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EXPLORING THE GROWTH OF E-FILING OF INCOME TAX RETURNS IN INDIA: AN IN-DEPTH EXAMINATION OF GROWTH AND COMPARATIVE ANALYSIS

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Abstract:

This research study aims to comprehensively examine and compare the growth of Electronic filing of returns associated with Income Tax in the 28 states of India. It examines the correlation between the states of India and the adoption of e-filing for income tax, aiming to understand variations in e-filing growth among large, medium, and small states. Using data from the department of Income Tax, this study analyzed E-filing trends spanning from 2011-12 to 2022-23. The states were categorized according to their population sizes. Data processing was performed in Microsoft Excel, and the statistical analysis involved descriptive analysis and various tests conducted in Jamovi software. The findings of this study reveal a consistent upward trend in E-filing of tax returns across large, medium, and small states in India. Maharashtra distinguishes itself as the leading state in terms of performance among the large states, Punjab leads in the medium state category, and Goa excels among small states regarding adoption and use of E-filing of returns. This research contributes value by offering a comprehensive analysis of E-filing trends within different state categories in India, providing a deeper understanding of the variations and significant differences among states in their adoption of electronic income tax filing methods.

Key words: e-filing, Direct tax, income Tax, returns, comparative study.

1. Introduction

In any country, the taxation system plays a very significant role. Tax revenue contributes a substantial amount to the government treasury and the country's welfare (Lulaj & Dragusha, 2022). Taxpayers must provide tax-related information to the government to inform of tax returns and pay tax; this process is called the return filing process. Previously taxpayers were physically filing the returns in the tax department

office. Still, with the advancement of technology, taxpayers are now filing tax returns online on the tax department website, called e-filing of returns. E-filing has become increasingly popular as governments and tax authorities move towards digital processes. With the advancement of technology and the ease of access to the internet, e-filing has become more convenient and user-friendly for taxpayers. Governments worldwide encourage citizens to file their tax returns electronically to reduce paperwork and streamline the process. The impact of the digitalisation on e-filing has been noteworthy. The global view on e-filing of tax returns are mixed, with some countries having successfully implemented electronic filing systems while others are still in the process. The pandemic of Covid 19 has also contributed positively by integrating information technology into the taxation system (Alrjoub et al., 2023). In general, countries that have implemented e-filing have reported increased efficiency, convenience, and accuracy in the tax return filing process while reducing costs associated with traditional paper based return filing. One notable example is the United States, which implemented electronic filing of returns in 1986. Today, the Internal Revenue Service (IRS) estimates that over 90% of individual returns of income tax are filed electronically, with similar rates for business tax returns. E-filing has reduced the time and costs of paper-based filing and provides taxpayers with more accurate and timely refunds.

India is another country that has implemented electronic filing of returns for Income tax taxpayers, with the government mandating its use for specific categories of taxpayers since 2006. In recent years Government & Income Tax department has made efforts to increase the number of taxpayers using e-filing by simplifying the process and providing incentives, such as faster refunds. To understand the current situation regarding the e-filing of tax returns in India in this research paper, the authors have attempted to study in detail the growth of e-filing of ITR in India.

2. Literature review

Many studies have been undertaken in the domain of E-filing of returns around the globe. (Azmi et al., 2012) studied data from 249 taxpayers from Malaysia. They found that certain aspects of perceived risk are positively correlated with the adoption of tax e-filing, while the perceived ease of using the system does not show a positive relationship. The author proposed and came up with model for incorporating and expanding potential users. (Barati & Safar, 2015) they explored the challenges and problems of implementing e-taxation in Iran. The authors asserted that the main difficulties include low computer literacy and internet access among taxpayers, inadequate infrastructure and technical support (Hevia & Mascagni, 2015) they examined the potential benefits and challenges of implementing electronic tax filing and payment systems in developing countries. The authors investigated and found that while electronic systems can increase efficiency and reduce costs, their success depends on infrastructure, internet access, and taxpayer education. (Ojua & Mbat, 2015) evaluated the effectiveness of e-filing in Cameroon. The authors revealed that e-filing could improve tax compliance and reduce tax evasion. (Liao & Fu, 2016) studied the impact of electronic filing on individual taxpayer compliance in China. The study discovered that e-filing increased taxpayers' willingness to report their income accurately and decreased the likelihood of underreporting. (Perera &

