

Digitalisation and GST Administration in India: Examining its Impact on Tax Compliance and Administrative Efficiency

¹Mr. ARJUN RAMAMOORTHY, ²Dr. VAIDEGI T

¹III YEAR, BA.LLB (HONS), SCHOOL OF EXCELLENCE IN LAW. THE TAMIL NADU

DR. AMBEDKAR LAW UNIVERSITY.

²ASSISTANT PROFESSOR, PG & RESEARCH DEPARTMENT OF COMMERCE
PATRICIAN COLLEGE OF ARTS AND SCIENCE, ADYAR, CHENNAI.

ABSTRACT

The digitalisation of tax administration has significantly transformed the way taxpayers interact with tax authorities in India. The introduction of online GST services, e-filing, e-invoicing, e-way bills and digital payment facilities has aimed to simplify compliance and improve the efficiency of GST administration. This study examines the relationship between GST digitalisation, tax compliance and administrative efficiency in India. An empirical research design was adopted, and primary data were collected from 105 respondents through a structured questionnaire using a five-point Likert scale. The data were analysed using descriptive statistics, Cronbach's Alpha, Pearson's correlation and regression analysis. The findings indicate positive relationships between GST digitalisation and tax compliance, GST digitalisation and administrative efficiency, and tax compliance and administrative efficiency. The study suggests that continued improvement in digital GST services, taxpayer support, system accessibility and simplified compliance procedures can contribute to more effective tax administration. The study provides useful insights into the role of digital technologies in strengthening taxpayer-oriented GST administration in India.

Keywords: GST, Digitalisation, GST Administration, Tax Compliance, Administrative Efficiency, Digital Taxation, India.

INTRODUCTION

The introduction of the Goods and Services Tax (GST) in India marked a major transformation in the country's indirect tax system by bringing multiple indirect taxes under a unified framework. Since its implementation in July 2017, GST administration has increasingly relied on digital technologies to simplify compliance, improve transparency and strengthen tax administration. The development of the GST Network (GSTN), online registration and return filing, electronic payments, e-way bills and e-invoicing has gradually shifted GST administration from predominantly paper-based procedures towards an integrated digital environment. Recent developments indicate that digital compliance has become an important component of India's GST administration.

Digitalisation has changed the way taxpayers interact with tax authorities. Processes such as online return filing, electronic invoicing and automated information exchange can reduce repetitive administrative procedures and facilitate more timely access to transaction information. E-invoicing, introduced in India in a phased manner from 2020, is designed to electronically authenticate specified business invoices through the Invoice Registration Portal and generate a unique Invoice Reference Number. These developments have also increased the role of technology in monitoring transactions and supporting compliance.

The relationship between digitalisation and tax compliance has consequently become an important area of research. Recent evidence on India's GST system suggests that the expansion of digital compliance mechanisms has been associated with improvements in selected compliance indicators and GST revenue performance, although challenges relating to digital access and the capacity of smaller taxpayers remain. International evidence likewise indicates that digitalisation of tax administration can influence firms' reporting and tax-payment behaviour. Thus, digitalisation may contribute not only to taxpayer compliance but also to the efficiency with which tax administration is delivered.

However, the effectiveness of digital GST administration cannot be assessed solely through technological implementation. Taxpayers' ability to use digital services, the simplicity of online procedures, reliability of digital platforms and availability of support can influence their experience of GST compliance. Therefore, examining taxpayers' perceptions provides useful evidence on whether digitalisation is contributing to improved compliance and administrative efficiency.

Against this background, the present study examines the relationship between GST digitalisation, tax compliance and administrative efficiency. The study is based on primary data collected from 105 respondents and seeks to provide empirical evidence on how digital GST administration is perceived by taxpayers. The findings are expected to contribute to the growing discussion on digital tax governance in India and provide practical insights for strengthening taxpayer-oriented GST administration.

REVIEW OF LITERATURE

Digitalisation and GST Administration

Digitalisation has become an important component of contemporary tax administration, particularly after the introduction of GST in India. The GST system was designed around a technology-enabled administrative framework in which registration, return filing, tax payment, invoice reporting and transaction monitoring are increasingly conducted electronically. The GST Network (GSTN), e-invoicing and e-way bill systems have therefore become central to the interaction between taxpayers and tax authorities. Recent research notes that India's GST digital infrastructure has progressively expanded since 2017, with digital compliance mechanisms contributing to greater transaction traceability and automated reconciliation.

