The impact of artificial intelligence techniques use in the management of tax administration

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Abstract:

In this steady we talked about artificial intelligence techniques and its Impact on administration and management of public facilities, we discussed the possibility of applying artificial intelligence to functions practiced by tax administration and its role in developing services by focusing on fields that could use artificial intelligence in taxes and we finished with the probable risks if applying it in tax field.

Keywords: Artificial intelligence, public utility, tax administration, tax system, collection

Introduction:

Developed countries focus on using artificial intelligence tools in different fields of administration in what is named electronic government and what results in public function as a smart administration that becomes an essential ask to develop public facilities.

The importance of this topic is that it is a study that analyzes the Impacts of artificial intelligence techniques on managing public facilities and a trial to raise the positive sides and dealing with negative ones through developing existing systems and makes them more flexible.

The main issue about this intervention is about: **how could applying artificial intelligence techniques on managing public facility in general and on tax administration in specific?**

Answering this issue we aim to :

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-Highlighting the concept artificial intelligence technique

-exposing the requirements, devoting artificial intelligence techniques to the management of public facilities

-studying the probability of using these techniques in tax field and the probable effects

Reaching these goals in answering this issue we divide this study into two axes as follows:

-Axe one: the content of artificial intelligence and the requirements in public facility management

-Axe two: applying artificial intelligence in tax administration

-Axe one: the content of artificial intelligence and the requirements in public facility management:

Developed countries focus on using artificial intelligence in different administrative fields as electronic government and what results in public function as a smart administration that becomes an essential ask to develop public facilities.

Through this axe we will try to discuss artificial intelligence then clarify the requirements in its use in public facility.

first :the concept artificial intelligence

this concept actually emerged in the 1940 and the French philosopher **paul valery** the first who indeed talked about the future of the machine and how it co –exist with human in the beginnings of the nineteenth century, the concept artificial intelligence firstly appeared in 1965through a computer conference in the united states of America ,where many researchers proposed the first research project in artificial intelligence worldwide ,in the fiftieths of the twentieth century special researches developed ,but these beginnings was not successful until the ninetieth ,where the world witnessed a huge jump in the field

of artificial intelligence with the appearance of 50's revolution that caused a great boom in artificial intelligence researches[4].

We define the concept of artificial intelligence and explain its characteristics and distinguish it from electronic services.

1-definition of artificial intelligence and its characteristics:

Researchers put so many definitions to the term artificial intelligence ,thus we can say that it is an imitational operation of human intelligence through computers ,it is a trial to imitate humans behavior and their way of thinking and how they take decisions by studying human behavior through experiments on their acts and putting them in certain circumstances then observe how they would react, their thoughts and how they manage with these positions then try to imitate the way of human thinking through complicated computer systems .[5]

2-characteristics of artificial intelligence:

Artificial intelligence has many characteristics we name:[6]

1-ability of describing knowledge and finding solutions:

Artificial intelligence programs use special structure to describe knowledge, this structure contains facts and their relation with its rules in order to create a database that provides as much as possible data about the problem that has to be solved. Artificial intelligence programs also tackle problems that have no known solution method, meaning that these programs do not use sequential steps that lead to a correct solution, but rather choose a particular solution method that seems good while retaining the possibility of changing this method if it returns out if the first choice leads to a faster solution.

Artificial intelligence programs can provide solutions even when information is lacking.

2-ability to learn and reason:

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[4] Hizia hajj Allah, the economic importance of artificial intelligence , the experience of the kingdom of Saudi Arabia , creativity Magazine , volume 14, issue 01Blida university 2, 2024, p72.
[5] Eugene charniac, drew Mcdermott, introduction to artificial intelligence , Addison –Wesley Publishing company , Canada, 1985, P6.
[6] Hizia hajj Allah, op.cit, P73.

Artificial intelligence technologies are divided by their ability to learn from previous experiences and practices, in addition to the ability to improve performance while considering previous mistakes. They can also find possible solutions to a specific problem based on known data and previous experiences, especially problems that cannot be solved by using computers that store possible solutions, laws of logic and rules of inference.

