



# A QUANTITATIVE IMPACT ASSESSMENT OF GST ON MSMEs IN ODISHA: COMPLIANCE, FORMALIZATION, AND COMPETITIVE DYNAMICS

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**Abstract:** The Goods and Services Tax (GST) represents a fundamental shift in India's fiscal architecture, with profound implications for Micro, Small, and Medium Enterprises (MSMEs). While its national impact has been studied, region-specific quantitative analyses are scarce. This study provides an empirical investigation into the effects of GST on MSMEs in the industrially emerging state of Odisha. A sample of 120 MSMEs from key districts—Khordha, Cuttack, Sambalpur, and Berhampur—was surveyed. Data on pre- and post-GST compliance costs, financial performance, and technology adoption were collected. Analysis using paired t-tests revealed a statistically significant increase in monthly compliance costs ( $p < 0.01$ ), with micro-enterprises experiencing the highest relative burden. However, multiple regression analysis demonstrated a strong positive correlation between consistent Input Tax Credit (ITC) utilization and growth in profit margins ( $R^2 = 0.68$ ,  $p < 0.01$ ). A Chi-square test established a significant association between the adoption of accounting software and a reduction in compliance time post-e-invoicing ( $\chi^2 = 12.4$ ,  $p < 0.01$ ). The findings indicate a dual narrative for Odisha's MSMEs: significant initial compliance hurdles coexist with emerging competitive advantages for digitally-adapted firms. The study concludes that next-generation GST reforms must be tailored to address regional disparities, focusing on digital literacy, targeted support for micro-enterprises, and leveraging GST data to enhance credit access in states like Odisha.

**Key Words-** GST, MSME, Odisha, Compliance Cost, Regression Analysis, Input Tax Credit, Regional Development.

## 1. Introduction

The MSME sector is a vital component of Odisha's economy, contributing significantly to employment and industrial output, particularly in sectors like metal fabrication, textiles, handicrafts, and food processing. According to the Odisha MSME Directorate (2023), the state is home to over 3.5 lakh registered MSMEs, playing a crucial role in its economic development agenda. The implementation of the Goods and Services Tax (GST) in 2017 aimed to create a unified national market, a reform with particular resonance for a state seeking greater industrial integration.

However, the unique industrial fabric of Odisha—characterized by a predominance of micro-enterprises, a significant rural and tribal entrepreneurship base, and evolving industrial clusters—means the impact of GST may differ from that in more industrialized states. Existing literature offers a pan-Indian perspective but lacks granular, data-driven studies focused on specific states like Odisha. This study aims to fill this gap by conducting a quantitative impact assessment based on primary data from Odisha's MSMEs. It seeks to move beyond anecdotal evidence to statistically evaluate the tangible effects of GST on compliance, competitiveness, and the growth trajectory of the state's most numerous business entities.

## 2. Literature Review

The implementation of the Goods and Services Tax (GST) in India has spurred a rich and evolving body of scholarly work, particularly concerning its impact on the MSME sector. The literature can be synthesized into several interconnected thematic areas, revealing a complex narrative of disruption, adaptation, and potential transformation, while also highlighting significant gaps, especially at the sub-national level.

### 2.1. The Compliance Burden and the Formalization Paradox

A dominant theme across studies is the substantial compliance burden created by GST for MSMEs. Survey-based findings indicate that many enterprises experienced a significant “compliance shock” during the transition, driven by increased documentation, digital filing requirements, and procedural complexity (Goyal, 2024). Multiple empirical studies confirm that compliance costs—including professional fees, software upgrades, and additional administrative time—are disproportionately high for micro and small firms, creating a regressive burden structure (Chatterjee & Pal, 2022). Sector-specific assessments, such as research on pharmaceutical MSMEs, further validate these operational difficulties and highlight persistent confusion regarding return filing and input tax management (Buttan et al., 2024). This dynamic contributes to what scholars term the formalization paradox: although GST aims to enhance formalization, the higher compliance costs initially discouraged small firms from entering or remaining within the formal tax net (Bhattacharya & Singh, 2022). While policy measures like the QRMP scheme and composition levy sought to alleviate the burden, evidence suggests that these reforms have not fully mitigated challenges for the smallest enterprises (NITI Aayog, 2025).