Gunawardena, 2017) investigated the current state of e-filing in Sri Lanka, identified the challenges faced by taxpayers and tax authorities, and investigated potential benefits of e-filing for the Sri Lankan tax department. (Gheorghe & Filip, 2017) investigated Romanian taxpayers' experiences with e-filing tax returns. The results suggest that e-filing enhances adherence to tax regulations and diminishes the probability and extent of tax avoidance. (Todorova & Vogel, 2017) compared e-filing systems in the US and Germany, it was highlighting differences in adoption rates, ease of use, and taxpayer preferences. The study discovered that the United States has a higher rate of e-filing adoption than Germany due to the Internal Revenue Service's (IRS) proactive approach to promoting the system's benefits and simplicity. (Edem & Effiong, 2017) explored the benefits and challenges of electronic tax filing in Nigeria. The authors found that electronic tax filing can increase tax compliance, reduce administrative costs, and enhance the effectiveness of collecting tax revenue. (Fuzi et al., 2018) provided an exploratory analysis of the electronic filing system in Malaysia. The authors found that the adoption of e-filing has increased significantly in Malaysia, but there are still challenges, such as the need for greater awareness and education among taxpayers. (Ashtiani, 2018) conducted a cross-national study of taxpayers' attitudes toward electronic tax filing in Iran and Malaysia. The study discovered that e-filing adoption is relatively low in Iran and Malaysia, with only 40% and 36% of respondents reporting to use the electronic filing system. (Sanni & Jimoh, 2018) analyzed the opportunities and challenges of e-filing in Nigeria. The authors found that while e-filing can improve tax compliance and reduce the cost of tax administration, challenges such as inadequate infrastructure, low internet penetration, and limited taxpayer education and awareness may hinder its adoption. (Martin & Wong, 2018) investigated the impact of online assistance on e-filing adoption among UK taxpayers. According to the researchers, online assistance features should be evaluated and updated regularly to ensure their relevance and usefulness to taxpayers. (Ershova & Vlasova, 2019) examined the perceived benefits and barriers of electronic filing of income tax returns in Russia. The study revealed some challenges taxpayers face in using e-filing, including technical issues, lack of awareness and trust in the system, and concerns about data privacy and security. (Karami & Asgari, 2019) examined the impact of electronic filing on tax compliance in Iran and the United States. The authors observed that e-filing has significantly improved tax compliance rates in Iran, particularly among small and medium-sized businesses. The research additionally revealed that e-filing has increased compliance rates and reduced the tax gap in the United States. (Aregawi & Stokke, 2020) examined the impact of digitalization on tax administration and revenue collection in Ethiopia, focusing on electronic filing. The researchers concluded that electronic filing could increase tax compliance & reduce administrative costs associated with tax collection, but challenges related to internet connectivity and taxpayer awareness must be addressed. (Iwuagwu & Ezech, 2020) e-filing positively impacts tax compliance and the level of taxpayer education moderates this relationship, with more educated taxpayers being more likely to comply with tax authorities regulations when using e-filing systems.

In India, a number of research have been conducted in the area of e-filing; for example (Roy & Sinha, 2016) investigated the issues and challenges related to India's adoption of electronic filing of returns of Income Tax. They suggested that the government provide

more assistance and guidance to taxpayers on using the e-filing system and improve the user interface to make it more user-friendly. (Upreti & Neupane, 2018) compared income tax return e-filing systems in Nepal and India. While both countries have implemented e-filing procedures, the authors find out that there are differences in their implementation and adoption rates, with India having a more mature and widespread system. (Jadhav & Rokade, 2018) investigated the trends and patterns of e-filing income tax returns in India. The researchers recommended the Indian government should continue to promote e-filing and simplify tax laws and regulations to encourage more taxpayers, particularly corporate entities, to use the e-filing tax system. (Roy, 2019) investigated the perceived benefits and barriers to e-filing income tax returns in India. The study recommended that the government create more awareness about the advantages of e-filing and provide technical assistance to taxpayers who face difficulties in filing their returns online. (Upadhyay & Jain, 2019) compared India's and the United States e-filing systems, examining the similarities and differences in the adoption and use of e-filing by individual taxpayers in both countries. The study revealed that Indian taxpayers primarily expressed apprehension regarding the intricacy of the e-filing procedure, while their American counterparts exhibited greater concern about the system's precision. (Desai & Divya, 2021) discovered five factors influencing the e-filing user experience: perceived usefulness, ease of use, system quality, information quality, and trust in system.

