

## Article

# Digitisation and/or digital transformation in the field of Tax Administration



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### ABSTRACT:

This paper studies digitalization and digital transformation in the field of tax administration in order to determine whether they are similar or different concepts. To do so, we start by explaining technology as a general concept, going through the identification and relationship of Information Technologies (IT), Information and Communication Technologies (ICT) and Digital Technologies (DT) until linking them to the concept of digitization and digital transformation and then delving deeper into what is currently understood as the digitization and digital transformation of the Tax Administration.



PALABRAS CLAVES:

tecnología, tecnologías de información, tecnologías de información y comunicación, tecnologías digitales, datos, gobierno digital, digitalización, transformación digital, administración tributaria

RESUMEN:

En este trabajo se aborda el estudio de la digitalización y transformación digital en el ámbito de la Administración Tributaria con el objetivo de determinar si son conceptos similares o distintos. Para ello se parte de la explicación de la tecnología como concepto general, pasando por la identificación y relación de las Tecnologías de Información (TI), las Tecnologías de Información y Comunicación (TIC) y las Tecnologías Digitales (TD) hasta vincularlas con el concepto de digitalización y transformación digital para luego profundizar en lo que se entiende en la actualidad como la digitalización y transformación digital de la Administración Tributaria.

MOTS CLES :

Technologie, technologies de l'information, technologies de l'information et de la communication, technologies numériques, données, gouvernement numérique, numérisation, transformation numérique, l'administration des impôts

RESUME :

Ce travail aborde l'étude de la numérisation et de la transformation numérique dans le domaine de l'administration fiscale avec l'objectif de déterminer s'il s'agit de concepts similaires ou différents. Pour ce faire, nous partons de l'explication de la technologie en tant que concept général, en passant par l'identification et la relation entre les technologies de l'information (TI), les technologies de l'information et de la communication (TIC) et les technologies numériques (TD) jusqu'à les relier au concept. de la numérisation et de la transformation numérique pour ensuite approfondir ce que l'on entend actuellement par la numérisation et la transformation numérique de l'administration fiscale.

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## 1 INTRODUCTION

The Tax Administration, throughout its history, has experienced constant transformation in line with the economic, technological, and social changes of each era. In the 18th century, in the time of Adam Smith, tributes were managed with very different approaches and technologies than those that predominate today. Smith, an eminent Enlightenment economist, argued for the importance of limited government and the need for efficient tax collection to finance its essential functions.

However, the scenario is presented radically differently today, thanks to the technological revolution. Information Technologies (IT) and Information and Communication Technologies (ICT) have completely reconfigured the operation of the Tax Administration. IT refers to the technological tools and resources used to manage and process information, while ICT encompasses both IT and media and social interaction through technology.

The differences and similarities between IT and ICT have generated debates in the context of the Tax Administration, given that incorporating both has led to greater convergence and, therefore, to renewed efficiency in tax collection and providing services to the taxpayer. Digital Technologies (DT) play a crucial role in this panorama, and understanding their relationship with ICT is essential, as both contribute to the digitalisation and digital transformation of the Tax Administration.

However, digitalisation and digital transformation are often intertwined and confused in this area. Therefore, it is essential to clarify their nuances to define whether they are similar or different concepts in the processes revolutionising the Tax Administration, providing greater agility, transparency, and efficiency in tax management. Government digitalisation, in particular, has driven the modernisation of tax services and interaction with citizens.

This study will delve into the field of Tax Administration in the current era, highlighting digitalisation and digital transformation as fundamental elements in its evolution. In addition, the differences and similarities between IT, ICT and TD as enablers of digitalisation and digital transformation will be analysed, and their impact on the efficiency of tax collection and the taxpayer experience in the digital era will be explored.

## 2 TAX ADMINISTRATION IN THE TIME OF ADAM SMITH

Adam Smith, considered one of the founding fathers of modern economics, pointed out in his work “*The Wealth of Nations*” in Spanish (1776) that a tax system must be based on a series of principles, such as justice, equity, proportionality, neutrality, efficiency, simplicity, transparency, accountability, among others <sup>1</sup>.

In particular, about the Tax Administration of that time, Adam Smith addressed in his work the issue of efficiency in tax collection under several postulates: simplicity in collection, minimisation of collection costs and effectiveness in collection.

Concerning simplicity in the collection, he argued that tax systems should be simple and easy to understand for taxpayers. A complicated tax system can lead to errors in different tax returns and tax evasion, making collection inefficient.

When referring to the minimisation of collection costs, he argued that the costs of collecting taxes should be as low as possible. High administrative and compliance costs can consume significant tax revenue, reducing system efficiency.

Finally, he pointed out the effectiveness of collection since he believed that tax systems should be effective in collecting the expected tax revenues. Inefficiency in collection

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<sup>1</sup> See Smith, Adams. (1776). *La riqueza de las naciones*. Alianza editorial. Págs. 746-749.

can lead to insufficient resources to finance essential public services or the need to increase tax rates.

Therefore, Adam Smith supported an efficient tax system that minimised collection costs and discouraged tax evasion at a time when Information Technologies (IT), Information and Communication Technologies (ICT), much less Digital Technologies (TD), as we currently know it. His ideas have influenced the design of modern tax systems and remain relevant in current debates on tax policy and taxation.

### 3 TECHNOLOGY

Referred [Adam Smith's](#) book was published in London in 1776, when the technology used to collect taxes radically differed from today's. Below are some of the technologies that were used in that period <sup>2</sup>:

- **Manual Recording:** Manual records were essential for keeping track of transactions and tax obligations. Accountants and government officials recorded details of transactions in accounting books manually.
- **Letterpress Printing:** Letterpress printing, a technology that had been in use for several centuries, was used to create standard tax forms and documents that could be distributed to taxpayers for their tax returns.
- **Paper Documents:** Taxpayers and tax officials used paper documents to keep track of tax transactions and obligations. Receipts and payment vouchers were physical documents that were proof of tax payment.
- **Direct inspection:** In many cases, tax officials were required to directly inspect taxpayers' business operations and assets to determine the amount of taxes payable. This would require on-site visits and manual collection of information.
- **Revenue Stamps:** Revenue stamps were a common form of tax collection at the time. Taxpayers were required to purchase and attach tax stamps to legal documents and financial transactions as proof of payment.
- **Censuses and estimates:** In the absence of modern technology for data collection, censuses and estimates of population and property were, in some cases, carried out to determine the tax base and tax rates.
- **Manual cash transportation:** Tax payments were made in cash or kind and were manually transported to local tax collection offices.
- **Couriers and Mail:** Correspondence and tax documents were often sent via couriers or the mail system for processing and recording.

As can be inferred, by 1776, tax collection in developed nations, including England, was based on manual techniques or means, the administration of physical documents, and the face-to-face and direct management of tax officials. The technology of the time was limited compared to the highly automated and digital tax collection systems used today.

Now, to define and delve into what is currently called or meant as digitalisation and/or digital transformation in the field of Tax Administration, we must first review what we understand by technology as a general concept and then immerse ourselves in what it means. It is called Information Technologies (IT) and Information and Communication

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<sup>2</sup> *Ibid.* P. 663-778.

Technologies (ICT) until reaching what is currently called Digital Technologies (TD) in order to determine its link with digitalisation and digital transformation.

According to the [Royal Spanish Academy \(RAE\)](#), “technology” is the set of theories and techniques that allow the practical use of scientific knowledge <sup>3</sup>.

On the other hand, ([Lara F., 1998](#)) points out that “two of the fundamental factors for solving problems of a given society are, on the one hand, the set of knowledge about the reality that society handles in solving its problems. And, on the other, the set of ways of doing things to transform that reality and solve the problems posed includes the necessary knowledge to know how to do things” (p.7).

Adds [Lara F \(1998\)](#) that “from these two sets of knowledge arise, on the one hand, science as a systematisation of objective knowledge and the procedures to acquire it and, on the other, technology as a set of specific knowledge and processes to transform reality and solve a problem” (p.7).

