Impact of GST Revenue on Government Revenue in India: A Statistical Analysis

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Abstract: The Goods and Services Tax (GST), introduced in India on 1 July 2017, has emerged as an important source of government revenue. The present study examines the impact of GST Revenue on Government Revenue in India using secondary data for the period 2017–18 to 2025–26, collected from the Ministry of Finance, Government of India, and Receipt Budget publications. GST Revenue is considered the independent variable and Government Revenue the dependent variable. Descriptive statistics, Pearson correlation, and simple linear regression were employed for analysis. The results reveal a very strong positive correlation (r = 0.9809) between GST Revenue and Government Revenue. The regression analysis shows an R^2 value of 0.9622, indicating that 96.22% of the variation in Government Revenue is explained by GST Revenue. The regression coefficient is positive and statistically significant ($p = 0.00000311 < 0.05$). Therefore, the null hypothesis is rejected, indicating that GST Revenue has a statistically significant positive impact on Government Revenue in India. The study highlights the importance of effective GST administration and improved compliance for strengthening government revenue mobilisation.

Keywords: *GST Revenue, Government Revenue, Tax Revenue, Revenue Mobilisation, GST, India, Regression Analysis, Taxation.*

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I. INTRODUCTION

The Goods and Services Tax (GST) is one of the major tax reforms introduced in India with the objective of creating a unified and simplified indirect tax system. GST was implemented on 1 July 2017, replacing several central and state indirect taxes. The reform aimed to improve tax compliance, reduce tax cascading, widen the tax base, and strengthen the revenue collection mechanism. Since its implementation, GST has become an important component of India's tax revenue system.

GST Revenue has shown considerable changes and growth over the years, reflecting the expansion of economic activity, improvement in tax compliance, digitalisation of tax administration, and various policy measures. The increasing importance of GST makes it necessary to examine its contribution to overall Government Revenue. A systematic assessment of GST Revenue and Government Revenue can provide useful insights into the effectiveness of GST as a revenue mobilisation mechanism.

The present study, titled "Impact of GST Revenue on Government Revenue in India: A Statistical Analysis," analyses the relationship between GST Revenue and Government Revenue using secondary data for the period 2017–18 to 2025–26. The study considers GST Revenue as the independent variable and Government Revenue as the dependent variable. Descriptive statistics, Pearson correlation, and simple linear regression are employed to analyse the data and determine whether GST Revenue has a statistically significant impact on Government Revenue in India. The findings of the study are expected to provide useful insights for policymakers, researchers, and academicians in understanding the role of GST in India's public revenue system.

➢ *Objectives of the Study*

- To examine the trend of GST Revenue in India during the study period.
- To analyse the relationship between GST Revenue and Government Revenue in India.
- To examine the impact of GST Revenue on Government Revenue in India.

II. RESEARCH METHODOLOGY

The present study is based on secondary data to examine the impact of GST Revenue on Government Revenue in

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India. The study covers the period from 2017–18 to 2025–26. The required data on GST Revenue and Government Revenue were collected from authentic official sources, particularly the Ministry of Finance, Government of India, Receipt Budget and related government publications. GST Revenue is considered the independent variable, whereas Government Revenue is considered the dependent variable. The collected data were systematically organised and presented in tabular form for analysis.

The data were analysed using descriptive statistics such as mean and standard deviation, Pearson correlation analysis, and simple linear regression analysis. Descriptive statistics were used to understand the characteristics and variation of the variables, while correlation analysis was used to examine the strength and direction of the relationship between GST Revenue and Government Revenue. Simple linear regression was employed to examine the impact of GST Revenue on Government Revenue. The hypothesis was tested at a 5% level of significance, and the decision regarding the null hypothesis was based on the p-value obtained from the regression analysis. The findings are presented through tables with suitable interpretations and conclusions.

III. REVIEW OF LITERATURE

Paliwal, Saxena and Pandey (2019) analysed the impact of GST on tax revenue in India using the tax buoyancy approach. The study employed a semi-logarithmic ANCOVA regression model with VAT and GST as dummy variables. The findings indicated that after the introduction of GST, tax revenue became less responsive to changes in GDP, suggesting changes in the tax burden and revenue responsiveness following the GST reform. The study also highlighted the importance of GST-related revenue analysis for future tax policy and revenue generation.

Mukherjee (2020) examined inter-governmental fiscal transfers in the context of revenue uncertainty associated with GST in India. The study noted that GST was introduced as a dual VAT system involving both Union and State governments and assessed the implications of GST revenue mobilisation for inter-governmental finances. The study observed that revenue mobilisation from GST was initially not encouraging and emphasised the importance of stable GST revenue for sustainable public finance management.

Dey (2021) examined the impact of GST on indirect tax revenue in India, with special reference to Odisha. The study was based on published secondary data and analysed GST revenue collection from July 2017 to March 2021. The study assessed changes in indirect tax revenue following the implementation of GST and highlighted the importance of GST as a major tax reform for improving transparency and revenue collection.

