GST AND THE DIGITAL ECONOMY: ASSESSING THE ROLE OF DIGITAL PAYMENTS AND E-COMMERCE IN ENHANCING TAX COMPLIANCE AND REVENUE REALIZATION IN POST-GST INDIA

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Abstract :

The adoption of digital payments and rapid growth of e-commerce have transformed India's indirect tax ecosystem under Goods and Services Tax (GST), prompting a re-examination of their combined effect on tax compliance and revenue realization. This review paper synthesises recent empirical and conceptual research to assess whether the expansion of the digital economy has strengthened GST compliance and enhanced tax collections in post-GST India. Evidence from time-series and cross-sectional analyses suggests a robust positive relationship: studies report that increases in digital transactions (via payment platforms) significantly boost GST revenues. Concurrently, e-commerce and online services have broadened the tax base by formalizing previously informal traders and facilitating traceable, transparent transactions under digital invoicing and returns systems. However, several challenges persist: compliance burdens for small sellers, limited digital literacy and infrastructure in some regions, and regulatory ambiguities — especially for micro-merchants and cross-border digital service providers. The review concludes that while digitalization under GST has contributed substantially to improved tax compliance and revenue outcomes at the national level, the gains are not uniformly distributed across states, sectors, or business sizes. Significant gaps remain in micro-level studies, region-specific analysis (including retail and wholesale segments), and evaluation of how digital payment adoption affects small and informal enterprises. These gaps highlight the need for further empirical research — including region-based studies such as the proposed investigation in selected areas of Andhra Pradesh's retail and wholesale sectors.

Keywords: GST; Digital Payments; E-Commerce; Tax Compliance; Tax Revenue

Introduction:

The introduction of Goods and Services Tax (GST) on **1 July 2017** marked a watershed moment in India's indirect-taxation system. Prior to GST, the tax landscape was fragmented, with states and the centre levying a patchwork of indirect taxes — including excise duties, state-level VAT, service tax, octroi and other levies. GST unified these into a single, destination-based value-added tax, thereby streamlining compliance, reducing the cascading effect of multiple taxes, and facilitating a unified national market under a common tax code. The reform was not merely procedural; it required robust digital infrastructure for registration, invoicing, return-filing, and payment processing — structural features that aligned well with the country's shifting economic and technological trajectory.

Parallel to this tax-reform, India has witnessed a remarkable acceleration in the digitalization of economic activity — particularly in payments and e-commerce. A defining feature of this transformation has been the meteoric rise of Unified Payments Interface (UPI), which, since its launch, has dramatically changed how financial transactions occur across the country.) UPI now handles a substantial portion of India's digital payments, with

volume and value rising steeply in recent years. As cash usage declines and digital payments gain acceptance even among small traders and in rural areas, the potential for transparent, traceable, and compliant transactions has expanded significantly.

This convergence — of a unified GST regime and a rapidly growing digital-economy — presents a promising opportunity: digital payments and e-commerce may reinforce GST's objectives by reducing under-invoicing, smoothing compliance, improving traceability of transactions, and widening the taxable base. However, whether this potential has materialized uniformly — across sectors, regions, and business-size categories — remains an open and important question. Against this backdrop, this review paper aims to assess the role of digital payments and e-commerce in enhancing GST compliance and revenue realization in post-GST India. In doing so, it systematically reviews empirical and conceptual studies to explore the extent to which digital-economy mechanisms have contributed to tax compliance, formalization of informal trade, expansion of tax base, and what challenges remain in integrating digital transactions effectively within the GST framework — particularly from regulatory, infrastructural, sectoral, and regional standpoints.

Evolution of digital economy & payment systems in India

Rapid growth of digital payments and e-commerce

The digital payments landscape in India has undergone striking growth over the past decade — especially after the mid-2010s — transforming the way consumers and businesses transact. A key driver of this growth is Unified Payments Interface (UPI), which has emerged as the dominant payment platform in the country. According to data from 2022-23, UPI transactions increased at a compound annual growth rate (CAGR) of 168% in value terms: from roughly ₹1 lakh crore in FY 2017–18 to about ₹139 lakh crore in FY 2022–23. In terms of volume too, UPI transactions surged from 92 crore in FY 2017–18 to over 13,116 crore by FY 2023–24, reflecting widespread adoption across both urban and rural India. This dramatic expansion indicates that digital payment methods have transitioned from being urban-elite options to mainstream mediums of payment — including among small traders, street vendors, and retail merchants. The ease, low cost, and real-time functionality of UPI have driven its penetration even into traditionally cash-driven segments.

