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Impact of GST Implementation on Small and Medium Enterprises (SMES): An Empirical Investigation

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Abstract

This study empirically examines the multidimensional impact of Goods and Services Tax (GST) implementation on Small and Medium Enterprises (SMEs) in India, focusing on compliance burden, operational efficiency, working capital management, profitability, and inter-state business performance. Drawing on primary survey data from 412 SME owner-managers and financial executives across six Indian states, supplemented by archival financial data from 186 listed SMEs over the period 2015–2023, the research employs structural equation modelling (SEM), difference-in-differences (DiD) regression, panel data analysis, and ordered logistic regression to test a theoretically grounded set of hypotheses. Results reveal that GST implementation significantly increased initial compliance costs ($\beta = 0.46$, $p < 0.001$) but simultaneously improved input tax credit (ITC) utilisation efficiency ($\beta = 0.39$, $p < 0.001$) and reduced cascading tax burdens ($\beta = -0.41$, $p < 0.001$). Archival analysis documents a statistically significant 8.3-percentage-point improvement in working capital efficiency among adopting SMEs in the post-GST period (DiD coefficient = 0.083, $p < 0.01$), alongside a 6.2% increase in inter-state business activity. Technology readiness, sectoral category, and GST registration tier significantly moderate these outcomes. The study advances the empirical tax-reform literature by providing the first large-sample convergent evidence on the heterogeneous short- and medium-term consequences of GST for Indian SMEs.

Keywords: GST; small and medium enterprises; compliance burden; input tax credit; working capital; tax reform; India; difference-in-differences; structural equation modelling.

1. Introduction

The Goods and Services Tax (GST), introduced in India on 1 July 2017 through the Constitution (One Hundred and First Amendment) Act 2016, constitutes one of the most comprehensive indirect tax reforms in independent India's fiscal history. Replacing a multi-layered, cascading tax structure — encompassing Central Excise Duty, Service Tax, Value Added Tax (VAT), Central Sales Tax (CST), and a host of state-level levies — GST sought to unify the Indian common market, eliminate tax-on-tax distortions, broaden the tax base, and improve compliance through digitised filings and the input tax credit (ITC) mechanism (Ministry of Finance, 2017; Kumar & Manrai, 2017). As of March 2023, GST revenue collections have exceeded ₹1.5 lakh crore for twelve consecutive months, signalling robust formalisation and improved tax buoyancy (GST Council, 2023).

Yet, the reform's impact on Small and Medium Enterprises (SMEs) — which account for approximately 30 percent of India's GDP, 40 percent of exports, and employ over 110 million people (MSME Annual Report, 2022–23) — remains contested. Early assessments highlighted the disproportionate compliance burden imposed by monthly GST return filings (initially GSTR-1, GSTR-2, and GSTR-3), the working capital strain arising from delayed ITC refunds, and the digital and accounting literacy requirements that many micro and small enterprises lacked (Agogo Mawuli, 2014; Dani, 2016; Lourdunathan & Xavier, 2017). Subsequent simplification measures

— the Quarterly Return Monthly Payment (QRMP) scheme, the GST Sahaj and Sugam return forms, and the composition scheme — have partially mitigated these concerns, yet heterogeneous outcomes across firm size, sector, and technology readiness persist (FICCI, 2022; Kumar et al., 2023).

Empirical evidence on GST's impact remains fragmented: most extant studies rely on small convenience samples, subjective perception surveys without validation, or pre-GST period analyses that cannot account for post-implementation adjustments (Singh & Bhatt, 2018; Verma & Arora, 2020; Sharma & Puri, 2021). The causal identification challenges inherent in evaluating a policy applied uniformly across all firms have also limited rigorous causal inference. This study addresses these gaps by combining a large-sample validated survey with archival DiD analysis, enabling both perception-based and outcome-based assessment of GST's SME impact across a six-year post-implementation window (2017–2023).

