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CHALLENGES OF BIG DATA AS PART OF TRANSFORMATION OF FISCAL POLICY IN MEXICO

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Abstract: The purpose of this paper is to evaluate the challenges in tax matters in relation to the accelerated growth of new information technologies, specifically big data, the sensitivity of the handling of personal data and the loss of privacy. Tax policy has been evolving and has been transformed as a consequence of globalization and the development of new technologies, such as artificial intelligence, big data, biometric data, personal data, the global risk report and the cybersecurity report 2023 were also analyzed, and the fiscal impact in Mexico of the use of big data in the Federal Tax Code was studied. Using the analytical method, an analysis was made of the main laws in Mexico that regulate big data, in addition to emphasizing the great responsibility for International Organizations and Governments in charge of protecting and monitoring the respect of people's rights in all areas. Finally, it is concluded the need to work together with society, government and academia to seek solutions from the law that allow the protection and security of taxpayers in the face of a phenomenon that is advancing and that without a good regulation can overtake people. It is important and urgent that international organizations, states and interested individuals strengthen collaboration and mechanisms that impact on issues such as privacy and security, always in favor of human dignity before technology.
Keywords: human rights, artificial intelligence, big data, tax policy, cyber security

INTRODUCTION

The purpose of this paper is to analyze the main findings and challenges as a consequence of globalization and the accelerated growth of new technologies, as they have advanced not only worldwide but also in Mexico; an important part is their incorporation within the Tax Administrations to facilitate services and operations, such as virtual assistants.

In this sense, it becomes relevant how the incorporation of *Big Data* in tax administrations can help improve public management (Sosa, 2020), make it more efficient however there are also serious challenges such as personal data storage, privacy, security among others.

The digital economy increased considerably in recent years, in addition to simplifying the ways of life of people, it means the growth of data on the network, since 2012 the Organization for Economic Cooperation and Development OECD, launched the BEPS Action Plan, this Plan with the approach to go against the erosion of the tax base and profit shifting.

This has been one of the most important steps taken by the OECD, forcing countries to incorporate into their legislation rules that limit the actions of persons obliged to pay taxes, establishing mechanisms to end or eliminate tax evasion and avoidance, however, the digital economy is changing day by day and new ways to avoid paying taxes are emerging.

It must be remembered that one of the fundamental aspects under which the digital economy operates is the transfer of intangible goods, where they can be from the exchange of a large amount of data, the most delicate thing is that they are mostly personal data, being on the network, it is difficult to determine the jurisdictions under which they operate and returns the issue of residence and source of income, as an important part for the determination of taxes.

There is a saying that who has the information, has the power, and with the use of new technologies and the storage of personal data, it is worth recognizing that too much data is collected through these systems, where people really need to know what is being generated by giving their consent, otherwise their right to privacy and intimacy will continue to be violated. (Abdala & Lacroix, 2019) .

The importance of the implementation of artificial intelligence within the tax administrations derives from the consequences that it would have if this were done, since it would result in efficient and more effective administrations in terms of taxpayers complying with their established obligations, thus facilitating and preventing fraud or tax evasion.

If the internet of things, artificial intelligence and *big data* are used, a large amount of data collection is achieved, which can be analyzed to review and study the behaviors of different taxpayers, predict situations and avoid illicit acts that harm governments and society in general.

An example of this is the use of *chat bots*, virtual assistants are used as part of artificial intelligence, in the case of customs they are used for facial recognition in tax control among others (Serrano, 2022).

This is why, within this global panorama, the figure of *big data* appears as one of the main actors, as it is generating a large amount of data that was not even known that it could be generated.

BACKGROUND ON THE USE OF NEW TECHNOLOGIES IN TAX MATTERS

The rapid progress of new technologies has also generated that the prices of technological and computer products have decreased, with this, people have had electronic devices within their reach.

An important aspect is the use of the data that users give to the applications and their owners, that is, companies have access to a large amount of data that can be personal, can be obtained when subscribing, if they are installed on their devices and computers, the activities performed on them can be analyzed.

Thus, new scenarios emerge that bring figures such as the internet of things, virtual currencies, advanced robotics, 3D printing and *big data*, a topic that will be addressed more specifically in the following sections.

Governments are also focused on getting into the new information technologies in their use and how to achieve the least tax evasion in their areas, it is increasingly common to hear, read or see about governments with open data policies, open government, governments with platforms.

A Government with open data policy, is when we talk about accountability, that performance is improved so that through this generation of data in applications and programs there is better cooperation and finally the participation of third parties in public affairs, where a fundamental role is the Public Administration and the use of applications (OECD, 2014) .

Big data, it is said to be permeating the countries, because of its background in technology, it gradually invades all areas of knowledge, it is about making a collection, storage and an analysis of information with large amounts of information, it is part of the digital revolution, but it is generating many challenges and challenges (Becerra et al., 2018) to solve, especially in legal and tax matters.

The inclusion of *big data* within tax administrations, needs to accept the risks involved, given the lack of ethics, transparency and controls that to date do not exist and that some international organizations have warned of the danger in terms of privacy (Castañeda et al., 2016) .

