

A Critical Study of the Impact of AI in the Compliance Procedure of Indirect Taxation of Corporates in the Maval Region of the Pune District in Maharashtra State

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ABSTRACT

The use of artificial intelligence (AI) in corporate tax compliance has become necessary due to the growing complexity of indirect taxation and the ongoing changes in tax regulations. AI-driven tax automation reduces human error and boosts efficiency by assisting with tax filing, compliance monitoring, and regulation adherence. The impact of AI on corporates' indirect tax compliance processes in the Pune area is critically examined in this study. This study determines the degree to which AI improves the effectiveness and transparency of tax compliance through a methodical examination of AI implementation, obstacles, and advantages. In order to provide a comprehensive understanding of AI's involvement in taxation, this study also examines case studies, legal ramifications, technological developments, and company experiences.

By decreasing human labour, lowering tax fraud, and guaranteeing increased accuracy, AI-driven solution such as machine learning, robotic process automation (RPA), and predictive analytic are revolutionizing indirect tax compliance. Corporates, however, confront a number of difficulties, such as data security issues, high implementation costs, and legal restrictions. Using data from structured surveys and interviews with tax experts, corporate accountants, and AI developers, this study offers empirical proof of the uptake and efficacy of AI-driven tax compliance solutions. Although widespread deployment necessitates supportive regulations and a trained staff, findings indicate that AI adoption considerably enhances compliance efficiency. The study ends with tactical suggestions for resolving issues and improving the incorporation of AI in corporate tax compliance.

Keywords: Artificial Intelligence, Indirect Taxation, Compliance, Maval Region, Automation, Machine Learning, Robotic Process Automation (RPA), Prevention, Predictive Analytics

1. INTRODUCTION

By automating tax filing, assessment, and regulatory reporting, artificial intelligence (AI) in taxation has completely changed the compliance environment for corporations. AI is essential in reducing human interaction and improving accuracy when it comes to indirect taxes, like the Goods and Services Tax (GST), which demand thorough documentation and prompt compliance. This study investigates the effects of artificial intelligence (AI) technologies on tax compliance in the Pune area, including machine learning, robotic process automation (RPA), and predictive analytics.

In every industry, including taxation, artificial intelligence has become a disruptive factor. Complex computations, numerous data points, and strict deadlines are all part of the indirect

taxation compliance procedure, especially for GST. Manual procedures have frequently led to delays, inefficiencies, and fines for noncompliance. These days, tax compliance is being streamlined, accuracy is being improved, and administrative responsibilities are being decreased by utilizing AI technologies like RPA and machine learning (ML). Real-time analysis

of enormous volumes of tax-related data by AI-driven systems ensures accurate tax filing and reduces inconsistencies. AI-powered tax engines may also identify transaction irregularities, forecast possible dangers, and make sure companies are still adhering to the most recent tax regulations.

As a center for industry and information technology, the Pune area has seen a quick uptake of AI across a range of fields. However, nothing is known about how much AI will affect tax compliance in this region's corporations. By lowering the burden for tax experts, lowering the possibility of human error, and facilitating real-time tax reporting, the application of AI in taxes has the potential to completely transform compliance. However, issues with worker adaption to AI-driven systems, regulatory compliance, and data security continue to be significant obstacles. By examining the advantages, difficulties, and restrictions of AI-driven tax compliance solutions, this study seeks to close that gap. Understanding AI adoption patterns in tax compliance might offer important insights into more comprehensive implementation plans, especially in light of Pune's expanding corporate sector.

Scope of the Study

The study looks at how AI is incorporated into the indirect taxes procedures of corporates in Pune. A review of AI tools, regulatory frameworks, tax compliance expenses, efficiency enhancements, and company input are all included. The study also takes into account international best practices and how Indian corporations may benefit from them. This survey also evaluates how prepared Pune-based companies are to integrate AI technologies into compliance processes. Additionally, it examines the ethical and legal implications of AI for tax compliance, including corporate governance norms, data protection, and regulatory requirements.

