	Yes
Commercial property rental	Service Tax 15%	GST 18%	Yes (>Rs.20L pa)
Mixed-use property	Service Tax 12-15%	GST 18%	Yes

4.2 Input Tax Credit (ITC) provisions

A significant feature of the GST architecture is the availability of Input Tax Credit, allowing registered landlords to offset GST paid on inputs—maintenance services, legal fees, property management—against their output GST liability on rental income. In principle, ITC should reduce the effective tax burden and dampen the incentive to raise rents. In practice, however, ITC utilisation among individual landlords has been limited due to documentation requirements, the blocked credit provisions under Section 17(5) of the CGST Act which disallow GST on original construction or acquisition, and general unfamiliarity with the mechanism. This architectural constraint significantly curtails ITC's efficacy as a rent-dampening mechanism. Sharma and Tripathi (2022) quantified the blocked credit impact on institutional landlords, estimating that Section 17(5) effectively eliminates 60–75% of the potential ITC benefit for new construction projects. The gap between the theoretical and practical ITC benefit represents one of the most actionable reform opportunities identified in this study.

4.3 The 2022 residential rental amendment

The July 2022 GST Council decision to extend tax applicability to residential properties rented by GST-registered entities under the reverse charge mechanism constituted the most significant post-implementation change to the rental tax framework. Under RCM, the tenant (rather than the landlord) is responsible for depositing the applicable GST directly with the government. This inversion of the customary tax remittance obligation caught many small businesses and individual professionals off guard, generating a wave of compliance confusion and retrospective demands from GST authorities.

The 2022 amendment was motivated by a genuine structural concern: businesses were exploiting the residential rental exemption by housing employees or conducting quasi-

commercial activities from residential premises. By closing this loophole, the Council sought to achieve tax neutrality between commercial and residential renting by registered entities. The policy logic is sound, but implementation—particularly the absence of a de minimis threshold and the compressed transition period—left much to be desired.

5.0 Findings and Analysis

5.1 Rental price impact

The quantitative analysis reveals a statistically significant increase in rental prices for properties subject to GST. Among surveyed landlords with above-threshold turnover, 78% reported having increased rent at least partially to account for their GST liability, with an average rent increase of 11.4% over the two years following GST implementation. The paired t-test comparing pre-GST (2016–17) and post-GST (2019–20) annual rents for commercial properties yielded $t(df=159) = 7.23$, $p < 0.001$, confirming significance.

Commercial properties in Mumbai and Bengaluru recorded the highest increases (average 14.2%), reflecting inelastic demand for prime space. Residential properties rented to businesses averaged 8.7% increase, while exempt residential lettings showed no statistically significant change. These patterns align with standard tax incidence theory: the burden falls most heavily on tenants in markets with limited substitution options.

Table 2: Average Rental Price Increase Attributable to GST, 2017–2020

City & Property Type	Avg. Rent Increase (%)	Statistical Significance
Mumbai (Commercial)	14.2%	$p < 0.001$
Bengaluru (Commercial)	13.8%	$p < 0.001$
Delhi-NCR (Commercial)	12.1%	$p < 0.001$
Mumbai (Residential-Corporate)	9.1%	$p < 0.01$
Bengaluru (Residential-Corporate)	8.3%	$p < 0.01$
Pan-India Average (all GST-applicable)	11.4%	$p < 0.001$
Exempt Residential Lettings	0.3% (NS)	$p = 0.72$

5.2 Compliance burden

One of the most consistent findings across both quantitative and qualitative components is the disproportionate compliance burden borne by individual landlords. Registered landlords must file GSTR-1 returns, reconcile GSTR2A, and submit annual GSTR-9 returns—obligations largely absent under the pre-GST regime. The majority of individual landlords surveyed had no prior experience with indirect tax compliance and relied on chartered accountants, incurring average professional fees of Rs. 18,000–Rs. 32,000 per

annum solely for GST compliance—a material cost relative to rental incomes at the lower end of the threshold. Qualitative interviews revealed that compliance anxiety had deterred several small landlords from crossing the Rs. 20 lakh threshold—a distortionary behaviour consistent with notch effects documented in international tax literature. One landlord interviewee summarised: 'I deliberately kept my third property vacant for four months to avoid crossing the GST registration line.' Such threshold effects suggest that the current rate-threshold architecture may be generating allocative inefficiencies in the rental housing market.

5.3 Government revenue impact

From a government revenue perspective, GST on commercial rentals has contributed meaningfully to the overall pool. Ministry of Finance data indicate that the real estate services sector contributed approximately Rs. 14,200 crore to GST revenue in FY 2022–23, representing a compound annual growth rate of approximately 17% since FY 2018–19. A senior CBIC official noted in interview that the integration of GST data with the income tax database had substantially improved the quality of rental income disclosures among high-value property owners, highlighting a valuable cross-compliance benefit.

The formalisation dividend from GST is particularly notable: pre-GST estimates suggested that only 40–45% of commercial rental income was accurately declared for income tax purposes. Post-GST, GST-income tax crossmatching has increased the effective disclosure rate to approximately 73%, representing a significant improvement in tax system integrity independent of the direct revenue from GST on rentals.

5.4 Stakeholder perceptions

The qualitative findings reveal a nuanced set of perceptions across stakeholder groups. Individual landlords acknowledged GST's legitimacy but expressed frustration with complexity and the absence of clear guidance on edge cases.

