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AI and Big Data: New Horizons in Tax Awareness and Evasion Detection

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Abstract

The technological tools of Artificial intelligence and Big Data Analytics are converting the operational structure of taxation process and increasing the awareness related to the regulations of taxation process. The study of this research identifies or determines the the way these advance tools and technologies are being utilized in the world of taxation for improving the transparency of financial operations and estimating the suspicious activities and frauds present in the tax filing operations. There will be both secondary and primary data collection method utilized to assess the contribution of these technologies of AI and Big Data in the global picture of taxation procedures. There will significant insights provided in this study about the innovative processes utilized by the taxation authorities of other countries in the process of incorporating these advanced technologies in their operational structure. The study will define the potential of these technologies in decreasing tax-related fraud, increasing the collection of revenue, and developing trust between the general taxpayers and the government. In accordance to the new age of technological advancements and frauds related to the systems and regulations the study will provide significant future opportunities for the implementation of AI and Big Data Analytics. These opportunities will be provided as per the global viewpoints of these systems and its effectiveness on the tax regulatory authorities. Asper the topic of the study it will also show the analyzation results of the collected primary data from the participant who have significant insight in the regulatory system.

Keywords: *IMF, Artificial intelligence, Big Data, tax, taxpayers, GSTN, IRS, AIS,*

Introduction

The process of maintaining obedience for the regulations related to taxation process is being significantly challenging for the taxation authorities in the world. Disobedience for these tax regulations can potentially result in threats for the development of financial security and revenue generation. The traditional methods or system for identifying these frauds and abnormality are not efficient enough for these present day advanced, complicated, and large-scaled financial operations and transactions. Technological tools of Artificial Intelligence and Big Data are contributing significantly in fulfilling these gaps with increasing the productivity in the process of tax audits, promoting taxation related awareness, and determining the similarities and patterns in these frauds and abnormalities (Olabanji *et al.* 2024). The core motive of this study is to identify the contributions of tools and technologies of AI and Big Data in present-day taxation operations by providing importance on the potential of these tools and technologies. It also increases awareness in the public and streamline the application process of taxation regulations.

Objectives

- To evaluate the way tools and technologies of AI and Big Data are being implemented for identifying abnormalities and frauds related to taxation regulations.

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- To estimate the way strategies created by AI being efficient in the promotion activities for increasing awareness for taxation regulations in businesses and general population.
- To study the global case studies defining the implementation of AI and Big Data technologies in the tax obedience structure.
- To identify the moral implications and challenges in the incorporation process of these technological tools in the application of tax regulations.

Methodology

There are two kinds of methods utilized in this study, primary quantitative and secondary data collection. In the collection process of primary data, a questionnaire was prepared to collect opinions from participants. There are 33 participants who volunteered for the accomplishment of this research and the survey is conducted through Google Forms. In the secondary research process analyses of recent journals and case studies reviewed by various authors have been conducted. The research also utilized released reports of global tax institutions such as the IMF and OECD. It also analyzed the new advanced technologies such as algorithms of machine learning and blockchain and their implications on the tax systems. Various case studies from other countries such as India, the United States, and the United Kingdom have been analyzed to create a global picture of this subject. The process of data collection provides importance to the identification of similar patterns, results, and innovations from the implementation of these technologies. Analysis of these data has been conducted in a comparative approach for the identification of different patterns of incorporation of these technologies in the world. This will determine the practices in these implementation processes.

Interpretation

Implementation of AI and Big Data for identification of frauds and abnormalities related to Taxation Regulations

The tools and algorithms of AI have been developed, trained, and used for analyzing large-scale datasets. Utilization of these technologies analyzes large financial datasets and identifies the evasions as per tax regulations. It also favors determining irregularity in the data of financial transactions with the comparison of historical data. These tools and technologies also favor estimating potential disobedience by analyzing the taxpayer's recent financial operations. The implementation of these technologies favors automated risk scoring which provides importance to the efficiency related to the investigation and audit process. In the USA the Internal Revenue Service (IRS) utilizes AI technologies for the identification of patterns in tax filings that are suspicious (Oguh and Nwonu, 2023). Similarly, the Goods and Services Tax Network (GSTN) of India uses AI for the cross-verification process of claims related to fraud and invoices (Kumar *et al.* 2023).