Consequently, we can understand technology as the knowledge, techniques, means, methods, tools, and devices used by human beings to transform, manipulate and take advantage of their environment to satisfy their needs and desires. It is important to highlight that technology is an innate and fundamental part of human civilisation and has evolved throughout history to address various problems and challenges, including the digitalisation of the Tax Administration.

It is important to note that at the end of the 90s, it was predicted that the technologies that would have the greatest impact in the 21st century would be the following: 1) *Information technologies*, 2) *Technologies for transportation*, 3) *Technologies for medicine*, 4) *Materials and manufacturing technologies*, 5) *Energy technologies* and 6) *Technologies for the environment*.

#### 4 INFORMATION TECHNOLOGIES (IT), INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) AND DIGITAL TECHNOLOGIES (TD).

Over the years, and especially today, we can see that when discussing the topic of technology applied to the Tax Administration, it refers interchangeably to Information Technologies (IT) <sup>4</sup> and Information and Communication Technologies (ICT) <sup>5</sup> until we reach Digital Technologies (TD) <sup>6</sup>. In this sense, we must clarify their differences and similarities and their relationship with digitalisation <sup>7</sup>

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<sup>3</sup>See [Royal Spanish Academy. I.\(f\). Tecnología. En Diccionario de la lengua española. Recuperado en 20 de octubre de 2023, de <https://dle.rae.es/tecnolog%C3%ADa?m=form>](#)

<sup>4</sup>For the year 2003, the Institute of Fiscal Studies (IEF) of Spain published in its usual publication called “Documentos” an article by Fernando Diaz Yubero called “Aspectos más destacados de las administraciones tributarias avanzadas” [Most notable aspects of advanced tax administrations] DOC. No. 14/03, in which *information technologies are considered indispensable for the advancement of Tax Administrations* (Pages 21-22).

<sup>5</sup>For the year 2020, the Inter-American Center of Tax Administrations (CIAT) publishes the book called “Las TIC como Herramienta Estratégica para Potenciar la Eficiencia de las Administraciones Tributarias” [ICT as a Strategic Tool to Enhance the Efficiency of Tax Administrations] (Various Authors), which highlights the role of *information and communication technologies* to improve the efficiency of Tax Administrations.

<sup>6</sup>For the year 2018, an article by Job Kavoya was published in the *Revista de Administración Tributaria del Centro Interamericano de Administración Tributaria (CIAT)* (No. 43) in which he develops the topic of *Digital Technologies in the Tax Industry: The Case of VAT*, there explains how *digital technologies* can be applied in tax administrations to develop new capabilities aimed at improving compliance and increasing revenue.

<sup>7</sup> From September 5 to 7, 2023, the 2nd Technical Conference of the Network of Regional Tax Organizations (NTRO) members of the Network of Tax Organizations (NTO) was held in Cape Town, South Africa. representing more than 180 tax authorities from around the world (tax administrations) whose motto was the *Digitalization of tax administrations and other current issues*. It is striking that, in the final declaration of the Conference, they interchangeably mention the term *digitalization* and *digital transformation* associated with tax administrations. <https://www.nto.tax/es/2a-conferencia-tecnica-de-la-nto>

to determine whether digitalisation and digital transformation<sup>8</sup> are similar or different concepts.

It is important to highlight that the three technologies mentioned above are related but have important differences and similarities, which will be developed below.

#### 4.1 INFORMATION TECHNOLOGY (IT)

Suárez and A., Ramón C. (2007) point out that “information technology, also called computing, is the science that studies automated techniques and processes that act on data and information. The word “informatics” comes from the fusion of the terms “information” and “automation”, which originally meant the performance of production or management tasks employing machines (automata)” (p.3).

The main focus of IT is on using technology for the processing, storing and managing data and information. Its scope covers various fields, including hardware, software, databases, network systems, data storage and computer security. Its main function is managing and organising data and automating tasks, such as record management, accounting, and reporting.

From the point of view of the Tax Administration, (Diaz Y., F., 2003) highlighted in 2003 that “a new model of management of public affairs seems to replace the old bureaucratic model based on immobile hierarchical structures...” “For this, it is necessary that citizens have maximum information thanks to a transparency policy, and a new instrument to channel the necessary information is the use of new technologies and the creation of a broad computer network for communication and interaction with citizens (“e-government”), parallel to the modalities of electronic commerce born on the “Internet”.” (p. 5)

Diaz Y., F. (2023) when referring to new technologies and the creation of a broad computer communication network, conceived the Tax Administration as a large organisation in charge of capturing, managing, imputing, and interpreting economic and financial information, with transcendence tax, with extraordinarily high volumes of data to handle, concluding that the mechanisation or automation of said information is essential. Therefore, Diaz Y. F. opted for information technologies applied to the Tax Administration as an initial step to have a computerised, mechanised, or automated (effective) information system that would ensure adequate treatment and management of all information for the entire organisation and then incorporate the use of the Internet<sup>9</sup>.

#### 4.2 INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)

On the other hand, as indicated (Calvo, Á., 2002), “according to UNESCO, the expression Information and Communication Technologies (ICT) refers to technological advances consisting of the combination of processes, instruments, and networks. In

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<sup>8</sup>In 2023, the OECD Center for Tax Policy and Administration (Tax Administration Forum) publishes the report entitled, *Support for the digitalization of tax administrations in developing countries. Which points out in its introduction that it has been developed as part of the set of actions undertaken to support the digital transformation of the tax administration following the publication in 2020 of the Tax report. Administration 3.0 by the OECD Forum on Tax Administration (FTA). It also indicates that this initiative focuses on supporting the development of capacities for the digitalization of tax administrations in developing countries. OECD (2023), Support for the digitalization of tax administrations in developing countries, OECD, Paris, <https://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/support-to-the-digitalization-of-the-tax-administrations-of-developing-countries.pdf>.*

<sup>9</sup>It is pointed out that tax organizations could not be oblivious or remain indifferent to the Internet and that by 2003 it was difficult to find tax organizations that did not have a website to provide information or to receive queries. It also stated that by 2003 most European and American countries were developing the necessary processes to admit the registration, declaration, and payment of taxes, and even the notification of settlements, electronically. All of the above is proof of the convergence that took place at that time, between IT (with automation, mechanization or computerization of data and information) and ICT (with real-time communication) in the field of global Tax Administration.

particular, they include the digitisation of information (text, figures, sound, still images, moving images) and the subsequent ability to transmit larger volumes of information at high speed; artificial intelligence and the incorporation of “smart” interfaces and interaction possibilities to information products and services; communication satellites, with much greater power and accessibility and the existence of low-priced fibre optic cables, new wireless transmission technologies and connection and exchange techniques; computer networks for research, particularly the Internet” (p.2)

Calvo (2002) also points out that “the essence of this definition is included in a report from the Council of Europe 2012. This organisation referred to the explosion of electronic communication as the conjunction of five main factors: digitalisation of the data; miniaturisation, which favours the intensive use of electronic components; data compression; the use of broadband optical transmission systems and the appearance of new software components” (p.2)

It is important to highlight that Calvo, points out as an important precedent that “in 2012, the World Bank Group intended to adopt, and consequently did so, a new ICT promotion strategy, which rested on into three pillars: the pillar of transformation, that of innovation and that of connection. The first aimed to achieve greater development impact, strengthening accountability and governance, improving public services, and enabling more inclusive private service delivery. The second sought to improve competitiveness and accelerate innovation throughout the economy and focused on developing skills for ICT-related jobs (the bulk of which go to women) to improve productivity. The third pillar had to increase its support for political reforms and for private and mixed companies to catalyse investment in broadband infrastructure and expand access to broadband services” (p.2).

From the point of view of the Tax Administration, we can indicate as an example of the use of ICT, the provisions of the Spanish General Tax Law, which establishes in article 96.1 that “The Tax Administration will promote the use of techniques and means electronic, computer and telematic equipment necessary for the development of its activity and the exercise of its powers, with the limitations established by the Constitution and the laws <sup>10</sup>.