Based on the analysis of literature in e-filing, it becomes apparent that most research has focused on primary data, while limited research has explored the use of secondary data. Therefore, the authors of this study aim to address this gap by analyzing in detail the secondary data on the e-filing of Income Tax returns in India.

3. Objective of the Study

The overall objective of this paper is to study and compare the growth of the E-filing of Income Tax returns in detail in each state of India.

4. Hypothesis of the Study

Based on the detail review of literature and research objective, the current study aims to investigate the growth of E-filing in India and its states. To accomplish this, the study formulates the following hypotheses:

Ho1: There is no significant difference between the growth of E-filing of Income Tax returns amongst large states in India.

Ho2: There is no significant difference between the growth of E-filing of Income Tax returns amongst medium states in India.

Ho3: There is no significant difference between the growth of E-filing of Income Tax returns amongst small states in India.

5. Data and Research Methodology

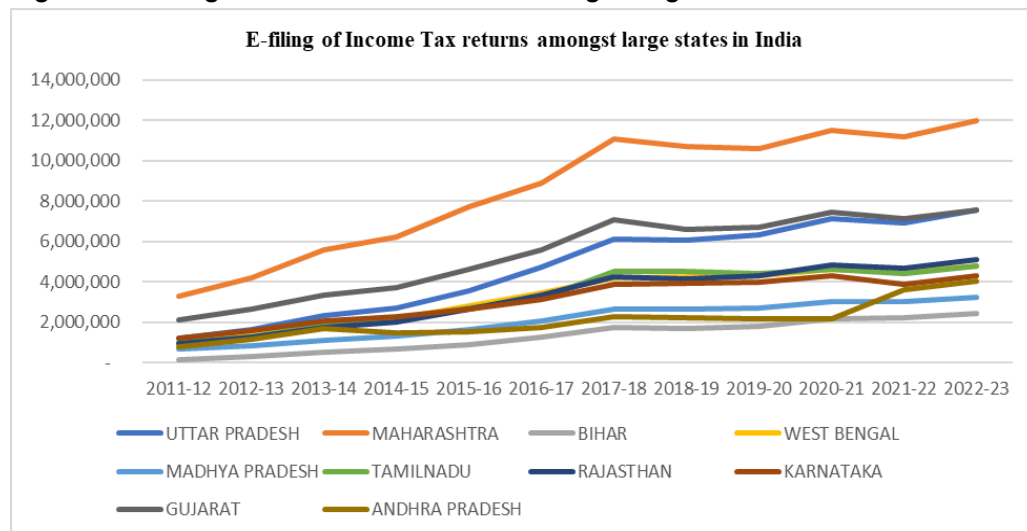
The present study is based on secondary data compiled by authors, obtained from <https://www.incometax.gov.in/iec/foportal/statistics-data>. Firstly, based on the availability of data made available by the Income Tax authority of India, the raw data of E filing Income Tax returns from every 28 states of India is collected for 12 years starting from 2011-12 to 2022-23. For comparing the E-filing data amongst all the states in India, the 28 states have been divided based on population per the latest 2011 population census of India. As per the population, 28 states have been divided into three groups. The first group consists of 10 states with large populations in India, which comprise Uttar Pradesh, Maharashtra, Bihar, West Bengal, Madhya Pradesh, Tamil Nadu, Rajasthan, Karnataka, Gujarat and Andhra Pradesh. The second group is of 10 states with a medium population in India which comprises Odisha, Telangana, Kerala, Jharkhand, Assam, Punjab, Chhattisgarh, Haryana, Uttarakhand, and Himachal Pradesh. The third group includes eight states with a small population in India, comprising Tripura, Meghalaya, Manipur, Nagaland, Goa, Arunachal Pradesh, Mizoram, and Sikkim. The authors processed the collected raw data using Microsoft Excel to refine and prepare it for analysis in Jamovi statistical software. To achieve the study's objectives and test the study's hypothesis, various statistical analyses were conducted using Jamovi software. These analyses included graph analysis, descriptive analysis, ANOVA test, Kruskal-Wallis's test, Games-Howell posthoc test & DSCF pairwise comparisons test. These tests were chosen to provide a comprehensive understanding of the data and to extract meaningful insights.