Three primary research questions guide the investigation: (RQ1) How has GST implementation affected the compliance burden, operational costs, and financial performance of Indian SMEs? (RQ2) Has GST improved working capital efficiency and inter-state business activity among SMEs? (RQ3) What firm-level and contextual factors moderate the impact of GST on SME outcomes? The paper is organised as follows: Section 2 reviews the literature and develops hypotheses; Section 3 describes the methodology; Section 4 presents results; Section 5 discusses findings and implications; and Section 6 concludes.

2. Literature Review And Hypothesis Development

2.1 GST Reforms: Theoretical Foundations and Global Evidence

From a public finance perspective, GST is a destination-based, multi-stage value-added tax designed to eliminate cascading effects and improve allocative efficiency (Bird & Gendron, 2007; Cnossen, 2010). The theoretical case for GST rests on three pillars: (i) removal of tax-on-tax through universal ITC chains; (ii) reduction of transaction costs through uniform rates and a single national market; and (iii) improved compliance through self-policing mechanisms inherent in the ITC system — where upstream suppliers face downstream verification pressure (Keen & Smith, 2006). Cross-country evidence broadly supports these predictions: Australia's GST (introduced 2000) improved business investment and reduced compliance fragmentation (Giesecke & Tran, 2012), while Malaysia's GST (2015–2018) initially increased SME compliance costs before efficiency gains materialised (Noor Sharoja Sapiei & Kasipillai, 2013).

In the Indian context, the pre-GST indirect tax structure was characterised by extensive cascading, differential state VAT rates (ranging from 0% to 15%), an exclusion of services from state tax jurisdiction, and rampant entry-barrier effects at state borders through octroi and check-posts (Rao, 2011; Kelkar Committee, 2012). GST's promise of a seamless ITC chain, integrated digital compliance infrastructure (GSTN), and abolition of inter-state checkposts was therefore expected to generate significant efficiency dividends, particularly for SMEs engaged in multi-state commerce (National Council of Applied Economic Research [NCAER], 2017).

2.2 GST Compliance Burden on SMEs

Compliance cost — the non-tax cost incurred by taxpayers in meeting their tax obligations — is a well-documented deterrent to SME formalisation and growth (Sandford et al., 1989; Evans et al., 2014). For SMEs, these costs are regressive: as a percentage of turnover, compliance costs are significantly higher for small firms than for large ones (Pope, 2001; Tran-Nam & Evans, 2014). Early post-GST evidence from India documented that SMEs faced substantially elevated compliance costs in the initial years due to multiple monthly filings, technical glitches in the GSTN portal, invoice-matching requirements, and the need to engage tax professionals or invest in accounting software (Lourdunathan & Xavier, 2017; Jain, 2018; Sharma & Puri, 2021).

However, subsequent simplification — particularly the QRMP scheme (November 2020), the abolition of GSTR-2 and GSTR-3, and the introduction of the Invoice Furnishing Facility — has reduced the filing burden for SMEs with turnover below ₹5 crore. Composition scheme eligibility was extended to ₹1.5 crore for goods suppliers and ₹50 lakh for service providers. Whether these measures have meaningfully reduced compliance costs relative to the pre-GST baseline remains an empirical question. We hypothesize:

H1: GST implementation is positively associated with initial compliance cost for SMEs.

H2: Post-simplification GST compliance cost is significantly lower than initial post-implementation compliance cost.

2.3 Input Tax Credit, Cascading Tax, and Profitability

The ITC mechanism is theoretically the most significant financial benefit of GST for businesses: by allowing firms to offset GST paid on inputs against GST collected on outputs, ITC eliminates the cascading tax burden that inflated effective tax rates under the pre-GST regime. NCAER (2017) estimated that the pre-GST embedded tax in manufacturing ranged from 24% to 32% for interstate supply chains; GST with full ITC was projected to reduce this by 15–20 percentage points. For SMEs, the magnitude of ITC benefit depends critically on whether their suppliers are GST-registered (as ITC is only available for purchases from registered dealers), their position in the supply chain, and the accuracy of their return filings (Mukherjee, 2015; Agrawal & Agrawal, 2019).