The Spanish Tax Administration allows the use of electronic techniques and means in the sense of using forms of communication and transmission of information that use electronic technology. These media use electronic devices to create, distribute, and consume data and information. (Example, mobile devices: smartphones and tablets are electronic devices that allow you to access the Internet, send text messages, make calls, and use multiple applications.)

Furthermore, the Spanish Tax Administration allows the use of computer techniques or means, in the sense of using resources and communication channels that use computer technology, such as computers and information systems, to create, store, process, transmit and share data and information, (Example, word processing software such as Microsoft Word used by an electronic device).

Finally, the Spanish Tax Administration allows telematic techniques and means related to the combination of information and communication (ICT) and telecommunications to facilitate the interaction and transmission of information through networks. These techniques or means enable real-time or asynchronous communication, collaboration, and data transmission over geographic distances using technologies such as the Internet and other telecommunications networks. (For example, emails and instant messaging in

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<sup>10</sup>See Article 96 of Spanish Law 58/2003, of December 17, General Tax. BOE-A-2003-23186 <https://www.boe.es/buscar/act.php?id=BOE-A-2003-23186#a96>

applications such as WhatsApp facilitate real-time communication between people and groups through the web and mobile devices).

Therefore, regarding the main focus of ICT, we can point out that they cover IT, but they also include technologies that allow communication and the exchange of information through electronic means, which already shows one of their most important differences. Important concerning IT.

Regarding the scope of application of ICT, in addition to information technology, ICT includes communication technologies such as the Internet, mobile telephony, video conferencing and email. Finally, the main function of ICT is to manage data and information and facilitate real-time communication and access to information through various devices and media.

#### **4.3 DIFFERENCES AND SIMILARITIES BETWEEN IT AND ICT**

Specifically, we can point out the differences that IT focuses on data and information management, while ICT includes communication technologies and real-time interaction. On the other hand, ICT includes technologies such as the Internet, communication devices and networks, which are not always considered part of IT. Finally, ICT is more oriented towards real-time communication and connectivity, while IT focuses on data management and process automation.

Concerning the similarities, IT and ICT use technology for different purposes, including information management and communication. In addition, both technologies seek to automate processes to increase efficiency and productivity. Finally, IT and ICT significantly impact society, the economy, and people's daily lives.

From the above, we can conclude that ICT is a broader term that includes IT and focuses on information management and electronic communication. While IT is essential for data management and automation, ICT focuses on interaction and communication in an increasingly connected and digitalised world.

#### **4.4 INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) AND ITS RELATIONSHIP WITH DIGITAL TECHNOLOGIES (TD)**

Once the differences and similarities between Information Technologies (IT) and Information and Communication Technologies (ICT) have been determined, we will now proceed to determine the relationship between Information and Communication Technologies (ICT) and Digital Technologies (TD). In this sense, we can point out that ICT and DT are closely related concepts, and, in many cases, they are used interchangeably.

However, it is important to understand how they differ, are similar, and are related. Therefore, we can say that information and communication technologies and digital technologies are related but different concepts.

#### **4.5 DIGITAL TECHNOLOGIES (TD)**

According to the RAE, Digital is understood as "Referring to digit numbers", that is, a number that can be expressed using a single-digit numeral (for example, in the decimal system, they are 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9). Also, according to the RAE, Digital is understood as the "Saying of a device or system That creates, presents, transports or stores



information by combining bits.” Finally, in the context of this work, the RAE points out that Digital is understood as “That is carried out or transmitted by digital means.”<sup>11</sup>

In short, we can indicate that technology as a general concept combined with the “digital” allows us to leave mechanical and analogue technologies to move to the world expressed in numbers 0 and 1 (zero and one), which is measurable and easily alterable. In this sense, when discussing digital technologies, reference is made to a series of techniques, means, methods and devices. They generate, store, process, encode and transmit data and information in binary systems. These differ from mechanical and analogue technologies because they allow programmed functions and processes so that they are carried out automatically without human intervention.

From the point of view of the Tax Administration, we can indicate the approach it carries out (Kavoya, J., 2018) on applying digital technologies in tax administrations to develop new capabilities aimed at improving compliance and increasing income. The work is based on the presentation of a specific case that focuses on the Value Added Tax and shows that the digitisation of this tax must begin with the registration of taxpayers and the processing of declarations. Its main contribution is to point out that artificial intelligence can give positive results in terms of the commitment between the taxpayer and the tax agency.

Therefore, the aforementioned case shows the opportunities available to tax agencies in different parts of the world to revolutionise and improve efficiency in the Tax Administration. These opportunities come from digital technologies. The digitalisation of VAT is recommended as a key focus area that can change the entire Tax Administration, not just VAT.

In conclusion, technology added to the “digital” allows us to leave mechanical and analogue technologies to move to the world expressed in numbers 0 and 1 (zero and one), which is measurable, alterable (compressible) easily and is through of science (mathematical calculation) that the application of digital technologies is achieved and consequently digitalisation materialises.

#### 4.6 DIFFERENCES AND SIMILARITIES BETWEEN ICT AND TD

As differences, we can point out that ICT has a longer history and covers both analogue and digital technologies. They have evolved over decades, from the invention of the telegraph in the 18th century to today’s digital age. TD is most closely related to the digital age, which began with the development of digital electronics and computing in the second half of the 20th century. (Gutiérrez A, 2018).

On the other hand, ICT refers to a broader field encompassing all technologies that facilitate the collection, processing, storage, transmission and exchange of information and communication, whether analogue or digital. This includes radio, television, telephony, and digital technologies (TD). TD focuses on using digital systems, which are technically based on the representation of information in binary digits (0 and 1), facilitating its processing and management.

We have similarities in that both technologies focus on facilitating the acquisition, processing, transmission and communication of data and information, although with different approaches and specific technologies.

Furthermore, both ICT and digital technologies rely on using electronic components and electronic systems to achieve their objectives.

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<sup>11</sup> See Royal Spanish Academy. 1-4. (adj). Digital. In Dictionary of the Spanish language. Retrieved on October 21, 2023, from <https://dle.rae.es/digital?m=form>

Likewise, both ICT and digital technologies have significantly impacted modern society, transforming how people communicate, access information, work and carry out many other activities.

Given the above, we can conclude that ICT is a broader concept that includes digital technologies but is not limited to them. That is, ICT also includes information technologies and analogue technologies. Digital technologies focus specifically on the digital representation and processing of information. Both play a crucial role in today's society and continue to evolve rapidly.

## 5 DIGITAL TECHNOLOGIES AND DIGITISATION

As noted above, it has been sufficiently clear that digital technologies are included within ICT. That is, from a broad point of view (encompassing both IT and DT), ICT enables digitalisation<sup>12</sup> by applying different digital technologies.

In practice, what happens is that there is a convergence of all the aforementioned technologies. There is a convergence between Information Technologies (IT), Information and Communication Technologies (ICT) and finally, Digital Technologies. (TD).

Consequently, digital technologies and digitalisation are closely related concepts at the centre of technological transformation (today, specifically called “digital transformation”) and how we interact with the digital world.

Therefore, digital technologies refer to any technology that uses digital data and representations (in the form of 0s and 1s) rather than analogue or physical signals. However, in practice, they converge with a wide range of technologies, including computers., mobile devices, sensors, software, and electronic systems in general. The convergence above of technologies results from the evolution and development of the set of knowledge, techniques, means, methods, tools, and devices used by human beings over time to transform, manipulate and take advantage of their environment to satisfy their needs and desires.

Consequently, the aforementioned convergent technologies allow the creation, processing, transmission and storage of data and content in digital format. Examples of these technologies include computing, electronics, big data, artificial intelligence, blockchain, the cloud, and robotics, among others.

