

The Evolution of the Collection of State Tax Revenue in Portugal with the Introduction of e-Invoicing

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Abstract: The digital revolution has taken place in several areas and has been transversal in the Portuguese economy. Concerning the accounting area, it promoted the creation of new tools for processing information, increasing production capacity, automating processes for filling in tax returns and improving the information provided. The Tax Authority (AT) computerized its services, created new tax obligations, and automated the revenue collection process. Regarding tax obligations, the former highlighted the e-invoice system and a tax obligation for monthly communication of the turnover of economic agents with commercial activity. This obligation generated greater AT control over the effective delivery of Value Added Tax (VAT) by economic agents. The study of VAT is important because it is the (indirect) tax that has the greatest weight in the State's annual tax revenue. In light of the above, by interconnecting the digital evolution of the AT accounting sector and the evolution of the effective collection of tax revenue, this study aims to determine the advantages of the digital evolution and whether it provided an increase in tax revenue collected by the State. The study's methodology focused on VAT tax revenue before and after the implementation of e-invoicing and the volume of invoices communicated by economic agents to the AT was collected. The tax years selected for the collection of information were between 2012 and 2021. From the analysis conducted, we can conclude the State revenue from this tax increased. In general, the

digital revolution has enabled accounting professionals with computer skills, and AT has changed its way of working with taxpayers.

Keywords: Accounting, Tax Authority, e-Invoice System, Digital Evolution

1 Introduction

The digital transformation of the economic and financial market is one of the major milestones in the way goods and services are transacted (Melnychenko et al., 2020). Human interaction in the buying and selling of goods and services has been partly abandoned, and replaced by virtual contact (Mosteanu & Faccia, 2020). In Portugal, digital evolution began to take greater hold in the year 2000 and is now rooted in the public and private sectors.

This digital evolution has extended to the accounting sector, which has moved from manual bookkeeping to computerizing processes, helping to improve the accounting process and making some daily accounting activities less time-consuming. As for the public administration, in particular the Tax and Customs Authority (TA), over the years it has carried out various reforms, including computerisation and the use of IT and digital resources, to simplify and speed up tax collection processes. Tax acts that used to be carried out manually are now computerised and automated, without human hands.

From the taxpayer's point of view, one of the most visible innovations has been the implementation of the e-invoice system, aimed at both natural and legal persons. For individuals, it is an online source for consulting the expenses they incur. For legal persons, it leads to new tax obligations (reporting: monthly sales, annual inventories, transport notes). The e-invoice system, introduced by the AT, has the following objectives: control of company activity, control of VAT paid, control of the deduction of expenses for personal income tax (PIT) for individuals, combating tax evasion, and increasing tax revenue.

The e-invoice system is an important source of information for the AT, built on the information provided by economic agents, making the tax system more transparent and fairer.

Given the above, by linking the digital evolution of the accounting sector, the AT and the evolution of the effective collection of tax revenue, this applied project seeks to ascertain whether digital evolution has been an additive in the increase of tax revenue collected by the State.

The aim is therefore to study the importance of digital evolution in accounting and AT. To achieve this goal, we opted to analyse tax revenue before and after the implementation of e-invoicing using quantitative methodology, after reviewing concepts and collecting data available at the actual date of this report.

To achieve this objective, this article is divided into four points. After the introduction, point two provides a theoretical framework for the tax system, the e-invoice system and tax evasion. Point three presents the empirical study on the evolution of tax

revenue with the introduction of the e-invoice system, through a quantitative study, focusing on Value Added Tax (VAT), and its relationship with the digital evolution that has occurred in the Tax Authority. Finally, the conclusion is presented, indicating the limitations of this study and suggestions for possible future work.

2 Theoretical Framework

Over the last decade, the Portuguese tax system has been subject to successive reforms. The reforms, it should be emphasised, have not been in the types of taxes, but in the evolution of the *modus operandi* of the Tax Authority (TA).

The reformist impact was more incisive following the 3rd international bailout of Portugal, with the entry of the Troika in 2011. Aggressive policies were introduced, with the main aim of increasing tax revenue and reducing public spending, to reduce the annual deficit in the public accounts, as well as the excessive indebtedness of the Portuguese state.

One of the most high-profile measures, which involved economic agents and consumers, was the implementation of the e-invoice system, which led to an increase in the AT's power to observe, analyse and supervise commercial entities and consumers.

The e-invoice system consists of the taxable persons themselves registering and communicating a certain set of transactions to provide greater control by the AT. With this system, the AT now has a comprehensive database on various sectors of activity (consequent monitoring), making it possible to control the issuing of invoices, the creation of a tax incentive and the automatic filling in of PIT deductions.

