

The Impact of Employing Artificial Intelligence Applications in Enhancing the Efficiency of Tax Administration –France's Experience-

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Abstract:

The study aims at shedding light on the uses of artificial intelligence in tax administrations and its role in increasing their effectiveness and efficiency. Given the nature of the study, we relied on the descriptive approach and analytical approach. By studying the experience of the French tax administration (DGFIP) in using artificial intelligence applications, the study concluded that predictive analysis methods (artificial intelligence and data mining) work to enhance the efficiency of tax administration. It allows for the identification of fraudulent behavior and facilitates more accurate targeting of limited resources in high-risk situations, leading to improved accuracy and operational efficiency. Therefore, the study recommended the need to implement governance rules that ensure the deployment of artificial intelligence in a way that balances administration's tax collection powers with the rights of taxpayers.

Keywords: Artificial Intelligence; Tax Administration; Data Analysis; efficiency; France.

Jel Classification Codes : H39 ; O33 ; C80.

Résumé:

L'étude vise à mettre en lumière les utilisations de l'intelligence artificielles dans les administrations fiscales et son rôle dans l'augmentation de leur efficacité et leur efficience. Compte tenu de la nature de l'étude, nous nous sommes utilisés l'approche descriptive et l'approche analytique. En étudiant l'expérience de l'administration fiscale Française (DGFIP) dans l'utilisation des applications d'intelligence artificielles, l'étude a conclu que les méthodes d'analyse prédictive (intelligence artificielles et data mining) travail pour améliorer l'efficacité de l'administration fiscale. Il permet d'identifier les comportements frauduleux et facilite un ciblage plus précis des ressources limitées dans les situations à haut risque, ce qui conduit à une meilleure précision et efficacité opérationnelle. Par conséquent, l'étude a recommandé la nécessité de mettre en œuvre des règles de gouvernance qui garantissent le déploiement de l'intelligence artificielles d'une manière qui équilibre les pouvoirs de collecte fiscale de l'administration avec les droits des contribuables.

Mots clés: Intelligence Artificielles; Administration fiscale; Analyse des Données; Efficacité; France.

Jel Classification Codes : H39 ; O33 ; C80.

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I. Introduction

Artificial intelligence (AI) is the primary driver of the Fourth Industrial Revolution, creating intelligent systems based on developing algorithms that mimic human behavior and thought processes, and have the ability to analyze data, predict, and perform tasks. Therefore, the use of artificial intelligence has become increasingly widespread in many fields, including tax administrations that rely centrally on data collection and analysis, which has facilitated the early adoption of rules-based artificial intelligence systems. These systems enable tax administrations to analyze large amounts of data through data mining, machine learning, and automation of repetitive tasks, such as file classification or tax declaration verification. This saves tax administration personnel time to focus on more complex tasks, facilitates the full range of their operational activities, and improves services provided to taxpayers. Given the many advantages that artificial intelligence provides to tax administration, it raises the question of the implications of employing this technology in tax administrations.

What is the Impact of Employing AI Applications on the Efficiency of French Tax Administrations (DGFIP)?

I.1 Study Hypotheses

To answer the above question the hypotheses were set out:

H 1: Artificial intelligence helps more accurately detect fraudulent behavior and better target resources in high-risk situations.

H 2: The use of artificial intelligence in tax administration requires continuous guidance and development from the human element in order for it to work reliably.

H 3: The effectiveness of artificial intelligence in detecting violations remains limited.

I.2 Methodology of the study

In this study, we used the descriptive approach to provide an overview of the concepts related to AI and tax administration and the relationship between them, and the analytical approach to analyze data related to the uses of AI in tax control and its impact on the tax collection process and combating tax fraud.

I.3 Previous studies

- **Study of (OECD, 2025): Governance with Artificial Intelligence**, Since 2022, the OECD has been conducting an inventory of technology-Enabled Tax Initiatives (ITTI) and has provided lessons on the application of AI in tax administrations around the world. The survey showed that the main areas of application in OECD countries are detecting tax evasion, supporting decision-

making, and improving services provided to taxpayers. It is based on this experience that tax administrations seek to determine how to deploy more advanced techniques. While technological advances in AI offer significant opportunities to improve and transform services, they can also increase the risks associated with sensitive data processing and generate new concerns. Tax administrations must ensure that privacy, security, and the trustworthy application of AI are prioritized.

- **Study of (courts of auditors, France, 2024): AI in public policies: The Example of the Ministry of The Economy and Finance,** The AI system in the French tax administration DGFIP consists of an integrated set of applications (13 applications), in particular: Datalake, Galaxie Application, Fraud Targeting and Request Valorization (FTRV), Innovative Land ..., which have helped to activate operations to combat tax evasion, increase the level of tax compliance, facilitate tax procedures, improve labor productivity,... However, The study found that the AI system faces significant challenges at the legal, technical, ethical levels (manipulation of collective data, methodological bias produced by AI systems), organization of teams and development of professions necessary for managing public policies

- **Study of (Rebecca Martel & Lyne Latulippe, 2021): Use of Artificial Inteligence in Taxation: Status Report According to Literature,** The literature on developments in the field of AI was examined. The study found that despite the multiple problems and potential risks related to taxes, AI is increasingly changing the role of professionals and revolutionizing the ways tax operations are conducted more effectively in tax administrations. It is essential to ensure that taxpayers' rights, the integrity of the tax system, and the reliability of tax administrations are maintained in a balanced manner when using AI.