### 2.2. Competitiveness, Efficiency, and Value Chain Integration

Despite the short-term challenges, several studies emphasize the long-term efficiency gains expected from GST. The most significant advantage arises from the seamless flow of Input Tax Credit (ITC), which reduces cascading taxes and improves firms’ working capital conditions (Bhattacharya & Singh, 2022). Policy analyses highlight that GST has also enabled the creation of a unified national market, improving logistics efficiency and facilitating the movement of goods across states without traditional check-post delays (NITI Aayog, 2025).

Additionally, the digital tax trail generated through GST filings provides an alternative form of “digital collateral,” improving MSMEs’ access to formal credit by enabling better assessment of cash flows and turnover. Studies note that this integration into formal value chains is a crucial step toward enhancing the global competitiveness of Indian MSMEs (NITI Aayog, 2025).

### 2.3. Technological Adaptation and the Digital Divide

Technology adoption emerges as a major determinant of MSME performance under GST. Firms that successfully adopted digital tools such as GSTN-based filing systems, e-invoicing, and accounting software reported smoother compliance and better utilization of ITC (Sharma & Kumar, 2025). Broader research on digital transformation in India shows that robust digital infrastructure strengthens firm resilience and compliance capability (Bajpai, 2021).

However, these advantages are unevenly distributed. Literature consistently highlights the persistence of a digital divide, particularly affecting micro-enterprises in rural or remote areas, where digital literacy and infrastructure remain limited (Innovation & Entrepreneurship, 2024). This divide risks marginalizing digitally weaker firms, limiting their ability to realize the benefits of GST and integrate into modern supply chains.

### 2.4. Regional and Sectoral Heterogeneities

An emerging but less developed area of research examines how GST affects different states and sectors differently. Subnational studies show that states dominated by manufacturing MSMEs experience GST-induced liquidity constraints and compliance challenges differently from states with service-heavy or unorganized-sector economies (ResearchGate Working Paper, 2024). Evidence from Tamil Nadu’s Dindigul district, for example, indicates that smaller firms face additional difficulty due to infrastructure gaps, limited awareness, and high dependence on intermediaries for GST filing (Serials Publications, 2023). These findings highlight that the one-size-fits-all tax framework interacts unevenly with diverse regional economic structures.

While some national-level studies acknowledge regional variation, rigorous state-specific analyses remain scarce (NITI Aayog, 2025). This reinforces the need for localized empirical research to understand ground-level impacts more clearly.

## 2.5. Synthesis and Identification of the Research Gap

Overall, the literature provides a strong foundation for understanding GST's national-level implications for MSMEs. A consistent consensus exists regarding the initial compliance burden, the potential efficiency gains through ITC, and the importance of technological adaptation. However, a major gap persists in the lack of state-specific, quantitative evidence that evaluates whether the promised long-term efficiency gains effectively offset compliance costs for MSMEs.

Existing surveys, such as those conducted by the National Institute of Public Finance and Policy, emphasize the need for more granular, state-level analyses that move beyond qualitative perceptions to provide measurable insights (National Institute of Public Finance and Policy, 2022). In states such as Odisha, empirical evidence remains limited regarding how digital constraints, compliance burdens, and ITC realization collectively influence MSME performance. This study aims to fill that critical gap by offering a data-driven assessment of GST's impact on MSMEs in Odisha.

## 3. Objectives of the Study

1. To quantify the change in direct and indirect compliance costs incurred by MSMEs in Odisha before and after GST implementation.
2. To analyze the relationship between the systematic utilization of Input Tax Credit (ITC) and key financial performance indicators for these MSMEs.
3. To assess the impact of technology adoption on the efficiency of GST compliance for firms in Odisha.

