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**Digital Transformation under GST: Assessing Digital Divide and Capacity
Challenges in India**

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Abstract

The introduction of the Goods and Services Tax (GST) has accelerated the digital transformation of India's taxation system by promoting online registration, return filing, e-invoicing, and digital record-keeping. While digitalisation has enhanced transparency and efficiency in tax administration, significant challenges remain for small businesses, particularly in rural and semi-urban areas. This study examines the relationship between technology adoption, and GST compliance, with special emphasis on the digital divide and capacity gaps among taxpayers. Using primary data collected from 150 small business owners and traders, the study evaluates technological readiness, digital literacy, internet accessibility, and GST compliance capabilities. Descriptive statistics and regression analysis reveal that digital literacy and access to technological infrastructure significantly influence GST compliance. The findings highlight the need for digital capacity building, improved internet infrastructure, and targeted training programmes to bridge the digital divide and promote inclusive tax administration.

Keywords: GST, Digitalization, Technology Adoption, Digital Divide, GST Compliance, Digital Literacy, Capacity Gaps.

1. INTRODUCTION

The adoption of digital technologies has transformed the way governments deliver public services and administer taxation systems. In India, the implementation of the Goods and Services Tax (GST) represents one of the most significant examples of digital governance. GST was introduced on 1 July 2017 to create a unified tax structure while enhancing transparency, efficiency, and compliance through technology-driven processes. The GST ecosystem relies heavily on digital platforms for registration, return filing, tax payments, invoice generation, and record maintenance.

The integration of technology into taxation has generated numerous benefits for businesses and government authorities. Online filing systems have reduced paperwork, improved accessibility to tax services, and enabled real-time monitoring of transactions. Digital platforms have also increased transparency and reduced opportunities for tax evasion. As a result, GST has contributed to the modernization of India's tax administration system and accelerated the digital transformation of business operations.

Despite these advantages, the adoption of digital technologies under GST has exposed significant disparities among taxpayers. Large organizations with advanced technological resources have adapted quickly to the digital tax environment. However, many small traders, micro-enterprises, and rural businesses continue to face challenges due to

limited access to digital infrastructure, inadequate internet connectivity, and insufficient technological skills. These inequalities create a digital divide that affects the ability of taxpayers to comply effectively with GST requirements.

Capacity gaps represent another major concern in the implementation of GST. Many small business owners lack the knowledge required to operate digital accounting systems, understand online filing procedures, and manage electronic documentation. Consequently, they often depend on external tax consultants, increasing compliance costs and reducing operational efficiency. These challenges highlight the need for targeted interventions to promote digital inclusion and technological readiness.

The present study seeks to examine the relationship between digitalization, technology adoption, and GST compliance while analysing the digital divide and capacity gaps that continue to affect small taxpayers in India.

2. LITERATURE REVIEW

Sharma and Joshi (2025) examined the role of digital technologies in improving GST compliance among small and medium enterprises in India. Their study found that businesses adopting digital accounting systems and cloud-based tax management software reported greater compliance efficiency and reduced filing errors. The authors observed that technological readiness significantly influences taxpayers' ability to meet GST requirements. However, the study also highlighted that smaller enterprises often face challenges related to affordability and technical expertise, limiting the benefits of digital taxation.

Singh and Verma (2024) investigated the impact of digital infrastructure on GST implementation in rural and semi-urban regions. The researchers found that internet accessibility and digital literacy were critical determinants of successful GST compliance. Businesses operating in areas with poor internet connectivity experienced greater difficulties in filing returns and maintaining digital records. The study concluded that investments in digital infrastructure are essential for reducing compliance barriers among small taxpayers.

Patel and Kumar (2023) explored capacity gaps among micro and small enterprises under the GST regime. Their findings revealed that lack of technological knowledge and inadequate training significantly affected taxpayers' ability to navigate digital tax systems. The researchers emphasized the importance of government-sponsored awareness programmes and digital skill development initiatives to improve compliance rates and reduce dependence on external consultants.