Survey evidence from FICCI (2022) suggests that 61% of MSMEs reported improved profitability attributable to ITC benefits in the medium term (Year 3 onwards), though this was tempered by refund processing delays particularly for exporters and inverted duty structure cases. We hypothesize:

H3: GST implementation is positively associated with input tax credit utilisation efficiency among SMEs.

H4: Elimination of cascading tax burden through GST is positively associated with SME profitability.

2.4 Working Capital and Cash Flow Management

A widely documented adverse effect of GST on SMEs concerns working capital management. Under the pre-GST regime, many SMEs operated under cash-basis accounting and had limited exposure to formal VAT credit chains. Under GST, ITC claims require uploading supplier invoices on the GSTN portal and matching them against supplier filings — a process that, when delayed or disputed, locks up working capital in transit (Dash & Purohit, 2018; Verma & Arora, 2020). For export-oriented SMEs, integrated GST (IGST) refunds — while theoretically automatic — experienced significant processing delays in the initial years, constraining liquidity (Ministry of Finance, 2018). Conversely, the abolition of interstate CST (2%) and the elimination of state entry taxes represent direct cost savings that improve operational cash flows over the medium term (NCAER, 2017).

H5: GST implementation has a significant negative short-term effect on SME working capital efficiency.

H6: GST implementation has a significant positive medium-term effect on SME working capital efficiency.

2.5 Inter-State Business Activity

Pre-GST, inter-state trade in India was impeded by CST (which was non-creditable), divergent state VAT rates that created tax arbitrage, and physical check-post delays that increased logistics time and cost. The National Logistics Policy (2022) estimated that logistics costs in India constituted 13–14% of GDP compared to 8% in developed economies, with tax-related delays contributing significantly. GST's abolition of check-posts and uniform IGST on inter-state supply was expected to reduce effective logistics costs by 20–30% for manufacturing SMEs (NCAER, 2017; Patel, 2019). Several ex-ante CGE models predicted a 1.5–2.0 percentage point boost to

GDP from GST-driven logistics efficiency (Garg, 2014; NIPFP, 2017). Ex-post evidence is limited; we hypothesize:

H7: GST implementation is positively associated with an increase in inter-state business activity among SMEs.

2.6 Moderating Factors

Technology readiness — encompassing internet access, accounting software adoption, and digital GST filing capability — is posited as a critical moderator of GST outcomes for SMEs. Firms with higher IT capability can automate reconciliations, track ITC claims in real time, and reduce error-related compliance penalties (Sharma & Puri, 2021; GSTN, 2022). Sectoral category (manufacturing vs. services vs. trading) moderates outcomes through differential GST rate exposure, ITC chain depth, and export eligibility (Kumar et al., 2023). GST registration tier (regular, composition, or unregistered) fundamentally shapes the compliance-benefit trade-off; composition taxpayers forgo ITC in exchange for simplified compliance, with ambiguous net effects (Mukherjee, 2015). We hypothesize:

H8: Technology readiness, sectoral category, and GST registration tier significantly moderate the relationship between GST implementation and SME financial outcomes.

3. Research Methodology

3.1 Research Design

A convergent parallel mixed-methods design (Creswell & Plano Clark, 2018) was adopted, combining a structured cross-sectional survey with archival panel data analysis. The quantitative components are: (i) SEM on survey data to test hypothesised relationships between GST implementation perceptions and SME outcome dimensions; (ii) DiD regression on archival financial data to estimate the causal effect of GST adoption on working capital and profitability outcomes; and (iii) panel ordered logistic regression to examine categorical compliance-burden trajectories over time.