## 4. Methodology

### 4.1. Research Design and Sample

A cross-sectional, mixed-methods research design was employed. A purposive sampling technique was used to select 120 MSMEs from four industrially significant districts in Odisha: Khordha (including Bhubaneswar), Cuttack, Sambalpur, and Berhampur. The sample was stratified based on enterprise size as per the MSME definition:

- Micro: 65 enterprises (Turnover < ₹5 Cr)
- Small: 35 enterprises (Turnover ₹5 - ₹50 Cr)
- Medium: 20 enterprises (Turnover ₹50 - ₹250 Cr)

The sectoral distribution was approximately 50% manufacturing (e.g., metal workshops, agro-processing, textiles) and 50% services (e.g., IT/ITES, hospitality, repair services).

### 4.2. Data Collection

Primary data was collected through a structured questionnaire and a data sheet covering the financial years 2016-17 (pre-GST) and 2022-23 (post-GST stabilization). The data included:

- **Compliance Costs:** Monthly expenditure on GST professionals, software, and internal staff time.
- **Financial Data:** Annual turnover, cost of inputs, profit before tax, and total ITC availed.
- **Technology & Perception:** Use of accounting software (e.g., Tally, Zoho), experience with e-invoicing, and perceived changes in market access.

Semi-structured interviews were conducted with 15 business owners to add qualitative context to the statistical findings.

### 4.3. Data Analysis

Quantitative data was analyzed using **R software**.

- **Descriptive Statistics:** Mean and standard deviation were calculated for all quantitative variables.
- **Paired Samples t-test:** Used to compare the mean monthly compliance costs pre- and post-GST.
- **Multiple Regression Analysis:** Employed to model the relationship between ITC utilization (independent variable) and profit margin (dependent variable), controlling for firm size and sector.
- **Chi-square Test of Independence:** Used to determine if there was a significant association between the adoption of accounting software and a reduction in compliance time post-e-invoicing.

## 5. Analysis and Findings

### 5.1. Analysis of Compliance Costs (Paired Samples t-test)

- **Objective 1:** To quantify the change in direct and indirect compliance costs incurred by MSMEs in Odisha before and after GST implementation.
- **Hypothesis 1:**
  - **H<sub>0</sub>:** There is no significant difference in the average monthly compliance costs for MSMEs in Odisha before and after GST implementation. ( $\mu_{\text{pre-GST}} = \mu_{\text{post-GST}}$ )
  - **H<sub>1</sub>:** There is a significant increase in the average monthly compliance costs for MSMEs in Odisha after GST implementation. ( $\mu_{\text{post-GST}} > \mu_{\text{pre-GST}}$ )
  - **Statistical Test:** One-tailed Paired Samples t-test.

**Table 1: Paired Samples t-test for Compliance Costs (in INR '000 per month) for Odisha MSMEs**

Enterprise Size	N	Pre-GST Mean (SD)	Post-GST Mean (SD)	Mean Difference	t-statistic	p-value
Micro	65	4.8 (1.0)	12.5 (2.8)	7.7	19.12	<0.001
Small	35	17.2 (3.0)	36.8 (7.2)	19.6	14.85	<0.001
Medium	20	42.1 (7.9)	68.3 (12.5)	26.2	8.91	<0.001
<b>Total</b>	120	18.1(15.8)	35.2 (24.1)	17.1	13.45	<0.001

**Finding 1:** The analysis revealed a statistically significant increase in monthly compliance costs across all enterprise sizes, with Micro-enterprises bearing the highest relative burden—a 160% increase. The mean cost jumped from ₹4,800 to ₹12,500 per month. Qualitatively, owners cited the cost of hiring GST professionals and the time invested in navigating the GST portal as primary drivers. This was not just a one-time transition cost but an ongoing operational overhead.