Parallel to payment systems, India's e-commerce and online retail sectors have expanded rapidly, aided by digital-payment infrastructure and increasing internet/mobile penetration. While exact nationwide aggregated public data for volume/value of e-commerce is fragmented, multiple industry reports reflect that online transactions have increased substantially post-2017, especially in urban and semi-urban areas. The growing comfort with digital payments among consumers and merchants has lowered friction in online purchases, encouraging both demand and supply sides to shift toward e-commerce. This trend is particularly significant for small and medium enterprises (SMEs), enabling them to reach broader markets without heavy investment in physical storefronts. Overall, the data suggests a structural transformation: digital payments, led by UPI, have become almost normative, integrating a broad cross-section of Indian commerce — from large enterprises to corner shops — into the formal financial/payment ecosystem. This evolution underpins the potential for better traceability, formalization, and compliance with taxation (such as GST) for a wide range of business entities.

Digitization of Tax Compliance under GST: E-Invoicing, Online Filing & Digital Record-Keeping

The rollout of GST in July 2017 created not just a tax-policy shift but also laid the foundation for a digital compliance ecosystem. To operationalize GST across millions of taxpayers and diverse business models, the government and tax authorities introduced several technological and procedural innovations. One of the most significant developments is the mandatory GST e-Invoice / IRN System for B2B transactions. Under this system, invoices must be reported electronically to a central portal (Invoice Registration Portal, IRP) before being issued to customers. Each invoice receives a unique Invoice Reference Number (IRN) and often a QR code — ensuring real-time validation and reducing the scope for under-invoicing or tampering.

The adoption of e-invoicing has been phased: it initially applied to large businesses (turnover thresholds), but over time the threshold was lowered — broadening coverage to many more enterprises. Once e-invoices are generated and validated, these invoices feed directly into the e-way bill and GST return systems — streamlining tax compliance and reducing manual paperwork. Beyond invoicing, the entire compliance infrastructure under GST — including registration, return-filing, input credit claims, and e-way bills — is largely digital and accessible through centralized portals. This shift from physical paperwork to digital filing has significantly reduced administrative burden for taxpayers and improved transparency for tax authorities.

As one recent study puts it, digitalization of tax administration — via e-invoicing, prefilling returns, and real-time reporting — has reduced compliance costs and administrative workload, while enhancing auditability and reducing evasion risk. Moreover, these digital tools make it easier for tax authorities to track the flow of goods and services across the supply chain — improving traceability and ensuring enforcement of GST across the economy. Thus, the post-GST era in India is not only characterized by a unified tax law, but also by a parallel digital transformation of tax compliance infrastructure — enabling real-time, traceable, and verifiable transaction reporting that aligns with the evolving digital economy.

Why This Evolution Matters for GST — and For Your Study

The convergence of widespread digital payments / e-commerce with a digitized GST compliance framework strengthens the case that digital economy mechanisms can play a central role in enhancing tax compliance, formalization of informal trade, expanding the tax base, and improving revenue realization.

- **Traceability and Transparency**: With digital payments and e-invoices, every transaction leaves a digital footprint — making under-reporting, under-invoicing, or tax evasion harder.
- **Formalization of Informal Sector**: Small traders and retailers who adopt digital payments become part of the formal financial ecosystem — thus bringing more businesses under GST firms' radar.
- **Ease and Efficiency of Compliance**: Electronic invoicing and return filing reduce paperwork, manual errors, and compliance burden — encouraging voluntary compliance especially among small and medium enterprises.
- **Broader Coverage**: As UPI and digital payments penetrate deeper into rural and semi-urban areas, more business transactions get captured digitally — widening GST's potential reach beyond traditional urban/commercial hubs.
- **Policy Leverage**: The digital compliance infrastructure allows tax authorities to monitor, analyse, and enforce compliance more efficiently — supporting policy objectives of a unified tax and reducing leakages.

E-Commerce, Online Services & GST Compliance: Opportunities and Challenges

Opportunities / Benefits

Broader Tax Base and Seller Formalization

Under GST, all online sales are taxable, which brings numerous small and informal sellers into the formal system. E-commerce platforms naturally aggregate these sellers, expanding the tax base and capturing economic activity that often remained outside traditional offline taxation.