Table 3: Stakeholder Perception Matrix on GST Impact

Stakeholder	Primary Concern	Sentiment Profile
Individual Landlords (above threshold)	Compliance complexity & fees	42% Neg · 34% Neu · 24% Pos
Institutional Landlords / REITs	ITC blocked on construction	28% Neg · 29% Neu · 43% Pos
Commercial Tenants (SMEs)	RCM mechanism & cash flow	61% Neg · 22% Neu · 17% Pos
Corporate Tenants (large firms)	Admin burden offset by ITC	18% Neg · 35% Neu · 47% Pos
Government / Tax Authorities	Compliance gaps (small LLs)	8% Neg · 27% Neu · 65% Pos

Commercial tenants—particularly SMEs—expressed the greatest discontent: the post-2022 RCM provision made the tenant, not the landlord, liable to deposit GST directly with the government, imposing additional working capital burdens on already cash-constrained businesses. Institutional landlords and large corporate tenants were more sanguine, able to leverage ITC to offset costs and possessing the finance teams to manage compliance. Government officials were the most uniformly positive, citing improved audit trails and cross-database compliance as tangible gains. This perception divergence broadly maps onto capacity and resources: larger and better-resourced entities navigate the system more successfully.

6.0 Discussion

6.1 Tax incidence and the pass-through problem

The findings are broadly consistent with standard tax incidence theory. In markets characterised by relatively inelastic supply—prime commercial real estate in Mumbai and Bengaluru—landlords successfully shift a substantial portion of the GST burden to tenants through higher rents. Where supply is more elastic or demand more pricesensitive—Tier 2 cities or peripheral residential zones—pass-through is lower and landlords absorb a greater share. This distributional pattern suggests that GST functions as a regressive levy on tenants in supply-constrained urban markets, an outcome that sits uneasily with the reform's stated neutrality objectives.

The ITC mechanism should in principle counteract this pass-through by reducing landlords' net GST liability. In practice, however, blocked credit provisions under Section 17(5) disqualify GST paid on original construction or acquisition of the property, limiting ITC to maintenance and service inputs. This architectural constraint in the GST law significantly curtails ITC's efficacy and represents one of the most actionable reform opportunities identified in this study. The effective ITC capture rate among surveyed individual landlords was just 23%, compared to 71% for institutional landlords—a disparity that amplifies the regressive tendencies of the current framework.

6.2 Compliance architecture and small landlord vulnerability

The compliance challenges documented here echo a broader structural tension in GST design: the system was architected primarily for businesses with dedicated finance functions, yet it applies to a large universe of individual property owners who lack institutional capacity to navigate its complexities. The result is a compliance ecosystem in which chartered accountants have become indispensable intermediaries, effectively privatising a compliance function that should be simple enough to self-administer. The GST

Council's compositional scheme does not apply to rental income suppliers, as it explicitly excludes service providers with turnover above Rs. 50 lakh. The absence of a simplified compliance pathway for individual property owners represents a clear and addressable policy gap. A well-designed composition-style scheme for rental income—with a flat rate, quarterly filing, and no ITC—would materially reduce both administrative burden and professional fee dependency for the most vulnerable segment of the landlord population.

6.3 The 2022 residential rental amendment in context

The 2022 amendment extending GST to residential properties rented by GST-registered businesses under the reverse charge mechanism has been the most contested development in the post-GST rental landscape. While the amendment addresses a perceived exemption asymmetry, its practical implementation generated significant confusion. Thematic analysis of interview data identified a recurrent theme of regulatory surprise: stakeholders felt that the amendment was insufficiently communicated and that the transition period was too short to enable orderly adjustment. Many small businesses were unaware of the reverse charge obligation, leading to compliance gaps and retrospective demands.

The amendment also illustrates a systemic challenge in indirect tax policymaking: when changes are introduced through GST Council notifications rather than through primary legislation with adequate lead time, the adjustment costs borne by taxpayers can be disproportionate to the policy gain. A minimum six-month transition window for significant structural changes would substantially improve taxpayer preparedness and reduce the incidence of involuntary non-compliance.

6.4 Housing affordability implications

The rental market in Indian cities already operates under significant structural strains: limited housing stock, regulatory barriers to new construction, and rising land values all contribute to affordability pressures that GST has compounded. The documented 11.4% average rent increase in GST-applicable properties—concentrated in the commercial segment that is critical to SME operations—has downstream consequences for business cost structures, employment generation, and ultimately urban economic dynamism.

For residential tenants in the higher-income segment who occupy corporately-leased apartments, the 2022 amendment has translated into direct cost increases. While these tenants are typically better positioned to absorb the burden, the signal value of the amendment—that no segment of the rental market is permanently exempt—has generated broader market uncertainty. Property managers interviewed in this study noted a discernible preference shift among corporate clients toward owned rather than leased residential accommodation in some markets, with potentially inefficient capital allocation consequences.

7.0 Policy Recommendations

Based on the empirical findings and analytical discussion, six evidence-based policy recommendations are advanced for the consideration of the GST Council, the Ministry of Finance, and state governments. These recommendations are calibrated to balance fiscal efficiency, compliance simplicity, and housing equity.

R1: Introduce a Simplified Compliance Scheme for Individual Landlords

A dedicated quarterly composition-style return for individual property owners with rental turnover between Rs. 20 lakh and Rs. 1 crore would dramatically reduce compliance costs without significantly sacrificing revenue. A flat GST rate of 6% under this scheme, without ITC, could be revenue-neutral while reducing professional fee dependency among small landlords. The scheme should feature a single-page return, pre-populated with PANlinked property data, and should be integrated into the existing GSTN portal with guided completion prompts.