6. Results

6.1 Study of E-filing of Income Tax returns amongst large states in India.

In figure 1, the data provided highlights the number of income tax returns filled online in various states of India from 2011-12 to 2022-23. Uttar Pradesh, Maharashtra, and Gujarat consistently recorded high e-filed returns, with substantial increases over the years. States like Bihar and Andhra Pradesh also witnessed a gradual rise in e-filing. West Bengal experienced a remarkable surge, showing a considerable increase in the number of returns filed electronically. Tamil Nadu and Rajasthan consistently grew, while Madhya Pradesh and Karnataka exhibited steady progress. Overall, the data showcases a positive trend of e-filing amongst large states in India.

The normality of the data for E-filing of Income Tax returns among large states in India was assessed using the Shapiro-Wilk test (Shapiro & Wilk, 1965). The results in Table 1 indicate that the normality assumption was not met ($p < 0.001$), suggesting that the data does not follow assumption of normal distribution. To compare the differences among the independently sampled groups, as data was not expected, a non-parametric Kruskal-Wallis test (Kruskal & Wallis, 1952) was conducted. The findings in Table 2 reveal a significant difference in the E-filing of returns of Income Tax across the large states in India as $p < 0.001$. Therefore, the null hypothesis (H_0) is rejected, indicating significant variations among India's large states.

Figure 1: E-filing of Income Tax returns amongst large states in India.

Source: Prepared by the authors (2023)

Additionally, pairwise comparisons was performed using DSCF (Dwass-Steel-Critchlow-Fligner) method (Critchlow and Fligner, 1991). Table 3 presents the results of these comparisons, showing significant differences between various large state pairs in India. Notably, Maharashtra exhibits significant positive variations compared to almost all other large states in India for E-filing Income Tax returns.

Table 1: Normality test

	Statistic	P Value
Shapiro-Wilk	0.977	0.040

Source: Prepared by the authors (2023)

Table 2: Kruskal-Wallis test

	χ^2	Df	P Value
E-filing of Income Tax returns amongst large states in India	58.4	9	< .001

Source: Prepared by the authors (2023)

Table 3: DSCF Pairwise comparisons

		W	P Value
Uttar Pradesh	Bihar	-4.7357	0.028
Maharashtra	Bihar	-5.8788	0.001
Maharashtra	West Bengal	-4.8990	0.019
Maharashtra	Madhya Pradesh	-5.8788	0.001
Maharashtra	Tamil Nadu	-4.8990	0.019
Maharashtra	Karnataka	-5.2256	0.008
Maharashtra	Andhra Pradesh	-5.7155	0.002

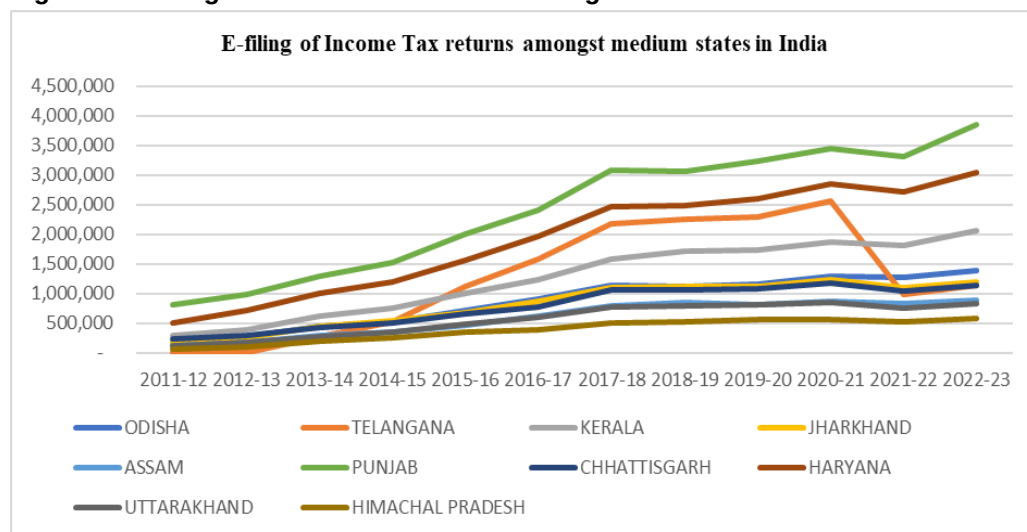
Maharashtra	Rajasthan	-4.8990	0.019
Bihar	Karnataka	4.4907	0.048
Bihar	Gujrat	5.6336	0.003
Madhya Pradesh	Gujrat	5.0623	0.013
Gujrat	Andhra Pradesh	-4.9809	0.016