2.1 Tax System

A basic notion of a tax system, according to Pereira (2009), is the so-called classical notion of a tax system, which considers it to be the set of taxes in force in a given country or geographical space, referring to existing tax legislation. However, how taxes can be organised varies greatly from country to country.

In addition to the composition of the systems, they have a purpose, an objective, which gives them the foundation, reason, and legality, to exist. In the case of Portugal, legality is found in Article 103(1) of the Constitution of the Portuguese Republic (CRP) (República Portuguesa, 2003). In the same article, and view of the objectives of the tax system as defined in paragraph 1, the CRP also recognises the need to create a tax by law as an essential element in the structure of a tax system.

The Portuguese tax system follows the line of the countries of continental influence (Continental Europe) (Alexander & Nobes, 1994) and is made up of a set of state and local taxes on income, wealth and expenditure, in addition to other taxes that tax certain specific acts (INE, 1997).

A tax system can be considered an open system. Open, because it interacts with its environment, influencing it, i.e. regulating it, and being influenced by it, being altered by the environment, according to the dynamic reality mentioned above (Pereira, 2011).

From a more dynamic perspective, adapted to the political, economic and social reality, a tax system is nothing more than the result of the state's need to raise revenue and the taxpayer's right not to have their assets raided beyond what the law provides for and which, indirectly, they have authorised through their representatives in the Assembly of the Republic (AR), in the case of Portugal. This is a broader perspective centred on the dynamic relationships that occur between the elements of a tax system and between it and other systems such as the political, economic and social.

There are four complementary domains for analysing a tax system: normative, economic, organisational and psychosociological. The normative domain includes all tax legislation. The economic domain is responsible for studying the impact of taxes and the fiscal policies pursued. The organisational field is concerned with the structure of services. Finally, the psychosociological domain is a gauge of acceptance of a given tax system by those to whom they are bound (Pereira, 2011).

As for the tax system, its adjacent principles are equity, efficiency, economy and simplicity (Alm, 1996) and it must have the following characteristics:

- Non-distortion of preferences: the tax system should not interfere in the application of resources, and should not alter individuals' choices (choosing between goods and services, between present and future consumption or choosing between leisure and work);
- Administrative simplicity: minimising costs should be one of the concerns when designing any tax system, both those associated with tax operation and indirect costs;
- Flexibility: the tax system must mold itself to the economic climate. Taxes and the respective rates must be manipulable by economic policy objectives and adapt to the changing economic climate;
- Political accountability: in addition to reflecting individual preferences expressed through elections, the tax system must also be transparent, i.e. it must be designed in such a way that all individuals are aware of the amount to be paid;
- Justice and equity: the tax system must be fair and equitable so that each individual pays a fair proportion of public spending.

2.2 E-Invoice

In July 2012, the Portuguese government approved a structural reform of the invoicing system in Portugal, through Decree-Law No. 197/2012 and Decree-Law No. 198/2012, of 24 August, which led to the implementation of the e-invoice system, with effect from 1 January 2013.

Portugal was a pioneer in the implementation of the e-invoicing system. However, it was not implemented solely and exclusively in Portugal and there has been growing concern about the modernisation and implementation of the invoicing system worldwide,

both in the European Union (Italy) and in Latin America (Mexico, Brazil, Chile) (Sousa, 2018).

Numerous measures were stipulated, innovative, and extendable to the universe of the internal economic and financial market, being one of the most important points in the fight against tax fraud, innovative at the European level (Saniuk, et al., 2020; Melo, 2018).

The development and improvement of information mechanisms (Neziraj & Shagiri 2018; Petersone & Ketners 2017) have led to greater control by the AT over economic and financial transactions carried out by economic agents. This system provided all the information about companies' tax obligations, acting as an incentive to issue invoices in sectors considered favourable to tax evasion (OBEGEF, 2023). It has allowed the AT to efficiently control and monitor VAT submissions, but also to promote a more effective operation of the Portuguese tax system.

Since 1 January 2013, it has been compulsory to issue an invoice or fiscally relevant document for each transaction involving goods or services, even if taxpayers do not request it at the time of purchase, under Decree-Law 197/2012 of 24 August. Subsequently, measures were put in place to control the issuing of invoices and a tax incentive was introduced under Decree-Law 198/2012 of 24 August.

As mentioned above, the obligation for taxpayers to electronically communicate the details of invoices issued by economic operators to the AT was defined, as well as the obligation to issue an invoice for all purchases of goods and services, which initiated a new collaboration between the state and citizens, to combat the black economy.

To protect the internal structure of the database and its functionality, a standardised tax audit file was created - Standard Audit File for Tax Purposes - Portuguese Version (SAFT - PT) - which predefines a set of accounting records in a readable and common format, allowing easy export of accounting records in an eligible format, invoicing, transport documents, receipts, among others, via a database.