II. Theoretical Framework (Artificial Intelligence – Tax Administration)

The use of artificial intelligence (AI) in tax matters is part of the enormous uses this tool provides, generating both risks and opportunities for taxpayers and tax administration. It also raises real technical issues, whether new or simply updated.

II.1 Artificial Intelligence – Definitions and Classifications -

A. Definition of Artificial Intelligence (AI)

The term AI was first formulated by the famous computer scientist John McCarthy in 1956 at the conference that he organized on **AI**, and he defined it as: the science and engineering of making intelligent machines.

In 2019, the Organization for Economic Co-operation and Development OECD defined **AI** as: an automated system that aims at achieving a set of specific objectives for humans, as a measure that works to record expectations,

formulate recommendations and make decisions that affect real or virtual data (Belaid, 2024, p. 108).

The Cambridge Dictionary defines **AI** as: the use of innovative computer systems and machines that possess the characteristics of the human mind, such as the ability to recognize images and data, solve problems, and learn. The Oxford Reference also defines it as: the study and development of computer systems capable of replicating intelligent human behavior, such as understanding languages and making appropriate decisions (Akachat & Boucheriba, 2024, p. 3).

From the above, we find that **AI** refers to computer systems or devices and machines that simulate human intelligence to perform tasks, and have the ability to learn, think, understand, adapt, infer, and make decisions quickly and efficiently after collecting, processing, and analyzing huge amounts of data.

B. Classifications of Artificial Intelligence (AI)

Depending on the type or capacity, **AI** is classified into 3 main categories:

- **Artificial Narrow Intelligence (ANI):** It refers to AI systems that can only perform a specific task autonomously using human-like capabilities. These machines can only do what they were programmed to do and therefore have a very limited or narrow range of skills. According to the aforementioned classification system, these systems correspond to all reactive and limited AI memory. Even the most complex AI that uses machine learning and deep learning to teach itself falls under ANI.
- **Artificial General Intelligence (AGI):** Is a type of AI capable of performing any intellectual task as a human being. AGI machines are designed to perceive, learn and function fully like humans. In addition, the goal of designing AGI systems is to create multiple skills that can significantly reduce the time required for training these machines.
- **Artificial Super Intelligence (ASI):** The development of artificial Superintelligence will probably mark the peak of AI research, as AGI will become by far the most powerful form of intelligence on the planet. ASI, in addition to replicating the multifaceted intelligence of human beings, will be extremely efficient thanks to a considerably increased memory, faster data processing and analysis, and decision-making capabilities (Gimazane, 2022).

II.2 Tax Administration 3.0 and the Inclusion of Artificial Intelligence

A. Definition of Tax Administration 3.0

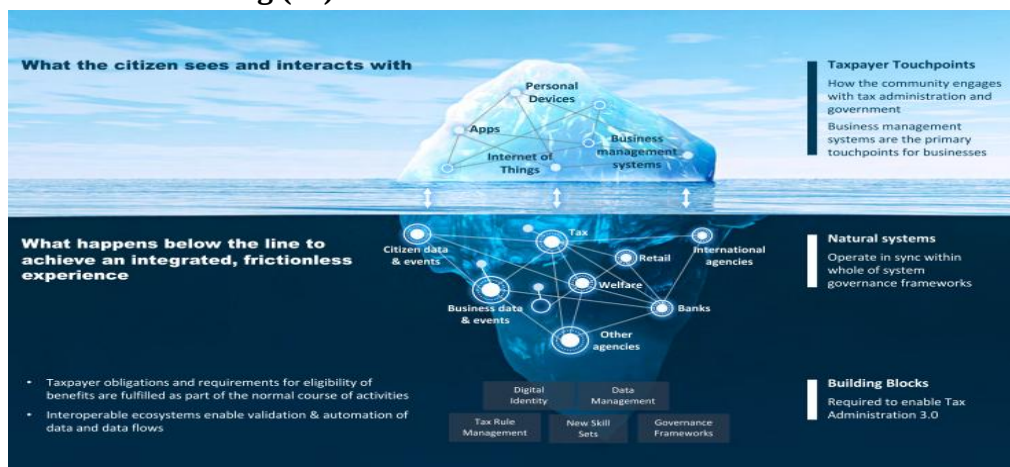
Tax administrations in various countries around the world face many challenges (increasing complexity of the global economy, rapid technological change, changing customer expectations) that put pressure on the tax system by increasing taxpayer requirements and internal tax processes. That is why the OECD Forum on Tax Administration has identified Tax Administration Vision 3.0, for the digital transformation of tax administrations.

Tax Administration 3.0 aims to integrate tax processes into the systems

used by taxpayers in order to reduce the tax burden and increasingly integrate tax compliance. According to this vision, taxes will become automatic, as processes such as payments and tax declarations will be automated within a network of systems. Automating tax processes helps significantly reduce the reporting burden on taxpayers, and integrating tax compliance would reduce the need for tax administration intervention (Hawara, 2024, pp. 10-11).

To achieve the requirements of Tax Administration 3.0 and process automation, this depends on integrating emerging technologies, including applications of **AI**, into various tax matters (payment processes, tax collection, tax control, etc.), which leads to reducing the tax burden, increasing tax compliance, and enhancing the efficiency of the tax system.