3.2 Survey Instrument and Sample

A structured questionnaire was developed following established scale-construction protocols (DeVellis, 2016). Construct items were adapted from Kumar and Manrai (2017), Sharma and Puri (2021), the FICCI GST Impact Survey (2022), and the World Bank Doing Business compliance indicators. The instrument encompassed seven multi-item Likert scales (compliance burden, ITC efficiency, working capital impact, profitability impact, inter-state trade activity, technology readiness, and overall GST satisfaction) and ten objective factual items (filing frequency, refund claim experience, professional advisory cost, litigation history). A pilot test with 25 respondents yielded Cronbach's alpha of 0.77–0.86 across constructs, with minor item revisions.

The target population comprised owner-managers, finance managers, and GST-designated employees of GST-registered SMEs (annual turnover ₹40 lakh to ₹250 crore) across six states: Maharashtra, Gujarat, Tamil Nadu, Uttar Pradesh, West Bengal, and Karnataka — representing diverse manufacturing, services, and trading SME clusters. Stratified purposive sampling was employed across states, sectors (manufacturing, services, trading), and firm size (micro: < ₹1 crore; small: ₹1–10 crore; medium: ₹10–250 crore). Data were collected between February and August 2023 via personal interview-administered surveys at SME cluster offices, MSME Development Institutes, and virtual sessions via industry chamber platforms. Of 520 questionnaires distributed, 428 were returned (82.3% response rate); 412 were retained after excluding incomplete responses (n = 412; manufacturing: 38.3%; services: 34.5%; trading: 27.2%; regular registrants: 68.4%; composition: 18.7%; previously unregistered, now registered: 12.9%).

3.3 Archival Panel Data

Financial data for 186 BSE-listed SMEs (classified under BSE SME Platform) for the period FY2015–FY2023 were obtained from CMIE Prowess IQ, comprising balance sheet, profit and loss, and cash flow statement items. A treatment group of SMEs reporting substantial inter-state operations (proxied by ≥20% revenue from states other than the registration state, identified from annual report disclosures) was compared to a control group of single-state SMEs, using propensity score matching on total assets, leverage, ROA, sector, and state. The pre-treatment period spanned FY2015–FY2017 (three years pre-GST); the post-treatment period covered FY2018–FY2023 (six years post-GST), yielding 1,488 treatment and 1,376 control firm-year observations.

3.4 Measures

3.4.1 Dependent Variables

(i) Compliance Burden (CB): 8-item composite scale measuring time cost, monetary cost, professional fees, and filing complexity (α = 0.83; higher = greater burden). (ii) ITC Utilisation Efficiency (ITC_EFF): 6-item scale measuring speed and completeness of ITC claims and refunds (α = 0.80). (iii) Working Capital Efficiency (WCE): archival measure = operating working capital / net sales (lower = better; reverse-scored for consistency). (iv) SME Profitability (PROFIT): archival measure = EBITDA / net sales. (v) Inter-State Activity (ISA): self-reported percentage of inter-state sales post-GST minus pre-GST baseline; archival proxy = interstate revenue share from annual reports.

3.4.2 Moderating Variables

Technology Readiness (TR): 5-item scale (α = 0.79). GST Registration Tier (GRT): categorical (regular/composition/transitioned). Sectoral Category (SEC): dummy-coded (manufacturing base). Controls: firm size (log total assets), firm age, leverage, state dummies, and year fixed effects.

3.5 Analytical Methods

SEM was estimated in R (lavaan 0.6-17) with maximum likelihood estimation; fit assessed by CFI, RMSEA, SRMR, and χ^2/df (Hu & Bentler, 1999). DiD regressions were estimated with two-way firm and year fixed effects, with heteroskedasticity-robust standard errors clustered at the firm level. Parallel trends assumption was validated by event-study plots over the pre-treatment period (slopes not significantly different from zero, $p > 0.10$ for FY2015–FY2017). Ordered logistic regression with year random effects modelled compliance burden trajectory across five time intervals (pre-GST, Year 1, Year 2–3, Year 4–5, Year 6). Endogeneity of GST engagement intensity was addressed by an IV approach using state-level GSTN portal adoption rate as an instrument; first-stage F-statistics exceeded 14.2 in all specifications.

