Chapter 1: Scope of Artificial Intelligence in the Tax Review in Mexico

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Abstract

The tax collection of nations is an area that is of interest for the application and use of artificial intelligence, since through this tool, data can be processed through algorithms, which facilitates the processing of high volumes of information and time-efficient reduction of tax fraud, and improvement of various administrative processes that tax authorities carry out. This research in progress was prepared in a documentary manner, with the qualitative method and descriptive approach, collecting data through the analysis of the information collected, with the purpose of generating an approach to artificial intelligence in tax collection. The results obtained show the usefulness of using this tool in tax collection, as well as the limitations and future expectations in the application of artificial intelligence for inspection in Mexico.

Keywords: *audit, supervision, Artificial Intelligence, review.*

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Introduction

According to the report of the Organization for Economic Cooperation and Development (OECD), Tax Statistics in Latin America and the Caribbean 2023, in the last 20 years, the average tax collection as a proportion of gross domestic product (GDP) in our country has never exceeded 17.8%, compared to 34.1% in other member countries of that organization (Mendoza, 2023).

Generically, AI can be used to analyze relationships between taxpayers to identify hidden or simulated relationships or potentially high-risk tax non-compliance networks, which can generate new sources of information for screening rules that are not obvious.

Today Mexico is going through a crisis of public trust. If we add to this the fact that for the fiscal year 2021, Mexico has an expenditure budget of 6.3 trillion pesos,1 destined to acquire goods, services and public works, indispensable to cover the collective needs and diverse government programs, which makes it the main buyer of the country, together with a deficient control of public expenditure, the risk of deviations in the processes and loss of financial resources due to corruption it is plausible.

Therefore, it is necessary to review the scope that artificial intelligence implies in its application in Mexico, since it represents substantial advances in the collection and application of taxes and public resources. Not only the benefits but also the effects on taxpayers, on the exercise of human rights and on the future regulation of this controversial and current tool in Mexico's tax collection systems should be analyzed.

Theoretical framework

The science of complexity is located within the framework of a scientific revolution and the breaking of paradigms by the adoption of new technologies, which allows taking advantage of the benefits and promoting the development of human-centered artificial intelligence, but we must ensure that it is safe, inclusive and reliable (Palomino-Guerrero, 2023).

Increasingly, Tax Administrations (TAs) are using new ICTs to be more effective and efficient in their management, being a digitalization process that accelerated exponentially in the current circumstances. According to the document *"Adoption of artificial intelligence in tax administrations"* (Collosa, 2020), artificial intelligence is booming, and there are different countries and institutions conducting research for a common purpose, which is to improve the administrative processes of governments. In this context, European and South American countries are adopting this technology.

Eventually, all countries will adopt it because according to the findings, it improves efficiency and effectiveness in the analysis of data, compares social networks with the declared income of each taxpayer, sends alert messages in which it detects non-deductible expenses, discovers inconsistencies between declared and generated income, are multiple functions that will help improve the accounting profession, auditing, audits of tax administrations that can facilitate better tax collection and improve state revenues for social investments of each country (Duarte-Sanchez, Alegre, & Ramirez-Girett, 2023).

In the fiscal area, Mexico is a sui generis country because it oscillates between a deficient fiscal culture, attributable to low tax morale (i.e., low collection rates derived from a general unwillingness to pay taxes), and a governmental auditing apparatus that could be considered avant-garde due to its advanced technological structure, leaving aside the occasional complexity of scheduling appointments (Mendoza, 2023).

Against this backdrop, the work of the various audit agencies in Mexico has made efforts to professionalize their personnel and certify their capacities, and to a large extent they have found powerful allies in technological tools such as computers, smart cell phones, spreadsheets, user-friendly accounting systems, etc., to process and validate large volumes of information, with greater ease and accuracy in less time.

However, given the evident results, citizen demand, the requirement and priority of the Executive Branch to eradicate corruption and its effects, it is evident that more efficient control models must be adopted, supported by state-of-the-art technology (Guardiola, 2021).

In Mexico, the "*Servicio de Administración Tributaria*" (SAT), a decentralized agency of the "S*ecretaria de Hacienda y Crédito Público*" (SHCP), is

responsible for facilitating and encouraging voluntary compliance with the tax obligations of individuals (citizens) and corporations (companies).

Despite the structure and goals established by the Mexican State through the SAT, some taxpayers seek to avoid an obligation imposed by the Constitution to participate in the expenses required by the nation, which are necessary for its existence and development. In this way, the phenomenon of tax evasion is generated, defined according to the SAT as "any action or omission, partial or total, tending to reduce or delay compliance with the tax obligation" (Universidad Nacional Autónoma de México in collaboration with Central European University, 2018).

The principles that promote the development of artificial intelligence delimited by Palomino-Guerrero (2023):

1. It must be supervised by humans.
2. Tamper-resistant systems.
3. Guarantee the privacy of personal data throughout the life cycle of artificial intelligence.
4. Transparency to know that artificial intelligence is interacting with.
5. Consider social diversity so as not to incur direct or indirect discrimination.
6. To value the social and environmental impact to be sustainable.
7. The results of artificial intelligence must be auditable.