Singhal, Goyal, Sharma, Kumar and Nagar et al. (2022) examined whether GST influences economic development in India. The study considered GST in relation to tax compliance, expansion of the taxpayer base, reduction in tax evasion and government revenue generation. The study highlighted that GST was introduced not only to simplify indirect taxation but also to improve compliance and increase government revenue.

Garg, Priyanka, Narwal and Kumar (2022) examined the implications of GST on the revenue efficiency of sub-national governments in India. The study used state-level VAT/GST revenue data for the period 2012–13 to 2020–21 and employed a panel regression approach. The findings indicated that GST implementation had a negative impact on the revenue efficiency of Indian states during the period considered, highlighting differences between the objectives of GST and actual revenue performance at the state level.

Haldankar and Patkar (2024) examined regional dynamics and state-level performance of GST revenue in India using secondary data from all 28 states and 8 Union Territories. The study employed graphical analysis, descriptive statistics, and the Kruskal-Wallis test to examine differences in GST revenue performance across regions. The study highlighted significant regional variations in GST revenue generation and the importance of analysing GST performance across different geographical regions.

Mukherjee (2025) examined the contribution of taxes on commodities and services to India's general government tax collection. The study found that taxes on commodities and services constituted a substantial share of total tax collection, while a significant portion of such tax revenue continued to be collected outside the GST system. The findings suggested that expanding the coverage of the GST system could potentially strengthen revenue mobilisation.

- *Research Gap*

Existing studies on GST in India have mainly focused on tax revenue performance, tax buoyancy, GST revenue mobilisation, and state-level revenue efficiency. However, comparatively limited attention has been given to examining the statistical relationship and impact of GST Revenue on overall Government Revenue at the national level using recent data. Therefore, the present study attempts to address this gap by analysing the relationship and impact of GST Revenue on Government Revenue in India during the period 2017–18 to 2025–26 using descriptive statistics, Pearson correlation and simple linear regression analysis.

IV. DATA ANALYSIS AND INTERPRETATION

The study examines the impact of GST Revenue on Government Revenue in India using secondary data for the period from 2017–18 to 2025–26. GST Revenue is considered the independent variable, while Government Revenue is considered the dependent variable. The data were collected from official government sources, particularly the Ministry of Finance, Government of India, Receipt Budget. Descriptive statistics, Pearson correlation, and simple linear regression analysis were used to analyse the data.

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Table 1 GST Revenue and Government Revenue in India

Financial Year	GST Revenue (₹ Crore)	Government Revenue (₹ Crore)
2017-18	4,42,561	14,35,233
2018-19	5,81,559	15,52,916
2019-20	5,98,749	16,84,059
2020-21	5,48,777	16,33,919
2021-22	6,98,114	21,69,906
2022-23	8,49,132	23,83,207
2023-24	9,57,208	27,29,036
2024-25	10,27,041	30,36,619
2025-26	**10,46,480**	**33,42,323**

Source: Government of India, Ministry of Finance, Receipt Budget 2026–27.

- Note: The figures for 2025–26 are Revised Estimates (RE).
- Interpretation: The table presents the secondary data on GST Revenue and Government Revenue for the period 2017–18 to 2025–26. GST Revenue shows an overall increasing trend during the study period, while Government Revenue also increased over the same period, except for a temporary decline in 2020–21. The data provide the basis for further statistical analysis of the relationship and impact of GST Revenue on Government Revenue.

➢ *Descriptive Statistics*

Table 2 Descriptive Statistics

Variable	N	Mean (₹ Crore)	Standard Deviation (₹ Crore)
GST Revenue	**9**	7,49,957.89	2,25,378.91
Government Revenue	**9**	22,18,579.78	6,98,776.16

- Interpretation: The average GST Revenue during the study period was ₹7,49,957.89 crore, while the average Government Revenue was ₹22,18,579.78 crore. The standard deviation values indicate variation in GST Revenue and Government Revenue during the study period.

➢ *Correlation Analysis*

Table 3 Correlation Between GST Revenue and Government Revenue

Variables	GST Revenue	Government Revenue
GST Revenue	1.000	0.9809
Government Revenue	0.9809	1.000

- Interpretation: The Pearson correlation coefficient between GST Revenue and Government Revenue is 0.9809, indicating a very strong positive relationship between GST Revenue and Government Revenue during the study period.

➢ *Regression Analysis*

Simple linear regression analysis was conducted to examine the impact of GST Revenue on Government Revenue in India.

Table 4 Regression Model Summary

Multiple R	R Square	Adjusted R Square	Observations
0.9809	0.9622	0.9568	9

- Interpretation: The R Square value of 0.9622 indicates that approximately 96.22% of the variation in Government Revenue is explained by GST Revenue in the regression model.