#### Implications:

1. **Threat to Informal-to-Formal Transition:** The regressive nature of this cost (disproportionately affecting the smallest firms) creates a perverse incentive for micro-enterprises to remain informal or limit their growth to stay below the GST registration threshold. This undermines a key goal of GST: broadening the tax base.
2. **Erosion of Competitive Capacity:** The additional ₹7,700 per month for a micro-enterprise is capital that could have been invested in machinery, raw material, or marketing. This compliance cost directly erodes their ability to compete on price and invest in growth, potentially cementing their position at the bottom of the value chain.
3. **Regional Developmental Concern:** For a state like Odisha, which is actively promoting grassroots entrepreneurship and rural enterprise, this "compliance tax" can stifle the very industrial development it seeks to foster. The high cost may deter new entrants and marginalize existing tiny businesses, contrary to the state's economic objectives.

### 5.2. Analysis of ITC and Profitability (Multiple Regression Analysis)

- **Objective 2:** To analyze the relationship between the systematic utilization of Input Tax Credit (ITC) and key financial performance indicators.
- **Hypothesis 2:**
  - **H<sub>0</sub>:** There is no significant relationship between the utilization of Input Tax Credit (ITC) and the profit margin of MSMEs in Odisha, after controlling for firm size and sector. ( $\beta_{\text{ITC}} = 0$ )
  - **H<sub>1</sub>:** There is a significant positive relationship between the utilization of Input Tax Credit (ITC) and the profit margin of MSMEs in Odisha, after controlling for firm size and sector. ( $\beta_{\text{ITC}} > 0$ )
  - **Statistical Test:** A multiple regression was performed to predict profit margin based on ITC as a percentage of total turnover, controlling for firm size and sector.

**Table 2: Multiple Regression Coefficients for Profit Margin (Odisha Sample)**

Predictor Variable	B	SE B	$\beta$	t	p-value
(Constant)	4.85	0.91		5.33	<0.001
ITC (% of Turnover)	0.61	0.05	0.75	12.20	<0.001
Firm Size (Small)	1.12	0.48	0.13	2.33	0.021
Firm Size (Medium)	2.25	0.61	0.21	3.69	<0.001
Sector (Manufacturing)	0.38	0.41	0.05	0.93	0.355

**Finding 2:** The analysis reveals a strong, statistically significant positive relationship between ITC utilization and profit margin ( $\beta = 0.75$ ,  $p < 0.001$ ). For Odisha's MSMEs, a 1% increase in ITC as a proportion of turnover leads to a 0.61% increase in profit margin. This relationship held strong even after controlling for firm size and sector. In practical terms, a micro-enterprise with a turnover of ₹40 lakh that strategically avails ITC can see a margin improvement of several percentage points, which is substantial for their bottom line.

#### Implications:

- 1. Creation of a Two-Tier MSME Ecosystem:** This finding highlights the emergence of a bifurcated sector. On one tier are the "GST-Enabled" MSMEs—those who have absorbed the compliance costs and mastered the system to unlock the ITC dividend. They are becoming more profitable and competitive. On the other tier are the "GST-Burdened" MSMEs, for whom compliance remains a net cost. This divide risks widening the gap between more and less sophisticated firms.
- 2. Strategic Imperative for Business Advisory:** The strong correlation makes a compelling case for business advisors and the MSME Directorate to shift their narrative. The focus should not just be on "complying with the law" but on "leveraging GST for profitability." Training programs must pivot to practical ITC optimization, showing owners how to turn compliance from a cost center into a profit center.
- 3. Validation of GST's Core Economic Principle:** This finding serves as a robust, empirical validation of the core value proposition of a VAT-like system. For policymakers, it confirms that the economic mechanism of GST is functioning as intended for those within the system, strengthening the argument for continuing on the path of reform and formalization.

#### 5.3. Analysis of Technology Adoption and Compliance Efficiency (Chi-square Test)

- **Objective 3:** To assess the impact of technology adoption on the efficiency of GST compliance.
- **Hypothesis 3:**
  - **H<sub>0</sub>:** There is no association between the adoption of accounting software by MSMEs in Odisha and a perceived reduction in compliance time after the implementation of e-invoicing.
  - **H<sub>1</sub>:** There is a significant association between the adoption of accounting software by MSMEs in Odisha and a perceived reduction in compliance time after the implementation of e-invoicing.
- **Statistical Test:** A Chi-square test was conducted to see if firms in Odisha that adopted accounting software were more likely to report a "significant reduction in compliance time" after implementing e-invoicing.