2-deferenciate artificial technology from electronic services:

We summarize these differences as follows:[7]

a-by definition: artificial intelligence based on creating computer programs capable of thinking the same way as the human brain and imitate human behavior while electronic services means giving services through electronic methods like internet or email or communications

b-by terms of scope: artificial intelligence can replace wide functions in electronic services usually mean providing specific services through electronic channels

c-by doing complicated tasks: artificial intelligence can solve complicated problems that could not be possible with electronic services that could be designed for simpler transactions

d-by generality: artificial intelligence can applied on various services even if they are not homogeneous , unlike electronic services which can be customized for users needs.

e-by cost: Investment in artificial intelligence can cost more in the beginning comparing to electronic services that could be applied faster.

Two: the requirements of devoting artificial intelligence in management of public facilities

Clarifying devoting artificial intelligence in public facilities we will discuss the bases of its use and then show Algerian efforts in devoting artificial intelligence as follows:

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[7] Salah hammed Mohamed Hussein, artificial intelligence techniques and their impact on tax systems, an analytical study , journal of juridical and legal research , volume N°44 faculty of shariaa and law in Damanhur , Egypt , January 2024, p257.

1/basics of using artificial intelligence in public utility management:

Public facility depends on many foundations to apply and develop public service most important are:[8]

A/relying on geographical developed technology: this is to point the location of a public facility to provide fast services by the availability of internet because it s the most important one , so a location study is required through a technological technique.

B/relying on a strategy to determine the standards of activity:

It must be planned for the importance of that subject economically, politically and socially with that the public facility will be managed through two manners important facilities such as education, health and judicial with smart electronic way and facilities that have nothing to do with citizens and touches the state as defense and traditional, electronic and access to applying artificial intelligence in all technical and legal aspects with high precision to avoid digital threat.

2/ Algeria s efforts in the dedication of the artificial intelligence system:

The basic principle that governs the public facility is the principle of adaptation in administration management[9] and this fastened the appearance of the term digital administration, e-government and smart electronic administration and the latter has many advantages which guarantee rationalization of public service.

Algeria was not away from the fast technological development in the world especially while artificial intelligence helps reaching developmental goals. So, Algeria started a number of steps to consolidate the artificial intelligence we name:

A/the national observatory public facility:

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[8] Khebal hamid , artificial intelligence techniques in general administration activity , doctoral these third level , faculty of law and political sciences , university of Ghardaya , 2121/2022, p35.

[9] Whereas article N°27paragraph 2 of presidential decree N°242/20 of December 30, 2020 regarding the insurance of the constitutional amendment , official magazine N°82 of December 30, 2020 stipulates that pubic facilities shall be based on the principles of continuity, continuous adaptation and equitable coverage of the national territory

This one is an advisory body headed by the interior minister; its mission is to develop public facilities and administration. The observatory is responsible for proposing measures that could develop electronic administration; the Algerian legislator was right when he created the national public observatory[10] because the country has to develop its knowledge and experience in artificial intelligence when it aims to gain profits and this is through education, training and continuous research in addition to encouraging initiative innovation and promoting the innovative projects application.

All this could not be done unless through establishing such bodies and laboratory centers to achieve better results for studied applications.

B/center of artificial intelligence:

The first center for artificial intelligence in Algeria was in skikda on August 20,1955 this project began in February 2020, as an initiative for training research and development in the field of artificial intelligence , the center's team works to reach a social and economical atmosphere to the university in order to propose artificial intelligence solution for industrial , economical and social partners. The center aims to organize training courses and workshops also there is an exchange of experiences for researchers and executive directors working in artificial intelligence.[11]

C/ National high school for artificial intelligence:

Algeria built a national school of artificial intelligence by a presidential order n°21/323[12] from its functions is to develop main practical research to public and private national institutions , through encouraging creativity by entering innovative and technological transformation which help with no doubt in supporting artificial intelligence apps in public facilities.[13]

 from the above we could say that although Algeria has not achieved the development achievement in artificial intelligence , but it is striving to keep pace

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[10] Published by presidential decree N°16/03 of January 7, 2016, including the establishment of the national observatory of public utility article N°02of January 13, 2016

[11] Artificial intelligence center web site https://shallab2021univ_skikda.dz

[12] Presidential decree N°21/323 of August 22, 2021 establishing the national higher school for artificial intelligence journal N°65 dated, August 26, 2021

[13] Khebal hamid, former reference p38.

with these countries which is obvious through its efforts to enhance that path such as the establishment of the center for AI and the national high school for AI, in addition to strategies to develop this science in the coming years.