R2: Expand ITC to Include Construction GST on Rental Properties

Allowing landlords to claim ITC on GST embedded in construction costs would align India's approach with international best practice and reduce the incentive to pass compliance costs to tenants. A phased ITC scheme, amortised over 20 years, could manage the revenue impact while creating a meaningful incentive for institutional investment in purpose-built rental housing—a segment that India critically lacks at scale. The revenue cost could be partially offset by the efficiency gains from increased formal sector rental supply.

R3: Review the 2022 Residential Rental RCM Amendment

The RCM on residential properties rented by businesses should include a clear de minimis threshold to shield micro and small enterprises. Properties with monthly rents below Rs. 50,000 could be exempted from the RCM obligation, materially reducing the compliance burden on the smallest operators. The threshold should be indexed to the Consumer Price Index to prevent bracket creep over time. Additionally, a simplified RCM deposit mechanism—integrated with the tenant's existing GST returns rather than requiring a separate remittance—would reduce the operational friction associated with compliance.

R4: Invest in Targeted Taxpayer Education

CBIC should partner with landlord associations, housing finance companies, and real estate platforms to deliver accessible GST compliance guidance. A GST eligibility checker and pre-filled return templates for common rental scenarios would reduce inadvertent non-compliance. Educational content should be available in at least 12 regional languages and in formats accessible to individuals with limited digital literacy. Targeted outreach through cooperative housing societies and real estate agents—key information intermediaries in the rental market—would extend reach beyond formally registered landlords.

R5: Enhance Data Integration for Rental Income Monitoring

The GST–income tax data linkage should be extended to include municipal property tax records and rental agreements registered with state authorities, improving compliance visibility without imposing additional filing obligations on already-compliant landlords. This integrated data architecture would enable risk-based audit targeting, reducing the compliance burden on honest taxpayers while concentrating enforcement resources on highrisk non-disclosure cases. The National Housing Bank's rental index data should be incorporated as a benchmarking reference to flag anomalous rent declarations.

R6: Conduct Periodic Affordability Reviews

The Ministry of Housing should commission biennial studies on the distributional impact of rental taxation on housing affordability, with findings fed back into GST Council deliberations to ensure fiscal and housing objectives remain in balance. These reviews should track rent-to-income ratios across income quintiles in major cities, model the incidence of GST on rental housing across tenure types, and assess the effectiveness of ITC provisions in dampening rent pass-through. The empirical foundation established by this study can serve as a baseline for such an ongoing monitoring framework.

8.0 Conclusion

This study has examined, through a mixed-method lens, the multidimensional impact of the Goods and Services Tax on rental income taxation in urban India. The core finding is unambiguous: GST has significantly and durably transformed the taxation landscape of urban rental properties, with consequences extending well beyond the fiscal domain into housing affordability, compliance behaviour, and landlord-tenant relations.

The 18% GST rate on commercial rentals and on residential lettings to registered businesses represents a meaningful increase from the pre-existing service tax framework, and the evidence confirms that the majority of this burden is passed through to tenants in supply-constrained markets. The compliance architecture, while conceptually sound, has proven operationally demanding for the large universe of individual landlords who constitute the backbone of India's informal rental market. The 2022 reverse charge amendment, though legally defensible, has compounded these challenges and requires calibrated revision.

At the same time, the study acknowledges genuine gains from the reform: enhanced revenue collection with a 17% CAGR in real estate services GST since inception, improved cross-compliance between GST and income tax disclosures, and a gradual formalisation of the rental market that brings long-term benefits for market transparency and investor confidence. These benefits are important markers of a maturing fiscal architecture and should not be dismissed in the rush to critique implementation shortcomings.

The six policy recommendations advanced—spanning a simplified compliance scheme, ITC expansion, RCM threshold relief, taxpayer education, data integration, and periodic affordability reviews—constitute a coherent, fiscally responsible reform agenda. They do not require a fundamental rearchitecting of the GST framework; rather, they represent targeted adjustments implementable through GST Council notifications and CGST Act amendments. Looking ahead, as India continues to urbanise and the rental market deepens, the interaction between tax policy and housing affordability will only grow in significance. A GST regime perceived as fair, simple, and proportionate will yield better compliance outcomes and support the broader policy objective of ensuring that India's cities remain accessible to all income groups. This study contributes a rigorous empirical foundation to that ongoing policy conversation and calls for sustained, data-driven engagement between tax authorities, housing regulators, and the research community.

Table 4: Summary Matrix — Pre- vs Post-GST Rental Income Taxation

Dimension	Pre-GST	Post-GST	Net Impact
Residential rent (below threshold)	Nil service tax	Nil GST	Neutral
Commercial rent tax rate	15% service tax	18% GST	↑ Moderate
Compliance burden (individual LL)	Low (income tax only)	High (GST + IT)	↑↑ Significant
Govt. revenue (rental sector)	Moderate	Higher (~17% CAGR)	↑↑ Positive
ITC availability	None	Limited (maintenance)	Partial gain
Housing affordability (tenants)	Unaffected	Rent inflation 8–14%	↓ Negative

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Appendix A: GST Rate Schedule — Real Estate Services

The following table presents the complete GST rate schedule applicable to real estate and rental services as of FY 2023–24, including Service Accounting Codes (SAC) for each category.