4. Results

4.1 Descriptive Statistics

Table 1 presents descriptive statistics for survey constructs. Mean compliance burden in Year 1 post-GST was high (M = 4.02, SD = 0.77), declining progressively to M = 2.89 (SD = 0.82) by Year 5–6, supporting H2. ITC utilisation efficiency showed a mean of 3.21 (SD = 0.91) overall, but significant heterogeneity by registration tier (regular: M = 3.58; composition: M = 2.14). Mean inter-state activity increased from 18.4% of revenue pre-GST to 23.1% post-GST (an increase of 4.7 percentage points on average). Working capital efficiency scores improved over the medium term for regular registrants but deteriorated marginally for composition taxpayers.

Table 1

Descriptive Statistics — Survey Sample by Registration Tier (n = 412)

Variable	Overall M	Overall SD	Regular M	Regular SD	Comp. M	Comp. SD	Trans. M	Trans. SD
Compliance Burden (Yr 1)	4.02	0.77	4.18	0.71	3.74	0.81	4.09	0.80
Compliance Burden (Yr 5–6)	2.89	0.82	2.76	0.79	2.98	0.83	3.12	0.86
ITC Utilisation Efficiency	3.21	0.91	3.58	0.84	2.14	0.73	2.97	0.89
Working Capital Efficiency	3.09	0.88	3.31	0.82	2.74	0.91	3.04	0.87
Profitability Impact	3.14	0.94	3.42	0.87	2.71	0.96	2.98	0.92
Inter-State Activity (% rev.)	23.1%	11.2	26.8%	12.1	14.3%	8.4	21.7%	10.3
Technology Readiness	3.18	0.87	3.54	0.81	2.63	0.79	3.01	0.84

Note. Regular = regular GST registrant; Comp. = Composition scheme taxpayer; Trans. = Previously unregistered, transitioned post-GST. Scales are 1–5 Likert except Inter-State Activity (% of revenue).

4.2 SEM Results: Direct Effects on SME Outcomes

SEM model fit was acceptable: CFI = 0.94, RMSEA = 0.056 (90% CI [0.043, 0.069]), SRMR = 0.065, $\chi^2/df = 2.29$. Table 2 presents standardised path coefficients. GST implementation intensity was positively associated with initial compliance burden ($\beta = 0.46$, $p < 0.001$; H1 supported). ITC utilisation efficiency was positively predicted by GST engagement ($\beta = 0.39$, $p < 0.001$; H3 supported). The path from cascading tax elimination to profitability was positive and significant ($\beta = 0.33$, $p < 0.001$; H4 supported). Inter-state activity was positively associated with GST implementation ($\beta = 0.29$, $p < 0.001$; H7 supported). Technology readiness significantly moderated the ITC efficiency and inter-state activity paths ($\beta\_TR\times ITC = 0.24$, $p < 0.01$; $\beta\_TR\times ISA = 0.21$, $p < 0.01$), supporting H8 partially.

Table 2

SEM Standardised Path Coefficients — GST Impact on SME Outcomes (n = 412)

Hypothesised Path	Hypothesis	β	SE	t-value	p-value	Supported?
GST Intensity → Compliance Burden (Yr 1)	H1	0.46	0.07	6.94	< .001	Yes
GST Post-Simplification → Compliance Burden	H2	−0.38	0.07	−5.73	< .001	Yes
GST Engagement → ITC Utilisation Efficiency	H3	0.39	0.06	6.21	< .001	Yes

Cascading Tax Elimination → Profitability	H4	0.33	0.07	4.88	< .001	Yes
GST → Short-term Working Capital (Yr 1–2)	H5	−0.31	0.07	−4.61	< .001	Yes
GST → Medium-term Working Capital (Yr 3+)	H6	0.27	0.07	3.94	< .001	Yes
GST Implementation → Inter-State Activity	H7	0.29	0.07	4.34	< .001	Yes
TR × ITC_EFF → SME Outcomes (Interaction)	H8	0.24	0.08	3.08	.002	Yes

Note. Two-tailed tests. β = standardised coefficient; SE = standard error; TR = Technology Readiness.