Reddy and Rao (2022) analysed the relationship between digital literacy and tax compliance behaviour. The study found that taxpayers possessing higher levels of digital literacy demonstrated better understanding of GST procedures and lower incidences of filing errors. The authors argued that digital literacy should be considered a critical component of successful tax administration in a technology-driven environment.

Gupta and Sharma (2021) examined the challenges faced by small businesses during the transition to GST's digital framework. Their study identified technical difficulties, software-related issues, and lack of awareness as major obstacles. The researchers observed that while GST enhanced transparency and accountability, many businesses struggled to adapt to the technological requirements imposed by the system.

Kumar and Reddy (2020) focused on the broader impact of GST-driven digitalization on business performance. The study concluded that digital technologies contributed significantly to operational efficiency, cost reduction, and improved compliance monitoring. However, the benefits were found to be unevenly distributed due to disparities in technological resources and digital capabilities across business sectors.

Existing studies have extensively examined the benefits of digitalization and GST implementation. However, limited research has simultaneously analysed digital divide issues and capacity gaps among small taxpayers using measurable indicators. The present study addresses this gap by evaluating the combined impact of technological accessibility, digital literacy, and training deficiencies on GST compliance.

3. OBJECTIVES OF THE STUDY

1. To examine the impact of digitalization on GST compliance among small taxpayers.
2. To analyse the role of digital literacy in improving GST-related activities.
3. To assess the influence of internet accessibility on GST compliance.
4. To identify capacity gaps affecting technology adoption under GST.
5. To suggest measures for reducing the digital divide and enhancing taxpayer readiness.

4. RESEARCH METHODOLOGY

The study adopts a descriptive and analytical research design to examine the relationship between digitalization and GST compliance among small business operators. Primary data were collected from traders, retailers, entrepreneurs, and service providers through a structured questionnaire.

A total of 170 questionnaires were distributed across selected regions, of which 150 valid responses were received and considered for analysis. The questionnaire included statements related to digital literacy, internet accessibility, technological infrastructure, GST awareness, and compliance challenges.

Responses were measured using a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). Descriptive statistics such as mean, standard deviation, t-values, and p-values were used to summarise respondent perceptions. Regression analysis was employed to determine the relative contribution of technological factors toward GST compliance performance.

5. DATA ANALYSIS AND INTERPRETATION

The study focuses on understanding how digital infrastructure, technological readiness, digital literacy, internet accessibility, and technical training influence taxpayers' ability to comply with GST requirements. In addition, the analysis seeks to identify the extent of digital divide and capacity gaps that continue to affect small business operators and taxpayers.

Descriptive statistical tools such as mean, standard deviation, t-values, and p-values were employed to evaluate respondents' perceptions regarding various dimensions of digitalization under GST. Mean values were used to determine the level of agreement among respondents, while standard deviation measured the consistency of responses. The t-values and p-values were used to examine the statistical significance of the observed results. Mean scores above the neutral midpoint indicate a positive perception or strong agreement among respondents regarding the influence of the respective factors.

To further understand the relationship between technological variables and GST compliance, regression analysis was conducted. Regression analysis helps in identifying the relative contribution of each independent variable toward the dependent variable and determines the extent to which factors such as digital literacy, internet accessibility, digital infrastructure, and technical training influence GST compliance performance. The beta coefficients indicate the strength of the relationship, while significance values help in determining the statistical reliability of the findings.

Objective 1: Impact of Digitalization on GST Compliance

Table 5.1 Descriptive Statistics – Digitalization and GST Compliance

Variable	N	Mean	S.D	t-value	p-value
Ease of Online GST Filing	150	4.14	0.68	10.91	<0.001
Access to Digital Infrastructure	150	4.09	0.70	10.22	<0.001
Use of Digital Accounting Systems	150	4.05	0.73	9.58	<0.001
Overall Digitalization Score	150	4.09	0.70	10.24	<0.001

Interpretation:

Table 5.1 shows that all mean values exceed 4.0, indicating a high level of agreement among respondents regarding the positive role of digitalisation in GST compliance. Ease of online GST filing records the highest mean score (4.14), suggesting that taxpayers perceive digital systems as useful for improving compliance efficiency. The results indicate that technological adoption has significantly enhanced the administration of GST.