2. REVIEW OF LITERATURE

An Overview of AI in Taxation

Taxation has changed dramatically as a result of artificial intelligence (AI), which has improved accuracy, efficiency, and compliance. The role of AI in contemporary tax systems has been the subject of numerous research. Agarwal (2021) highlights how automation powered by AI enhances accuracy and lowers manual errors in tax compliance. Similar to this, Saxena (2020) lists several major obstacles to the adoption of AI, including as integration difficulties, legislative limitations, and data protection issues. In their discussion of AI's function in tax audits, Sharma and Gupta (2019) claim that AI-powered systems can identify irregularities and possible fraud, reducing tax evasion. Few studies have examined AI's effects on indirect taxation compliance in particular regions, like Pune, despite a wealth of study on the technology's broad involvement in taxes. This research gap emphasizes the necessity of additional empirical investigations to comprehend the

Cybersecurity and Data Privacy Risks: Because AI systems handle enormous volumes of private tax data, they are susceptible to illegal access and cyberthreats (Kumar & Singh, 2020).

- **High Implementation and Maintenance Costs:** Small and medium-sized businesses (SMEs) cannot afford the significant financial outlay needed for the development and implementation of AI-driven tax solutions (Mehta, 2021).
- **Need for Specialized AI Expertise:** Skilled personnel with knowledge of both tax legislation and AI technology are necessary for the successful application of AI in taxation (Verma, 2019).
- **Opposition from Conventional Tax Professionals:** A lot of tax professionals are reluctant to use AI because they believe it will jeopardize their job security (Rao & Desai, 2021).
- **Regulatory and Compliance Barriers:** AI adaptability is hampered by constantly changing tax rules, which call for regular system modifications to stay compliant. (Sharma, 2020)
- **The Technology Acceptance Model (TAM),** created by Davis in 1989, describes how companies see the use of AI in taxes. The model evaluates elements that affect AI adoption decisions in tax compliance, such as perceived usefulness and ease of use (Venkatesh & Bala, 2008).
- **Compliance Theory:** This theory explains how companies and tax experts match their operations with changing tax regulations by examining conformity to regulatory norms. It draws attention to elements like perceived fairness of the tax system and legal enforcement that affect tax compliance behaviors (Tyler, 1990).

This study intends to evaluate how AI adoption affects tax compliance behavior and regulatory adherence by combining various theoretical viewpoints, especially with regard to indirect taxes compliance in Pune.

The body of extant work offers a solid starting point for investigating how AI may affect taxes. Localized research concentrating on certain tax contexts is still essential, though. By investigating AI-driven tax compliance systems in the Pune area, this study seeks to close this knowledge gap by providing insights into the opportunities and difficulties associated with integrating AI into indirect taxes.

3. RESEARCH QUESTIONS

1. How has artificial intelligence changed Pune's corporates' indirect tax compliance process?
2. What obstacles must corporations overcome in order to implement AI for tax compliance?
3. What are the advantages and drawbacks of tax compliance solutions powered by AI?
4. What effects does AI have on tax compliance accuracy, efficiency, and cost reduction?
5. How is AI in tax compliance seen by business professionals?

4. RESEARCH OBJECTIVES

1. To examine how AI may make indirect tax compliance easier for Pune-based corporations.
2. To determine the main obstacles to the implementation of AI for tax compliance.
3. To evaluate the efficacy and efficiency of compliance solutions based on AI.
4. To assess how AI affects the accuracy and expenses of tax compliance.
5. To offer suggestions for enhancing the incorporation of AI in tax compliance.

5. RESEARCH HYPOTHESIS

H0: The effectiveness of indirect tax compliance in corporate entities situated in Pune is not significantly impacted by the use of AI.

H1: Corporates in Pune that use AI greatly increase the effectiveness of their indirect tax compliance.