Source: Prepared by the authors (2023)

6.2 Study of E-filing of Income Tax returns amongst medium states in India.

Figure 2 provides the trend analysis of the e-filing of Income Tax returns among medium states over 12 years. From 2011-12 to 2022-23, all medium states experienced substantial growth in e-filing numbers. Odisha, Kerala, Jharkhand, Assam, Punjab, Chhattisgarh, Haryana, Uttarakhand, and Himachal Pradesh consistently witnessed an upward trend in e-filing, demonstrating an increasing preference for electronic modes of tax submission. Furthermore, the data indicate that the growth rate varied across states. Some states, like Odisha and Kerala, demonstrated a relatively steady and gradual increase in e-filing numbers, while others experienced more pronounced growth, such as Himachal Pradesh, Chhattisgarh, and Punjab.

Figure 2: E-filing of Income Tax returns amongst medium states in India.



Source: Prepared by the authors (2023)

The normality of the data for E-filing of Income Tax returns among medium states in India was assessed using the Shapiro-Wilk test (Shapiro & Wilk, 1965). The results ($p = 0.185$) in Table 4 indicated that the data followed a normal distribution. Since the data met the normality assumption, a parametric ANOVA test was applied to compare the means of more than two groups. However, before proceeding with ANOVA, the assumption of homogeneity of variance was tested using Levene's test, which showed significant variations ($p < 0.001$) in the variances across the medium states in India. Therefore, the homogeneity of variance assumption was not met, and an ANOVA test using Welch's test

was performed. The results ($p < 0.001$) from Table 6 revealed significant variations in the E-filing activities among the medium states in India.

Consequently, the null hypothesis (H_0) was rejected, indicating significant differences in the E-filing of Income Tax returns among the medium states in India. Further analysis using the Games-Howell posthoc test (Table 7) conducted pairwise comparisons and identified significant differences ($p < 0.05$) between various pairs of medium states in India. Notably, the state of Punjab exhibited significant positive variations compared to almost all other medium states in India for E-filing Income Tax returns.

Table 4: Normality test

	Statistic	P Value
Shapiro-Wilk	0.984	0.185

Source: Prepared by the authors (2023)

Table 5: Homogeneity of Variance test (Levene's test)

	Statistic	df	df2	P Value
E-filing of Income Tax returns amongst medium states in India	11.5	9	110	<.001

Source: Prepared by the authors (2023)

Table 6: ANOVA test (Welch's test)

	F	df1	df2	P Value
E-filing of Income Tax returns amongst medium states in India	10.6	9	44.3	<.001

Source: Prepared by the authors (2023)