However, as Margarita Palomino comments, it is important that parameters are established as to the use and where artificial intelligence is applied, otherwise it may be the case of violating rights in terms of privacy and security. (Palomino, 2021).

In Mexico, the first time that the tax law included electronic media was in 1985 (Zamarripa, 2022), in this case with the modification of Article 45 of the Federal Tax Code, where it refers in the case of a home visit, and that taxpayers keep electronic records of their accounting, they must place the computer equipment at the disposal of the visitor.

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In 2013, the Organization for Economic Co-operation and Development (OECD) published a report entitled *"Tax Administration 2013 - Comparative Information on OECD and Other advanced and emerging economies"* (OECD, 2013), where emphasis is placed on the digital part to make costs more efficient.

In Mexico, Article 17 K of the Federal Tax Code introduces the figure of the tax mailbox, which the law recognizes as a means of communication to maintain contact with taxpayers and to be able to notify them of any administrative ruling or resolution (PWC, 2020).

THEORETICAL FRAMEWORK OF BIG DATA

In this topic, there are transcendental concepts, on which it is necessary to start in order to identify the opportunities and, where appropriate, the challenges in the technological era for the Administrations that also seek to incorporate in their systems to streamline public management.

Artificial Intelligence is said that its object is to make computers do the same thing that the mind can execute (Boden, 2017) . Another concept says that artificial intelligence is part of legal informatics, and it is to have machines do any kind of tasks that a human being can do (Martinez, 2013) .

As for the definition of ***Big data,*** it is said to refer to ***big data*** that is employed in information and communication technologies, to refer to data or data sets with different volume, velocity and variety. (Moreno, 2018) .

Among the variables used to measure security and privacy in *big data,* the protection of personal data within applications such as new information technologies. And as with all of the above, it is causing governments to transform and modify their ways of operating in order to obtain more information and, therefore, more revenue through tax collection.

In this information society, all measures aimed at strengthening people's security, privacy and the right to intimacy must be taken into account as fundamental values regarding the protection of users' privacy. (Arellano, 2014)

The use of *big data* requires new guarantees along with the already existing regulations by the tax administration, it is necessary to reinforce transparency to the taxpayer when using these technologies and another important point, is the respect for privacy hand in hand with respect for the principle of equality, with this can avoid discrimination when using these applications in tax matters. (Oliver, 2021).

METHODOLOGY

In this research, the historical method was used to review the background and the first findings that led to the birth of *big data* within the administrations. The analytical method was also used to review electronic sources from journals, articles related to the main transformations that have been taking place in tax matters through electronic systems.

Finally, in order to draw conclusions, the synthesis method was applied, with which information was compiled to delimit the next lines to be followed in the face of a phenomenon that is advancing with a panorama of little or no regulation.

RESULTS

In the Report on the Fiscal Outlook for Latin America and the Caribbean 2023, prepared by ECLAC, emphasis is placed on the importance of the administrations relying on technological discoveries to achieve taxpayer control, i.e., all technological advances aimed at simplifying administrative procedures and reducing costs are supported, including tax returns as an example, with (ECLAC, 2023) this is intended to encourage compliance.

The Global Risks Report 2023 states that new technologies will be the new national security threats, not only at the national level but also at the international level, which will surpass conventional wars. This means that cyberspace will be a new scenario (IMF, 2023).

Information warfare through new technologies, including the rise of disinformation, *hardware* hacking. Increasing investment in digital applications along with artificial intelligence.

This is generating a large collection of data, which is a great threat to the lives of people, who are increasingly closer to being violated in their personal data by both the public and private sector, in this case in tax matters, are left in a state of defenselessness in terms of human rights.

The Cybersecurity Report 2023, points out that cybersecurity will be one of the most important issues in the next ten years, as a consequence of the use of technology that is increasing the complexity of digital environments. (WEF, 2023).

Regarding the use of artificial intelligence as a good practice, it is important to preserve the confidentiality of personal data, therefore, the analysis and sharing of good practices among institutions, academia, administrations and companies is fundamental (Gómez, 2022).

The importance of *big data* in tax matters lies in the fact that through digital applications it is possible to have information at the moment, with availability, immediate and with a large amount of data, these trends help the tax authority to have more elements to eliminate tax evasion and tax avoidance. (Matteucci M. A., 2020)

The use of *big data* in tax matters offers new opportunities to improve tax compliance in order to avoid tax evasion (Camara, 2022). Another interesting aspect, is regarding the decisions that in administrative matters are being made in conjunction with *big data,* seen as a very useful tool in the detection of tax evasion, without a regulation with transparency can lead to certain injustices, violate the rights of taxpayers can even generate discrimination (Rodriguez, 2021) .

Article 28, Section III of the Federal Tax Code establishes: "The records or entries that make up the accounting shall be kept in electronic media as established by the Regulations of this Code and the general provisions issued by the Tax Administration Service". This article establishes the obligation to keep electronic accounting.

Another article that is important to mention is article 53-B of the Federal Tax Code, which establishes everything related to electronic reviews and the basis under which they will be carried out. It also establishes the obligations for the tax authorities in electronic reviews.