Table A1: GST Rate Schedule for Real Estate and Rental Services (FY 2023–24)

Service Description	SAC	CGST	SGST	Total GST
Renting of commercial property	997212	9%	9%	18%
Residential property rented to businesses (RCM, post-2022)	997211	9%	9%	18%
Residential property — personal use, below threshold	997211	Nil	Nil	Nil
Real estate agent/broker services	997221	9%	9%	18%
Property management services	997222	9%	9%	18%
Construction — affordable housing	995411	0.5%	0.5%	1%
Construction — other residential	995411	2.5%	2.5%	5%
Construction — commercial	995412	9%	9%	18%

Appendix B: Survey Instrument Summary

The structured questionnaire administered to property owners comprised five sections: (A) Respondent and Property Profile, (B) Pre-GST Rental Income and Compliance Practice, (C) Post-GST Rental Income and Compliance Practice, (D) Input Tax Credit Awareness and Utilisation, and (E) Perceptions of Fairness and Reform Priorities. Key questions included: the annual rental turnover band; whether rent was adjusted post-GST; estimated percentage rent increase; whether the respondent had engaged a CA for GST compliance; estimated annual professional compliance fees; and a five-point Likert scale rating of overall satisfaction with the GST rental framework. The instrument was pre-tested with a pilot group of 15 property owners in Pune before finalisation. Cronbach's alpha for the perception scale was 0.81, indicating high internal reliability. The survey was available in English, Hindi, and Marathi to accommodate the linguistic diversity of the respondent pool across six cities.

Appendix C: Key Legislative References

The following primary legislative and regulatory documents form the legal foundation for the analysis presented in this paper:

- Central Goods and Services Tax Act, 2017 (CGST Act) — Schedule II, Section 5(a): Classification of rental services as supply of services.
- CGST Act Schedule III: Exemption of residential lettings for residential use.
- CGST Act Section 17(5): Blocked credits, including GST on original construction and acquisition of immovable property.
- Integrated Goods and Services Tax Act, 2017 (IGST Act) — provisions applicable to inter-state rental transactions.
- GST Council Decision, July 2022: Extension of GST to residential property rented by GST-registered businesses under reverse charge mechanism.
- CBIC Circular No. 177/09/2022-GST: Clarification on RCM applicability to residential dwelling rentals.
- Income Tax Act, 1961 — Section 22 to 27: Taxation of income from house property, including 30% standard deduction.
- Finance Act, 1994 — Service tax provisions applicable to commercial rental income prior to July 2017.

CHAPTER 16

A Comparative Study of Pre-GST and Post-GST Taxation in Heavy Industries: An In-Depth Analysis of India's Tax Reform Impact on Steel, Cement, Petroleum, Power, Automotive, and Capital Goods Sectors

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ABSTRACT

The introduction of the Goods and Services Tax (GST) on July 1, 2017 marked the most significant overhaul of India's indirect tax structure since independence. This paper undertakes a comprehensive comparative analysis of pre-GST and post-GST taxation frameworks as they apply to heavy industries— specifically the steel, cement, petroleum, power, automotive, and capital goods sectors. Prior to GST implementation, these industries operated under a fragmented, multi-layered tax regime comprising Central Excise Duty, State Value Added Tax (VAT), Central Sales Tax (CST), Octroi, and various other levies, resulting in cascading tax effects, supply chain distortions, and significant compliance burdens. This study employs a doctrinal and empirical approach, drawing on data from the Ministry of Finance, GSTN filings, CMIE industry databases, and published financial statements of listed heavy industry firms from FY 2015-16 to FY 2022-23. The research evaluates changes in effective tax incidence, input tax credit (ITC) availability, logistics costs, compliance intensity, and sectoral profitability across the transition. Our findings indicate that while GST has substantially reduced the cascading effect and improved ITC flows for most heavy industries, certain sub-sectors — notably petroleum, power generation, and real estate-linked construction — remain outside GST's full ambit, creating policy asymmetries. The paper concludes with sector-specific recommendations for rationalizing the GST framework to maximize efficiency gains in heavy manufacturing.

Keywords: GST; Pre-GST taxation; Heavy industries; Cascading tax effect; Input tax credit; CENVAT; VAT; CST; Excise duty; Tax incidence; Manufacturing sector.

1.0 Introduction

India's heavy industrial sector — encompassing steel, cement, power, petroleum, automotive, and capital goods manufacturing — constitutes the backbone of the country's economic infrastructure.

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These sectors collectively contribute approximately 15-18% to India's GDP and employ over 50 million workers directly and indirectly. The tax environment governing these industries has profound implications for production costs, investment decisions, export competitiveness, and ultimately consumer prices. Before July 2017, India's indirect tax architecture was widely criticized as one of the most complex in the world. Heavy industry participants were subjected to a cascading cascade of taxes: Central Excise Duty (CED) levied by the Union Government on manufactured goods, State-level VAT on sales, Central Sales Tax on inter-state commerce, Entry Tax or Octroi at state borders, and a variety of cess and surcharges. This multiplicity created what economists termed the 'tax-on-tax' problem — where each successive levy was imposed not on the underlying value but on the cumulative price inclusive of previous taxes.

The implementation of GST, described by the Government of India as 'one nation, one tax, one market,' sought to replace this complex architecture with a unified, destination-based, multi-stage consumption tax. Under GST, heavy industries were categorized under various rate slabs (5%, 12%, 18%, and 28%), with comprehensive ITC provisions designed to eliminate the cascading effect. This research paper undertakes a rigorous comparative analysis to answer three central questions:

- How did the aggregate tax burden on heavy industries change after GST?
- What were the sectoral variations in tax treatment and ITC availability?
- What structural anomalies persist in the post-GST framework that continue to distort heavy industry economics?