Table 7: Games-Howell Post-HocTest

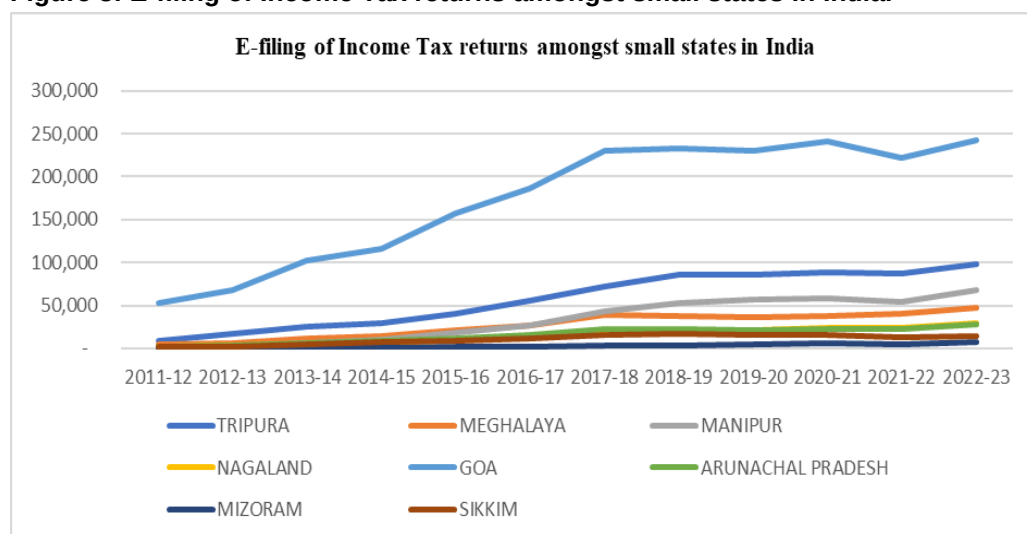
		P Value
Odisha	Punjab	0.008
Odisha	Haryana	0.045
Kerala	Himachal Pradesh	0.012
Jharkhand	Punjab	0.006
Jharkhand	Haryana	0.031
Assam	Punjab	0.002
Assam	Haryana	0.007
Punjab	Chhattisgarh	0.005
Punjab	Uttarakhand	0.002
Punjab	Himachal Pradesh	<.001
Chhattisgarh	Haryana	0.024
Haryana	Uttarakhand	0.006
Haryana	Himachal Pradesh	0.002

Source: Prepared by the authors (2023)

6.3 Study of E-filing of Income Tax returns amongst small states in India.

Figure 3 represents the e-filing of Income Tax returns among small states in India over 12 years. From 2011-12 to 2022-23, all small states experienced significant growth in e-filing numbers. States such as Tripura, Meghalaya, Manipur, Nagaland, Goa, Arunachal Pradesh, Mizoram, and Sikkim consistently increased the number of electronic tax returns. The data indicate that states like Goa, Sikkim, and Arunachal Pradesh are showing high e-filing of returns. These states showed a steady growth rate over the years, reflecting an increased adoption of electronic tax filing methods. It is worth noting that while all states experienced growth, the rate of increase varied among them. States like Manipur, Nagaland, and Mizoram showed a relatively slower growth rate than others.

Figure 3: E-filing of Income Tax returns amongst small states in India.



Source: Prepared by the authors (2023)

The normality of the data for E-filing of Income Tax returns among small states in India was assessed using the Shapiro-Wilk test (Shapiro & Wilk, 1965). The results in Table 8 indicate that the normality assumption was not met ($p < 0.001$), suggesting that the data is not following a normal distribution. To compare the differences among the independently sampled groups, as data was not normal, a non-parametric Kruskal-Wallis test (Kruskal & Wallis, 1952) was conducted. The findings in Table 9 reveal a significant difference in the E-filing of Income Tax returns across the prominent states in India as $p < 0.001$. Therefore, the null hypothesis (H_0) is rejected, indicating significant variations among the small states while e-filing Income Tax returns in India. Additionally, pairwise comparisons were performed by using the DSCF (Dwass-Steel-Critchlow-Fligner) method (Critchlow and Fligner, 1991). Table 10 presents the results of these comparisons, showing significant differences between various small state pairs in India. Notably, the state of Goa exhibits significant positive variations compared to almost all other small states for E-filing Income Tax returns.

Table 8: Normality test

	Statistic	P Value
Shapiro-Wilk	0.891	< .001

Source: Prepared by the authors (2023)

Table 9: Kruskal-Wallis test

	χ^2	Df	P Value
E-filing of Income Tax returns amongst small states in India	60.7	7	< .001

Source: Prepared by the authors (2023)

Table 10: DSCF Pairwise comparisons

		W	P Value
Tripura	Nagaland	-4.654	0.022
Tripura	Goa	4.817	0.015
Tripura	Arunachal Pradesh	-4.654	0.022
Tripura	Mizoram	-5.879	<.001
Tripura	Sikkim	-5.226	0.005
Meghalaya	Goa	5.879	<.001
Meghalaya	Mizoram	-5.471	0.003
Manipur	Goa	5.389	0.003
Manipur	Mizoram	-4.736	0.018
Nagaland	Goa	5.879	<.001
Nagaland	Mizoram	-4.491	0.032
Goa	Arunachal Pradesh	-5.879	<.001
Goa	Mizoram	-5.879	<.001
Goa	Sikkim	-5.879	<.001
Arunachal Pradesh	Mizoram	-4.654	0.022
Arunachal Pradesh	Sikkim	4.409	0.039