Within Chapter II of the Federal Tax Code, which is titled "Electronic means", where Article 17 D stands out, since it talks about the supposed submission of documents, and that these must be digital and have an advanced electronic signature, from there we can see how little by little the Tax System has been evolving and with the objective of reducing costs, combating corruption and avoiding tax evasion or avoidance, steps have been taken in digital matters.

Iván Venzor and Héctor Flores (Venzor & Flores, 2018) conclude in one of their investigations that the use of *big data* in tax matters through the observance of the issuance of CFD`is that are issued, it can be said that, contribute to the generation of higher revenues for the administrations.

As stated in the OECD Report entitled "Tax Co-operation for Development" OECD, 2019), in the section on the fight against tax avoidance through the BEPS Plan, it makes it clear that one of the main priorities is to put an end to avoidance practices in which the loopholes in the different tax rules are usually taken advantage of, which makes countries choose low or no tax jurisdictions

Now, if the tax administrations use *big data*, through electronic systems the authorities get information that in fiscal terms helps them to collect electronically always in networks that are authorized, you can determine people who are hiding profits or who want to commit any (Matteucci M. , 2020) , *big data* if it favors for governments to make decisions.

DISCUSSION

The Organization for Economic Co-operation and Development OECD, in 2021, produced a report entitled "Supporting Digitization in Developing Countries" (OECD, 2023) , spearheaded by the Centre for Tax Policy and Administration in conjunction with the African Tax Administration Forum.

This report points out as good practices, chatbots that work through artificial intelligence, accounts that are digital in mobile applications, clarify that they must be fiscal accounts where appointments are booked, payments are made on smartphones.

It also mentions that data analysis in the use of technology to carry out data analysis in terms of tax returns, also to follow up on taxpayers who comply, in addition to the use of *machine learning*, translated as automatic learning, with which it is possible to predict the behavior of the taxpayer, in addition to improving processes.

In turn, it can be said that tax administrations are further professionalizing their teams to improve the processing of the large amount of data for analysis, therefore, *big data* is positioned as an important part of innovation in the way data is handled, thereby accelerating the measurement of those who comply or do not comply.

New tax problems are looming, in this great globalization, every government is facing the digital revolution, although, innovations are in tax matters an opportunity for effective taxation to take place, make processes easier, however, on the other side, it is known that there are experts who use new technologies to defraud fiscally.(Gupta et al., 2017)

Therefore, the impact that can result from digitization goes hand in hand with the accuracy of the information that is collected. The work of the tax Administration known as 3.0, intends that with the help and use of artificial intelligence it will be possible to carry out activities automatically, it is also said that, in this case, the operation will be focused on the operation and how the tax administration systems will grow. (OECD, 2022).

This means that it would increase the analysis of data, evaluate knowledge that generates behaviors and how to achieve strategies with the use of information technologies to help national and international standards in conjunction with the resolution of their problems.

On the other hand, the use of disruptive technologies is said to move from an unfavorable situation to modernity, without going through intermediate phases, in addition to cost savings are some of the favorable aspects for its implementation in tax matters.

The concept of *Big data*, together with artificial intelligence are not new, but they have made positive advances within the tax administrations, the most important ones being the reduction of costs, through computers it has been possible to improve the process and storage, growth of communication networks, development of very effective models to capture, process and store large amounts of data, algorithms. (CIAT, 2020).

According to the OECD, the exchange of tax information between countries has improved, in terms of computation, algorithms and data, with *big data*, the handling of data with its characteristics in terms of volume, variety, speed, veracity and value.

This is the great importance that *big data* has been having in recent years, due to the large production that has been taking place

in data worldwide, *big data* is the basis for all applications that help analyze data always with the help of artificial intelligence.

Regarding the digital tools used to collect data, they are also designed to make comparisons between different countries, their tax administrations, as well as being used to make reports that show how their tax aspects are doing and inform their administrations, up to being of help to formulate public policies. (Norad, 2020)

An important aspect is the care for administrative efficiency hand in hand with respect for the rights of taxpayers as part of their fundamental rights and as a limitation for the application of artificial intelligence in tax matters. (González, 2021)

CONCLUSIONS

The use of *big data* within the tax administrations poses a great challenge in terms of personal data protection and security issues, as the availability of large amount of data on tax matters, without effective regulation can trigger serious events.

The risk of privacy and intimacy issues will continue to increase in the coming years, the management of our data, and which authority will be responsible for sanctioning the criminal acts generated on the network will continue to be debated, the world is evolving faster and faster and with it the virtual world.

The use of *big data* in tax matters requires deepening transparency and how administrative entities will solve the management of data on the network, it is that the new technologies that are emerging within artificial intelligence come to give practicality, cost reduction and improvement in services always with ethics, values and transparency, otherwise there is a risk that people are hostages of new technologies.

The Undersecretary of Finance Gabriel Yorio, shared that Mexico needs to tax in a progressive tax system (Saldívar, 2022) , and that this is one of the biggest challenges for the country, it is still unknown if the impact of artificial intelligence and the use of big data will be a fundamental part of this movement.

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