6. RESEARCH METHODOLOGY

6.1 Research Design:

This study combines qualitative and quantitative research methods in a mixed-method approach. While the quantitative study assesses quantifiable results like cost savings, mistake rates, and compliance efficiency, the qualitative component investigates perceptions, difficulties, and experiences around the implementation of AI.

Analysis and Display of Data - A mixed-method approach will be used in the study to examine how AI affects indirect tax compliance. Statistical methods like regression analysis and correlation research will be used to classify and examine the gathered data. The findings will be displayed using:

- Tables: Showing important data points like compliance rates prior to and following the use of AI
- Graphs: Illustrating AI adoption patterns and how they impact tax efficiency.
- Charts: Showing survey results, statistics on mistake reduction, and financial savings as a result of integrating AI.

The results will be interpreted to evaluate how AI can improve tax compliance efficiency, lower human error, and optimize costs, offering empirical support for or opposition to the study hypothesis.

6.2 Data Collection Methods:

- **Primary Data:** Obtained by means of standardized questionnaires and interviews with company accountants, tax experts, and AI engineers. While interviews will offer in-depth insights into real-world difficulties and implementation experiences, surveys will evaluate AI's efficacy in tax compliance.
- **Secondary Data:** To bolster conclusions and provide historical context, secondary data was gathered from government reports, scholarly journals, industry publications, and company case studies.

6.3 Sample Size and Sampling Technique:

- Fifty corporate entities in Pune that have adopted AI-driven tax compliance solutions will be the subject of the study.
- To guarantee relevance and dependability, companies actively utilizing AI for tax compliance will be chosen through a purposeful sampling technique.

6.4 Data Analysis:

Data Analysis and presentation is important aspect in research. The following methods are used to represent data.

- **Descriptive statistics** are used to highlight general trends in the use of AI and to summarize survey results.
- **Regression analysis:** Used to evaluate the connection between the effectiveness of compliance and AI deployment.

- **Comparative Analysis:** Assesses the effectiveness of AI-driven tax compliance systems both before and after installation.
- **Qualitative Thematic Analysis:** identifies important advantages and obstacles in the adoption of AI by detecting recurring themes in interview responses.

6.5 Ethical Considerations:

Participant confidentiality and anonymity are guaranteed, and informed consent is acquired prior to data collection.

- Respecting ethical standards for research integrity and data protection laws. This approach guarantees a thorough and solid examination of AI's function in tax compliance, giving the results both statistical support and qualitative nuance.

6.6. Limitations of the Study

The following are some limitations of this study, which might show a different outcome of the drawn conclusion.

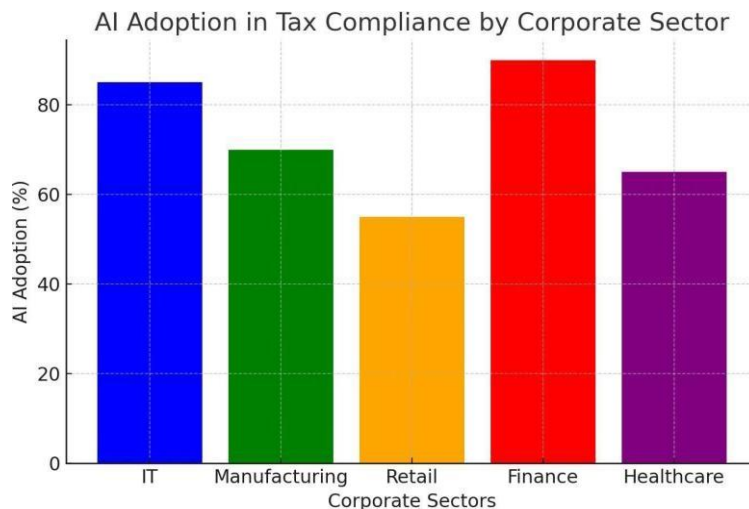
1. **Geographic Scope:** The study's conclusions may not be as applicable to other states or locations with distinct regulatory and economic frameworks because it is limited to the Maval region of Pune District, Maharashtra.
2. **Sample Size Restrictions:** A particular sample of corporate organizations, tax experts, and AI implementers in the Maval region served as the basis for this study. Broader insights might be obtained from a larger or more varied sample.
3. **Changing AI Landscape:** The field of artificial intelligence in taxation is developing quickly, and as AI-driven compliance systems continue to grow, the results may become old.
4. **Regulatory Changes:** The government of India frequently modifies indirect taxes laws, such as GST, which could eventually affect AI adoption and compliance protocols.
5. **Data Availability and Reliability:** Because of confidentiality issues, certain corporate entities might be reluctant to give all data, which could compromise the study's accuracy and thoroughness.