Table 5 ANOVA Results

Model	F-value	Significance F
Regression	178.1139	0.00000311

Table 6 Regression Coefficients

Variable	Coefficient	t-value	p-value
GST Revenue	3.041265	13.34593	0.00000311

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- Interpretation: The regression coefficient of GST Revenue is 3.041265, indicating a positive relationship between GST Revenue and Government Revenue. The p-value of 0.00000311 is less than the 0.05 level of significance, indicating that the effect is statistically significant.

➢ *Hypothesis Testing and Interpretation*

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

The hypothesis was tested using simple linear regression analysis at a 5% level of significance ($\alpha = 0.05$). The regression results show a t-value of 13.34593 and a p-value of 0.00000311 for GST Revenue. Since the p-value is less than the significance level of 0.05, the null hypothesis is rejected.

➢ *Decision Rule:*

- If p-value < 0.05 → Reject H_0.
- If p-value > 0.05 → Do not reject H_0.

➢ *In the Present Study:*

- p-value = 0.00000311 < 0.05
- Therefore, H_0 is rejected and H_1 is accepted.

- Hypothesis Result: The analysis provides statistically significant evidence that GST Revenue has a significant positive impact on Government Revenue in India during the study period.

The positive regression coefficient of 3.041265 further indicates that the relationship between GST Revenue and Government Revenue is positive. The R^2 value of 0.9622 indicates that approximately 96.22% of the variation in Government Revenue is explained by GST Revenue in the regression model.

- Final Conclusion: The study concludes that GST Revenue has a statistically significant and positive impact on Government Revenue in India during the period 2017–18 to 2025–26. Hence, the null hypothesis is rejected.

V. FINDINGS OF THE STUDY

- The study found that GST Revenue showed an overall increasing trend during the period from 2017–18 to 2025–26, indicating the growing importance of GST in India's revenue mobilisation.
- The average GST Revenue during the study period was ₹7,49,957.89 crore, while the average Government Revenue was ₹22,18,579.78 crore.
- The Pearson correlation coefficient between GST Revenue and Government Revenue was 0.9809, indicating a very strong positive relationship between the two variables.
- The regression analysis produced an R-squared value of 0.9622, indicating that approximately 96.22% of the variation in Government Revenue is explained by GST Revenue in the regression model.
- The regression coefficient of GST Revenue was 3.041265, indicating a positive relationship between GST Revenue and Government Revenue.
- The regression model was statistically significant, with an F-value of 178.1139 and a p-value of 0.00000311, which is below the 0.05 significance level.
- The hypothesis testing result showed that the null hypothesis was rejected, confirming that GST Revenue has a statistically significant positive impact on Government Revenue in India during the study period.

VI. SUGGESTIONS

- The government should continue to strengthen GST compliance and tax administration to sustain the growth of GST Revenue.
- Greater use of digital technologies, data analytics, and artificial intelligence can help identify tax evasion, improve compliance, and increase revenue collection.
- Simplification of GST procedures and timely resolution of taxpayer issues should be continued to encourage voluntary compliance among businesses.
- The government should focus on broadening the GST tax base by bringing eligible businesses and economic activities into the formal tax system.
- Regular monitoring of GST Revenue trends and their contribution to Government Revenue should be undertaken to support effective fiscal planning and revenue management.
- Greater attention should be given to small businesses and taxpayers through awareness programmes, simplified procedures and appropriate support mechanisms to improve GST compliance.

VII. LIMITATIONS OF THE STUDY

- The study is based entirely on secondary data collected from official government sources.
- The study covers a limited period from 2017–18 to 2025–26.
- The 2025–26 figures are Revised Estimates (RE) and may differ from the final actual figures.
- The analysis is based on only nine annual observations, which may limit the generalisation of the findings.
- The study considers mainly GST Revenue and Government Revenue and does not include other economic and fiscal factors that may influence government revenue.

VIII. CONCLUSION

The present study examined the impact of GST Revenue on Government Revenue in India using secondary data for the period from 2017–18 to 2025–26. The analysis indicates that GST Revenue has shown an overall increasing trend during the study period, highlighting its growing

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importance in India's revenue mobilisation. The descriptive analysis also shows considerable variation in both GST Revenue and Government Revenue over the study period.

The Pearson correlation analysis revealed a very strong positive relationship between GST Revenue and Government Revenue, with a correlation coefficient of 0.9809. The regression analysis further confirmed the statistical significance of this relationship, with an R-Squared value of 0.9622. The regression model was statistically significant, with a p-value of 0.00000311, which is lower than the 0.05 level of significance. Therefore, the null hypothesis that GST Revenue has no significant impact on Government Revenue was rejected.

The findings indicate that GST has emerged as an important contributor to India's government revenue system. Continued improvement in tax compliance, digitalisation, widening of the tax base and efficient GST administration can further strengthen revenue mobilisation. Overall, the study concludes that GST Revenue has a statistically significant and positive impact on Government Revenue in India, highlighting the important role of GST in strengthening the country's fiscal and revenue framework.

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