In the years following implementation, some changes were imposed by the AT on the structure of the SAFT - PT file, but these were not visible from the user's perspective, inducing end consumers to request invoices with their Tax Identification Number (TIN), with the primary aim of combating the black economy in the various sectors of activity.

Also in 2013, a compliance support system came into force. In the 2013 report on activities to combat tax evasion, a methodology was defined that is based on the operationalisation of the IT system, the automated processing of invoice data, taxpayer declarations and the relational interface between the AT and taxpayers (Governo de Portugal, 2014, p. 40).

This system aims to promote and support compliance, acting as an educational and warning element by detecting common taxpayer errors and prompting taxpayers to regularise the non-compliances detected. This system is based on the principle that e-invoice data refers to the universe of tax facts produced by companies.

With the implementation of the e-invoice system, tax revenue (e.g. from VAT, personal income tax, corporate income tax) increased in the years following its implementation.

Another important point is that the e-invoice obligations that economic agents have to comply with have meant that smaller taxpayers have had to modernise their businesses technologically (by acquiring computer equipment and software), making it easier to standardise information between everyone and making it easier and more transparent to deal with customers, suppliers and the Tax Authorities.

2.3 Tax Evasion

Three things are certain: death, taxes and humanity's tireless endeavour to avoid both (Klepper & Nagin, 1989).

Taxes are a very important financing mechanism for countries, for their economic and social functioning, since they finance the state, which will hopefully sustainably apply them, channelling them directly or indirectly to citizens.

Mason and Calvin (1984) state that the tax burden affects tax evasion phenomena, causing it to increase since it is presumed that the cost between being tax compliant and the benefit associated with evasion, without taking other factors into account, increases as taxation rises. However, the practical explanation of this relationship is not, contrary to what it may seem, simple, since a wide range of factors are associated with this issue, from economic and fiscal factors, where there are often obstacles to their availability, to social and behavioural factors, which given their nature are complex to quantify.

While omission can be related to tax planning and the greatest possible tax savings through the best combination of factors allowed by the interpretation of rules and laws, evasion is abusive tax planning. Both cause the taxpayer to pay less tax, but in abusive tax planning the mechanisms used to do so are not legal, so we are dealing with tax evasion (Alm, Betty, & Michael, 1992).

It should be noted that according to the European Union Report (União Europeia, 2015), tax evasion is distinguished from tax avoidance. While tax avoidance has to do with using legal instruments to pay as little tax as possible, tax evasion has to do with using illegal instruments to avoid paying or paying less.

The phenomenon of tax evasion, as its name suggests, is extremely complex to measure, since evasive behaviour is carried out in such a way that it is not easily detected (Tanzi, 2017). This is due to the misuse of existing mechanisms, such as bank secrecy, the misuse and abuse of perks such as tax deductions and credits, the diversion of income to the underground (parallel) economy, evading taxation, or any other of a multitude of mechanisms.

The increase in tax evasion and its relationship with the increase in the tax burden has long been recognised. Taussig (1920) stated that the greater the tax burden, the greater

the danger of tax evasion and the danger of not being able to prevent the demoralisation of taxpayers.

Allingham and Sandmo (1972) also showed that the probability of detection and the penalty rate have a negative influence on evasion. However, these two factors imply the allocation of a very considerable amount of resources by the tax authorities.

In his analysis, Feinstein (1991) emphasises some of the most important problems of tax evasion, highlighting, in addition to the loss of state revenue, the discouragement of taxpayers from being fiscally responsible, since taxpayers who effectively fulfil their tax obligations will feel a system of injustice towards others. This feeling of injustice, or the perception that taxes may not be being used fairly, is addressed by Pommerehne and Hannemann (1996), who state that how taxpayers see their taxes being applied to public goods and services is a determining factor in the progression to evasion.

Tax evasion is recurrent, and generational and has a major impact on the effective collection of state revenue, which is why the competent collecting authorities will have to adopt more transparent policies on how the revenue collected is spent, to appeal to the civic sense of those who don't pay their due taxes.

3 Tax Revenue versus Digital Evolution in the Portuguese Tax Authority

This section will analyse the evolution of tax revenue, before and after the implementation of the e-invoice system, which was one of the implementations with visibility among citizens, as a result of IT and digital developments that revolutionised the way AT operates.

The use of the potential of technology by the Tax and Customs Authority (AT) in tax revenue collection operations, preventive and proactive surveillance, and the fight against tax evasion was and is an important tool in its daily activity, to achieve the objectives outlined.