2.0 The Pre-GST Taxation Framework (Pre-July 2017)

2.1 Central Excise Duty (CED)

Central Excise Duty, levied under the Central Excise Act, 1944, was the primary Union-level tax on manufactured goods. For heavy industries, the standard CED rate was 12% of the assessable value, with specific rates varying by product. Steel manufacturers faced CED at 12% on finished steel products, while the cement sector was subject to a hybrid structure combining ad valorem rates with specific duties per tonne. Capital equipment manufacturers paid CED ranging from 10% to 12% depending on the tariff classification.

A critical limitation of CED was its restricted credit mechanism under CENVAT (Central Value Added Tax Credit). While CENVAT allowed manufacturers to offset excise duty paid on inputs against the output excise liability, this credit was not transferable across different tax heads — CED credits could not offset VAT liabilities, and VAT credits could not reduce CED obligations.

2.2 State Value Added Tax (VAT)

VAT, replacing the earlier State Sales Tax in phases between 2003 and 2008, was levied by individual state governments on the sale of goods within their territories. VAT rates for heavy industrial goods varied dramatically across states. Steel products attracted VAT rates between 5% and 15% depending on the state; cement VAT ranged from 12.5% in some states to 20% in others. This inter-state variation compelled heavy industries to factor state-specific tax costs into their supply chain configurations, leading to economically irrational location decisions driven by tax arbitrage rather than genuine efficiency considerations.

2.3 Central Sales Tax (CST)

CST was levied on inter-state sales of goods at a standard rate of 2% (with Form C) or the full state VAT rate without declaration forms. For heavy industries with geographically dispersed production and consumption, inter-state movement was routine. The critical problem with CST was its non-creditable nature — CST paid on interstate purchases could not be set off against VAT payable on subsequent sales, representing an absolute cost embedded in the price of goods. For capital goods procured from different states, this resulted in permanent tax costs ranging from 2% to 14.5% depending on the applicable rates.

2.4 Additional Taxes and Levies

Beyond CED, VAT, and CST, heavy industries faced numerous additional levies:

- Entry Tax / Octroi: Levied by states and municipalities on goods entering their jurisdiction, ranging from 1% to 6% on the value of goods.
- Purchase Tax: Applicable in states like Punjab and Haryana on purchase of certain agricultural commodities used as industrial inputs.
- Luxury Tax and Entertainment Tax: Marginally relevant to certain sectors.
- Service Tax: At 12.36% (including education cess) on input services — legal, engineering, consulting — used by heavy industries. Partial CENVAT credit for service tax was available but subject to complex restrictions.
- Customs Duty: On imported raw materials and capital equipment, ranging from 5% to 25%, creating further complexity for import-dependent heavy industries.

2.5 The Cascading Tax Problem: A Quantitative Illustration

To understand the magnitude of the cascading effect, consider a simplified production chain in the steel industry: This illustration demonstrates that the effective tax rate of approximately 29.3% significantly exceeded the nominal rate of any individual tax. Industry studies estimated that cascading taxes added 25-35% to production costs in heavy manufacturing, with the steel and cement sectors being particularly affected.

Table 1: Illustration of Cascading Tax Effect in the Pre-GST Steel Supply Chain (Hypothetical Values)

Stage	Value Added (₹)	Tax Paid (₹)	Cum. Value (₹)	Tax Rate
Iron Ore Mining	10,000	1,200 (CED 12%)	11,200	12%
Steel Manufacture (on ₹11,200)	5,000	1,944 (CED 12%+VAT 5%)	18,144	17%
Inter-State Transport (CST)	2,000	363 (CST 2% on ₹18,144)	20,507	2%
Dealer / Distributor (VAT)	3,000	2,356 (VAT 12.5%)	25,863	12.5%
Total Tax Burden	—	5,863	—	~29.3% of base

3.0 The Post-GST Taxation Framework (July 2017 Onwards)

3.1 GST Architecture and Rate Structure

GST in India is structured as a Dual GST model, with the Centre levying Central GST (CGST) and states levying State GST (SGST) on intra-state transactions, while Integrated GST (IGST) applies to inter-state transactions. This structure preserves the federal character of India's Constitution while achieving tax unity.

Heavy industrial goods are spread across GST's rate slabs as detailed below:

Table 2: GST Rate Structure vs. Pre-GST Effective Tax Rates for Major Heavy Industry Products

Sector / Product	GST Rate	Prev. Eff. Rate	ITC Availability
Steel (Flat / Long Products)	18%	26-30%	Full ITC Available
Cement (OPC / PPC)	28%	28-31%	Full ITC Available
Automobiles (Passenger Cars >4m)	28% + Cess	30-55%	Full ITC Available
Capital Goods / Machinery	18%	24-28%	Full ITC Available
Coal (for power generation)	5%	11-14%	Full ITC Available
Crude Petroleum / Natural Gas	Outside GST	Variable	No ITC
Electricity (Power Generation)	Exempt / Outside	Various Levies	Restricted ITC
Aviation Turbine Fuel	Outside GST	Approx. 28%+	No ITC

3.2 Input tax credit mechanism

The cornerstone of GST's reform impact is its seamless ITC mechanism. Under GST, registered taxable persons can claim credit for GST paid on all inputs, input services, and capital

goods used in the course or furtherance of business, subject to conditions under Section 16 of the CGST Act. This eliminates the credit blockage that was endemic to the pre-GST regime.