Contribution of AI and Big Data in creating strategies for promoting Tax Awareness

The analytics of Big Data increases awareness of tax regulations providing the taxpayers with personalized insights. Implementation of this technology can favor the tax organizations to analyze data related to financial, demographic, and behavioral. This analysis process will favor the organization to develop campaigns related to education for individual groups to improve the aspect of voluntary obedience. It will also favor the authorities to provide reminders and real-time notifications related to tax filing operations. These advanced technologies also have the potential to streamline the process of tax filing with the incorporation of pre-filled forms and digital-based platforms.

Implementation in Different Countries as per Global Case Studies

The HM Revenue and Customs implements the technologies of AI and Big Data to detect frauds related to VAT and external tax evasions (Closs-Davies *et al.* 2024). The "Connect" system of this technology collects and integrates data or information from various sources, such as social media and banks to detect abnormality in the information provided by the taxpayers. After the implementation of these technologies, HMRC identified various tax evasions that favored it to recover unpaid taxes amounting to billions.

Utilization of AI technologies in the Australian taxation office favors them to identify and estimate the risks related to tax and determining the non-cleared income sources. Implementation of advanced technological tools of AI such as advanced analytics the Taxation Office of Australia identifies cases with high risks and sends alerts with automated systems around potential errors (Bevacqua, 2020). This process favors them to promote the idea of voluntary corrections to the taxpayers.

The Goods and Services Tax Network (GSTN) of India utilizes the technologies of AI and Big Data analytics in the monitoring process of real-time tax obedience all around the states. Incorporation of these technologies in the system favored the authority in identifying abnormality in the financial transactions and reducing the claims related to tax fraud (Shahwar and Vikas, 2024). The outcome of these advancements resulted in an increase in revenue collection. Concept of AIS implemented in the taxation system of India is an extension of From 26AS which displays property purchases, high value investments, TDS/TCS

transactions which are carried out in that financial year. It also allows the tax payers to provide their feedback about the information projected in AIS (incometax.gov.in, 2024).

Challenges Related to Morals and Operations

The process of collecting and evaluating the huge scale of data from taxpayers or information by incorporating the data analytic technology of AI and Big Data develops issues such as data protection and personal privacy-related regulations. Algorithms of machine learning sometimes can potentially provide biased results which can result in inequality for significant groups (Adelekan *et al.* 2024). The required financial and technical resources for incorporating and maintaining tax systems powered by AI are significantly high. There can be potential resistance to the adoption of these advanced technologies caused by less understanding and awareness among the authorities and the general population or taxpayers. It also allows the tax payers to provide their feedback about the information projected in AIS (incometax.gov.in, 2024).

Opportunities for the future

The implementation or incorporation of AI and Big Data technologies and tools has the potential to significantly enhance the taxation system structure with blockchain technology, predictive analytics, and global collaborations.

Opportunities for AI

The implementation of blockchain technology has the potential to ensure security and transparency in tax-related transactions (Adelekan *et al.* 2024).

The tools of AI quickly collect information and data relevant with the subject. It also can significantly contribute in identify and test obedience for the tax regulations. This will enhance the operational speed of the tax audit process and increase the accuracy of regulations related to price transfer (Staff, 2024).

The incorporation of Ai can streamline the process of tax operations, identify abnormality and errors, transaction classification and outline solutions for tax related operations as per the requirements of clients (pwc.in, 2024).

Opportunities for Big Data

The utilization of predictive analytics can favor the global tax authorities to estimate the present time trends related to the economy and in the process of optimization of tax policies as per these estimates.

The application of big data can increase the efficiency of developing tax data base by collecting internal information or data and incorporating efficient management information (onlinelibrary.wiley.com).

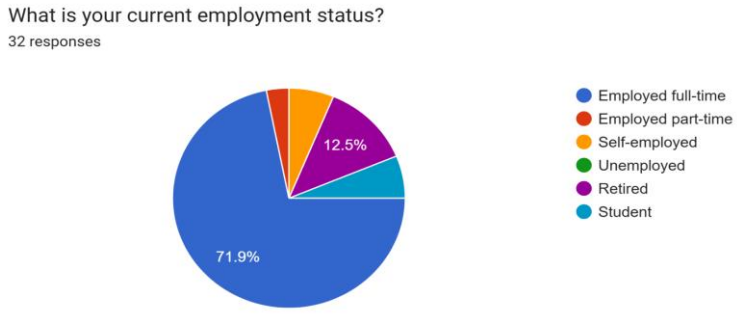
The incorporation of Big Data in Taxation systems can favor the global tax administrations to implement automation in their operational activities. It will decrease the manual data operations of the administrations and reduces the cost.