These principles are aligned with various legislations in the world that seek to regulate the operation and application of artificial intelligence in each nation, given that in countries with high economic development, this tool is a fundamental part of tax collection, contributing to the operation of tax authorities and the use of public resources. It should be noted that such systems are fed and supervised by human beings and seek to safeguard compliance with fundamental human rights.

Some of the benefits of using AI in audit work in Mexico that are concluded in Guardiola's research (2021):

• AI computers would be able to locate and prevent patterns, as well as hidden trends, to support early fraud detection.

- Computers with AI would perform audit, materiality analysis and reference linkage; they would verify a larger percentage of the universe and not just a small sample; they would evaluate evidence with specific criteria.
- Computers with AI would support internal control evaluations, propose improvement actions and control activities.
- Computers with AI would improve risk identification and prevention, given access to all available information cubes.

The application of artificial intelligence in Mexico is a great challenge that implies making the processes carried out by the Tax Administration System and its administrative personnel more efficient in all its functions; however, its progress will be limited by the reforms and initiatives related to the subject, presented in the institutions foreseen for such purpose in the country.

The tax authorities must analyze the effects and benefits, as well as the respect for human rights and the principles that the application of this technology must keep, which presents unquestionable benefits, but which in the future could represent risks or dangers not only for the authorities themselves, but the main affected party would be the taxpayer due to the vulnerability of his data and the susceptibility of the frequent revision of his tax data.

Methodology

For the elaboration of this first stage of the research, documentary research has been used to qualitatively support and sustain the necessary information to conclude the present research process. To this end, we resorted to the review, compilation and selection of information on the subject, in various scientific publications, books, magazines and digital newspapers, since, given the modernity of the subject, such information was discriminated against by its timeliness.

Conclusions

Through the realization of this documentary research, it can be affirmed that auditing is the action through which the tax authorities try to prevent taxpayers from tax evasion or tax fraud and, in case of committing them, try to detect, prove and liquidate them.

In the analysis of millions of data, people need time to discover inconsistencies; instead, artificial intelligence can analyze millions of data, in which we can intervene and draw conclusions from the findings.

The use of artificial intelligence (AI) in audit work in Mexico implies, from the perspective of the authors and examples studied, understanding that cutting-edge technology can greatly improve their productivity and results, so that implementing AI is a window of opportunity that would reduce the time spent on mechanical and repetitive tasks to focus it on activities of greater value in favor of transparency and accountability in Mexico.

It is assumed that Mexico faces the following challenges in the application of artificial intelligence:

Challenges:

- Maximizing via IA the scarce resources available to evaluate government management and being able to make valuable contributions.
- Rotating the different auditing entities with specialized software with similar professional and operational standards, with effective information exchange capabilities, to avoid duplication or omissions in auditing acts.
- Permeating a change of mentality from top management to assume the changes and understand the importance of AI and thereby build adequate and indispensable tools for the foundation of a suitable anticorruption program.
- Modernizing management and government auditing systems with the use of AI becomes increasingly attractive to employers as a career option for millennials and Generation Z professionals.

- Harmonizing the governmental accounting of all public entities of the three levels of government to be able to monitor more effectively the exercise of public spending, via data mining.

It is recommended to other researchers to deepen the subject of studies by making inquiries in the tax collection agency of Mexico to explain the operation of artificial intelligence in the cross-referencing of data for the case of Mexico.

References

Collosa, A. (2020, 13 de october). Inteligencia artificial aplicada a la fiscalización. Centro Interamericano de Administraciones Tributarias (CIAT). https://www.ciat.org/ciatblog-inteligencia-artificial-aplicada-a-la-fiscalizacion/

Duarte-Sanchez, D. D., Alegre, M., y Ramírez-Girett, V. A. (2023). Adopción de la inteligencia artificial en las administraciones tributarias: Revisión de literatura. *Ciencias Económicas*, 19-29.

Guardiola, H. C. (2021). *Inteligencia artificial en la fiscalización en México: ¿Una ventana de oportunidades?* Dossier.

Mendoza, A. (2023, 3 de julio). La inminente aplicación de inteligencia artificial en el aparato de recaudación fiscal. *Forbes México*. https://www.forbes.com.mx/la-inminente-aplicacion-de-inteligencia-artificial-en-el-aparato-de-recaudacion-fiscal/

Palomino-Guerrero, M. (2023, 3 de marzo). Inteligencia artificial: un mecanismo para frenar la evasión fiscal sin vulnerar los derechos del contribuyente. *Cuestiones Constitucionales*. https://doi.org/10.22201/iij.24484881e.2022.46.17053

Universidad Nacional Autónoma de México en colaboración con Central European University. (2018). *Evasión en IVA: Análisis de redes*. UNAM.