For a steel plant, this means GST paid on iron ore, coking coal, limestone, furnace oil (where applicable), engineering services, logistics services, and even capital equipment procurement is fully creditable against the output GST liability. Industry estimates indicate that seamless ITC availability effectively reduces the net tax cost for heavy manufacturers by 8-15% compared to the pre-GST era, depending on the input intensity of the specific industry.

3.3 Unified Compliance and E-Way Bill System

GST replaced the patchwork of state-specific forms, declarations, and entry permits with a unified online compliance system administered through the GSTN (Goods and Services Tax Network). The E-Way Bill system, mandating electronic documentation for goods movement exceeding ₹50,000 in value, replaced the cumbersome state border checkpost system that had been a major bottleneck for heavy industries moving large volumes of raw materials and finished products. Empirical studies documented reductions in truck turnaround time at state borders from an average of 12-15 hours to under 2 hours following E-Way Bill implementation, translating to meaningful logistics cost savings for bulk-transport dependent heavy industries.

4.0 Sector-Wise Comparative Analysis

4.1 Steel industry

4.1.1 Pre-GST scenario

The Indian steel industry, with an installed capacity exceeding 150 million tonnes per annum (MTPA), operated under one of the most complex tax environments in the pre-GST era. Key characteristics included: CED at 12% on steel products with limited CENVAT credit for certain inputs; VAT ranging from 4% to 14.5% across states; CST at 2% on inter-state steel movements (non-creditable); separate Service Tax on transportation, logistics, and technical services (partially creditable); and Entry Tax of 1-4% in multiple states. The effective tax burden on hot rolled coil (HRC), a benchmark steel product, was estimated between 26-31% of production cost, with significant state-to-state variation creating market distortions. Steel producers strategically located warehouses in low-VAT states, maintaining artificially distributed inventory to minimize tax incidence — a commercially suboptimal but tax-rational behavior.

4.1.2 Post-GST scenario

Under GST, steel products attract an 18% GST rate. More significantly, the full credit chain for inputs — iron ore at 5% GST, coking coal at 5%, limestone at 5%, and industrial gases

at 18% — is now seamlessly available. Analysis of SAIL and JSW Steel's annual reports (FY 2018-22) indicates that net tax cost as a percentage of revenue declined by approximately 5-8 percentage points post-GST, with the bulk of savings attributable to ITC availability on inputs previously taxed under non-creditable regimes. Supply chain rationalization has been another major benefit. Steel producers have consolidated warehousing from tax-driven distributed models to economically efficient centralized hubs, reducing overall logistics and inventory carrying costs.

4.2 Cement Industry

4.2.1 Pre-GST scenario

Cement was among the most heavily taxed sectors in the pre-GST regime. The total tax incidence included CED at 12% plus specific duty (₹125 per tonne for mini cement plants, varying for large plants), VAT ranging from 12.5% to 20% across states, and CST on inter-state sales. Together with various local levies, the cumulative tax incidence was estimated at 28-32% of the ex-factory price, making Indian cement among the highest-taxed globally.

4.2.2 Post-GST scenario

Cement was placed in the 28% GST slab — the highest standard rate — which initially drew criticism from the industry as not representing meaningful tax relief. However, the critical change was the availability of comprehensive ITC. Previously blocked credits on coal, fly ash, raw materials, capital goods, and services are now fully available. The Cement Manufacturers' Association estimated that ITC benefits effectively reduce the net tax cost to approximately 20-22%, a meaningful improvement despite the nominal 28% rate. Cement companies have benefited significantly from reduced logistics costs. Being a weight-to-value heavy product, cement transportation is highly cost-sensitive; the elimination of border checkpost delays has produced logistics savings of ₹15-40 per bag depending on the route.

4.3 Petroleum and petrochemical sector

4.3.1 The GST exclusion problem

The petroleum sector represents the most significant structural anomaly in India's post-GST landscape. Crude petroleum, natural gas, aviation turbine fuel, petrol, and diesel remain outside the GST framework, continuing to be governed by Central Excise Duty and State VAT. This exclusion was initially described as temporary pending consensus in the GST Council, but as of 2024, petroleum products remain outside GST. For petrochemical manufacturers and refineries, this creates a severe ITC inversion problem. While output products like plastic

granules, polymers, and chemicals are taxable under GST (18%), the primary input — naphtha or natural gas — attracts CED and VAT for which no GST input credit can be claimed. Industry estimates place this stranded credit cost at ₹8,000-12,000 crore annually for the petrochemical sector alone.

4.3.2 Downstream impact on heavy industries

The petroleum GST exclusion creates cascading effects across other heavy industries. Diesel — the primary fuel for mining, steel plants, cement kilns, and heavy logistics — carries an effective tax rate of 45-55% (Central Excise + State VAT) with no ITC availability to industrial users. This embedded fuel tax represents a permanent production cost disadvantage estimated at 2-4% of revenue for energy-intensive heavy industries.

4.4 Power sector

Electricity is exempt from GST. While this appears beneficial for power consumers, it creates an ITC blockage problem for power generating companies. Generators procuring GST-taxable equipment (transformers, turbines, cables at 5-18% GST) and fuel (coal at 5% GST) cannot claim ITC since their output (electricity) is exempt. This blocked ITC is estimated at thousands of crores annually and is ultimately passed on to industrial electricity consumers through higher tariffs, imposing an indirect and opaque tax burden on heavy industries that are large power consumers.

The cement sector, for instance, uses 60-80 kWh per tonne of clinker production; steel manufacturing requires 400-500 kWh per tonne of crude steel. The embedded GST cost in electricity tariffs, arising from power sector ITC blockage, adds ₹20-80 per unit of production to costs that are not offset by any ITC mechanism.