Fig.(01): Vision of Tax Administration 3.0



Source: (OECD, 2020, p. 13)

In Table 1, we explain the development of tax administration, which relied on electronic data deposit and then moved to the database to reach the latest development based on the use of emerging technologies, especially **AI** and machine learning, which rely on predictive analysis of the huge amount of data, which will make tax administration more flexible and responsive. It supports the relationship between taxpayers and tax administration, which contributes to increasing tax compliance and achieving tax policy objectives.

Table (01): Passage from administration 1.0 to administration 3.0

Tax Administration	Characteristics	Technological Waves
1.0	A tax administration-centric view of how the tax system should work: Paper-based processes, Siloed administration .	Electronic filing
2.0	Increasingly focused on the taxpayer: Taxpayers become clients Better articulation within the tax administration and with other administrations	Database

3.0	Administration becomes more resilient and more agile: New technological tools and the significant increase in data sources, A growing range of services	Predictive analysis, machine learning and deep neural networks
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Source: (El Haddad, Chafik, & Mghizou, 2023, p. 76)

B. The Importance of Using Artificial Intelligence in Tax Administration

The description of an AI system is based on the existence and common use of five skills: discovery, prediction, justification, action, and learning. In the context of tax administration procedures, the importance of AI comes from its ability to analyze large amounts of data, automate repetitive tasks, and provide useful information, reflecting the benefits observed in numerous national experiments. The Inter-American Center for Tax Administrations (CIAT), seven of its members, and Microsoft have developed an open source solution that allows the identification, selection, and prioritization of taxpayer files with unusual behavior by applying unsupervised machine learning models to electronic invoices, taxpayer records, and tax return data. The detector works in an automated manner, from loading data to providing information for analysis. Some of the benefits of an anomaly detector are:

- Efficiency, design and effective development through an open source solution
- Improve risk management and prevent tax fraud.
- Return on investment in electronic billing.
- Reduce data processing time (Reguilon, 2023).

C. Trends in Employing Artificial Intelligence in Tax Administration

- **Firstly**, tax administrations have used technology to significantly increase the amount of data collected. The volume of information contained in tax declarations has increased and additional declarations (such as: the standard audit file [SAF-T], e-invoicing and VAT declaration in Europe real-time) have significantly increased the volume and level of detail of the data collected.

- **Secondly**, Tax authorities have deployed a range of AI solutions to detect compliance violations in the form of reporting errors or fraud. In 2023, for example: French tax authorities discovered 140.000 undeclared groups (generating €40 million in tax revenue) using AI along with aerial photographs made available to them by the National Institute of Geographic Information and Forestry (NIGIF).

Meanwhile, tax authorities have sometimes misused the technology. The Dutch Tax Administration used an AI-based risk classification model to manage the childcare benefits system. This AI solution incorporates machine learning algorithms to create risk profiles of applicants believed to be most vulnerable to fraudulent applications. AI has been poorly designed and managed, leading to a large number of false accusations. This situation led to a major political scandal

that contributed to the fall of the government in 2021.

- **Thirdly**, digital platforms have been deployed to allow:

- ✓ Taxpayers to view the status of payments, returns and correspondence;
- ✓ Simple tax returns to be filed automatically;
- ✓ Citizens to access resources in taxation.

More advanced solutions are being developed: in Italy, for example, the Prodigit project uses generative AI to predict the outcome of tax disputes and thus reduce the backlog of ongoing cases.

In Canada, it has been reported that the CRA has been using AI for a number of years as part of tax compliance and risk assessment (Trossman, 2024, p. 3).

In Table 2, we explain the most important applications of AI used by tax administrations.

Table (02): Applications of AI Used by Tax Administrations

Field of Application	Mobilized AI technique	Expected effects
Data collection and processing	Automated extraction, natural language processing (NLP), document recognition	Improvement of data quality, reduction of human errors, strengthening of transparency and equity
Analysis of tax behaviors	Machine learning (supervised and unsupervised), deep neural networks	Proactive detection of fraud, targeting of controls, reduction of arbitrariness
Personalization of tax	Predictive models, recommendation systems, usage data analysis	Adjustment of contributions according to the use of public services, increase in tax justice perceived
Evaluation of tax policies	Algorithmic simulation, multi-agent impact models, decision trees	Measurement of redistributive effects, design of more inclusive and socially acceptable policies
Communication and user services	Intelligent chatbots, voice interfaces, personalized interactive platforms	Improvement of the taxpayer-administration relationship, strengthening consent and trust
Transparency and governance	Traceable algorithms, automated data publication, open visualization interfaces	Fight against opacity, budgetary transparency, strengthened accountability

Source: (Aba & Nasri, 2025, pp. 85-86)

II.3 The Role of AI in Enhancing the Efficiency of Tax Administration

More than 80% of tax administrations have declared the use of the latest technologies, or have begun the implementation phase before future use of these technologies, to exploit data in ways that reduce the need for human intervention. Although AI and machine learning are still at an early phase of development in general, they are already producing efficiency gains that work on freeing up resources that can be redeployed to other areas (OECD, 2023, p. 23).

Tax administrations use AI to facilitate the full range of their operational activities, actively analyze its potential to increase the efficiency of their operations, improve services provided to taxpayers, enhance tax discipline and prevent fraud. They are well positioned to do so: data collection and analysis are central to many tax administration processes, which has facilitated the early adoption of rules-based AI systems. These systems have allowed tax administrations to analyze and learn from large amounts of data, accelerating crime detection and facilitating more accurate targeting of limited resources in high-risk cases (OECD, 2025, p. 191).