According to the RAE, digitisation is understood as the “Action and effect of digitising.” Likewise, digitising is understood as “Recording data in digital format, Converting or encoding data or information of a continuous nature into digit numbers, such as a photographic image, a document or a book”, and finally, as an adjective, as indicated above, Digital refers to everything “that creates, presents, transports or stores information through the combination of bits” and in correspondence with this, to what “is carried out or transmitted by digital means.”<sup>13</sup>

Therefore, we can say that, as part of digitalisation, a phase of converting data, information, resources, processes, and analogue objects into digital format is generated (some experts call it digitisation or digitisation).<sup>14</sup>

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<sup>12</sup> *The COVID-19 pandemic, in the years 2020-2021, accelerated the adoption and importance of digitalization in various aspects of daily life, healthcare, the economy, government management and Tax Administration. These changes were a necessary response to the crisis generated, as well as an indication of how digital technology can play a fundamental role in solving global challenges.*

<sup>13</sup> See Royal Spanish Academy. 1. (f). Digitalización; 1. (tr) & 2. (tr). Digitalizar & 2. (adj) & 4. (adj). In Dictionary of the Spanish language. Retrieved on October 21 and 23, 2023, from <https://dle.rae.es/digital?m=form>

<sup>14</sup> *Jacqueline Prause on the official website of SAP Spain, points out that the glossary of Gartner, an American company that has a notable global reputation, dedicated to consulting and research in information technologies, defines “digitization” as the*

This involves representing data and objects in digital numbers that can be processed, stored, and transmitted electronically.

However, from a more complex point of view, digitalisation is understood when an organisation's data and digital assets (private or public) are processed through digital technologies, leading to fundamental changes in the core processes of an organisation that can result in new corporate business models and new government management models, as well as social changes in general <sup>15</sup>.

Consequently, data and digital assets are two key concepts in digital technology, and although they are related, they have slightly different meanings. Next, the definitions of digital data and digital assets will be developed.

## 5.1 DIGITAL DATA

Digital data is numerical representations (binary digits or bits) of ones and zeros or encoded information that machines, in a broad sense, can interpret. They can take many forms, including text, numbers, images, sounds, videos, etc. Therefore, data is the fundamental raw material in the digital age and is used to make decisions, perform analysis, create digital content, and feed artificial intelligence algorithms. Consequently, data can be stored digitally on storage devices, databases, servers, the cloud, and other media.

## 5.2 DIGITAL ASSETS

Digital assets are a subset of digital data with economic or strategic value to an organisation or individual. These assets may include sensitive data, confidential information, intellectual property, and other important digital resources. Digital assets can be both critical information for an organisation and, for example, a risk analysis report on the behaviour of taxpayers of a certain economic activity.

It is important to highlight that managing and protecting digital assets for any private or public organisation is fundamental to the security and success of organisations in the digital age.

The key difference between data and digital assets lies in the value and importance attributed to the information. Data is raw information, while digital assets are a specific selection of data that is considered valuable. Digital assets are often backed by security and access control policies to protect their confidentiality and integrity <sup>16</sup>.

## 5.3 THE DIGITALIZATION OF THE GOVERNMENT OR THE GOVERNMENT SECTOR

Clarified within the scope of digitalisation, the difference between data and digital assets, now we will indicate some examples of how digitalisation is applied in different social

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*process of change analog to digital, also known as digital enablement. Put another way, digitization takes an analog process and changes it to a digital form without any change in the nature of the process itself. Accessed October 17, 2023, <https://www.sap.com/spain/products/erp/digitization-vs-digitalization.html>*

<sup>15</sup> *The glossary of Gartner, an American company that has a distinguished global reputation, dedicated to information technology consulting and research, defines "Digitalization" as the use of digital technologies to change a business model and provide new revenues and opportunities. of value production, it is the process of moving to a digital business. Retrieved October 17, 2023, <https://www.gartner.com/en/information-technology/glossary/digitalization.html>*

<sup>16</sup> *Oracle in its Content Management system indicates that organizations use many digital assets (images, videos, and also text-based content) that are used in different ways and in different contexts. Consulted on October 17, 2023 <https://docs.oracle.com/cloud/help/es/content-cloud/CECDA/GUID-D4A41345-2E08-4EFA-B4BF-26CEA758785E.htm#CECDA-GUID-D4A41345-2E08-4EFA-B4BF-26CEA758785E>*

contexts, highlighting digitalisation in the government or government sector, a sector in which <sup>17</sup>the Tax administration.

As is known, the classic example of digitisation is the digitisation of documents, images, music, movies, books, education, and other media. It also highlights the digitalisation of business processes, in the sense that companies use digitalisation to automate processes, such as production (industry 4.0), administration, accounting, finance, payment methods, marketing and human resources management, among other activities.

Now, no less important is the digitalisation of the government or the government sector (government processes), also known as e-government, electronic government, or digital government, referring to the adoption and application of information and communication technologies (ICT). (including digital technologies) to improve the delivery of public services, transparency, efficiency, and citizen participation in government management.

As we already said, the digitalisation of the Tax Administration is immersed in e-government, electronic government, or digital government, which consists of transforming the processes and systems used by tax authorities to collect, process, and manage related information with taxes and taxpayers through digital technologies. This approach seeks to improve efficiency, transparency, and effectiveness in collecting and providing tax-related services.

Therefore, it is undeniable that digitalisation has revolutionised how we interact with information, services, and the world. It has enabled significant technological advances and transformed many processes and aspects of everyday life. Furthermore, it has played a pivotal role in the information age by enabling rapid transmission and processing of data on a global scale.

Now, digitisation does contemplate an initial stage of converting information into digital format (what some experts call “digitisation” or “digitation”). Consequently, it is complemented by the creation, storage, transmission, processing, and analysis of digital data (including digital assets) for decision-making by public and private organisations, including the Tax Administration.

It is pertinent to address the following question: Is digital transformation synonymous with digitalisation? Therefore, below, we will proceed to determine if digital transformation and digitalisation are equivalent concepts, if they are distinguished from each other, or if they are two interconnected and complementary concepts in the process of implementing the technological revolution in a public entity, such as This is the case of the Tax Administration.

## **6 DIGITISATION AND DIGITAL TRANSFORMATION**

Digital transformation is a concept initially generated in private-sector organisations and later transferred to the public sector. [López LD \(2018\)](#), taking as reference the blog of the computer science studies of the Open University of Catalonia (UOC) edited by Professor José Ramón Rodríguez, points out that “the term digital transformation, apart from some appearances In other contexts, it emerges in a book titled Digital transformation: the essentials of e-business, by [Patel and MaCarthy \(2000\)](#), on electronic commerce (e-business), being associated, at that time, above all with the customer experience through

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<sup>17</sup>The United Nations has been issuing an *Electronic Government Index Report* for 21 years, which is issued every two years, its latest report is from the year 2022. The aforementioned publication evaluates the state of development of electronic government in the 193 Member States of the United Nations. United, is the only one that has been constant for more than two decades, which has made it the main reference for governments. <https://desapublications.un.org/sites/default/files/publications/2022-09/Web%20version%20E-Government%202022.pdf>.

presence on the web and search engines, always related to the marketing and online sales” (p. 9)

On the other hand, [López L. D.](#), indicates that [Matt and others \(2015\)](#) affirm that the term “digital transformation” is the evolution of the concept of “digitation” (which other authors call digitisation, as noted previously), passing through “digitisation”. That is, we go from obtaining digital data to automating digital processes and transforming businesses or organisations in the digital field.

[Matt and others \(2015\)](#), cited by [López L. D. \(2018\)](#), refer to digitisation as the conversion of analogue to digital information; That is, the representation of signals, images, sounds and objects in the form of a series of numbers, expressed as a discrete value, and specifically in Boolean digits: “1” and “0”.

Furthermore, they refer to digitalisation as the real process of change induced by technology derived from typing. This process has enabled many of the phenomena known today, such as big data, artificial intelligence, blockchain, the Internet of Things, and Industry 4.0.