4.5 Automotive and capital goods sectors

The automotive sector, particularly commercial vehicles used by heavy industries, moved to a 28% GST rate plus applicable cess. While the nominal rate appears high, comprehensive ITC availability and the integration of previously non-creditable levies has resulted in a net tax incidence broadly comparable to or lower than the pre-GST regime for most categories. Commercial vehicle manufacturers report improved working capital conditions due to reduced ITC blockage on capital goods procurement.

Capital goods — industrial machinery, plant and equipment — are taxed at 18% GST with full ITC availability. This is a significant improvement over the pre-GST era where CED on capital goods was creditable only in installments (50% in the first year, balance in subsequent years) and VAT paid on capital goods was frequently non-creditable or available with restrictions.

5.0 Quantitative Comparative Assessment

5.1 Effective tax rate comparison

Table 3: Effective Tax Rate (ETR) Comparison across Heavy Industry Segments. ETR Accounts for Nominal Tax Rates, Non-creditable Embedded Taxes, and Post-ITC Net Rax Cost

Industry Segment	Pre-GST ETR (%)	Post-GST ETR (%)	Net Change (%)	ITC Impact
Steel (Long Products)	26–31%	17–20%	-7 to -11%	High
Steel (Flat Products)	24–29%	16–19%	-6 to -10%	High
Cement (OPC 50 kg bag)	28–32%	21–24%	-6 to -9%	High
Passenger Cars (>4m)	30–55%	28–50%*	-2 to -5%	Medium
Commercial Vehicles	26–34%	28%	-2 to +2%	Medium
Industrial Machinery	22–26%	18%	-4 to -8%	High
Petrochemicals	18–24%	18% + Stranded ITC	Neutral/Negative	Low
Coal (Energy Sector)	11–15%	5%	-6 to -10%	High
Petroleum Products	45–55%	45–55% (no change)	Neutral	None

**Cess applicable on luxury/SUV segment.*

5.2 Logistics cost impact

The logistics cost reduction attributable to GST-driven supply chain rationalization has been documented across heavy industries. The National Council of Applied Economic Research (NCAER) estimated a 20-25% reduction in logistics turnaround time nationally, translating to cost savings of approximately 1-2% of revenue for logistics-intensive heavy manufacturers. Specific findings include:

- Steel industry: Logistics cost as % of revenue declined from estimated 7-9% to 5-7% post-GST (FY 2019-22 data).
- Cement industry: Transport cost per bag declined by ₹10-30 depending on haul distance due to elimination of state checkpost delays and tax-driven warehouse proliferation.
- Capital goods: OEM logistics planning improved due to unified GST documentation replacing 29 different state forms.

5.3 Compliance cost analysis

Pre-GST, a company operating in multiple states was required to register under each state's VAT legislation, file returns in different formats and frequencies, and maintain state-specific records. A steel company with plants in 5 states and customers across 20 states could

be managing 20+ VAT registrations, 15+ Service Tax registrations (for different service categories), CED registration for each manufacturing unit, and CST declarations across states.

Post-GST, the same company operates under unified GSTIN registrations (one per state of business presence), a standardized return filing framework (GSTR-1, GSTR-3B), and centralized reconciliation through the GSTN portal. While the initial transition imposed significant IT and compliance investment (estimated at ₹5-25 lakhs per company for large heavy industry players), the steady-state annual compliance cost is estimated to be 15-30% lower than the pre-GST scenario.

6.0 Structural Anomalies and Ongoing Challenges

6.1 Inverted duty structure

An inverted duty structure occurs when the GST rate on inputs is higher than the rate on finished outputs, resulting in accumulated ITC that cannot be offset and must be claimed as a refund. This problem affects several heavy industry sub-segments:

- Textile machinery manufacturers: Inputs taxed at 18%, output products at 12%, resulting in refund accumulation.
- Renewable energy equipment: Solar panels at 12% but steel and aluminium components at 18%, creating inverted credit.
- Fertilizers: Inputs at 12-18%, output at 5%, creating massive refund buildup for heavy chemical industries.

The refund process, while available under Section 54 of the CGST Act, involves procedural delays and working capital blockage that impose implicit financial costs on manufacturers.

6.2 Anti-profiteering provisions

Section 171 of the CGST Act mandates that GST-related tax reductions be passed on to consumers through price reductions. The National Anti-Profiteering Authority (NAA, now subsumed into the Competition Commission of India) conducted investigations across sectors including cement, steel, and automotive. While the provision aims to ensure GST benefits reach end consumers, heavy industry complained that the complex cost accounting involved in attributing tax savings to individual products was administratively burdensome and susceptible to interpretational disputes.

6.3 E-invoicing and technology compliance burden

The mandatory e-invoicing system, applicable to businesses with turnover above ₹5 crore, while beneficial for large heavy industry players, has created significant technology

investment requirements. Small and medium ancillary manufacturers — critical suppliers to heavy industries — faced acute difficulties in adopting e-invoicing systems, temporarily disrupting supply chains during the transition period (FY 2020-22).

6.4 GST on mining royalties and their treatment

The taxability of mining royalties under GST has been a contentious issue directly affecting the steel, cement, and mineral extraction sectors. The Supreme Court's 2024 ruling clarifying that mining royalties are not 'taxes' but contractual payments has significant implications for the taxability of royalties under GST. Uncertainty in this area has led to notices, assessments, and litigation that add compliance risk to heavy mining and minerals-based industries.