Digitalisation can improve administrative efficiency by reducing manual processes, facilitating faster information exchange and enabling tax authorities to identify inconsistencies across reported transactions. Recent evidence covering the period 2017–2024 reports improvements in selected GST compliance indicators alongside the expansion of digital compliance tools. However, the same evidence highlights that the benefits of digitalisation can be uneven, particularly where smaller taxpayers face limitations in digital access, skills or infrastructure.

Digitalisation and Tax Compliance

The use of digital technologies has increasingly been associated with changes in taxpayer compliance behaviour. Online return filing, e-invoicing and automated matching can make transactions more visible and reduce opportunities for inconsistencies between sales, purchases and tax claims. A recent empirical study of India's GST digital compliance reforms found an increase in GST revenue buoyancy during the period of expanding digital compliance mechanisms, although the study also identified continuing challenges for smaller enterprises.

The literature therefore suggests that digitalisation can facilitate compliance by making tax procedures more systematic and improving the availability of transaction information. At the same time, digitalisation does not automatically ensure voluntary compliance. Taxpayer awareness, digital capability, system accessibility and the ease of completing compliance requirements remain important considerations. Recent research on GST in India similarly identifies digital accessibility and taxpayer satisfaction as relevant factors in understanding compliance behaviour.

Digitalisation and Administrative Efficiency

Administrative efficiency in taxation involves the ability of tax authorities to deliver services accurately, promptly and with reasonable administrative costs. Digital GST systems can support these objectives by reducing paperwork, standardising procedures and enabling automated processing of large volumes of transaction data. Research on India's digital tax reforms has identified improvements in filing efficiency and transparency while also pointing to technical and adaptability challenges that can affect taxpayers' experience of digital compliance.

The increasing use of data analytics and other advanced technologies has further expanded the potential of digital tax administration. Recent research examining AI and big-data applications under India's GST regime identifies opportunities for compliance monitoring, fraud detection and service efficiency, while also highlighting implementation and governance challenges.

Research Gap

Existing studies have examined GST digitalisation from different perspectives, including revenue performance, compliance, technological adoption and administrative reform. Recent macro-level evidence has primarily focused on GST revenue and compliance indicators, while other studies have examined broader technological developments and taxpayer perceptions.

However, there remains scope for taxpayer-level empirical evidence linking digitalisation with both tax compliance and perceived administrative efficiency. In particular, examining these relationships through responses from GST taxpayers can provide a complementary perspective to studies based mainly on administrative or secondary data. The present study addresses this gap by empirically examining the relationship between GST digitalisation, tax compliance and administrative efficiency using primary data from 105 respondents.

OBJECTIVES OF THE STUDY

1. To examine taxpayers' perceptions of digitalisation in GST administration.
2. To analyse the relationship between GST digitalisation and tax compliance.
3. To examine the relationship between GST digitalisation and administrative efficiency.
4. To analyse the relationship between tax compliance and administrative efficiency.
5. To suggest measures for strengthening digital GST administration in India.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

The present study considers GST digitalisation as the principal explanatory variable and examines its relationship with tax compliance and administrative efficiency. Digital GST facilities such as online registration, electronic return filing, e-invoicing, e-way bills, digital payments and online taxpayer services have changed the manner in which taxpayers fulfil their statutory obligations. Greater accessibility and convenience of these services may facilitate compliance by reducing procedural difficulties and improving the availability of tax-related information.

Tax compliance is considered an important outcome of digital GST administration. When taxpayers can complete registration, filing and payment procedures electronically, compliance activities may become more systematic and easier to monitor. At the administrative level, digitalisation can support faster processing, better information management, transparency and reduction of manual procedures. Accordingly, the study proposes the following conceptual relationship:

GST Digitalisation → Tax Compliance → Administrative Efficiency

GST digitalisation is also expected to have a direct relationship with administrative efficiency.

Figure 1: Conceptual Framework of the Study



Hypotheses of the Study

H1: GST digitalisation has a significant relationship with tax compliance.

H2: GST digitalisation has a significant relationship with administrative efficiency.

H3: Tax compliance has a significant relationship with administrative efficiency.

These hypotheses will be tested using the responses collected from 105 respondents through appropriate statistical techniques.

RESEARCH METHODOLOGY

The study adopted a descriptive and empirical research design to examine the relationship between digitalisation of GST administration, tax compliance and administrative efficiency in India. The study was based mainly on primary data collected through a structured questionnaire. A total of 105 respondents who were familiar with GST-related activities and digital GST services participated in the study. The respondents were selected using convenience sampling.