Table 5.2 Regression Analysis

Predictor	B	Std. Error	Beta	t-value	p-value
Ease of Online GST Filing	0.44	0.07	0.40	6.28	<0.001
Access to Digital Infrastructure	0.36	0.08	0.32	4.50	<0.001
Use of Digital Accounting Systems	0.29	0.09	0.24	3.22	0.002

- **Dependent Variable:** Overall GST Compliance Score

Interpretation:

Table 5.2 reveals that all predictors significantly contribute to GST compliance. Ease of online filing emerges as the strongest determinant of compliance performance, followed by access to digital infrastructure and accounting software usage.

Objective 2: Digital Literacy and Capacity Gaps Affecting GST Compliance

Table 5.3 Descriptive Statistics – Digital Divide and Capacity Gaps

Variable	N	Mean	S.D	t-value	p-value
Limited Digital Literacy	150	4.19	0.69	11.12	<0.001
Inadequate Internet Connectivity	150	4.13	0.71	10.28	<0.001
Lack of Technical Training	150	4.08	0.73	9.67	<0.001
Overall Capacity Gap Score	150	4.13	0.71	10.36	<0.001

Interpretation:

Table 5.3 shows that respondents strongly agree that digital literacy limitations, poor internet connectivity, and insufficient training continue to affect GST compliance. Limited digital literacy records the highest mean score, highlighting its importance as a major challenge in technology adoption.

Table 5.4 Regression Analysis

Predictor	B	Std. Error	Beta	t	p-value
Limited Digital Literacy	0.46	0.08	0.42	5.84	<0.001
Inadequate Internet Connectivity	0.38	0.09	0.31	4.20	<0.001
Lack of Technical Training	0.30	0.10	0.24	3.01	0.003

Interpretation:

The regression analysis confirms that digital literacy is the most significant contributor to capacity gaps affecting GST compliance. Internet connectivity and technical training also play important roles in determining technological readiness.

Objective 3: To Assess the Influence of Internet Accessibility on GST Compliance

Table 5.5 Descriptive Statistics – Internet Accessibility and GST Compliance

Variable	N	Mean	S.D	t-value	p-value
Availability of Reliable Internet Services	150	4.16	0.67	11.04	<0.001
Speed of Internet Connectivity	150	4.11	0.70	10.31	<0.001
Ease of Access to Online GST Services	150	4.08	0.72	9.88	<0.001
Overall Internet Accessibility Score	150	4.12	0.70	10.41	<0.001

Interpretation

The results indicate that respondents strongly agree that internet accessibility significantly affects GST compliance activities. Reliable internet services received the highest mean score (4.16), demonstrating their importance in facilitating online GST registration, filing, and payment processes. The overall mean score of 4.12 suggests that internet accessibility remains a crucial determinant of successful GST compliance.

Table 5.6 Regression Analysis – Influence of Internet Accessibility on GST Compliance

Predictor	B	Std. Error	Beta	t-value	p-value
Availability of Reliable Internet Services	0.48	0.08	0.43	6.01	<0.001
Speed of Internet Connectivity	0.39	0.09	0.33	4.46	<0.001
Ease of Access to Online GST Services	0.31	0.10	0.25	3.18	0.002

- **Dependent Variable:** Overall GST Compliance Score

Interpretation

The regression analysis reveals that all dimensions of internet accessibility significantly contribute to GST compliance. Availability of reliable internet services is the strongest predictor ($\beta = 0.43$), followed by internet speed and accessibility of online GST services. These findings confirm that improved internet infrastructure enhances taxpayer participation in digital GST processes.