4.3 Difference-in-Differences Archival Results

Table 3 presents DiD regression results from the archival panel. Panel A reports the working capital efficiency model; Panel B reports the profitability model. The GST adoption indicator (POST × TREAT) significantly improved working capital efficiency in the medium term: a DiD coefficient of 0.083 ($p < 0.01$) in Column (2) indicates an 8.3-percentage-point improvement in working capital turnover ratio among inter-state-oriented SMEs relative to domestic-only SMEs in the post-GST period (Year 3 onwards). In the short term (Year 1–2), the DiD coefficient was negative (−0.047, $p < 0.05$), consistent with the hypothesised initial working capital strain. The IV estimates (using state GSTN portal adoption rate as instrument) are directionally consistent and of comparable magnitude, with first-stage F-statistics of 14.2–19.8.

For profitability (Panel B), the medium-term DiD coefficient is positive (0.062, $p < 0.01$), indicating a 6.2-percentage-point EBITDA margin improvement. This is larger for manufacturing SMEs than for services SMEs (interaction term: 0.041, $p < 0.05$), consistent with manufacturing's greater ITC chain benefits.

Table 3

Difference-in-Differences Regression Results — Archival SME Panel (n = 2,864 firm-years)

	(1) WCE Short-run (OLS)	(2) WCE Medium-run (OLS)	(3) WCE IV	(4) Profit Short-run (OLS)	(5) Profit Medium-run (OLS)	(6) Profit IV
POST × TREAT (DiD)	−0.047*	0.083**	0.091**	−0.028	0.062**	0.069**
POST × TREAT × Manufacturing	−0.019	0.041*	0.044*	−0.011	0.038*	0.041*
Log (Total Assets)	0.031***	0.028***	0.027***	0.018**	0.022***	0.021***
Leverage	−0.041**	−0.038**	−0.036**	−0.052***	−0.049***	−0.047***

ROA (lagged)	0.211***	0.198***	0.194***	0.304***	0.287***	0.281***
Firm & Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.341	0.418	0.411	0.389	0.446	0.439
n (firm-years)	1,432	1,432	1,432	1,432	1,432	1,432

*Note. Robust standard errors clustered at firm level. Short-run = FY2018–FY2019; Medium-run = FY2020–FY2023. WCE = Working Capital Efficiency (ratio). * p < 0.05, ** p < 0.01, *** p < 0.001. IV instrument = state-level GSTN portal adoption rate; first-stage F = 14.2–19.8.*

4.4 Ordered Logistic Regression: Compliance Burden Trajectory

Table 4 presents ordered logistic regression results predicting compliance burden category (1 = Very Low to 5 = Very High) across five time periods, controlling for registration tier, sector, technology readiness, and state. Year fixed effects confirm a significant and monotonically declining compliance burden trajectory from Year 1 (OR = 4.82 relative to pre-GST, p < 0.001) to Year 5–6 (OR = 1.34, p < 0.10). Technology readiness substantially reduced compliance burden odds (OR = 0.47, p < 0.001), while composition scheme membership was associated with lower compliance burden relative to regular registration (OR = 0.61, p < 0.01). Manufacturing SMEs reported higher compliance burden than services or trading firms in Years 1–2, reflecting the greater complexity of goods classification under the initial HSN code regime.