Improved Invoicing, Documentation, and Transparency

E-commerce operators and sellers must issue GST-compliant invoices, maintain digital records, and report transactions through returns. This enhances transparency, supports supply-chain tracking, and strengthens verification of input tax credit (ITC), reducing under-invoicing and evasion.

Better Compliance Through Tax Collection at Source (TCS)

Section 52 of the CGST Act requires platforms to collect a small TCS on net supplies and remit it to the government. This upfront deduction secures part of the tax liability at the transaction stage, lowering the risk of non-compliance and creating a reliable audit trail, thereby improving revenue realization.

Simplified and Uniform Tax Structure

With GST replacing various state and central levies, e-commerce transactions across states fall under a unified tax system. This reduces procedural complexity and ensures consistent treatment for inter-state and intra-state supplies, benefitting platforms that operate nationwide.

Challenges / Limitations

High Compliance Burden for Small Sellers

Small or occasional sellers face mandatory GST registration, digital record-keeping, invoicing, TCS compliance, and regular return filing — often without turnover exemptions. These requirements can be cost-intensive and may discourage participation, limiting the intended expansion of the tax base.

Liquidity Constraints Due to TCS

Because TCS is deducted before payouts, sellers — particularly micro-merchants — may face cash-flow pressures. This can deter them from remaining on e-commerce platforms or weaken their ability to comply consistently.

Regulatory and Jurisdictional Complexities

Cross-border transactions, online services, and digital subscriptions pose challenges in determining the place of supply, applicable tax (CGST/SGST vs IGST), and compliance obligations. Ambiguities in taxing foreign digital service providers can cause revenue leakages and inconsistent enforcement.

Heavy Compliance Expectations for Platforms and Micro-Sellers

Both e-commerce operators and low-turnover sellers must meet stringent GST requirements, often beyond the capacity of micro-businesses lacking adequate digital or accounting infrastructure. This may push them further away from formal e-commerce participation.

Tax-Base Leakages, Especially for Foreign Digital Services

Despite TCS collections of around ₹13,000 crore in FY 2020–21, many foreign digital subscription services still fall outside the GST net, causing estimated annual revenue losses of ₹3,000–4,000 crore.

Digital Tax Administration & Technological Interventions

The post-Goods and Services Tax (GST) regime in India has ushered in a broad shift toward digital tax administration. A core element of this shift is the adoption of digital tools such as e-invoicing, automated return-filing, integrated data analytics, and a centralized tax-IT backbone via Goods and Services Tax Network (GSTN).

- **E-invoicing and real-time invoice reporting**: Under the current GST framework, businesses are required (above certain turnover thresholds) to generate invoices electronically, which are then authenticated and assigned a unique Invoice Reference Number (IRN) and QR code via a central portal before issuance. Once approved, these e-invoices feed directly into the GST return-filing system (e.g. GSTR-1), and data becomes available to tax authorities and purchasers in real-time — reducing manual entries, paper-based documentation, and human error.
- **Automated return-filing, data-matching, and reduced compliance burden**: E-invoice data can auto-populate relevant fields in GST returns, minimizing reconciliation burdens on businesses and lowering compliance costs. For many entities, this reduces paperwork and streamlines the entire accounting-to-taxation workflow.
- **Use of data analytics, backend monitoring and fraud detection**: The digital framework enables tax authorities to leverage big data analytics, algorithmic tools, and pattern detection to flag anomalies — such as suspicious input tax credit (ITC) claims, fake invoices, or circular/inconsistent transaction patterns. Moreover, emerging research suggests that such technological interventions can significantly reduce tax evasion and increase overall compliance.
- **Enhanced transparency, auditability, and ease of administration**: Because invoices, returns, and movement-of-goods documentation (e-way bills, supply-chain records) are digitized and centralized, GST compliance becomes more transparent; audit trails are robust, and mismatch/fraud risks via fake invoices or under-reporting are minimized.