The second axis: application of artificial intelligence in tax administration:

Artificial intelligence technologies can play a major role in the field of tax services developing provided by different tax administrations as they can provide it with a wide range of advantages, especially in terms of improving service and achieving accuracy and efficiency. Despite these advantages there are no doubt that these techniques have risks too; what makes us focus on possible effects of artificial intelligence techniques on tax administration by the exposure to difficulties and risks that could face Application in tax field.

1/ Uses of artificial intelligence in tax field and its benefits:

Through this we will try to highlight the most important fields that could tax administration benefit from artificial intelligence techniques in developing services, then present benefits that could be achieved through these techniques.

A/uses of artificial intelligence in tax administration:

Tax administration can benefit from artificial intelligence techniques through using it in the following services:[14]

- Recording identification number **,** tax type , payment period and the paid amount with updating details in taxpayers accounts and the incomes automatically.
- the ability to process to a suspense account if the taxpayer details are unknown.[15]
- providing treated decisions on all types of taxes and supporting the principles of self-assessment for processing returns, including verifying taxpayer identity and registering the date of deposit and accept the tax liability raised by the taxpayer, as well as performing a calculation based

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[14] Salah hamid Muhammad hassanein, previous reference p295.

[15] In this field Georgia has created an automated value added tax recover system using artificial intelligence techniques , this system was implemented in two phases , the first phase , the intelligent value added tax recovery system in 2019, the second phase :fully automated recovery system starting November 2020

on the data in the form, in addition to comparing the information provided with the information in the taxpayer database.

- detecting cases in which payment is due, as well as automatic payment of fees in the event of a late payment, and reporting debts owed by the taxpayer .

- classifying debts cases based on risk assessment criteria such us the size of the debt and its duration, etc…and supporting tax collection owed in installments.

- interacting with taxpayers through receiving and recording the taxpayers correspondence, and their disputes and appeals , objections and amendments, and also the possibility of creating specific administrative reports with an audit trail for any modifications made providing analysis.[16]

- tools for risk assessment and trend analysis

B/benefits of applying artificial intelligence in the tax field:

This will lead to the use of artificial intelligence techniques in Arab administration, especially in undeveloped countries to achieve the following:[17]

- increase revenues through expanding the tax base or by more effective collection

- increase effectiveness through simplifying processes and using digital forces that are cheaper and easier to interact with taxpayers and move to self service approach and efficient exploitation of data to focus in incomes effectively

- accept administrative taxes on taxpayers through facilitating tax obligation acceptance.

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[16] In this field tax administration decided in Peru 2018 to modernize service customer that works with intelligence technology **Chatbot** works as a robot to chat and its job was to answer a group of clear and repeated inquiries from customers , with the aim of reducing the volume of calls , the service was launched and programmed on 2020. The service continued to develop, improved accuracy and speed of responses and became able to deal with actions related to taxes on capital and income and some tax procedures during the year 2021This service of responding and handling messages with efficiency rate of 97%and the tax administration in Peru expected the continuity to develop this technique and set new subjects related to customs inquiries will be includes within a short period

[17] Ramadan siddiq, taxes in the world of digital economy , Dar AL NAHDA AL ARABIA , Cairo ,Egypt,2020,p263.

- providing tax information for everyone in charge of tax payment and administration to achieve transparency increase, these techniques can prompt the taxpayer to increase his tax compliance, it's because these technologies have the ability to track taxpayer transactions and reveal hidden elements.
- the ability to analyze information and estimate tax efficiency according to its Proper analysis and reduce opportunities of tax evasion.
- it helps the taxpayer to take his rights quickly, whether tax exemptions or benefits and fulfill all his obligations quickly without complicated procedures.
- it helps tax administration in proper selective examination by providing an accurate mechanism to identify and measure high –risk taxpayers.

Second: the difficulties and risks of applying artificial intelligence in the tax field:

1/Difficulties in applying artificial intelligence in the tax field:

There are many difficulties that face applying AI in tax administration we count:[18]

_ The technological barriers, especially the lack of widespread internet access. If tax payer does not have internet connection and a method to make payments easily at a low cost, this will lead to the failure of the tax administration in switching to a smart system.

_tax administrations face other challenges in the field of applying artificial intelligence, including the inability of the tax administration to cope with the burdens resulting from artificial intelligence, the lack of necessary funding and the lack of competencies and expertise in this field.