A. Identify and Analyze Basic Tax Data

The use of AI technologies in tax data analysis represents a significant advancement in the field of taxation. These technologies provide powerful tools for examining and analyzing data in a comprehensive and accurate manner by analyzing large amounts of data. AI can better identify trends, patterns, and future changes.

The Role of AI :

- enabling tax administration to make more informed decisions.
- determine tax procedures based on more sophisticated analyses.
- AI helps tax administration provide taxpayers with accurate and transparent information about their tax obligations and rights, which contributes to a better understanding of tax requirements and compliance with tax laws (Abouda & El Kar, 2025, pp. 166-169).

B. Employing Artificial Intelligence to Achieve Tax Equity

AI can be used to reduce tax bias, as Intelligent analysis can accurately analyze the impact of tax policies on various social and economic sectors.

The Role of AI :

- help to design fairer tax policies, thereby reducing tax bias and injustice.

C. Activating Tax Collection Processes

This process is known as tax collection automation, which refers to the use of technology to perform the tasks assigned to it without human intervention. It is a process that involves executing operations through software-based computer commands, combined with automated control to ensure the proper execution of instructions, resulting in a system capable of operating without the need for human intervention.

The Role of AI :

- AI can identify gaps in the tax system and suggest improvements to tax policies in order to ensure compliance with tax laws and enhance the efficiency of tax collection (Abouda & El Kar, 2025, p. 168).

D. Detecting Tax Evasion Operations (Tax Control)

Tax control is entering a new era with AI. Algorithms now make it possible

to analyze vast amounts of data in order to detect inconsistencies and potential fraud more quickly. While AI improves the administration's performance and reduces costs, it also raises key issues related to transparency, respect for privacy, and equal treatment of taxpayers. Therefore, its use should remain subject to strict regulation in order to balance the effectiveness of combating tax fraud with the fundamental guarantees of taxpayers' rights.

The Role of AI :

- making verifications processes more targeted and effective (Martin-Forisier, 2025).
- AI technologies make it easier to detect patterns of tax manipulation and fraud in more effective and accurate ways.
- helps the tax authority take deterrent measures against violators, which enhances compliance with tax laws and maintains an equal level of tax compliance (Abouda & El Kar, 2025, p. 169).

E. Predictability

The tax administration's adoption of predictive analytics represents a major shift in how tax controls are conducted. Due to AI, algorithms are now capable of processing massive amounts of data to predict and identify fraudulent behavior with unprecedented accuracy.

The Role of AI :

- AI allows for the detection of anomalies.
- AI allows for the prediction of emerging fraud trends, making oversight processes more targeted and effective.
- Integrating predictive analytics is a step toward proactive and preventive tax management, significantly reducing the risk of fraud.

F. Risk Identification and AI (A Winning Combination for Tax Administration)

AI-assisted risk Identification is transforming the tax control strategy. By analyzing tax behavior patterns and identifying risk indicators, AI allows prioritizing the most likely fraud cases.

The Role of AI :

- This focused approach improves the effectiveness of controls, and allows for better allocation of resources.
- AI risk Identification contributes to a better understanding of fraud strategies, making tax administration more flexible and responsive to new fraud methods.

G Reducing Time and Costs (The Impact of AI on Manual Controls)

The use of AI in tax control processes significantly reduces the time and costs associated with these processes. By automating data analysis and anomaly detection, AI saves tax agents time to focus on more complex and strategic tasks.

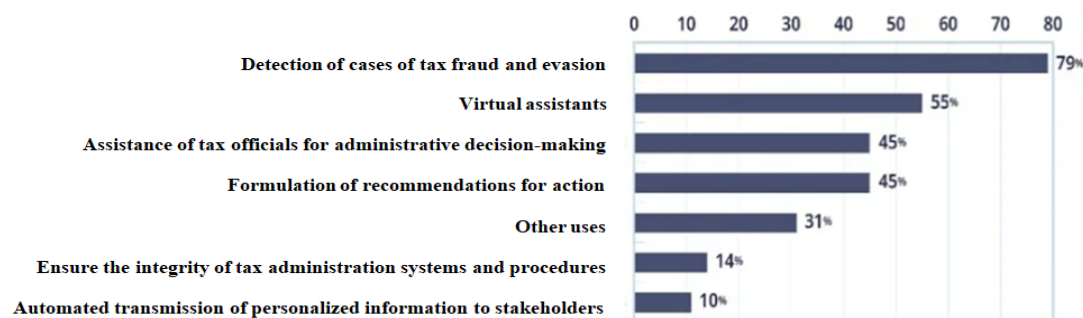
The Role of AI :

- enhancing the overall effectiveness of tax controls.

- The shift to automated processes illustrates the evolution of tax administration towards smarter and more economical administration (Bensaid & Ouairy, 2024).

Fig 2 shows tax administrations using AI applications in OECD member countries. A survey conducted by OECD through ITTI (Inventory of Tax Technology Initiatives) for the year 2024 showed that 29 out of 38 member states have reported the use of AI in tax administration.