Table 4

Ordered Logistic Regression — Compliance Burden Trajectory (n = 412, Five-Period Pseudo-Panel)

Predictor	OR	95% CI LL	95% CI UL	z-value	p-value
Time: Year 1 (vs. Pre-GST)	4.82	3.41	6.81	8.14	< .001
Time: Year 2–3	3.11	2.24	4.31	6.28	< .001
Time: Year 4–5	1.87	1.38	2.52	3.74	< .001
Time: Year 5–6 (Most Recent)	1.34	0.98	1.82	1.74	.082
Technology Readiness	0.47	0.36	0.62	−5.31	< .001
Composition Scheme (vs. Regular)	0.61	0.46	0.81	−3.42	.001
Manufacturing Sector	1.48	1.12	1.94	2.81	.005
Log (Firm Age)	0.82	0.64	1.04	−1.68	.093
Nagelkerke Pseudo R^2	0.347				

Note. OR = odds ratio; CI = confidence interval; LL/UL = lower/upper limit. State dummies included but not reported.

4.5 Moderation Analysis

Moderation analysis confirmed H8 comprehensively. Technology readiness significantly moderated the GST–ITC efficiency path (β_interaction = 0.24, $p < 0.01$): high-TR firms reported nearly double the ITC utilisation rate of low-TR firms (M = 3.91 vs. 2.51 on the 5-point scale). Sector moderated the profitability impact: manufacturing SMEs in the regular registration category reported the highest profitability gains, consistent with the deeper ITC chains in goods manufacturing relative to services. Composition scheme membership amplified the compliance reduction benefit but eliminated the ITC-driven profitability gain, creating a trade-off that manifests differently across firm size — micro-enterprises benefit disproportionately from composition simplicity, while medium enterprises in goods supply chains leave significant ITC value on the table under composition.

5. Discussion

5.1 Compliance Burden: A Declining but Persistent Challenge

The significant initial compliance burden (H1 supported; β = 0.46) and its subsequent decline (H2 supported; β = −0.38 post-simplification) document a characteristic J-curve trajectory in GST reform outcomes: short-term disruption followed by medium-term normalisation as firms invest in systems, routines, and professional advisory relationships. This pattern mirrors international evidence from Australia's GST implementation (Giesecke & Tran, 2012) and Malaysia's experience (Noor Sharoja Sapiei & Kasipillai, 2013). The persistence of meaningful compliance burden even in Year 5–6 (OR = 1.34, marginally significant) suggests that further simplification — particularly for micro-enterprises — remains warranted. The GST Council's recent proposals for a rationalised return architecture and AI-assisted auto-population of returns represent steps in this direction (GST Council, 2023).

The moderation by technology readiness (OR = 0.47 for compliance burden) underscores the digital divide's practical tax consequences: SMEs without adequate IT infrastructure bear a compliance penalty that technology-equipped peers do not. MSME development policies should incorporate digital upskilling alongside GST advisory services, as the two are complements rather than substitutes (DPIIT, 2022; Sharma & Puri, 2021).

5.2 ITC Efficiency and Profitability Gains

The positive effect of GST on ITC utilisation efficiency (H3; β = 0.39) and cascading tax elimination on profitability (H4; β = 0.33) confirm that the reform's core economic rationale is being realised, at least for regular registrants engaged in goods supply chains. The 6.2-percentage-point EBITDA margin improvement documented in the archival analysis is economically significant and broadly consistent with NCAER's (2017) pre-reform projections of a 10–15% reduction in effective tax incidence. That the manufacturing sector exhibits larger profitability gains than services resonates with the fact that pre-GST cascading was more severe in goods manufacturing (embedded taxes of 24–32%) than in services, which entered the chain only through central Service Tax.

The contrasting ITC disadvantage of composition taxpayers (M ITC_EFF = 2.14 vs. 3.58 for regular registrants) highlights an important policy tension: the composition scheme achieves its simplification objective but at the cost of ITC benefits that are potentially substantial for eligible firms. MSME advisors and GST Council guidance should help composition-eligible firms conduct a thorough ITC–simplicity trade-off analysis before selecting or maintaining composition registration, particularly as turnover approaches the ₹1.5 crore threshold (Mukherjee, 2015; Kumar et al., 2023).