_lack of tax awareness among taxpayers and their inability to deal with these technologies makes it difficult especially in the stage of examination, linking and collection

_current legislations does not keep pace at all with the progressive development in artificial intelligence technology, as all programs are still, in eyes of law,

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[18] Salah hamid Muhammad hassanein , former reference, p 222.

regardless of their degree of development, just tools to carry out the orders of its users.

2/Risks of applying artificial intelligence in the tax field:

Despite the advantages that could be proposed by artificial intelligence technologies to tax administration, but there are some risks related to these technologies we mention:[19]

- in case of robots spread in factories for example, or administrations and make it instead of human beings this will have a double impact in raising unemployment and a decrease in income tax thus affecting the state's general revenues, in addition to increasing demands for saving expenses of social security and unemployment benefits.
- these technologies can participate in increasing tax avoidance weather internal or international with the ability of these technologies to study laws, and international agreements and propose best way to invest and reduce tax burdens or avoid tax at all which needs developing tax texts till it can deal with those developments.

Conclusion:

Through this study it's obvious all countries use artificial intelligence tools in various administrative fields under what is named electronic government, and what results from it in the field of public function under the name of smart management, which has become a basic requirement for improving facilities management methods. Algeria was not immune to the rapid technological development in the world, especially since AI helps to achieve a significant ceiling of the desired development goals, so Algeria took the initiative to take some steps in order to devote the artificial intelligence system through the establishment of both national observatory and public facility, the national high school for AI beside other plans and strategies that it set to develop and progress this science in the coming years.

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[19]Ahmmed Taha al arabi abdel Fattah , the role of artificial intelligence in increasing tax revenues , journal of legal and economic thought ,first issue , thirteenth year, faculty of law , Benha university , Egypt, 2023.
Also Salah Hamed Muhammad hassanein, previous reference, p 223.

The gathered results from this study are as follows:

- Artificial intelligence is an imitation operation of human smartness through computer programs, which is a trial to imitate human's behavior and their way of thinking and how they took their decisions.
- Using tools and applications of artificial intelligence in the field of general administration comes in order to fulfill the requirements of digital reality and to cope with adaptation and possibility for change.
- Despite Algeria did not reached the development that exist in modern countries in the field of artificial intelligence, but it is working harder to cope with these countries through the efforts done to enhance that path.
- AI applications can provide tax administration with various benefits such us accuracy and ability to improve workers service and services of receiving appeals and declarations, and data analysis, which saves time and effort, it is used also to detect cases of tax evasions which leads to increase tax revenues.
- Despite the advantages that the application AI techniques can achieve in tax system, on the other side it is full of risks, especially that it can increase tax evasions phenomena weather interior or international with the ability of these techniques to study laws, international agreements and find best ways to to reduce tax revenues or avoid it which needs current tax texts to deal with these developments.
- current legislations does not keep pace at all with the progressive development in artificial intelligence technology, as all programs are still, in eyes of law, regardless of their degree of development, just tools to carry out the orders of its users.
- tax administrations face other challenges in the field of applying artificial intelligence, including the inability of the tax administration to cope with the burdens resulting from artificial intelligence, the lack of necessary funding and the lack of competencies and expertise in this field.

Through these results we suggest:

- The necessity to expand tools of artificial intelligence use in all sectors and administrative institutions to meet the requirements of the electronic government that works hard on supporting it's parts.

- The state support of underground to reach AI techniques be ued in all fields and to provide the needed funding to achieve the possibility of transforming all traditional administrations to smart ones.
- Expanding research related to transforming tax administration into a smart one and combining various researches efforts to design a smart program in tax field in order to achieve financial and economic revenues in this field.
- Regulating the current legislations to cope with the development in artificial intelligence techniques.
- Promoting the cooperation between tax administrations and technological service providers related to AI technologies in order to ensure the effective implementation of artificial intelligence in the tax administration.
- Training tax administrations employees , as the use of artificial technologies knowledge and artistic competencies with what is required to enhance employees abilities to guarantee the execution of artificial intelligence program.

In conclusion we can say that artificial intelligence has the ability to revolutionize tax systems and make them more efficient and flexible, which would strengthen the public finance system in general. Although this matter depends on providing the appropriate environment for the work of these techniques and to work on facing the challenges and finding solutions in a creative manner

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