The development of global collaboration between the international tax authorities will favor them to acknowledge cross-border tax avoidance.

Primary Data Analysis

There are some visual pie charts developed from the collected data in the questionnaire survey. The survey was conducted in 33 participants and all the participants volunteered for this study.

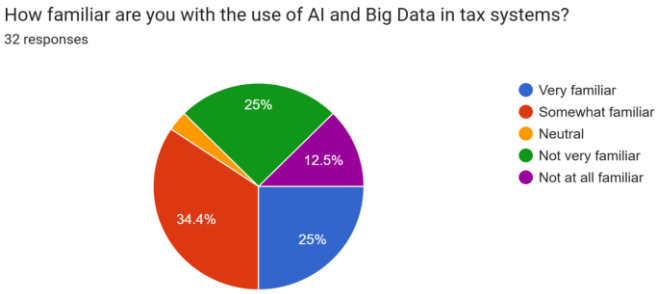
Figure 1: Employment status



(Source: Google Forms)

The data of the pie chart shows that 71.9% of the participants are full-time employed in their organization. This represents that the study will gain dependable information from this survey.

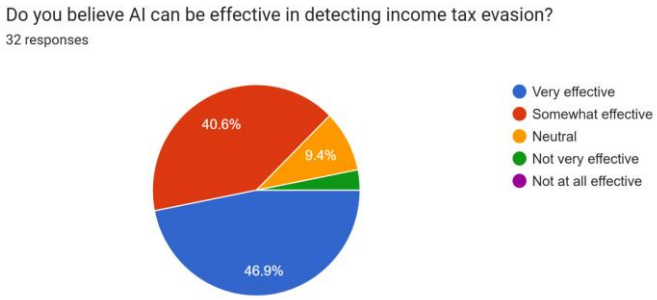
Figure 2: Familiarity with AI and Big Data in the taxation system



(Source: Google Forms)

The familiarity data of the pie chart shows that 34.4% of the participants are somewhat familiar and 25% are very familiar with the use of AI and Big Data in the tax systems. However, 25% of the participants are not very familiar with the usage of these technologies, which means that there will be some mixed results in the opinions of this survey.

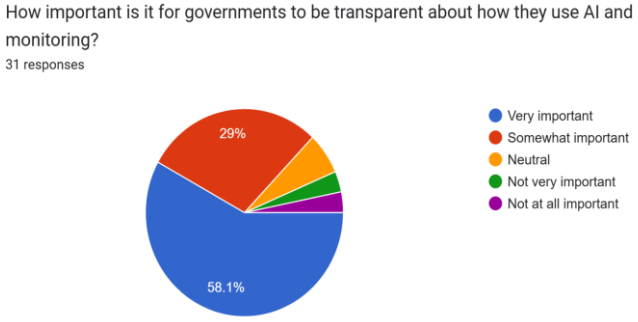
Figure 3: Effectiveness of AI in the detection of Income Tax Evasion



(Source: Google Forms)

The information in the pie chart shows that 46.9% of the participants think that AI can be effective in the detection process of income tax and 40.6% think that it is somewhat effective. This represents that the majority of the participants believe that AI is effective in the detection of income tax evasion.

Figure 4: Importance of Transparency in the Usage of AI and Big Data Technologies by the Government



(Source: Google Forms)

The information presented in the pie chart shows that 58.1% of the participants find it very important for the government to be transparent about the way they use AI and Big Data for Tax monitoring. This means that it is important for the government to maintain transparency in the usage of these technologies.

Conclusion

The implementation of AI and Big Data introduces new opportunities for the global tax authority to enhance their taxation-related systems.

These technologies can favor the authorities to increase obedience to tax regulations in the taxpayers, more collection of revenue, and development of trust with the taxpayers.