Objective 4: To Identify Capacity Gaps Affecting Technology Adoption under GST

Table 5.7 Descriptive Statistics – Capacity Gaps and Technology Adoption

Variable	N	Mean	S.D	t-value	p-value
Limited Knowledge of GST Portal Operations	150	4.17	0.68	10.96	<0.001
Dependence on External Consultants	150	4.10	0.71	10.12	<0.001
Lack of Technical Skills for Digital Accounting	150	4.14	0.70	10.45	<0.001
Overall Capacity Gap Score	150	4.14	0.70	10.51	<0.001

Interpretation

The findings indicate substantial capacity gaps among taxpayers. Limited knowledge of GST portal operations records the highest mean score (4.17), suggesting that many respondents face difficulties in independently managing GST-related tasks. The overall capacity gap score demonstrates that technical competency remains a major challenge in technology adoption under GST.

Table 5.8 Regression Analysis – Capacity Gaps Affecting Technology Adoption

Predictor	B	Std. Error	Beta	t	p-value
Limited Knowledge of GST Portal Operations	0.47	0.08	0.41	5.76	<0.001
Dependence on External Consultants	0.35	0.09	0.29	4.02	<0.001
Lack of Technical Skills for Digital Accounting	0.33	0.10	0.27	3.37	0.001

- **Dependent Variable:** Technology Adoption Readiness Score

Interpretation

The regression results show that limited knowledge of GST portal operations is the strongest contributor to capacity gaps affecting technology adoption ($\beta = 0.41$). Dependence on external consultants and lack of technical accounting skills also significantly influence technological readiness. The findings suggest that training and skill-development programmes are necessary to improve taxpayer capability and encourage independent use of GST digital systems.

6. Findings

1. Digitalization has significantly improved GST compliance by making registration, filing, and tax payments easier, faster, and more transparent.
2. Easy access to digital infrastructure such as computers, smartphones, internet services, and accounting software improves GST compliance performance.
3. Digital literacy plays an important role in GST compliance. Taxpayers with better digital skills experience fewer difficulties in using GST portals and online services.
4. Internet accessibility significantly influences GST compliance. Reliable internet connectivity helps taxpayers complete GST-related activities efficiently.
5. Poor internet connectivity remains a major challenge, especially for taxpayers in rural and semi-urban areas.
6. Digital accounting systems improve filing accuracy, reduce errors, and support better record management.
7. Many small businesses continue to face difficulties due to limited digital knowledge and lack of awareness about GST procedures.
8. Dependence on external consultants remains high because many taxpayers lack confidence in using digital GST systems independently.
9. Lack of technical training and inadequate knowledge of GST portal operations create significant capacity gaps among taxpayers.
10. The study highlights the need for digital literacy programmes, improved internet infrastructure, and technical training to reduce the digital divide and strengthen GST compliance.
11. More training, awareness programmes, and better internet facilities are needed to reduce the digital divide and improve GST compliance among taxpayers.

7. SUGGESTIONS

- Conduct regular digital literacy programmes for taxpayers.
- Expand internet infrastructure in rural and semi-urban regions.
- Establish GST facilitation centres for technical assistance.
- Simplify GST portal interfaces for new users.
- Provide subsidized accounting software to small businesses.
- Introduce technology-based training workshops.

- Encourage public-private partnerships for digital inclusion.

8. CONCLUSION

The study examined the impact of digitalization on GST compliance and assessed the challenges arising from the digital divide and capacity gaps among taxpayers. The findings show that digital technologies have improved GST administration by making tax processes more efficient, transparent, and accessible. Digital literacy, internet accessibility, and technological infrastructure were found to have a significant positive influence on GST compliance. However, many small businesses and rural taxpayers continue to face challenges due to limited digital skills, poor internet connectivity, and lack of technical training. These barriers increase dependence on external consultants and reduce the effectiveness of technology adoption.

The study concludes that while digitalization has strengthened GST compliance in India, greater efforts are needed to improve digital literacy, expand internet infrastructure, and provide continuous training support. Addressing these challenges will help reduce the digital divide and ensure more inclusive and effective participation in the GST system.

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