Fig.(02): Deployment of AI in Tax Administration in OECD Member Countries



Source: (OECD, 2025, p. 191)

From the figure, we find that these countries have focused on 3 basic elements that they aim to achieve through the use of AI in their tax administrations, as follows:

- ✓ Detecting fraud or tax avoidance: is the primary objective of any tax administration, as the use of AI has allowed the detection of cases of tax fraud by 79%.
- ✓ 55% reliance on virtual assistants aims to improve tax compliance by clarifying the rights and duties of taxpayers and tax declaration methods. This helps in predicting taxpayer behavior and achieving tax policy objectives.
- ✓ Improving the file selection process for investigation, providing decision-making support to tax inspectors, and making recommendations to improve the efficiency of tax administration, which reached 45%.

III. The Applied Study (The Impact of Employing AI Applications on the Efficiency of French Tax Administration –DGFIP-)

The French tax administration DGFIP has employed AI applications in its departments with the aim of enhancing their efficiency and achieving the objectives of the state's tax policy. It has clarified through its annual reports that the main objective of using AI applications is to ensure that some tax fraud operations that were difficult to detect can be detected more easily due to the contribution of AI or advanced mathematical techniques. This is done through 3 basic steps:

- **First**, try to find the data needed by the tax administration, which mainly consists of declarative data from natural or legal persons. It is then necessary to

sort through this declarative data to try to avoid targeting only people who made unintentional mistakes.

- **Second**, it is necessary to determine how tax fraud is targeted. This is done by finding mathematical models to target hazardous files.
- **Third**, it is necessary to do pedagogical work to explain why files deemed "vulnerable" are anomalous compared to the rest of the files in our databases (Public Finance, 2024, p. 15).

In order for the French tax administration (DGFIP) to achieve the required efficiency through its use of AI applications, this is achieved at 3 main levels, which are: **detecting fraud and tax avoidance, improving the file selection process, and improving tax compliance.**

III.1 Detecting cases of tax fraud more effectively

AI solutions based at the DGFIP level works on analyzing the data collected, by using the following applications:

A. Detect Undeclared Constructions or Developments (Innovative Land)

In order to optimize the process of detecting non-declared constructions or developments, the DGFIP uses, within the framework of the project « Innovative land », to AI and the valorization of data from aerial shots of the National Institute of Geographic and Forest Information (IGN).

The algorithms make allow to extract public aerial images from the IGN, available for everyone on the geoportail.gouv.fr website, as well as outlines of built buildings and swimming pools.

A computer process then checks, from the declarations of the owners made with the tax administration, if the elements thus detected on the images are correctly subject to local direct taxes (notably property tax). An agent of the tax administration then systematically checks each anomaly detected before any follow-up operation from the property owner and ultimately taxation.

Results achieved from using «Innovative land» application :

- The results showed gains estimated at €40 million in 2023 at the national level across the nine departments tested.
- Many automatic requests for information or clarifications have been directed to various companies or taxpayers through DGFIP's programming services from AI devices. Not all of the data collected via the Innovative Land application systematically leads to verifications, because sometimes, after a simple phone conversation or an email response, it is noticed that the information entered into the database may be outdated or incorrect (Data mining and tax control, 2023).

B. Fraud Targeting and Request Valorization (FTRV)

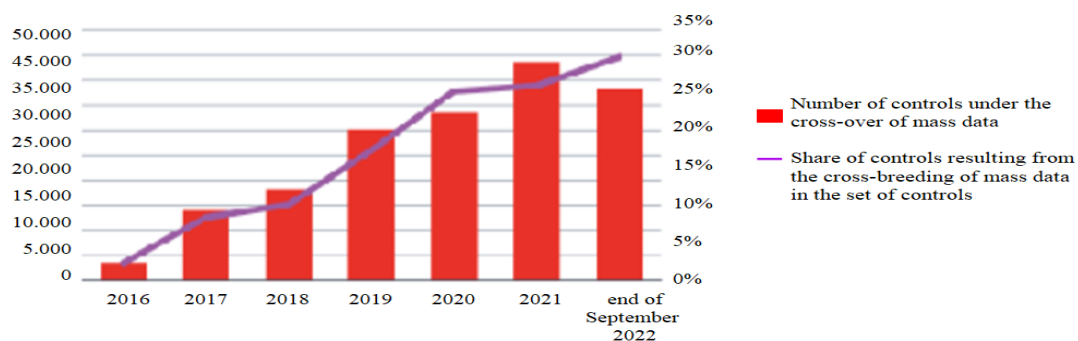
As part of the fight against tax fraud, the Directorate General of Public Finance (DGFIP) created in 2013, the « Mission requests and valorization »

responsible for the project FTRV. Since the decree 2021-148 of February 11, 2021, the tax administration can collect and exploit data and open access content on certain sites such as: Facebook, Instagram, LinkedIn, Vinted, eBay, etc. A considerable advance (Dalud, 2025).

The FTRV processor relies on data mining techniques and allows for predictive modeling, risk analysis, and the search for errors, inconsistencies, and connections between different individuals or professional entities, in that it:

- the algorithm traverses the data, lists the « differences by problem threshold », and then calculates in a second step the percentage relative difference between the declared value and the actual or estimated value.
- This program uses the « collective data cross-comparison » method, which allows identifying abnormalities between taxpayer data and reality (Trescher, 2024, pp. 21-22).