**Table 3: Chi-square Test for Technology Adoption and Compliance Efficiency in Odisha**

	Reduced Compliance Time	No Reduction in Time	Total
Uses Accounting Software	58	22	80
No Specialized Software	18	22	40
<b>Total</b>	76	44	120

$$\chi^2 (1, N = 120) = 12.4, p < 0.001$$

**Finding 3:**

The Chi-square test confirmed a significant association ( $\chi^2 = 12.4, p < 0.001$ ) between the use of accounting software and a reduction in compliance time post-e-invoicing. However, the low adoption rate (only 66% of the sample used dedicated software) was a critical contextual factor. Qualitatively, firms without software reported higher stress, more errors, and a feeling of being left behind.

**Implications:**

- 1. Automation is Key to Managing Compliance Burden:** The implication is that technology is not just an enabler but a necessary tool for survival in the GST era. Firms that automate data entry and return filing through software can mitigate the high compliance costs identified in Finding 1. This turns the initial fixed cost of software into a long-term solution for reducing variable compliance costs.
- 2. A Critical Policy Intervention Point:** The 34% of firms not using software represent a vulnerable segment. This digital divide is not just about connectivity but also about affordability, literacy, and awareness. It presents a clear and actionable target for state policy: bridging this gap is essential for ensuring that the benefits of GST are not confined to a technologically-advanced minority.
- 3. Future-Proofing for Next-Generation Reforms:** As GST evolves with more advanced analytics, artificial intelligence, and data-driven compliance, firms without a digital foundation will be increasingly marginalized. The inability to use basic software today implies an inability to interface with more sophisticated government systems tomorrow, potentially leading to their eventual exclusion from formal value chains.

**6. Suggestions**

The findings for Odisha underscore a critical juncture. The high compliance cost increase, especially for micro-enterprises, risks excluding the most vulnerable firms from the formal economy's benefits. Yet, the strong link between ITC and profitability presents a clear pathway for growth for those who can comply.

The following data-driven suggestions are tailored for Odisha's context:

- Odisha-Specific Compliance Handholding:** The State Government, in partnership with Odisha's Universities and Industry Associations, should launch "GST Sahayata Kendras" across all districts. These centers would offer free, basic GST filing assistance and digital literacy workshops, specifically targeting micro-enterprises and rural entrepreneurs.
- Subsidized Technology Packages:** The State's MSME Directorate should negotiate with software providers to offer heavily subsidized annual licenses for simplified accounting and e-invoicing software tailored to Odia language users, addressing the adoption gap identified in the Chi-square test.
- Cluster-Based ITC Optimization Drives:** Using the regression results, the government should identify specific MSME clusters (e.g., brass handicrafts in Sambalpur, textile clusters in Berhampur) and run targeted campaigns to educate owners on maximizing ITC claims for their specific input chains.
- Leverage GST Data for Credit Linkage:** The Odisha State Financial Corporation (OSFC) should pioneer a program where a consistent GST filing history (e.g., 2+ years) serves as a primary criterion for streamlined, collateral-free loans, directly transforming compliance into a financial asset.

**7. Conclusion**

This study provides the first empirical evidence that the impact of GST on Odisha's MSMEs is statistically significant and characterized by a tension between cost and opportunity. The state's policy challenge is to manage this transition equitably. The next generation of GST reforms, both at the national and state level, must be sensitive to regional disparities. For Odisha, this means prioritizing digital

inclusion, de-mystifying compliance through robust handholding, and proactively creating bridges between formalization (proven by GST data) and access to finance. By implementing targeted, data-informed policies, Odisha can ensure that its MSME sector not only adapts to the national tax regime but leverages it as a springboard for sustainable and inclusive regional development.

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