Source: Prepared by the authors (2023)

7. Discussion

The examination of e-filing trends among large states in India reveals a consistent upward trajectory in electronically filed income tax returns. Notwithstanding this positive trend, it is crucial to contextualize these findings within the broader landscape of existing research. Our study resonates with the observations made by (Arora, 2016), which also identified Maharashtra as a frontrunner. This consistency underscores the robustness of our results and affirms the sustained growth in Maharashtra over the years. However, significant variations unveiled by the Kruskal-Wallis test prompt a closer look at the reasons behind Maharashtra's exceptional performance compared to other states. Future research may delve into the specific policies, infrastructure investments, or unique initiatives that have propelled Maharashtra to the forefront, providing valuable insights for

other states seeking to emulate its success. Similar positive trends in Uttar Pradesh, Bihar, and Gujarat align with the findings of (Kotnal, 2016; Jain & Jain., 2017), emphasizing the nationwide effectiveness of digital initiatives. However, the observed differences suggest that state-specific strategies are imperative to ensure equitable growth. Further research could explore the intricacies of these strategies, shedding light on the contextual factors influencing e-filing adoption in diverse regions.

In medium states, positive e-filing trends are evident, paralleling the growth patterns reported by (Arora & Gupta, 2018). Nevertheless as per Anova test, the significant differences among medium states, particularly Punjab's standout performance according to the Games-Howell posthoc test, warrant a deeper understanding. Building on the insights from (Matharu , 2015;Thakar et al., 2021), future research should explore the nuanced challenges faced by medium states, enabling the formulation of targeted strategies tailored to their specific characteristics.

Small states exhibit noteworthy growth, with Goa identified as a standout performer by the DSCF test. Yet, the Kruskal-Wallis test exposes variations in growth rates among these states. The slower growth in states like Manipur, Nagaland, and Mizoram signals potential barriers, echoing concerns raised by (Vaghani, 2016). Future investigations could focus on uncovering the unique challenges hindering e-filing adoption in these states, providing a roadmap for addressing specific impediments.

By comparing e-filing trends across large, medium, and small states, our study affirms a nationwide trend toward digital tax filing. However, the observed variations underscore the necessity for tailored strategies based on population size and regional characteristics. The success stories of leading states within each category should be explored further, not only for benchmarking purposes but also for gleaning insights into the diverse factors influencing higher e-filing rates.

8. Conclusion

In conclusion, our research has provided a meticulous examination of the landscape of e-filing of income tax returns in India, spanning the years from 2011-12 to 2022-23. The consistent and positive trajectory in e-filing across the nation signifies a widespread acceptance of digital platforms for tax submissions. Maharashtra, Uttar Pradesh, and Gujarat have emerged as commendable leaders among large states, with Maharashtra standing out as an exemplar. Medium states, while participating in this positive trend, exhibit significant variations, with Punjab leading the pack. The study highlights the need for tailored strategies in promoting e-filing in medium states, considering their distinct characteristics and challenges. Small states also contribute to the digital surge, with Goa demonstrating remarkable success. However, variations in growth rates among small states indicate the presence of unique challenges that warrant focused attention.

This study not only contributes empirical insights into the growth of e-filing but also underscores the need for nuanced strategies to address varying regional characteristics. The success stories of leading states within each category can serve as guiding beacons for others, emphasizing the importance of factors such as service quality (Maji & Pal,

2017), ease-of-use (Ojha et al., 2008), awareness (Geetha & Sekae, 2012), infrastructure, and government initiatives (Singh et al., 2019) in driving successful e-filing adoption. As India progresses towards a more digitally integrated tax ecosystem, these findings offer valuable insights for policymakers, tax authorities, and researchers alike. Further exploration into the identified challenges in medium and small states, coupled with ongoing efforts to enhance awareness and infrastructure, will be pivotal in fostering a nationwide culture of efficient and user-friendly e-filing of income tax returns.

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