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Conflicts of interest
There are no conflicts of interest.

References

1. Adelekan, O.A., Adisa, O., Ilugbusi, B.S., Obi, O.C., Awonuga, K.F., Asuzu, O.F. and Ndubuisi, N.L., 2024. Evolving tax compliance in the digital era: a comparative analysis of ai-driven models and blockchain technology in US tax administration. *Computer Science & IT Research Journal*, *5*(2), pp.311-335. https://fepbl.com/index.php/estj/article/view/922
2. Adelekan, O.A., Adisa, O., Ilugbusi, B.S., Obi, O.C., Awonuga, K.F., Asuzu, O.F. and Ndubuisi, N.L., 2024. Evolving tax compliance in the digital era: a comparative analysis of ai-driven models and blockchain technology in US tax administration. *Computer Science & IT Research Journal*, *5*(2), pp.311-335. http://www.fepbl.com/index.php/csitrj/article/view/759
3. Bevacqua, J., 2020. Tax authority immunity in a digital tax administration world. *JTR*, *18*, p.402. https://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/ejotaxrs18&section=21
4. Closs-Davies, S., Burkinshaw, L. and Frecknell-Hughes, J., 2024. Engaging with a digitalized tax system: Experiences of vulnerable citizens and small tax practitioners. In *The landscape of public-service delivery: changes, challenges, and compromises in a modern society.: Workshop organized by the International Centre of Public Accountability (ICOPA)*. https://research.manchester.ac.uk/en/publications/engaging-with-a-digitalised-tax-system-experiences-of-vulnerable-
5. *Enabling tax bargaining: Supporting more meaningful tax transparency and taxpayer engagement in Ghana and Sierra Leone*. Available at: https://onlinelibrary.wiley.com/doi/abs/10.1111/dpr.12563 (Accessed: 16 December 2024).
6. *FAQs on AIS (annual information statement)* (no date) *Income Tax Department*. Available at: https://www.incometax.gov.in/iec/foportal/ais-faq#:~:text=AIS%20shows%20both%20reported%20value,facility%20to%20capture%20online%20feedback (Accessed: 16 December 2024).
7. Kumar, R., Malhotra, R.K. and Grover, C.N., 2023, January. Review on artificial intelligence's role in the implementation of Goods and Services Tax (GST) and future scope. In *2023 International Conference on Artificial Intelligence and Smart Communication (AISC)* (pp. 348-351). IEEE. https://ieeexplore.ieee.org/abstract/document/10085030/
8. Oguh, F.A. and Nwonu, C.U., 2023. E-CHANNELS AND INTERNALLY GENERATED REVENUE OF EBONYI STATE. *Advance Journal of Management, Accounting and Finance*, *8*(4). https://aspjournals.org/ajmaf/index.php/ajmaf/article/view/44
9. Olabanji, S.O., Olaniyi, O.O. and Olaoye, O.O., 2024. Transforming Tax Compliance with Machine Learning: Reducing Fraud and Enhancing Revenue Collection. *Asian Journal of Economics, Business and Accounting*, *24*(11), pp.503-513. http://journal.submissionpages.com/id/eprint/2010/
10. PricewaterhouseCoopers (no date) *Unlocking opportunities in tax using GenAI*, *PwC*. Available at: https://www.pwc.in/research-and-insights-hub/unlocking-opportunities-in-tax-using-genai.html#:~:text=Embracing%20AI%20can%20empower%20tax,the%20technology%20with%20some%20scepticism. (Accessed: 16 December 2024).
11. Shahwar, K. and Vikas, S., 2024. Emerging Issues in Goods and Services Tax Structure and Contributing Role of Various Taxes Under GST in Surge of Tax Collection in GST Regime in India. *Educational Administration: Theory and Practice*, *30*(5), pp.12975-12984. https://www.kuey.net/index.php/kuey/article/view/5541
12. Staff, T.N. (2024) *How AI can enhance Global Tax Systems*, *Forbes*. Available at: https://www.forbes.com/sites/taxnotes/2024/12/04/how-ai-can-enhance-global-tax-systems/#:~:text=AI%20tools%20could%20quickly%20gather,accuracy%20of%20transfer%20pricing%20regulation. (Accessed: 16 December 2024).