The Portuguese tax system underwent a revolution with the implementation of technology, with economic agents no longer carrying out declaratory acts in paper format, in person, but in digital format, submitted online.

The deadlines for communicating tax obligations through the e-invoice platform have been reduced year after year, so that the AT has the tax information in its possession in a shorter space of time, voluntarily.

The SAFT sales file sent by companies transmits to the AT the monthly invoicing volume and the VAT paid on the invoices issued.

The e-invoice system has increased the degree of control over value-added tax (VAT) by the AT and has made it possible to increase the degree of effectiveness in combating tax evasion.

In terms of a company's management model, it has an internal or external manager (accountant) who is responsible for calculating the various taxes to be paid to the Tax Authorities (TA) due for the operation of a certain economic activity.

In the accounting sector, computer programs have had to adapt to the demands and new realities of the market and, to a certain extent, have taken advantage of the information collected by AT through e-invoicing, which has facilitated and increased the degree of veracity of accounting records. Currently, accounting software integrates the information communicated by companies in the e-invoice (purchases and sales), so that when registering, using artificial intelligence, they simply validate the final registration of the purchase and sale, among other things.

In this respect, it has been advantageous for accounting professionals, because it has made it possible to increase productivity, and profitability and validate the veracity of documents. The uniformisation and standardisation of information, digital evolution in the state tax sector, and in the private commercial and financial sector, has made it easier to obtain commercial and financial information from reporting entities.

However, the barrier of secrecy and protection of economic and financial data has become more tenuous, given the National Data Protection Regulation (NDPR). The NDPR, through Law 58/2019 of 8 August, ensures the implementation of the national legal order of Regulation (EU) 679/2016 of the Parliament and of the Council of 27 April 2016 on the protection of individuals about the processing of personal data and on the free movement of such data.

Given the issue of the protection of personal data of natural persons, and the information that is transmitted to the e-invoice portal, in a way it is a question of people's personal information, accessible to various entities, which could mean a violation of the law.

3.1 Methodology for Analysing Tax Revenue

This work aims to study the importance of digital evolution in accounting and AT. To achieve this objective, we chose to analyse tax revenue before and after the implementation of e-invoicing. As a quantitative methodology, after reviewing the concepts, we collected the data available at the actual date of this report.

When collecting tax revenue data, and given the possible relationship between the e-invoice system and the taxes in question, we chose to collect information on the revenue collected by the state from Value Added Tax (VAT), because it is the tax with the greatest weight in tax revenue (INE, 2022).

About the e-invoice system, the volume of invoices communicated by economic agents to the AT was collected.

The tax years selected for collecting information were between 2012 and 2021, with 2012 being year $n-1$ (before the e-invoice system was implemented) and 2013 (year n) the first year in which the system was implemented. It should be noted that the analysis of the e-invoice system began in 2013, as this was the first year of implementation.

3.2 Description of Value-Added Tax

VAT, which was implemented in Portugal in 1986, replaced the transaction tax in the context of a reform in the taxation of goods and services, anticipating the obligations arising from Portugal's participation in the European Economic Community (EEC) (Braz & Cunha, 2009). This obligation consisted of the adoption of a common VAT system and the standardisation of the tax base to be applied to member countries, making it a community tax.

VAT's recognised ability to raise revenue neutrally and transparently convinced all OECD countries, except the United States of America (USA), to adopt this broad consumption tax (OECD, 2006). This neutrality allows taxation to be equitable between forms of trade, making it also an alternative to customs duties in the context of trade liberalisation. Palma (2014) points out that VAT is the greatest exponent of tax harmonisation in the European Union.

According to INE data, in 2021 VAT was the indirect tax with the greatest weight in total Portuguese state revenue, with a weight of 23.9% (INE, 2022).

Due to the effective importance that VAT has in total revenue, policies to combat fraud and tax evasion and to collect the tax on time have been intensive and constantly evolving in form and content to make the entity responsible (the Tax and Customs Authority) more and more efficient.

In terms of tax planning on the part of the state, to increase VAT collection, it implemented the e-invoice system, starting in 2013. This system was created so that the tax authorities would have in their possession information on the volume of monthly invoices issued by economic agents, and thus be able to automatically control the VAT paid on invoices issued about the VAT declared in the periodic VAT return.

However, for the system to have the desired impact, the respective invoice must be issued when economic agents make purchases and sales. At this point, it should be noted that one of the serious problems of VAT fraud and tax evasion is due to the failure to issue invoices, especially when the purchaser is the final consumer, which results in VAT not being paid.