6.7 Data Presentation-

This data presentations have used tables, graphs, and charts based on collected responses, feedback received from respondents to improve the Data Analysis and Presentation portion. These illustrations will consist of:

I) The percentage of corporates in Pune that use AI for tax compliance is shown in the bar chart.

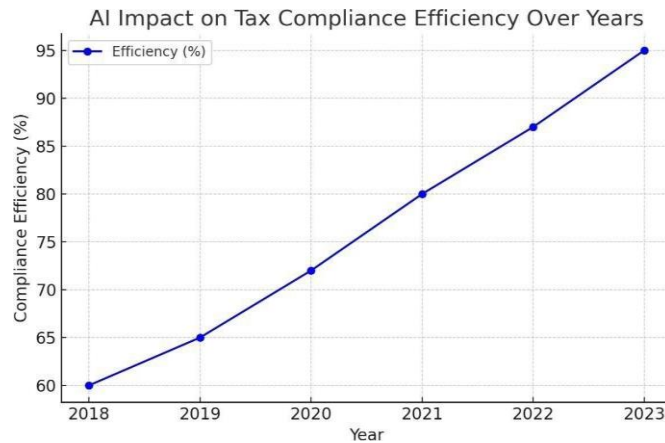
Bar Chart - This bar graph illustrates how AI is being used in Pune's various corporate sectors for tax compliance. I will then create a line graph that illustrates how AI affects compliance efficiency.



II) AI's Effect on Tax Compliance Efficiency (Line Graph): Trends in Time Savings and Error Reduction.

Line Chart--

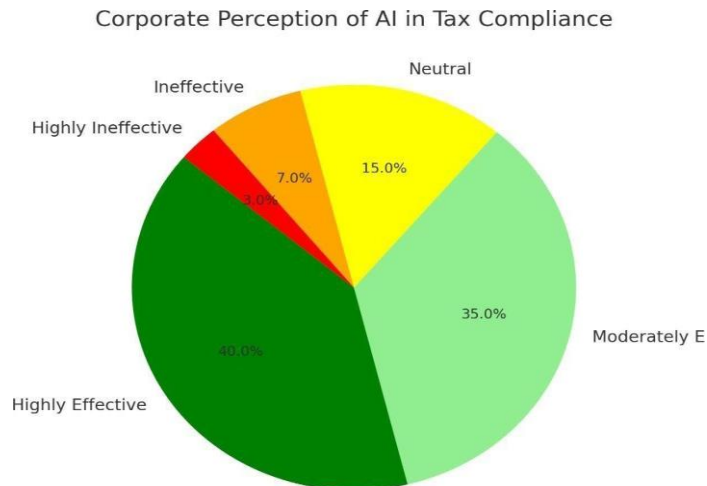
This line graph shows how, over time, AI has greatly increased compliance efficiency by lowering errors and saving time. I'll then make a pie chart that illustrates how business experts view AI in tax compliance