Fig.(03): Share of the crossing of mass data in tax controls on individuals



Source: (courts of auditors, November 2023, p. 52)

Over the period from 2016 to 2022, we find that large-scale data verification operations accounted for 30% of tax control operations on individuals, within the framework of the FTRV program, which contributed to an increase in the number of cases proposed for tax control through the use of cross-over of mass data. Specifically, 4,800 cases were proposed in 2016 (3%), rising to 44,000 cases at the end of December 2021 (29%) and 34,000 cases at the end of September 2022 (26%). These results demonstrate the efficiency of scheduling and programming tax control operations, given the very small team (consisting of 7 employees: the person in charge for cross-breeding of mass data on individuals within the central administration, and 5 employees specialized in the field, assisted by 2 data scientists). This indicates the productive efficiency of DGFIP in relation to the cross-over of mass data. Due to the lack of data for the period prior to 2016, before the FTRV program was implemented, it is not possible to accurately and objectively determine its impact before and after implementation .

C. Data Mining (DM)

- **Data Mining:** Big data analysis technology used to detect fraudulent behavior

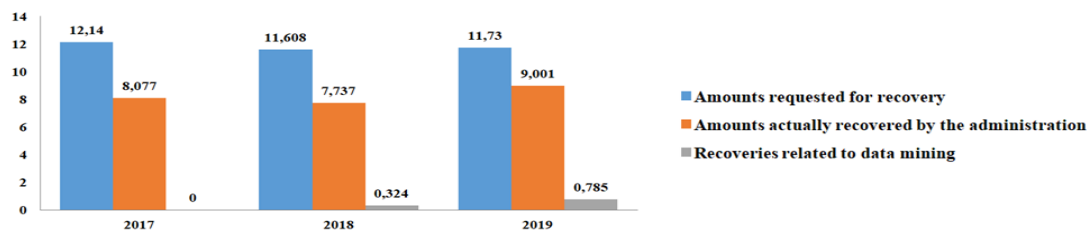
in tax matters. This structure is based on serving both tax control and information systems.

- **Objective:** To analyze the collective data available in multiple applications of DGFIP: declarative data, from tax control or even from monitoring litigation procedures,..., and this analysis should allow modeling of tax fraud profiles.
- **Mission:** To direct research primarily to tax fraud associated with the recovery of value-added tax, given the significant financial impact of this tax in France.

The data from the DGFIP professions applications are extracted digitally to be analyzed by the team of statisticians in order to highlight the most relevant characterizing fraud patterns. Statisticians regularly approach the mission's expert in tax control to refine the criteria and precisely identify the indicators capable of reporting fraudulent behaviour. Based on these signals, files are proposed for a tax control at the DGFIP network (Directorate General of Public Finance, 2024).

Three years after adopting DM on a pilot basis, this application allowed the recovery of €785 million in 2019 compared to €324 million in 2018 (+130% in one year). As shown in the figure.

Fig.(04): The Results of Combating Tax Fraud by Using DM (billion €)



Source: - (Le Febvre Dalloz Cométences, 2020)

From Fig 05, we find that the rates of relevance of the selection made by data cross-breeding reached, in 2021, 63.9% for files controlled under income tax, 34.1% for files controlled under wealth taxes and the highest incomes, and 28.4% for the files controlled under transfer and inheritance taxes.

This relevance rate therefore falls within a wide range, which suggests that data cross-checking has already reached a certain maturity for the detection of income tax irregularities but still has considerable scope for improvement over other taxes on individuals.

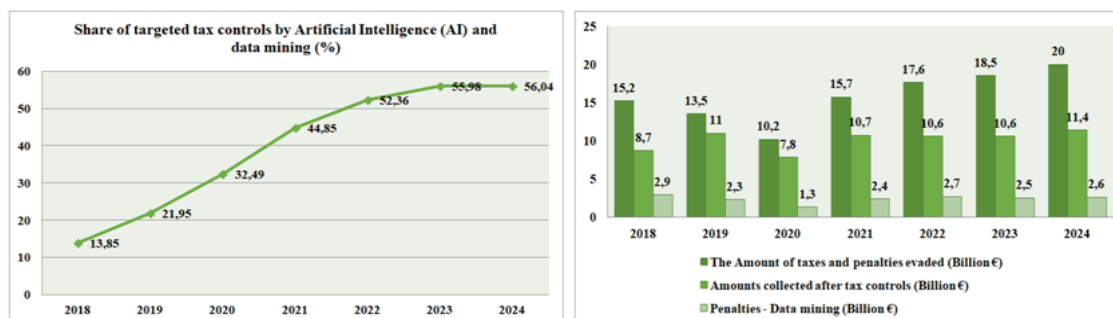
Fig.(05): Proportion of Part Checks Resulting from the Crossing of Mass Data (DM lists) that Led to a Rights Recall in 2021



Source: (courts of auditors, November 2023, p. 55)

Tax control programming has become more targeted due to the use of new data exploitation methods and predictive analysis methods (AI and DM) based on the volume and mass of data held by DGFIP, which extends to useful external data, in particular that resulting from the automatic exchange of information between countries. Therefore, it contributes to better detection of fraudulent behavior

Fig.(06): The contribution of AI to programming targeted Tax Control, Increasing Tax Revenues



Source: Prepared by the researcher based on annual report for the years 2019-2024.