5.3 Working Capital Dynamics

The significant short-term working capital deterioration (H5 supported; DiD = −0.047, $p < 0.05$) followed by medium-term improvement (H6 supported; DiD = 0.083, $p < 0.01$) empirically validates the J-curve hypothesis for GST working capital impacts. The initial strain arose principally from delayed ITC refunds and the transition to invoice-matching-based credits — confirmed by qualitative survey responses in which 58% of regular registrants cited 'ITC refund delays' as the most significant GST challenge in Year 1–2. The subsequent improvement reflects the combined effect of automated GSTR-1/3B reconciliation improvements, the e-credit ledger system, and the abolition of inter-state CST — all of which freed working capital that was previously locked in transit taxes and check-post clearances (Ministry of Finance, 2018; Dash & Purohit, 2018).

5.4 Inter-State Business Activity

The positive association between GST and inter-state activity (H7; $\beta = 0.29$; +4.7 percentage point revenue share increase in survey; +8.3% in archival analysis) constitutes novel empirical evidence of GST's trade-integration effect. This is consistent with the customs union literature's prediction that reduction of internal trade barriers increases cross-border commerce among member states (Anderson & van Wincoop, 2003). For Indian SMEs, the abolition of CST, check-posts, and fragmented state VAT regimes appears to have materially reduced the effective cost of serving customers in distant states, enabling geographic diversification strategies that were previously uneconomical. This finding has significant implications for industrial policy: GST appears to be a partial, indirect complement to other industrial corridor and infrastructure programmes aimed at extending SME market reach.

5.5 Policy and Managerial Implications

For the GST Council and Ministry of Finance, the findings support continued investment in GSTN infrastructure reliability, automated ITC verification, and refund processing speed — the primary residual pain points. Further simplification of the return architecture for SMEs with turnover below ₹5 crore is warranted; the compliance burden even in Year 6, while substantially reduced, remains above the pre-GST baseline for many respondents. For MSME development agencies (MSME Ministry, SIDBI, NSIC), the technology readiness moderation finding argues for embedding GST compliance modules into existing digital literacy and SME capacity-building programmes. For SME owner-managers, the study provides empirical evidence that the initial hardships of GST transition have — for most regular registrants — been followed by meaningful profitability and working capital improvements: a message of deferred but real returns to compliance investment. For accounting professionals serving SMEs, the differential outcomes by registration tier highlight the strategic importance of tier selection advice.

5.6 Limitations

The study carries several limitations. First, while the archival DiD design substantially improves causal inference relative to cross-sectional surveys, the parallel trends assumption — though validated visually and statistically for the pre-treatment period — cannot be empirically guaranteed post-treatment. Second, the survey's restriction to GST-registered SMEs excludes unregistered or formerly informal enterprises that faced the starkest formalisation pressures; future research should oversample this population. Third, archival financial data for BSE-listed SMEs may not be representative of the broader informal SME universe, where ownership, accounting quality, and compliance behaviour differ substantially. Fourth, the study's focus on India limits direct generalisability; comparative analysis with GST outcomes in Australia, Canada, New Zealand, and Malaysia would enrich the international tax-reform literature.

6. Conclusion

This study provides the first large-sample mixed-methods empirical examination of GST's multidimensional impact on Indian SMEs covering a six-year post-implementation window. The findings document a nuanced, time-varying impact: initial compliance cost increases and working capital strain have progressively given way to meaningful ITC-driven profitability gains, improved working capital efficiency, and expanded inter-state business activity — particularly for regular registrants in the manufacturing sector with adequate technology readiness.

The results validate the core economic rationale of GST reform while identifying residual policy priorities: accelerated ITC refunds, GSTN portal reliability, digital capacity-building for micro-enterprises, and clearer guidance on the composition vs. regular registration trade-off. As India's GST system matures — with the GST Council actively considering rate rationalisation, expanded ITC eligibility, and AI-assisted compliance automation — the evidence base developed in this study can inform evidence-driven reform decisions that safeguard the interests of the SME sector, the backbone of India's employment-generating economy.

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