To reverse the trend of not issuing invoices, which is more prevalent in certain sectors of activity, the state has created tax incentives for consumers in the form of personal income tax (PIT) on expenditures incurred in these sectors, provided that the consumer requests the respective invoice from the trader with their VAT number, which will be communicated to the AT when the trader sends in their sales every month via SAFT. This whole tax procedure is only possible because of the digital evolution that has taken place within the AT and the private sector.

The sectors of activity in which the Portuguese government opted to create incentives for taxable persons in terms of personal income tax (DL 198/2012, article 5, of 24 August) were:

- Maintenance and repair of motor vehicles;

- Maintenance and repair of motorbikes, their parts and accessories;
- Accommodation, catering and similar activities;
- Hairdressing salons and beauty parlours.

As of 1st January 2015, with the reform of personal income taxation brought about by Law no. 82-E/2014 of 31st December, taxpayers who request the issue of an invoice including their tax identification number on all expenses incurred can benefit from the following deductions, as stipulated in articles 78-B et seq. of the PIT Code:

- General family expenses;
- Deduction for requiring an invoice;
- Health expenses;
- Training and education expenses;
- Housing costs;
- Nursing home costs.

3.3 Evolution of Invoices Communicated by Issuers/emitters?

To ascertain the impact of the e-invoice system on the obligation to issue an invoice for each economic transaction involving goods or services, information was collected on the number of invoices communicated in the e-invoice system by economic agents with an obligation to communicate and the number of invoices issued to consumers with a particular Tax Identification Number (TIN) between 2013 and 2021.

Table 1 shows the evolution of the number of invoices communicated by issuers (economic agents with commercial or financial activity) in the e-invoice system between 2013 and 2021 (in number and annual percentage change). It also shows the evolution of the percentage change, based on 2013, in the number of overall invoices communicated by issuers, including those issued to final consumers, in the e-invoice system.

Table 1. Evolution in the number of invoices communicated by issuers in the e-invoice system - base year 2013

Years	Invoices Communicated			Invoices Communicated by the Consumer		
	Quantity (in billions)	% variation in relation to 2013	Variation % Annual	Quantity (in thousands)	% variation in relation to 2013	Variation % Annual
2013	4 472			495 078		
2014	4 808	7.51	7.51	652 175	31.73	31.73
2015	5 208	18.07	9.82	990 500	100.07	51.88
2016	5 504	23.08	4.24	1 129 154	128.08	14.00
2017	5 628	25.85	2.25	1 231 107	148.67	9.03
2018	5 801	29.72	3.07	1 319 601	166.54	7.19
2019	5 882	31.53	1.40	1 426 788	188.19	8.12
2020	4 613	3.15	-21.57	1 303 907	163.37	-8.61
2021	4 792	7.16	3.88	1 449 354	192.75	11.15

Source: Portuguese Government – Activity Reports to Combat Fraud and Tax and Customs Evasion – 2013 to 2021 (<https://www.portugal.gov.pt/>)

Table 1 shows that the number of invoices communicated to the AT by issuers (economic agents with commercial or financial activity) increased between 2013 (4.472 billion documents) and 2021 (4.792 billion documents), with a drop in 2021 and 2020 compared to 2019. This decline is justified by the fact that the pandemic that affected the country forced the population into isolation, leading to a decrease in consumption and, consequently, in economic transactions.

Regarding the number of invoices issued with TINs requested by end consumers, we can also see that there was an increase between 2013 and 2021, again excluding 2020 (Table 1). One of the factors that led to this increase is due to the tax incentives created by the Tax Authority. Consumers felt more encouraged to demand an invoice with a tax number. In 2021, the number of invoices issued to final consumers increased approximately 3 times compared to 2013.

Table 1 shows that the highest rate of increase in invoices communicated to the AT by issuers via e-invoice occurred between 2014 and 2015 (9.82%), while in 2020 the rate of increase was negative due to the pandemic crisis that hit the country.

Between 2013 and 2016, tax benefits and greater preventive surveillance by the AT were introduced, which, in a way, induced economic agents to proceed more timely and in compliance with tax obligations, thus contributing to the increase in the number of invoices communicated by issuers in the e-invoice system.

Table 1 also shows that from 2013 to 2014 the number of invoices communicated to the AT by final consumers increased by 31.73%, and from 2014 to 2015 it increased by 51.24%, because 2013 was the year in which e-invoicing was implemented, and also due to the publicising of the tax benefits resulting from requesting an invoice with a TIN. In 2020 there was a decrease in the communication of invoices to final consumers.

3.4 Value Added Tax Revenue

To understand the evolution of VAT between 2012 and 2020 on transactions carried out by VAT taxpayers (normal regime - monthly and quarterly), information was collected (consultation of the AT portal - statistics - <https://info.portaldasfinancas.gov.pt/pt/dgci/divulgacao/estatisticas/IVA>) on this tax (Table 2), and an analysis of the percentage change compared to the base year 2012 (Table 2) and also an analysis of the annual change.