From figure 06, we find that the use AI helps the DGFIP to combat tax fraud, by automating the processing of tax taxpayers' data, which constitutes a major technological advance in the design of targeted tax control, as it:

- **In 2019**, 22% of tax controls were scheduled using data analysis methods, so 100.00 files were directed from targeting to operational tax control services, and the value of tax collection from tax controls amounted to 11.7 billion€ compared to: 13.5 billion€, which represents the amount of taxes and penalties evaded.
- **In 2020**, 32.5% of tax controls were carried out. The value of tax collection from tax controls amounted to 8.3 billion€ compared to: 10.2 billion€ of the amount of taxes and penalties evaded, and this decline is due to the repercussions of the Covid-19 crisis on the global economy as a whole
- **2021-2024**, In light of the recovery of the French economy and its recovery after the crisis, we find that the process of programming tax control is constantly increasing thanks to the applications of artificial intelligence, reaching 45% (2021), 52% (2022), and 56% (2023). The year 2024 recorded a turning point for the DGFIP tax administration, as it reported fees and penalties worth 16.7 billion€, or +10% Compared to 2023, which doubled in five years.

The Results from fig 6:

- These statistics indicate AI and DM have allowed for automated cross-checks that were previously done manually, based on cross-breeding of mass data resulting in huge gains in terms of efficiency (a small team is now enough to define the basics of tax control programming), reduced time, improved accuracy and appropriate decision making, However, the real contribution of AI to tax control in the context of data mining is very modest because the value of reported

fees and penalties did not exceed 3 billion€ during the period 2018-2024, because it relies on relatively basic models, far from the latest technologies (such as generative AI, risk modeling on network infrastructure).

- Therefore, the results obtained and indicated in Fig 6 do not depend only on DM, but also on other AI applications that have effectively contributed to achieving good results in terms of tax collection, combating tax fraud, and targeted tax control programming, such as: Innovative Land, Galaxie, FTRV.

- In addition, we find that DGFIP has not developed a tool to compare the amounts collected through both AI and DM with those that would have been collected without these new technologies, nor has any evaluation been conducted of the financial results achieved from targeted tax controls through AI.

III.2 Improving the File Selection Process

This is done by using the following applications:

A. The « Datalake and API Management » Project of DGFIP and Data Science

According to the transformation contract concluded under the FTPA, the project « Valorization and provision of data from the DGFIP » is based on two components:

- **A section on the storage of data from the DGFIP in a « data lake »:** this should allow for the storage of this data by freeing it from the constraints to which it is subject when it is found within management applications. The storage of data in the datalake should thus facilitate their use for different purposes (cross-breeding with other data, prospective analysis, data science). In this regard, the contract provides that the datalake offers cross-matching and data visualization tools.

- **A section on data accessibility:** a component must allow « to expose the data of the DGFIP to all its partners », subject to the requirements of the GDPR (General Data Protection Regulation). This component of « API management » must allow « to industrialize » the access management of the different services within and outside the DGFIP, to offer them smoother access while ensuring compliance with data protection and security imperatives.

The DGFIP data enhancement project was thus intended to benefit its external partners, and the transformation contract mentioned use cases for the benefit of the GFI (General Finance Inspectorate), the PIG (Public Interest Group) Union Retirement or from the Ministry of Justice. The Datalake project could thus constitute an asset for experimenting with AI systems, by allowing different services to more easily access this mass data and therefore to consider new use cases for the development of AI systems (Court of Auditors, 2024, pp. 26-27).

B. Galaxie Application

In 2022, the French Directorate General of Public Finance issued the GALAXIE application, which authorizes it to carry out computerized and

automated processing of personal data, within its departments responsible for the tasks of monitoring taxes and fees stipulated in the General Tax Code, and on the other hand, control, investigation and tax collection services for the benefit of the General Directorate of Customs and Indirect Taxes.

The GALAXIE processor is a tool for visualizing existing links between professional entities (participation links), and between professional entities and natural persons (manager, partner or shareholder links), at the national level, and basic information on the ownership and tax status of these persons. The data processed comes from FTRV processing which feeds GALAXIE processing monthly.

Searchable data have a maximum historical depth of up to ten years from the date of information collection by DGFIP in TFVR processing (Légifrance the public service for the dissemination of law, 2022).

GALAXIE depicts data in graphical form, such as an organizational chart or family tree, and all links that exist between professional entities and natural persons.

III.3 Improving Tax Compliance

The deployment of AI in the DGFIP was accompanied by several legal or jurisprudential clarifications intended to ensure the proportionality of the methods to the objectives pursued and, more generally, to ensure that the legal framework for combating tax fraud respects taxpayers' rights and freedoms does not undermine the protection of their personal data.

IV.4 Challenges of Using AI in DGFIP Tax Administration

A. Transparency

Given the efficiency that AI brings about in the field of tax control at the level of DGFIP, it raises a very important issue related to transparency and preserving the rights of taxpayers, which is one of the most important limitations facing AI. Transparency regarding the technologies used by the SJCF-1D Office must therefore be established before an independent committee that includes trade union organizations representing employees, the National Commission for Data Processing and Freedoms (CNIL) and elected officials.

Training algorithms from previous tax observation experience must also be subject to special vigilance to avoid any bias. In fact, supervised models rely on the results of previous observations as a basis for learning (through previous observations, the algorithm learns to modify its criteria to assign expected outputs to each taxpayer, based on pre-selected input data). The model is then applied to taxpayers who have not been subject to tax control to identify potential taxpayers who pose a risk of tax fraud (Leduc, 2024).

B. Making Errors

If taxpayers submit declaration containing inaccurate, insufficient or biased

data, in this case the AI will track discrepancies between tax statements and sources of income, which will lead the tax administration to provide an inaccurate risk assessment and improper targeting of taxpayers who will be subject to tax control.