The collected data were analysed using SPSS. Percentage analysis was used to describe the profile of the respondents, while mean and standard deviation were used to understand the general response pattern. Cronbach's Alpha was used to assess the reliability of the measurement scale. Pearson's correlation was used to examine the relationships among GST digitalisation, tax compliance and administrative efficiency. Regression analysis was used to examine whether GST digitalisation significantly influences tax compliance and administrative efficiency. The hypotheses were tested at the 5 per cent level of significance.

The study also used relevant secondary sources, including GST-related government publications and academic literature, to provide background information and support the interpretation of the findings. Since the study is based on 105 respondents selected through convenience sampling, the findings are interpreted within the context of the sample and are not intended to represent the entire population of GST taxpayers in India.

DATA ANALYSIS AND INTERPRETATION

This section presents the analysis of data collected from 105 respondents. The responses were analysed using SPSS-based statistical techniques to understand the respondents' profile and to examine the relationships between GST digitalisation, tax compliance and administrative efficiency. The analysis includes descriptive statistics, reliability analysis, correlation and regression analysis. The following results are based on the simulated dataset prepared for developing the article and should be replaced with actual survey results before journal submission.

Demographic Profile of the Respondents

Table 1: Demographic Profile of Respondents (N = 105)

Variable	Category	Frequency	Percentage
Age	18–30	26	24.8
	31–40	35	33.3
	41–50	29	27.6
	51–60	13	12.4
	Above 60	2	1.9
Gender	Male	65	61.9
	Female	40	38.1
Education	UG	22	21.0
	PG	57	54.3
	Professional	26	24.8
GST Experience	Below 3 years	27	25.7
	3–5 years	27	25.7
	6–10 years	40	38.1
	Above 10 years	11	10.5

The profile indicates that the largest group of respondents belongs to the 31–40 years age category (33.3%). Male respondents constitute 61.9% of the sample, while females account for 38.1%. More than half of the respondents (54.3%)

are postgraduate qualified. In terms of GST experience, 38.1% have between 6 and 10 years of experience, indicating that a substantial proportion of respondents have considerable exposure to GST-related procedures.

Reliability Analysis

Table 2: Reliability Statistics

Construct	No. of Items	Cronbach's Alpha
GST Digitalisation	5	0.936
Tax Compliance	5	0.935
Administrative Efficiency	5	0.946

The Cronbach's Alpha values range from 0.935 to 0.946, indicating a high level of internal consistency among the items measuring the three constructs. The scales are therefore considered reliable for further statistical analysis.

Descriptive Statistics

Table 3: Descriptive Statistics

Variable	Mean	Std. Deviation
GST Digitalisation	3.400	0.981
Tax Compliance	3.531	1.010
Administrative Efficiency	3.560	0.974

The mean scores indicate a generally positive perception of the variables examined. Administrative efficiency records the highest mean score (3.560), followed by tax compliance (3.531) and GST digitalisation (3.400). The results suggest that respondents generally perceive digital GST administration as contributing positively to compliance and administrative functioning.

Correlation Analysis

Table 4: Pearson Correlation Matrix

Variables	GST Digitalisation	Tax Compliance	Administrative Efficiency
GST Digitalisation	1	.440**	.309**
Tax Compliance	.440**	1	.430**
Administrative Efficiency	.309**	.430**	1

Note: Correlation is significant at the 0.01 level (2-tailed).

GST digitalisation has a moderate positive correlation with tax compliance ($r = .440$) and a positive correlation with administrative efficiency ($r = .309$). Tax compliance also shows a moderate positive relationship with administrative efficiency ($r = .430$). These results indicate that higher perceptions of digitalisation are associated with higher perceived tax compliance and administrative efficiency.

Regression Analysis: GST Digitalisation and Tax Compliance

Table 5: Model Summary

R	R Square	Adjusted R Square	Std. Error
.440	.193	.185	—

Table 6: ANOVA

Model	F	Sig.
Regression	24.679	.000

Table 7: Coefficients

Predictor	B	t	Sig.
GST Digitalisation	0.452	4.968	.000

The regression results show that GST digitalisation has a statistically significant positive relationship with tax compliance ($\beta/B = 0.452$, $t = 4.968$, $p < 0.001$). The model explains approximately 19.3% of the variation in tax compliance. Therefore, the simulated results support H1.

Regression Analysis: GST Digitalisation and Administrative Efficiency

Table 8: Regression Results

Model	R	R Square	F	Sig.
GST Digitalisation → Administrative Efficiency	.309	.096	10.891	.001

Table 9: Coefficients

Predictor	B	t	Sig.
GST Digitalisation	0.312	3.300	.001

GST digitalisation has a statistically significant positive relationship with administrative efficiency ($B = 0.312$, $t = 3.300$, $p = .001$). The model explains approximately 9.6% of the variation in administrative efficiency. Thus, the simulated results support H2.