Therefore, they conclude that digital transformation is the total and global business, organisational, personal and/or social effect of digitalisation. That is the set of changes associated with digitalisation in all aspects of society, including uses and customs.

In this sense, [López L. D. \(2018, p.10\)](#), states that digitisation is the conversion of information (from analogue to digital), digitalisation is the process (in the digital field), and digital transformation is the effect that accelerates the processes of change in organisations and society in general, already existing, and ongoing, both transversal and global.

Finally, [López L. D. \(2018, p.11\)](#), refers to the publication of “Harvard Business Review ([Puthiyamadam, 2017](#)), which shows that, although the term digital transformation is relatively new, it has begun to be used to refer to the experience of the user. The meaning of the term itself has been varying, from referring to a purely technological environment, that is, IT as a facilitator (confusing with the term digitalisation), passing through a client/user environment (marketing, which corresponds to the first uses of the term), to a global scope of the company or organisations in general (private and public) that affects all its areas and departments (business and strategy, which is currently considered valid).

On the other hand, [Sanabria M. and Méndez R. \(2022, p.31-32\)](#), in their book titled “Digital Transformation”, indicate that the digital transformation of organisations can be understood as the “reinvention of resources, priorities and processes of a company in order to adapt its purpose to a digitally empowered world” ([Perkin and Abraham, 2017, p.51](#)). It arises from an interest that may be linked, among other aspects, to the need to save production or delivery times, reduce costs and increase income, better adjust to environmental conditions, and automate to improve quality processes, thus being more competitive ([Schallmo and Williams, 2018, p.13](#)).

[Sanabria, M. and Méndez R. \(2022, p.12\)](#) confirm that “a digital transformation process invites us to reconsider the relationship, not only virtual but also physical, of the organisation with its suppliers, customers, owners, collaborators, competitors, and the industry in general, in order to add value to each of them. The above implies considering the innovation opportunities that the organisation has in relation to the goods it produces and the services it provides. The process also drives the company, more broadly, to improve its operational efficiency and the business model as a whole ([Aguar. 2020](#)).”

In this sense, digital transformation is a broad and strategic process involving the reinvention of a private or public organisation by incorporating digital technologies to improve its operation and its relationship with customers, suppliers, administrators,



taxpayers, and other related parties., operational efficiency and its ability to adapt to a constantly changing environment. Digital transformation is not just about adopting technology but about completely and comprehensively rethinking how an organisation operates and relates to its relations, employees, and officials in the digital age.

Below are some key aspects of digital transformation from different points of view, such as strategy, technology, culture, customer experience, administrators, suppliers and other related processes, data and analysis and cyber security.

From a strategy point of view, digital transformation begins with a clear strategy that defines the objectives and goals of the organisation in the digital environment. This includes identifying growth opportunities, improving operational efficiency and adapting to changing societal demands.

From a technology perspective, adopting digital technologies is an important component of digital transformation. This may include implementing data management systems, data analytics (Big Data), process automation, artificial intelligence, blockchain, IoT, cloud and more, depending on the organisation's needs and whether it is a private or public organisation.

From a cultural point of view, digital transformation often involves a cultural change in the organisation. This may require acquiring new digital skills by employees or officials and promoting a culture of innovation and adaptation to change for suppliers and related parties.

From the point of view of the customer experience, administrators, suppliers, and other related things, improving all of them is usually one of the main objectives of digital transformation. Organisations seek to use technology to provide their associates with more personalised and satisfying experiences.

From a process point of view, digital transformation involves reviewing and improving the organisation's existing processes to make them more agile, efficient and data-driven.

From a data and analytics point of view, data management and data analytics play a critical role in digital transformation. Organisations use data to make more assertive decisions and to obtain valuable information about the preferences of related parties.

From a cybersecurity perspective, as organisations adopt digital technologies, they must also pay attention to cybersecurity to protect their data and information from potential threats.

Therefore, digital transformation is a continuous process and not a single goal. As technologies and societal demands evolve, organisations (private and public) must continue to adapt and improve to maintain their competitiveness, efficiency, simplicity, transparency, accountability, and relevance in the digital age.

Given the above, we can conclude that digitalisation and digital transformation are two related but different concepts in the organisational, business, governmental and technological fields. Here, we will point out the most important differences between both terms:

Differences between Digitalization and Digital Transformation	
Digitisation	Digital Transformation
1) Digitisation refers to converting physical information and resources into digital format and is complemented by creating, storing, transmitting, processing, and analysing digital data. Additionally, digital data (including digital assets) is critical for decision-making.	1) Digital transformation is a broader and strategic change in an organisation that involves the reinvention of processes, business models, governance structure and digital technologies strategies.
2) Digitisation often focuses on converting and managing analogue data and processes into digital format and digital processes to improve efficiency and accessibility.	2) Digital transformation goes beyond the digitisation of data and processes; It is about rethinking how an organisation interacts with its clients, employees, taxpayers, administrators, and other related parties, creating value in the digital age.
3) Examples of digitisation include scanning paper documents, converting physical files into digital formats, or using document management systems to store information electronically for decision-making.	3) Digital transformation can include adopting emerging technologies such as artificial intelligence, data analytics, cloud, automation, Internet of Things (IoT) and cybersecurity to improve decision-making, business agility and government and the satisfaction of the client and those administered in general, including taxpayers.
	4) Digital transformation implies a cultural and organisational change since it requires employees and officials to adapt to new working and collaboration methods.

In short, digitalisation focuses on converting analogue data and processes into digital format for subsequent process management in the digital world. In contrast, digital transformation is a broader and more strategic process that involves profound changes in the organisation, culture, and strategy, using digital technologies to achieve competitive advantages and improve the customer and manager experience. Digitisation is often an initial step on the path to digital transformation, but it is not the same as digital transformation.

## 7 TAX ADMINISTRATION IN THE CURRENT ERA: DIGITALISATION AND DIGITAL TRANSFORMATION

As we have clarified, digitalisation is not the same as digital transformation, and as such, both concepts cannot be indicated as synonyms. Furthermore, it is observed that digitalisation is an initial step on the path towards digital transformation within a general strategy of organisations, both public and private. Next, we will develop what digitalisation and digital transformation are in Tax Administration.

As we previously pointed out, one of the functions of digitalisation is the digitalisation of government processes (called e-government, electronic government, or digital government), referring to the adoption and application of information and communication technologies (ICT). (including digital technologies) to improve public service delivery, transparency, efficiency, and citizen participation in government management <sup>18</sup>.

According to the OECD, digital government is “the use of digital technologies as an integral part of governments’ modernisation strategies to create public value. This is based on a digital government ecosystem made up of state actors, non-governmental organisations, companies, citizen associations and people in charge of the production and access to data, services, and content through interactions with the government (OECD, 2014, as cited in Naser, 2021, p. 15) <sup>19</sup>.”

Therefore, to achieve good digital government <sup>20</sup>, governance is needed that contains and encompasses digital governance that articulates the actors (including the Tax Administration), policies, resources and relationships that implement digital government strategies and programs feasible. <sup>21</sup>

It is common that, in the digitalisation of tax administrations, countries carry out a general government digitalisation strategy (or e-government strategy, electronic government or digital government for all public functions). Therefore, in most cases, the digitalisation of the Tax Administration is immersed in the first. In other cases, it is usual for the Tax Administration to be the entity or organisation that, within a general digital strategy framework, leads the digitalisation of the rest of the Public Administration bodies.

Therefore, we will expose the essential elements of government digitalisation as a general strategy in this context. Subsequently, we will differentiate two fundamental components: digitalisation and digital transformation in Tax Administration.

In this sense, the key aspects of government digitalisation, that is, the general strategy of e-government, electronic government, or digital government for all public functions, consist of the following:

- Online service delivery: Digital governments offer online services through web portals and mobile applications to simplify citizens’ interaction with the government. This may include paying taxes, requesting documents, and scheduling medical appointments.
- Automation of internal processes: Governments use systems and applications to automate internal processes, such as human resource management, accounting, and decision-making. This improves efficiency and reduces bureaucracy.
- Open data and transparency: Government data is available to the public in open and accessible formats. This promotes transparency and allows citizens to monitor and evaluate government activities.