Limitations, Risks & Gaps in the Literature

Despite the clear benefits, there are several limitations, risks, and gaps — both in practice **and** in academic literature — which deserve attention:

- **Digital divide, infrastructure constraints & compliance burden**: While large and medium firms have mostly adapted to e-invoicing and digital filing, small businesses — especially in rural or semi-urban areas — may face challenges: poor internet connectivity, lack of accounting / IT infrastructure, and limited digital or financial literacy. The cost and complexity of onboarding onto digital tax tools can discourage participation, thus limiting the reach of digital compliance systems.
- **Partial coverage and phased rollout — not universal**: The e-invoicing mandate currently applies only above a certain turnover threshold; many small enterprises, informal traders, and micro-merchants remain outside its scope. As a result, a significant portion of the economy remains reliant on traditional invoicing, undermining the goal of full digital coverage and broad-based compliance.
- **Technical glitches, data mismatches and reconciliation burdens**: Despite automation, issues remain: sometimes e-invoice data may not flow smoothly from invoice-registration portals to GST return modules — leading to reconciliation mismatches that businesses still need to manually resolve.) Additionally, smaller firms lacking ERP systems may struggle to integrate invoicing, inventory, and accounting modules.
- **Emerging risks: cybersecurity, fraud tactics, adaptation cycles**: As digitization deepens, so do the risks of cyber-threats, data leaks, identity theft, or misuse of digital credentials. Moreover, evasion tactics — including circular trading, fake-invoice rings — may evolve, requiring constant technological vigilance and enhancements.
- **Research gaps: lack of micro-level, region-specific, or sector-specific studies**: Most empirical studies to date are macro-level or national, focusing on aggregate revenue or compliance trends. There is limited literature on how digital tax administration affects small retailers/wholesalers, informal traders, or businesses in specific states/districts — contexts which may have different infrastructure readiness, compliance capacity, and digital adoption.
- **Uncertainty about long-term behavioural change and informal-to-formal transition**: While digital tools may nudge firms toward compliance, it is less clear whether they permanently shift business practices — or whether firms revert to old modes under pressure, or face compliance fatigue. Longitudinal studies are scant, especially for small businesses.
- **Regulatory/policy lacunae for small sellers, foreign/online service providers, and cross-border digital transactions**: The existing system may inadequately cover micro-sellers, online-only vendors, or foreign digital service providers — potentially creating loopholes and persistent tax-base leakages. There is limited research evaluating how effective digital compliance tools are in such contexts.

Implications for Policy and Practice

Based on the evidence and the identified limitations, several implications arise — especially relevant for policymakers, tax authorities, and future researchers:

- **Strengthen digital infrastructure and accessibility**: To ensure inclusive compliance, investments in digital infrastructure (broadband/internet in rural areas), subsidized or simplified accounting tools/ERP for small businesses, and support for digital onboarding are vital.
- **Capacity building & digital literacy for SMEs and informal sector participants**: Education programs, training workshops, and simplified guidance can help small traders and informal retailers adapt to e-invoicing, digital record-keeping, and online filing — reducing resistance, improving compliance.
- **Gradual and inclusive widening of e-invoicing and compliance mandates**: Lowering thresholds for mandatory e-invoicing, offering transitional periods with support, or incentivizing voluntary adoption among small firms could expand coverage and reduce compliance gaps.
- **Leverage data analytics, AI & fraud-detection tools proactively**: Tax authorities should continue investing in analytics, machine learning, and network-based detection (e.g., to catch circular trading, fake invoices, suspicious patterns) — improving enforcement and minimizing evasion risks.
- **Tailored policies for small retailers, informal sector, and digital-only businesses**: Recognizing that small and informal businesses face different constraints, regulatory frameworks should be flexible — e.g., simpler GST-compliance pathways, lower compliance costs, periodic compliance windows, assistance programs.
- **Continuous monitoring, evaluation & feedback mechanisms**: Use compiled data to assess the effectiveness of digital tax tools, gather feedback from taxpayers (especially small traders), and iterate policy/administrative reforms — ensuring that digitization delivers intended benefits.

Conclusion

The digitization of tax administration under GST — via e-invoicing, GSTN-based return-filing, data analytics, and automated processes — represents a transformational shift in India's tax regime. The technological interventions have already yielded tangible benefits: greater transparency, reduced scope for fraud or fake invoices, streamlined compliance, and potential revenue gains. Studies suggest digitalization helps reduce evasion, improve auditability, and broaden the taxpayer base. However, the transformation is neither complete nor uniform. Significant limitations — particularly for small firms, informal retailers/wholesalers, and businesses in digitally under-penetrated regions — remain.

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