6.5 Place of supply complexity for services

Large heavy industry projects — power plants, steel greenfield expansions, cement plant constructions — involve multi-location operations with complex place of supply determinations for engineering, construction, and project management services. The cross-charging of common services between group entities and the GST treatment of 'distinct persons' (multiple registrations of the same legal entity) has generated significant litigation, particularly around construction-related input services where ITC is restricted under Section 17(5) of the CGST Act.

7.0 Macro-Economic Impact on Heavy Industry

The aggregate impact of GST on heavy industry's macro-economic indicators presents a nuanced picture. EBITDA margins for listed steel companies improved by 2-4 percentage points in FY 2018-20 (pre-COVID period), partially attributable to GST tax efficiencies alongside other market factors including capacity utilization improvements and commodity price movements.

Capital goods sector output (IIP Capital Goods Index) grew at 8.2% CAGR in the first three post-GST years (FY 2018-21), compared to 4.7% CAGR in the preceding three years, suggesting a correlation between improved tax efficiency and investment activity, though causal attribution requires caution given concurrent policy interventions.

Foreign Direct Investment (FDI) in manufacturing, which includes heavy industries, increased from USD 9.7 billion in FY 2016-17 to USD 15.3 billion in FY 2021-22. While multiple factors influenced this increase, the simplification of India's indirect tax framework under GST is consistently cited by industry surveys and investor feedback as a positive factor in investment decision-making.

Table 4: Key Macroeconomic Indicators for Indian Heavy Industry Sectors, Pre and Post-GST

Indicator	FY 2015-16	FY 2016-17	FY 2019-20	FY 2022-23
Steel Sector EBITDA Margin	8.2%	9.1%	12.4%	14.1%
Cement EBITDA Margin	17.5%	18.2%	20.1%	21.8%
Capital Goods IIP Growth	3.8%	4.7%	8.9%	9.2%
Manufacturing FDI (USD Bn)	7.1	9.7	12.3	15.3
Avg. Logistics Cost (% Rev.)	8.5%	8.2%	7.1%	6.4%

Sources: Ministry of Steel, CMA, DPIIT, RBI. Note: FY 2020-22 data excluded due to COVID-19 distortion

8.0 Policy Recommendations

Based on the comparative analysis, the following policy recommendations are proposed to maximize the efficiency and equity of GST's application to heavy industries:

8.1 Petroleum and natural gas under GST

The integration of petroleum products — at minimum natural gas and ATF, with phased inclusion of petrol and diesel — within the GST framework is the single highest-impact reform available. This would eliminate the ITC inversion affecting petrochemicals, reduce the effective fuel tax burden on heavy industry operations, and remove a major source of cascading taxation that continues to inflate production costs across energy-intensive sectors.

8.2 Rationalizing the 28% cement rate

Cement, as a critical infrastructure input with significant implications for housing and construction costs, should be reconsidered for rate reduction to 18%. The revenue impact would be partially offset by expanded base through better compliance and the multiplier effect of lower construction costs on broader economic activity. The GST Council's Technical Committee has periodically examined this proposal; implementation appears feasible within the medium term.

8.3 Streamlining refund mechanisms for inverted structures

An automated, time-bound refund system for inverted duty structure claims — with statutory interest on delays beyond 30 days — would significantly reduce working capital burden on heavy industry sub-sectors experiencing structural inversions. The current average refund processing time of 60-90 days imposes implicit financing costs that disproportionately affect capital-intensive heavy manufacturers.

8.4 Electricity sector ITC resolution

Permitting power generating companies to claim ITC on GST paid for capital equipment and fuel procurement — with appropriate ring-fencing to prevent misuse — would reduce the embedded tax cost in electricity tariffs. The GST Council could establish a formula-based pass-through mechanism that ensures ITC benefits reduce industrial tariffs on a transparent basis.

8.5 Sectoral GST stability and predictability

Heavy industry investment decisions — involving capital commitments of hundreds to thousands of crores with payback periods of 15-25 years — require tax policy stability. The GST Council should consider multi-year rate commitment frameworks for heavy industries, providing investment-grade certainty on tax treatment for approved projects, analogous to the Investment Promotion Incentive schemes that existed in the pre-GST era.

9.0 Conclusion

The introduction of GST has represented a paradigmatic shift in India's indirect tax architecture, with broadly positive implications for heavy industries. The elimination of the cascading tax effect through seamless ITC, the rationalization of supply chains enabled by E-Way Bill, and the reduction in compliance fragmentation have collectively improved the economic efficiency of heavy manufacturing operations.

Quantitative analysis confirms that most heavy industry segments have experienced a reduction in effective tax burden of 5-12 percentage points post-GST, with the steel, capital goods, and cement sectors being primary beneficiaries. These tax savings have partially translated into improved EBITDA margins, enhanced investment activity, and — in competitive markets — consumer price reductions.

However, the paper identifies three major structural deficiencies that limit the full realization of GST's potential for heavy industries: the exclusion of petroleum products creating ITC blockages across energy-intensive sectors, the electricity exemption generating opaque embedded taxes on power-dependent manufacturing, and the 28% cement rate maintaining high tax incidence on a critical construction material.

The reform journey remains incomplete. A second-generation GST rationalization — bringing petroleum under GST, streamlining refund mechanisms, and addressing power sector ITC distortions —could unlock an additional efficiency dividend estimated at 1.5-2.5% of heavy industry revenue, providing a significant boost to manufacturing competitiveness and economic growth. The imperative for continued tax reform is clear; the economic case is compelling; the political will to execute remains the critical variable.

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