The information in Table 2 shows that:

- Revenue net of refunds corresponds to the value of VAT received less refunds;
- VAT received corresponds to the amount received without deducting refunds;
- Refunded VAT corresponds to the VAT that the State returns to VAT-taxable persons at their request.

Table 2. VAT revenue summary table – base year 2012

Years	VAT Revenue		VAT Received		VAT Refunded	
	Net of refunds (10 ⁶)	% variation compared to 2012	Value (10 ⁶)	% variation compared to 2012	Value (10 ⁶)	% variation compared to 2012
2012	12 575.00		17 244.10		4 669.10	
2013	12 104.10	-3.74%	17 040.30	-1.18%	4 936.20	5.72%
2014	12 999.00	3.37%	17 729.20	2.81%	4 730.20	1.31%
2015	13 846.80	10.11%	18 379.00	6.58%	4 532.20	-2.93%
2016	14 008.90	11.40%	18 907.20	9.64%	4 898.30	4.91%
2017	14 701.60	16.91%	20 208.40	17.19%	5 506.80	17.94%
2018	16 356.80	30.07%	22 173.60	28.59%	5 816.80	24.58%
2019	18 017.20	43.28%	23 571.00	36.69%	5 553.80	18.95%
2020	16 457.00	30.87%	21 881.80	26.89%	5 424.80	16.19%

Source: TA – Finance Portal - Statistics – VAT

(<https://info.portaldasfinancas.gov.pt/pt/dgci/divulgacao/estatisticas/IVA>)

Table 2 shows that:

- Both VAT revenue net of refunds and VAT received increased progressively between 2014 and 2019, with a drop in 2020;
- In 2019, VAT revenue net of refunds reached a maximum value of 43.28%, when compared to the base year 2012;
- VAT received in 2013 fell by 1.18% compared to 2012. The highest value of VAT received was in 2019;
- The amount of VAT refunded fluctuated between 2012 and 2020, reaching a minimum in 2015 and a maximum in 2018;
- Considering 2012 as the year before e-invoicing and 2013 as the first year of e-invoicing implementation, there was an increase in net revenue (+3.37%) from 2014 onwards. Of course, the increase could have been the result of increased economic activity, higher GDP or other factors. However, it can be said that the increase in revenue has been significantly boosted by the implementation of computerised and digital systems, which have made it possible to create automatic collection control mechanisms, reducing the evasion of non-payment of this tax to the state.

In short, it can be seen that net revenue in the period under study increased progressively, except in 2020, when there was a decrease, as a result of the Covid-19 pandemic, which led to a decrease in consumption, due to restrictions on the movement of people and a decrease in economic activity in some sectors.

It should also be noted that Net Revenue is the result of VAT paid to the State, less VAT refunded to taxpayers, so Net Revenue could be lower if taxpayers with VAT to report applied for a refund. However, for taxpayers to claim a VAT refund, they have to comply with certain rules, which makes it difficult for them to do so.

Figure 1 shows the annual evolution of VAT.