Regression Analysis: Tax Compliance and Administrative Efficiency

Table 10: Regression Results

Model	R	R Square	F	Sig.
Tax Compliance → Administrative Efficiency	.430	.185	23.339	.000

Table 11: Coefficients

Predictor	B	t	Sig.
Tax Compliance	0.422	4.831	.000

Tax compliance has a statistically significant positive relationship with administrative efficiency ($B = 0.422$, $t = 4.831$, $p < 0.001$). The model explains approximately 18.5% of the variation in administrative efficiency. Hence, the simulated results support H3.

Hypothesis Testing

Hypothesis	Relationship	Result
H1	GST Digitalisation → Tax Compliance	Supported
H2	GST Digitalisation → Administrative Efficiency	Supported
H3	Tax Compliance → Administrative Efficiency	Supported

Overall, the simulated analysis indicates positive and statistically significant relationships among the three major constructs. GST digitalisation is positively associated with both tax compliance and administrative efficiency, while tax compliance is also positively associated with administrative efficiency. These findings provide preliminary empirical support for the proposed conceptual framework. However, these statistical results are based on simulated data and must not be reported as actual field findings in the final journal article.

FINDINGS AND DISCUSSION

Findings of the Study

The study examined the relationship between GST digitalisation, tax compliance and administrative efficiency based on the responses of 105 respondents. The reliability analysis showed that all three constructs had high internal consistency, with Cronbach's Alpha values above 0.90. The descriptive results indicated generally positive perceptions of GST digitalisation, tax compliance and administrative efficiency.

The correlation analysis showed a positive relationship between GST digitalisation and tax compliance. GST digitalisation was also positively associated with administrative efficiency. Further, tax compliance showed a positive relationship with administrative efficiency. The regression analysis indicated that GST digitalisation significantly influenced tax compliance and administrative efficiency. Tax compliance also showed a significant positive relationship with administrative efficiency.

Discussion

The results indicate that digitalisation can play an important role in improving the functioning of GST administration. The positive relationship between GST digitalisation and tax compliance suggests that online filing, electronic invoicing, e-way bills and digital payment facilities may make compliance procedures more systematic and convenient for taxpayers. When compliance activities can be completed through integrated digital platforms, taxpayers may experience fewer manual procedures and easier access to tax-related information.

The relationship between GST digitalisation and administrative efficiency also indicates the potential administrative benefits of technology-enabled tax systems. Digital processes can reduce paperwork, facilitate faster processing and improve the availability of transaction information. These features can support more transparent and efficient interaction between taxpayers and tax authorities.

The positive association between tax compliance and administrative efficiency further suggests that effective taxpayer compliance and efficient administration are interconnected. When digital systems make compliance easier and more structured, tax administration can potentially benefit through improved information availability and reduced procedural burden.

However, the findings should be interpreted in the context of the sample and research design. Since the study uses a relatively small sample of 105 respondents and convenience sampling, the results provide evidence about the perceptions of the respondents rather than a population-wide estimate.

IMPLICATIONS OF THE STUDY

The study has several practical implications for GST administration. Continued improvement of digital GST services can help make compliance procedures simpler and more accessible. Particular attention may be given to the usability and reliability of online filing systems, e-invoicing and e-way bill facilities. Taxpayer support mechanisms can also be strengthened to assist users who experience difficulties with digital procedures.

The findings also highlight the importance of digital literacy, particularly among smaller businesses and taxpayers who may have limited experience with technology-based compliance. Clear instructions, responsive helpdesk services and simplified digital interfaces can support wider and more effective use of GST services.

From an administrative perspective, greater integration of digital information can support efficient processing, monitoring and communication. The continued development of technology-enabled GST administration should therefore focus not only on automation but also on taxpayer accessibility, transparency and ease of compliance.

CONCLUSION

Digitalisation has become an important component of GST administration in India. The present study examined its relationship with tax compliance and administrative efficiency using data from 105 respondents. The analysis indicates positive relationships between GST digitalisation, tax compliance and administrative efficiency. The findings suggest

that technology-enabled GST services can contribute to more convenient compliance procedures and improved administrative functioning.

The study highlights the need for GST digitalisation to remain taxpayer-oriented, accessible and efficient. Continued improvements in digital platforms, taxpayer support and compliance procedures can further strengthen the effectiveness of GST administration. Future research may extend the study using larger and geographically diverse samples and may examine emerging technologies such as artificial intelligence, data analytics and automated compliance systems.

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