Therefore, inaccurate data negatively affects the effectiveness of results, threatening to undermine trust between taxpayers and tax administration. For AI to generate reliable results, raw data must be accurate, complete, and well-organized. Inconsistencies in data formats, incomplete or incorrectly entered records, outdated taxpayer data or data lacking the necessary context can lead to inaccurate forecasts, false risk models and biased results. Some machine learning systems do not require the data to be well organized, but quality and accuracy are still essential. Incorrect underlying data can reduce the efficiency of systems and disrupt trust between taxpayers and tax administration (OECD, 2025, p. 196).

Automation therefore increases the risk of tax control for each taxpayer in the event of a discrepancy, even if it is small. Previously, only a small portion of records were audited, but AI is expanding the network of controls on a large scale. Each statement is examined and compared from every angle. This does not mean that correction will be carried out systematically at the slightest discrepancy, but the likelihood of taxpayers being summoned to the tax office for additional information or a formal examination increases significantly (Tunica, 2025).

In order to achieve transparency and preserve the rights of taxpayers, their best protection is to ensure complete transparency in their tax declarations, with full supporting documents and consistency between declared income and assets offered.

IV. Conclusion

AI works on profoundly transforming tax administration. It is not limited to simple automation of repetitive tasks, but also allows for in-depth data analysis, more accurate prediction of tax risks, and proactive adaptation to legislative developments. It also improves the efficiency of targeted tax oversight, detects fraud, and improves the quality of services provided to taxpayers. Looking at the French experience, we find that DGFIP tax administration has:

- It benefited from AI that enabled it to analyze huge amounts of data through many applications that it used, especially data mining, Galaxie, ..., which helped it more accurately detect fraudulent behavior and better target resources in high-risk cases, and also enabled it to create lists of taxpayers who would be subject to tax control. This confirms the validity of the first hypotheses.
- The use of AI and DM in tax control processes does not eliminate human intervention because the system is constantly learning and target files are always reviewed by a tax agent to verify the importance of the reasons for selection and

regulation of control. Therefore, in order to implement the fight against tax fraud fully effectively, it is necessary to rely on the knowledge of the local environment possessed by field tax control agents and reintroduce a precise regional network of verification brigades. This confirms the validity of the second hypotheses.

- Referring to the performance indicators issued by the DGFIP tax administration in its annual reports, we find that they focus primarily on the number of tax audits it has implemented, without specifying the link between the reasons for scheduling tax audits and their results, which makes it difficult to evaluate effectiveness. Despite the great progress in updating tax audit tools and data analysis systems, the effectiveness of AI in automatically detecting tax violations without prior preparation remains limited. It requires preliminary preparation to accurately identify contradictions and anomalies. This confirms the validity of the third hypotheses.

A. Results

- The impact of AI on tax administration is gradually emerging, and the implementation of AI is not limited to technical innovation, but rather requires ethical and legal support to ensure transparency in transactions and maintain confidentiality and reliability. It also serves as a strategic opportunity to sustainably rethink financial governance.

- In order to achieve the required efficiency of tax administration (Procedures, Tax treatment), it requires that tax administrators should acquire a unique combination of skills that will include understanding of dynamic business models, technological competence, and data savviness to successfully navigate the evolving tax landscape.

- Integrating AI into tax administration introduces critical concerns related to transparency, fairness, and the protection of taxpayer rights. Complex AI algorithms can obscure transparency, potentially undermining taxpayers' rights to defense and due process. Thus, proactive measures - such as external audits of algorithms or ex-post certification processes - are essential to ensure fairness, accuracy, and accountability in AI-mediated tax assessments.

- The effectiveness of AI applications in the DGFIP remains difficult to evaluate rigorously, due to the lack of estimates of fraud and tax discrepancies, specifically designed performance indicators or information systems allowing traceability of administrative actions, from detection to recovery through the characterization of fraud. The results displayed by the processing of mass data to feed the programming of tax controls, although they do not yet reflect a real breakthrough, clearly suggest an increasing relevance associated with efficiency gains.

- The effectiveness of this strategy remains difficult to assess rigorously in the absence of estimates of fraud and tax gaps, specifically designed performance indicators, and information systems that allow for the traceability of administrative actions, from detection to recovery, including the characterization of fraud. The results obtained from processing of mass data to feed the programming of tax control, although they do not yet yet reflect a real break, clearly suggest an increasing relevance associated with efficiency gains.

B. Recommendations

- DGFIP must accurately assess the financial results of the use of new technologies and it must report the number of AI-targeted tax controls related to each tax to analyze their evolution and measure the performance of tax controls and their impact on combating tax fraud.

- Achieving transparency is of paramount importance in enhancing the efficiency of tax administration and improving compliance for taxpayers. Therefore, it is essential for tax administration to implement governance rules to ensure the deployment of artificial intelligence in a way that balances the administration's tax collection powers with the rights of taxpayers.

- The use of artificial intelligence in tax control processes requires protection (tax confidentiality), so the tax administration must develop its own language models, giving taxpayers and their advisors access to the results of the model used for correction, as well as how the model works, and understanding the databases that were used, how, over what period, and with what design. Such guarantees appear necessary to maintain the contradictory nature, achieve equality in the means of defense, and protect the private lives of taxpayers.

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