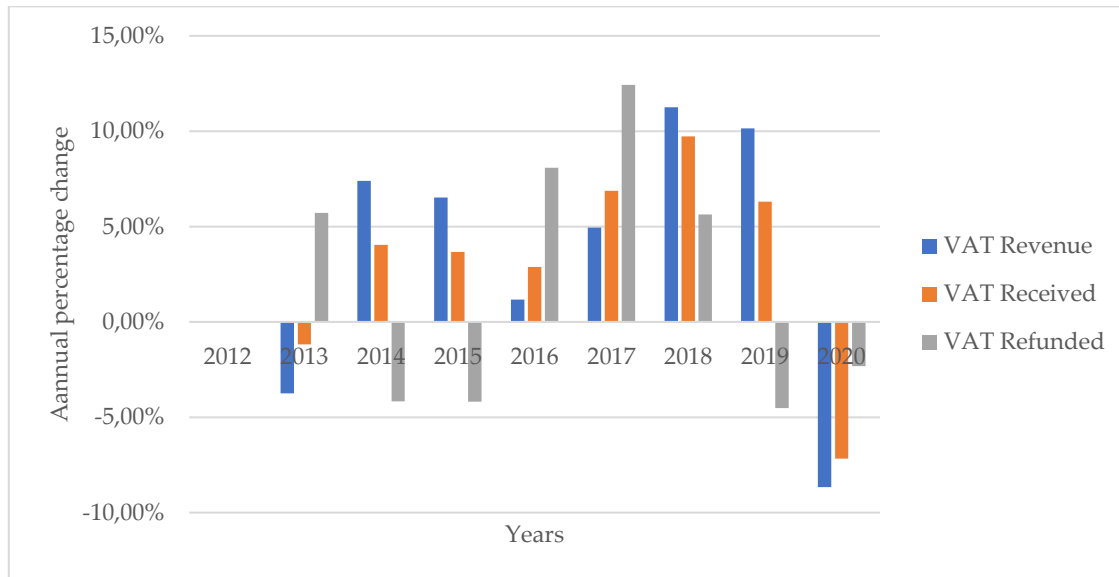


Figure 1. VAT evolution - Annual percentage variation

Source: TA – Finance Portal - Statistics – VAT

Analysing Figure 1, it can be seen that:

- The largest annual increase in net VAT revenue was 11.26 per cent and occurred in 2018 compared to the previous year;
- The biggest increase in VAT received between 2012 and 2021, compared to the previous year, was in 2018 (9.72%);
- The biggest increase in VAT refunded was in 2017 (12.42%), compared to the previous year;
- Net VAT revenue grew between 2013-2020. VAT received grew between 2014-2020, with only a slight drop in 2013. Refunded VAT increased in 2013, 2016-2018, with a negative growth rate in 2014, 2015, and 2019-2020 (in these two years, as a result of the state of the economy due to the pandemic).

3.5 Value Added Tax Revenue - Activity Sectors with Income Tax Benefits

The creation of the e-invoice system was a digital evolution of the tax system in the way it monitors economic activity, with particular emphasis on VAT. It was designed to revolutionise how the tax authority, economic agents and consumers interact.

The AT has endeavoured to get consumers more involved in the e-invoice system by granting tax benefits on VAT invoices, provided that consumers ask economic agents for them with their Tax Identification Number (TIN). In addition, the e-invoice system now communicates to taxpayers the annual PIT deductions to which they may be entitled in their annual tax return. This was an important point, because this way consumers indirectly started asking for more invoices for their purchases, limiting the possible non-invoicing of

economic agents for sales to the public. And, of course, specific deductions were created for sectors of activity signalled by the tax authority as being the most prone to a lack of invoicing in actual turnover.

At this point, information is collected on the VAT charged in the sectors of activity (from 2013 to 2021) for which there is now a tax benefit on the VAT paid on invoices, and the percentage change between the years has been calculated from two points of view: compared to the base year 2013 and also the annual change.

Table 3 shows the Taxable Bases corresponding to the turnover of economic agents operating in the sectors that give final consumers the right to PIT tax relief and the VAT paid.

Table 3. VAT- Taxable bases and VAT paid - base year 2013

Years	Taxable Bases			VAT Paid		
	Value (in thousands)	% variation compared to 2013	% Variation Annual	Value (in thousands)	% variation compared to 2013	% Variation Annual
2013	10 191 803			759 958		
2014	10 913 094	7.08	7.08	825 720	8.65	8.65
2015	11 763 956	15.43	7.80	926 817	21.96	12.24
2016	13 621 519	33.65	15.79	837 150	10.16	-9.67
2017	16 194 983	58.90	18.89	716 340	5.74	-14.43
2018	17 228 908	69.05	6.38	771 773	1.55	7.74
2019	19 052 881	86.94	10.59	872 722	14.84	13.08
2020	12 542 846	23.07	-34.17	612 465	19.41	-29.82
2021	15 136 181	48.51	20.68	738 201	2.86	20.53

Source: Portuguese Government – Activity Reports to Combat Fraud and Tax and Customs Evasion – 2013 to 2021 (<https://www.portugal.gov.pt/>)

The tax base increased successively between 2013 and 2019, with a decrease in 2020 as a result of the pandemic that hit the country. The consequences of the pandemic years are diverse: increased indebtedness of companies and individuals, and an increase in the unemployment rate (INE, 2021).

With the increase in declared turnover, the corresponding VAT delivered to the Tax Authorities also increased, thus offsetting the tax benefit granted to consumers in terms of personal income tax, since the tax benefit is levied on VAT.

Analysing Table 3, it can also be seen that:

- VAT delivered in the year 2016 decreased compared to the year 2015 (-9.67%), and in the year 2017, it decreased compared to the year 2016 (-14.43%), a decrease justified by the change in the VAT rate in the catering sector, which decreased from 23% to 13%.
- In 2018 and 2019, VAT paid recovered but decreased in 2020 (Covid-19 pandemic). The year 2021 is a year of recovery from the year 2020.

Table 3 shows that the biggest annual increases in the tax base were in 2016 and 2017, excluding 2020 as a result of the pandemic.