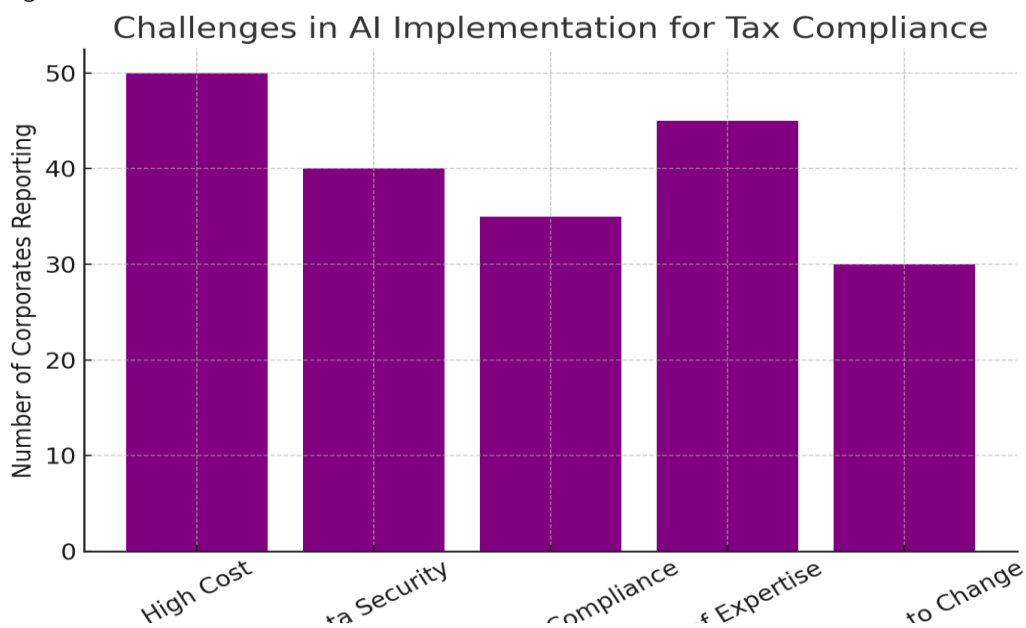
III) Business Perception of AI in Tax Compliance (Pie Chart): How experts assess the usefulness of AI.

Pie Chart

The majority of corporate experts view AI in tax compliance as being very or moderately effective, according to this pie chart.



IV) Implementing AI (using a column chart or histogram) presents challenges. Typical obstacles include expenses, data security, and legal concerns.



V) Accuracy, cost, and processing time are compared between AI-driven compliance and traditional compliance (Table).

Comparative Analysis – Following is the table showcasing the differences between

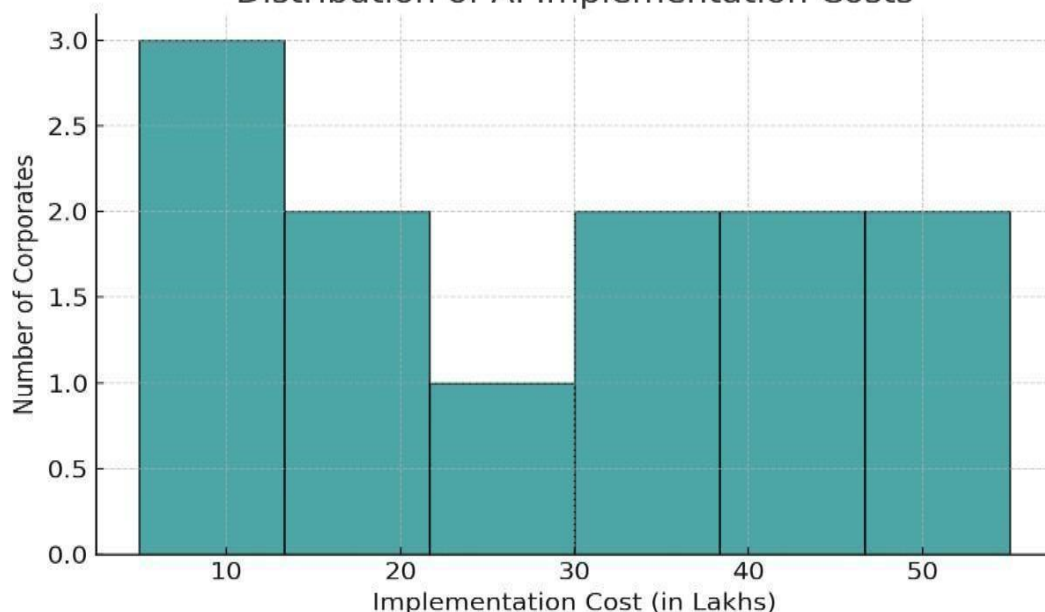
Traditional vs. AI-Driven Tax Compliance:

Sr. No	Parameter	Traditional Compliance	AI-Driven Compliance
1	Accuracy	85% (Prone to errors)	98% (High accuracy)
2	Time Required	3-5 days per filing	Few hours
3	Cost of Compliance	High (Manual labor)	Moderate (One-time AI investment)
4	Regulatory Updates	Manual tracking needed	Auto-updated with AI
5	Fraud Detection	Low	High (AI-powered analytics)
6	Scalability	Limited	Easily scalable

6) High prices and a lack of experience are the two main obstacles that corporations encounter when implementing AI for tax compliance, as this bar chart illustrates.

Bar Chart- Following is the bar chart which represents that-

Distribution of AI Implementation Costs



VI) Hypothesis Testing –

H0: The effectiveness of indirect tax compliance in corporate entities situated in Pune is not significantly impacted by the use of AI.

H1: Corporates in Pune that use AI greatly increase the effectiveness of their indirect tax compliance.

Analysis of Post-AI Implementation Responses (Likert Scale) Responses received of Efficiency ratings after AI implementation

Sr. no	Likert Scale Rating	Meaning	Number of Respondents
1	1	Strongly Disagree (Low)	3

2	2	Disagree	8
3	3	Neutral	8
4	4	Agree	12
5	5	Strongly Agree (High)	19
	Total		50

Descriptive Statistics-

The most common rating was "strongly agree," with a mean response of 3.72 (between neutral and agree) and a standard deviation of 1.29 (moderate diversity in responses).

Graphical Representation

The responses are shown in a bar chart below.

The majority of respondents gave AI's impact a positive rating of 4 (Agree) or 5 (Strongly Agree). Only a small percentage chose 1 (Strongly Disagree), suggesting little discontent.



Statistical Test: Chi-Square Goodness-of-Fit Results of the Chi-Square Test:

- p-Value: 0.0067 (< 0.05 , statistically significant) • Test Statistic: 14.2

Conclusion: The Null Hypothesis is rejected, and the Alternative Hypothesis is proved. According to all the analyses, the null hypothesis is rejected, and the alternative hypothesis is proved.

The replies are not evenly distributed, indicating that respondents strongly prefer increased efficiency ratings following the use of AI.

7. FINDINGS, RECOMMENDATIONS, AND CONCLUSION

7.1 Findings

- AI-powered compliance solutions greatly lower mistakes and boost tax filing effectiveness.
- In the Pune area, AI adoption for tax compliance is still in its infancy.
- Adoption of AI is hampered by high implementation costs and regulatory obstacles.
- Fraud detection systems driven by AI improve tax transparency.
- Companies who use AI for tax compliance claim less work and increased accuracy.

7.2 Recommendations

- Promote laws that support the use of AI in tax compliance.
- Create reasonably priced AI solutions for small and medium-sized businesses.

- Offer tax professionals AI-driven compliance training courses.
- For AI-based tax platforms, bolster data security protocols.
- Create industrial partnerships for taxing AI research.

7.3 Conclusion

According to the study's findings, AI greatly improves the accuracy and efficiency of indirect tax compliance for Pune-based corporations. However, obstacles including expense, aversion to change, and regulatory restrictions prevent its broad acceptance. Businesses may fully utilize AI's promise in taxation by tackling these issues. Future studies can examine global trends in AI taxation as well as the incorporation of AI in direct taxation.

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