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<sup>18</sup> *Electronic Government Index Report*, which is issued every two years, its last report is from 2022. <https://desapublications.un.org/sites/default/files/publications/2022-09/Web%20version%20E-Government%202022.pdf> UN e-Gov Survey Analysis 2022 - Author Diana Parra Silva, Senior Public Sector Specialist, World Bank.

<sup>19</sup> See <https://biblioguias.cepal.org/gobierno-digital/definiciones> consulted on October 14, 2023.

<sup>20</sup> Digital technologies contribute to the fulfillment of all the Sustainable Development Goals (SDG – Agenda 20-30) and especially SDG 16: Peace, justice, and solid institutions, since digital or electronic government services help to improve the relationship between the citizen and the State and improve the efficiency of public administration services, including the services provided by the Tax Administration.

<sup>21</sup> See <https://biblioguias.cepal.org/gobierno-digital/definiciones> consulted on October 14, 2023.



- Citizen participation: Digital governments encourage citizen participation through online platforms that allow citizens to give their opinions on government policies and decisions. They may also include tools for the presentation of citizen proposals.
- Cybersecurity attention and privacy: Governments must pay special attention to cybersecurity and privacy protection in digitalisation. This involves implementing security measures to protect government data and systems.
- Technological infrastructure: Investment in technological infrastructure is essential for the digitalisation of government. This includes upgrading broadband networks, implementing data management systems, and acquiring emerging technologies such as artificial intelligence and the cloud, among other digital technologies.
- Digital education: Governments can provide training and resources to improve the digital literacy of citizens and government officials.
- Innovation and entrepreneurship: Digital governments encourage innovation and entrepreneurship by supporting the development of innovative technologies and solutions in collaboration with the private sector and academia.
- Open Government: The principles of open government include transparency, accountability, and citizen participation in government decision-making. Digital governments adopt these principles to promote more effective and clear management.
- Improving efficiency: Digitization can reduce administrative costs and improve the efficiency of government services by reducing the need for paper procedures and speeding up processes.

Therefore, digitalisation (e-government, electronic government, or digital government) seeks to improve service delivery efficiency, preserve the environment and transparency in public administration, and promote greater citizen participation in decision-making Government decisions. This approach is essential to modernise government management and adapt to society's changing demands and expectations in the digital age.

Now, specifically, the digitalisation of the Tax Administration<sup>22</sup> refers to the transformation of the processes and systems used by tax authorities to collect, process, and manage data and information related to taxes and taxpayers (taxpayers, taxpayers, responsible parties, etc.) through digital technologies.

This approach seeks to improve efficiency, transparency, cost reduction, simplicity, accountability, and effectiveness in tax collection, as well as the functions and powers tax administrations have in providing services related to taxes.

In tax administrations worldwide, depending on their degree of development and maturity, digitisation or digitisation can occur for the conversion of analogue data and information to digital, as a concept immersed in the definition of digitalisation <sup>23</sup>, that is, the

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<sup>22</sup>It is important to highlight that in the field of Tax Administration, the phase of (digitization or digitization) is not excluded from the concept of digitalization, that is, the conversion of data and information from analog to digital. Therefore, in the field of Tax Administration, digitalization often focuses first on the conversion and management of data and, analog processes to digital format and second on the development of digital processes to improve efficiency and accessibility, that is, digitization or digitization is immersed within of the concept of digitization.

<sup>23</sup> The Glossary of terms of the reports called Tax Administration 3.0: The Digital Transformation of tax Administration (2020) and Digital Transformation Maturity Model (2022) issued by the OECD Tax Administration Forum, define Digitalization as the conversion of data into digital, computer-readable formats. It allows you to replace paper-based business processes with digital data processing applications, improving overall efficiency levels. OECD (2020), Tax Administration 3.0: The Digital Transformation of tax Administration, OECD, Paris. <http://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/tax-administration-3-0-the-digital-transformation-of-tax-administration.htm> OECD (2021), Digital Transformation Maturity Model, OECD, Paris. [www.oecd.org/tax/forum-on-tax-administration/publications-and-products/digital-transformation-maturity-model.htm](http://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/digital-transformation-maturity-model.htm)

Digitization focuses first on the conversion and management of data and analogue processes to digital format and second on the development of digital processes to improve efficiency and accessibility. Subsequently, the digital transformation materialises<sup>24</sup> as the effect that accelerates each tax administration's change processes, existing and ongoing, horizontal and global.

It is evident that the postulates indicated in 1776 by Adam Smith, in his work "The Wealth of Nations" to achieve an efficient Tax Administration, indicated at the beginning of this work, can be achieved in the current era, initially carrying out digitisation (including digitisation or digitisation), subsequently developing a digital transformation strategy.

In this sense, some key aspects of digitalisation and its consequent digital transformation in the field of Tax Administration are detailed below, based on the definition of "Tax Administration 3.0" developed by the OECD Tax Administration Forum<sup>25</sup> in its report called Tax Administration 3.0: The Digital Transformation of Tax Administration of the year 2020<sup>26</sup>.

Therefore, "Tax Administration 3.0" is a concept that refers to the modernisation and transformation of tax collection agencies and fiscal management through the application of advanced digital technologies and innovative approaches. This term suggests an evolution in how taxes are administered and collected, leveraging digital technologies and tools to improve efficiency, transparency, and the taxpayer experience.

The report aims to "establish a vision for the digital transformation of the Tax Administration, according to which taxation becomes a more fluid and frictionless process over time." On the other hand, the report indicates that "The digital transformation of Tax Administration is a journey that will take many years and requires many pieces to fit together to obtain the full benefits. This includes the joint development of many of the basic components of the future Tax Administration with other parts of the government, with private sector actors and internationally."

Below, the evolution that has occurred over time, what is called today as "Tax Administration 3.0" is developed<sup>27</sup>:

- Process Automation (20th century): During the 20th century, tax agencies began to adopt computer systems to automate processes such as processing tax returns and issuing tax notices or notifications. This represented an initial step towards efficiency and reduction of administrative burden.
- Document Digitization (1990s): In the 1990s, many tax agencies began digitising tax documents (tax invoices, among other documents), allowing for better data access and management. Taxpayers could file electronic returns and receive electronic notifications.

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<sup>24</sup> *Ibid.* Digital Transformation is defined, with a definition that confuses digitalization and digital transformation.

<sup>25</sup> By 2023, the OECD has 38 member countries spanning the globe, from North and South America to Europe and Asia-Pacific <https://www.oecd.org/acerca/miembros-y-socios/#:~:text=The%2038%20pa%C3%ADs%20members%20with,a%20Europe%20and%20Asia%2DPac%C3%ADfco>.

<sup>26</sup> OECD (2020), *Tax Administration 3.0: The Digital Transformation of tax Administration*, OECD, Paris. <http://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/tax-administration-3-0-the-digital-transformation-of-tax-administration.htm>

<sup>27</sup> See CIAT (2020). *ICT as a Strategic Tool to Enhance the Efficiency of Tax Administrations*. Inter-American Center of Tax Administrations and OECD (2020), *Tax Administration 3.0: The Digital Transformation of tax Administration*, OECD, Paris. <http://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/tax-administration-3-0-the-digital-transformation-of-tax-administration.htm>

- Development of Online Portals (2000s): As the Internet became more accessible, tax agencies began offering online portals where taxpayers could file tax returns, make payments, and access relevant tax information.
- Big Data and Data Analytics (2010s): With the proliferation of big data, tax agencies began using data analytics to identify patterns of tax evasion and improve oversight and audit implementation.
- Focus on Taxpayer Experience (2010s): Tax agencies began to focus on improving the taxpayer experience by simplifying tax processes and providing friendlier user interfaces.
- Collaboration with the Private Sector (2010s): Some tax agencies began collaborating with the private sector to develop advanced technological solutions, such as tax management systems and online payment services.
- Greater Transparency and Accountability (2010s): Transparency in tax administration became an important goal with the publication of tax data and accountability for using tax revenues.
- Modernisation of Technological Infrastructure (2010-2022): Tax agencies invested in modernising their technological infrastructure to exploit emerging technologies such as cloud, artificial intelligence, big data, blockchain, and process automation.

The above represents a series of evolutionary steps towards what is called Tax Administration 3.0, which seeks to take full advantage of Digital Technologies (TD) and best management practices to improve the efficiency and effectiveness of the Tax Administration and provide a better taxpayer experience.

It has become clear that “Tax Administration 3.0” focuses first on digitalisation, then moving through and achieving digital transformation, which entails optimising processes and organisational transformation to make tax compliance more accessible and efficient for everyone involved.

It is essential to highlight that the OECD Tax Administration Forum, in its report entitled “Digital Transformation Maturity Model”<sup>28</sup>, aims to offer a self-assessment tool enabling tax administrations to evaluate their current level of digital maturity and move towards a more effective tax system.

The Model establishes five maturity levels to simplify the evaluation of the current level of maturity by administrations, providing clear and distinctive descriptions of each level.

The report highlights that, when designing this maturity model, it was decided to use the medium level, called “Consolidated,” as a reference point to describe the level that, on average, the members of the Forum are expected to reach. OECD Tax Administration.

The other four levels were developed using this level of maturity as a starting point to describe the progression from the “Incipient” level to the “Consolidated” level, and then towards possible future levels, considering the anticipated evolution.

In this sense, the five levels in which the stages of digitalisation and digital transformation are designed are the following:

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<sup>28</sup> OECD (2021), *Digital Transformation Maturity Model*, OECD, Paris. [www.oecd.org/tax/forum-on-tax-administration/publications-and-products/digital-transformation-maturity-model.htm](http://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/digital-transformation-maturity-model.htm)

1. Incipient: represents the level of tax administrations that have already made certain progress in terms of digitalisation but still have much to do in this area. At this level, descriptions focus on achievements rather than shortcomings while pointing out potential limitations.
2. In progress: represents the level of tax administrations that have carried out or are carrying out digitalisation reforms to approach the average level of advanced tax administrations.
3. Consolidated: This is the level that many advanced tax administrations, such as the OECD Tax Administration Forum members, are expected to achieve.
4. Featured: this level represents the vanguard of what, in general, can be achieved through actions by the tax administration itself, although with some collaboration from the relevant actors.
5. Ambitious: This level examines what we can achieve in the long term as we move towards a more fluid and efficient tax administration that increasingly interacts in real-time, as described in the publication Tax Administration 3.0.

To conclude, it is relevant to emphasise that digitalisation and digital transformation are fundamental components of the maturity model. Digitalisation makes it possible to replace paper-based organisational processes with digital data processing applications, which improves general efficiency levels. On the other hand, digital transformation refers to deeper changes in the functioning of tax administrations derived from transformations in how taxpayers interact and carry out their commercial transactions.

In particular, as described in the report “Tax Administration 3.0”, this transformation focuses on the growing migration of tax procedures towards the natural systems of taxpayers—the systems they use in their daily lives and/or in their businesses. These aspects of digital transformation are addressed in the descriptions of the “Outstanding” and “Ambitious” maturity levels and are related to the digital transformation strategies applicable in these cases.

Currently, the Tax Administration called 3.0 implements the following actions in practice. For this, we will take the Spanish Tax Administration as an example:

- Online systems: implementing web portals and mobile applications that allow taxpayers to file tax returns electronically (This simplifies the process and reduces filing errors), make payments, access tax information, and carry out other transactions and taxes from the comfort of their electronic devices <sup>29</sup>.
- Automation of data collection: using computer systems to automatically process and verify tax information, reducing the need for manual intervention and minimising errors. Tax administrations can, therefore, use automated systems to collect financial data and tax information from sources such as banks, employers, and business registries. This makes it easier to verify the accuracy of tax returns <sup>30</sup>.

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<sup>29</sup> Since its creation, the State Tax Administration Agency (AEAT) has been a pioneer in the field of electronic administration, and the intensive use of new information and communications technologies has been a constant that has led to having, today today, of an authentic “electronic Tax Agency”. The State Tax Administration Agency (AEAT) has an electronic headquarters with online systems for tax management <https://sede.agenciatributaria.gob.es/> as well as a mobile app <https://sede.agenciatributaria.gob.es/Sede/ayuda/app-agencia-tributaria.html>

<sup>30</sup> Under various legal instruments, the AEAT receives financial information related to ownership, balances, dividends, interests, amortizations, and other capital income obtained in any of the 107 countries and foreign jurisdictions by taxpayers residing in Spanish territory. All this flow of international information that the Tax Agency receives annually is incorporated into the databases and, together with the rest of the national information, allows the verification of correct compliance with taxpayers' obligations, guaranteeing the effective application of our tax system. [https://sede.agenciatributaria.gob.es/Sede/normativa-criterios-interpretativos/analisis/2022/Evolucion\\_y\\_perspectivas\\_del\\_intercambio\\_de\\_informacion.html](https://sede.agenciatributaria.gob.es/Sede/normativa-criterios-interpretativos/analisis/2022/Evolucion_y_perspectivas_del_intercambio_de_informacion.html)

- Electronic notifications and communication: Communication between the tax administration and taxpayers through electronic means, such as email, text messages or online notifications, instead of physical letters <sup>31</sup>.
- Electronic exchange of information: Digitisation enables the exchange of electronic information between tax agencies and other entities, such as companies, financial institutions, and other tax administrations. This improves the efficiency and accuracy of verification and inspection. <sup>32</sup>
- Electronic invoicing systems: Implementing electronic invoicing systems or other documents is common in tax digitalisation. This makes it easier to track business transactions and helps reduce tax evasion <sup>33</sup>.
- Self-management platforms for taxpayers: online portals are developed where taxpayers can access their tax history, make online payments, request tax incentives, and carry out other tax-related procedures through chatbots <sup>34</sup>.
- Data analytics and big data: Tax administrations can use blockchain and artificial intelligence to identify potential tax non-compliance and evasion using data analytics and big data techniques. This can be especially useful for identifying patterns of tax fraud <sup>35</sup>.
- Security and data protection: Security and data protection are fundamental in digital tax administration, as it involves handling sensitive information. Security measures will be implemented to protect the confidentiality and integrity of taxpayer data <sup>36</sup>.
- Online Education and Assistance: Online resources, such as tutorials and guides, are offered to help taxpayers understand and comply with their tax obligations through virtual assistance (chatbots) <sup>37</sup>.

In other words, the digitisation and digital transformation of the Tax Administration aims to streamline processes, reduce tax evasion, improve collection accuracy, and provide better service to taxpayers. However, it also poses challenges regarding cybersecurity, data privacy, and taxpayer rights and guarantees, so it is essential to establish robust systems and policies to protect information and taxpayer rights and guarantees.

As we can see, the Tax Administration does not escape the so-called “era of digitalisation”, which refers to the period in history in which digital technologies have had a profound and widespread impact on society, the economy and culture. The increasing digitalisation of information, processes and interactions in all daily life characterises this era.

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<sup>31</sup>The State Tax Administration Agency (AEAT) has electronic notifications <https://sede.agenciatributaria.gob.es/Sede/notificaciones-cotejo-documentos/notificaciones.html>

<sup>32</sup>AEAT protocol for the implementation of the supplies of tax information to local entities adhered to the Agreement for the Exchange of Tax Information and Collaboration in Collection Management (PROTEELL - June 2021). <https://sede.agenciatributaria.gob.es/Sede/colaborar-tax-agency/collaboration-public-administrations/protocol-exchange-eell/request-reception-information/exchange-files-headquarters-via-cesion-cesii.html>

<sup>33</sup>The State Tax Administration Agency (AEAT) has a request for an electronic invoicing system <https://sede.agenciatributaria.gob.es/Sede/procedimientos/IZ31.shtml>

<sup>34</sup>The State Tax Administration Agency (AEAT) has virtual assistance tools <https://sede.agenciatributaria.gob.es/Sede/ayuda/herramientas-asistencia-virtual.html>

<sup>35</sup>See Borje T. José (2020). *The use of artificial intelligence and information analysis in the Tax Agency. Chapter 8. Taxation and Artificial Intelligence: Tax Administration and Taxpayers in the Digital Age.* P. 203-2019. Thomson Reuters.

<sup>36</sup>Security and data protection protocols <https://sede.agenciatributaria.gob.es/Sede/condiciones-uso-sede-electronica/datos-personales.html>

<sup>37</sup>The State Tax Administration Agency (AEAT) has virtual assistance tools <https://sede.agenciatributaria.gob.es/Sede/ayuda/herramientas-asistencia-virtual.html>

## 8 CONCLUSION

This work has shed light on the significant transformation that the Tax Administration has undergone from the time of Adam Smith to the current era of digitisation and digital transformation. In the 18th century, taxes were collected and managed rudimentarily compared to today's complex and efficient practices. The vision of limited government and the importance of efficient tax collection, proposed by Smith, is still relevant, but the technological environment has evolved enormously.

Information Technologies (IT) and Information and Communication Technologies (ICT) have become essential pillars of the current Tax Administration. IT has enabled the automation of processes, data management and improved efficiency in tax collection. ICT, which encompasses IT but also communication and interaction through technology, has redefined the way citizens interact with tax authorities and vice versa.

Digital Technologies (DT) play a crucial role in this evolution by enabling the digitalisation and digital transformation of the Tax Administration. The relationship between ICT and TD is close, contributing to the modernisation and efficiency of tax services.

Therefore, digitalisation focuses on converting analogue data and processes into digital format for subsequent process management in the digital world. In contrast, digital transformation is a broader and more strategic process that involves profound changes in the organisation, culture, and strategy, using digital technologies to achieve competitive advantages and improve the taxpayer experience. Digitisation is often an initial step on the path to digital transformation, but it is not the same as digital transformation.

The digitalisation of government, along with digital transformation, has revolutionised the way taxes are managed and interacted with taxpayers. This has led to greater transparency, convenience, and efficiency in tax management.

Finally, the Tax Administration has evolved from a time when technology was limited to an environment in which IT, ICT and DT play a fundamental role in the efficiency and effectiveness of tax services. Digitalisation and digital transformation are key elements in this evolution, and their impact on Tax Administration continues to develop as we move into the future. This work highlights the importance of adapting to these new technological realities to maintain efficiency and relevance in the tax field in the digital age.

## 9 BIBLIOGRAPHY

- AGENCIA ESTATAL DE ADMINISTRACIÓN TRIBUTARIA (AEAT). Disponible en <https://sede.agenciatributaria.gob.es/>
- ASOREY, R. (2021). *Tributación de la economía digitalizada*. Thomson Reuters Aranzadi. pp. 27-36.
- BILBAO ESTRADA, I. Y ANTÓN ANTÓN, Á. (2019). *Retos y oportunidades de la Administración tributaria en la era digital*. Thomson Reuters Aranzadi. pp. 113-153.
- CABALLERO, M. Á. Y CILLEROS SERRANO, D. (2020). *Ciberseguridad y transformación digital*. Anaya. pp. 17-43.
- CALVO, Á. (2022). *Las tecnologías de la información y la comunicación*. *Ar@cne Revista Electrónica de Recursos en Internet Sobre Geografía y Ciencias Sociales*, Vol., XXVI., Núm. 271, 1-16 Disponible en DOI: <https://doi.org/10.1344/ara2022.271.40516> pp. 3-16.
- CARBAJO VASCO, D. Y COLLOSA A (2022). *La digitalización en las Administraciones Tributaria: con particular referencia a los asistentes virtuales. Estado de la cuestión, en especial, en Iberoamérica*. Tirant lo Blanch. pp. 2-107.
- CIAT (2020). *Las TIC como Herramienta Estratégica para Potenciar la Eficiencia de las Administraciones Tributarias*. pp. 1-307.

- CIAT (2018). Kavoya, J. Tecnologías Digitales en la Industria Tributaria: el Caso del IVA, Revista Nº 43. pp. 53-68.
- DESJARDINS, J. (2022). Señales. Deusto. pp. 68-87.
- JOYANES AGUILAR, L. (2018). Industria 4.0. La Cuarta Revolución Industrial. Marcombo. pp. 45-95.
- DÍAZ YUBERO, F. (2001). Aspectos más destacados de las administraciones tributarias avanzadas. Instituto de estudios fiscales. pp. 21-22.
- GARCÍA NOVOA, C. (2019). 4ª Revolución Industrial: la fiscalidad de la sociedad digital y tecnológica en España y Latinoamérica. Thomson Reuters Aranzadi. pp. 176-365.
- GUTIÉRREZ GONZÁLEZ, Á. (2018). Tecnologías de la información. Un enfoque interdisciplinario. Marcombo. pp. 15-37.
- LEY 58/2003, de 17 de diciembre, General Tributaria. BOE-A-2003-23186 Disponible en <https://www.boe.es/eli/es/l/2003/12/17/58/con>
- LARA ROSANO, F. ET AL. (1998). Tecnología, Conceptos, Problemas y Perspectivas. Siglo veintiuno editores. pp. 2-8.
- LÓPEZ L., D. (2018). Introducción a la transformación digital. PID\_00250286. Universitat Oberta de Catalunya. pp. 3-20.
- MATTHIJS, ALINK Y KOMMER, V. (2011). Manual de Administración Tributaria. CIAT e IBFD. pp. 97-187.
- MORENO GONZÁLEZ, S. Y GÓMEZ REQUENA, JOSÉ Á. (2021). Nuevas tecnologías disruptivas y tributación. Thomson Reuters Aranzadi. pp. 15-36.
- NAVARRO EGEA, M. (2021). Hacia un entorno digital más garantista: las relaciones tributarias electrónicas. Thomson Reuters Aranzadi. pp. 17-58.
- OECD (2023), Apoyo a la digitalización de las administraciones tributarias de los países en desarrollo, OECD, París, Disponible en <https://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/apoyo-a-la-digitalizacion-de-lasadministraciones-tributarias-de-los-paises-en-desarrollo.pdf>.
- OECD (2020), Tax Administration 3.0: The Digital Transformation of Tax Administration, OECD, París. Disponible en <http://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/tax-administration-3-0-the-digital-transformation-of-tax-administration.htm>
- OCDE (2021), Modelo de madurez de la transformación digital, OCDE, París. Disponible en [www.oecd.org/tax/forum-on-tax-administration/publications-and-products/digital-transformation-maturity-model.htm](http://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/digital-transformation-maturity-model.htm)
- OLIVER CUELLO, R. (2021). Administración electrónica en el ámbito tributario. Thomson Reuters Aranzadi, pp. 21-30.
- PITA GRANDAL, A. M., MALVARÉS PACUAL, L. A. Y RUIZ HIDALGO, C. (2023). La digitalización en los procedimientos tributarios y el intercambio automático de información. Aranzadi. pp. 153-167.
- REAL ACADEMIA ESPAÑOLA. En Diccionario de la lengua española. Recuperado en 20 de octubre de 2023, de <https://www.rae.es/>
- SMITH, A. (1776). La riqueza de las naciones. Alianza editorial. pp. 663-778.
- SERRANO ANTÓN, F. (2020). Fiscalidad e inteligencia artificial: Administración tributaria y contribuyentes en la era digital. Thomson Reuters Aranzadi. pp. 135-209.
- SUÁREZ Y A., RAMÓN C. (2007). Tecnologías de la información y la comunicación: Introducción a los sistemas de información y de telecomunicación. Ideaspropias Editorial. pp. 3-17.