3.6 Relationship between VAT Revenue and ICT Developments - Discussion of Results

In the period between 2012 and 2021, the main tax collected by the state, VAT, and the one that contributes most to state revenue, has increased considerably.

The following conclusions can be drawn from the above analysis of VAT revenue:

- The increase in consumption led to an increase in economic activity, and consequently to an increase in the VAT paid;
- The increase in VAT rates on certain types of goods and services has increased revenue;
- The call for social responsibility on the part of economic agents has contributed to a reduction in illicit transactions and under-invoicing;
- Greater efficiency on the part of the state, through the agency responsible (TA), in collecting and combating fraud and tax evasion, has reduced the weight of the black economy.

Consumption represents expenditure on goods and services to satisfy people's needs. Goods and services are generally subject to VAT. This means that the more people consume, the more tax the state collects.

According to data from PORDATA (Manuel dos Santos Foundation, 2023), annual household consumption about GDP was: the year 2013, 67 per cent; year 2014, 68.2 per cent; year 2015, 68.1 per cent; year 2016, 68.3 per cent; year 2017, 68.4 per cent; year 2018, 68.4 per cent; year 2019, 68.4 per cent; year 2020, 64.7 per cent and year 2021, 64.7 per cent.

It can thus be seen that consumption practically stagnated between 2013 and 2021, being similar in percentage terms, which means that people maintained their consumption pattern, so it cannot be deduced that the increase in state revenue, namely VAT, was influenced by consumption. It should also be emphasised that inflation during this period was not significant.

Changing VAT rates on certain types of goods and services is a quick way for the state to increase revenue, which has an immediate effect, but can subsequently lead to a drop in the purchase of goods and services, causing the opposite effect.

The changes in VAT rates between 2011 and 2021 are noteworthy:

- In the catering sector, in 2011, the VAT rate increased from 13 per cent to 23 per cent (imposed by TROIKA, following the country's financial bailout). The rate increase was reversed on 1 July 2016;

- In the energy, electricity and natural gas sectors, there was an increase in the VAT rate from 6 per cent to 23 per cent (imposed by TROIKA following the country's bailout);
- The standard VAT rate of 21 per cent was increased to 23 per cent in 2011, globally affecting all goods and services that were subject to the standard VAT rate.

With the increase in VAT rates on the catering sector and goods and services, there was an increase in revenue from this tax.

The black economy in Portugal is a chronic problem in the economic and financial market, causing a loss of revenue for the state and creating situations of unfair competition between the economic agents themselves.

In 2011, the black economy accounted for 25.4 per cent of GDP, in 2012 it accounted for 26.74 per cent, in 2013 it accounted for 26.81 per cent, in 2015 it accounted for 27.29 per cent and in 2021 it will be more than 25 per cent, according to estimates by (OBEGEF - Observatório de Economia e Gestão de Fraude, 2023).

Taking into account the estimated data on the black economy, it is assumed that the state's policies to combat fraud and tax evasion have been producing the desired effects, albeit very slowly.

Analysing the data on the black economy, economic agents are to some extent responsible for fraud and tax evasion because they are active players in the market and continue to carry out under-invoiced commercial acts. In a nutshell, the lack of social awareness on the part of offenders harms the common good of society.

On the other hand, one of the reasons for tax evasion is the high tax burden, particularly VAT, which represents a substantial part of the final price of goods and services. It should be remembered that in an economic operation, there is the economic agent and the final consumer, so under-invoicing only occurs because the consumer often doesn't demand the invoice to avoid having to pay VAT, thus unburdening the final price and distorting competition.

Over the years, the Portuguese state has been improving efficiency in the effective collection of tax revenue, through improvements in internal and external processes, greater monitoring of economic activity and actions to raise awareness of voluntary compliance with tax obligations. And from a global point of view, the evolution of technology has been an important ally in making the revolution within the AT possible.

The e-invoice system highlights the importance of technology within the tax system because after being widely publicised to the general public, it created new tax obligations for economic agents and consumers. It has also enabled the AT to have monthly, annual and comparative information on economic agents, to speed up the automatic monitoring of economic activities and to act more promptly on any suspicions of deliberate tax evasion.

Analysing tax revenue, with a particular focus on VAT, and the economic growth of the Portuguese economy, it can be seen that:

- In 2011, the country had a financial bailout (to which it was subjected, due to the state's high external indebtedness), in which it was subject to austerity measures until 2015, which somewhat conditioned economic growth policies;
- In 2020 and 2021, due to the pandemic, the state-imposed restrictions on the movement and confinement of people, which restricted various sectors of activity;
- Gross Domestic Product (GDP) growth was negative in 2011 (-1.70 per cent) and 2013 (-0.92 per cent), and positive in 2014 (0.79 per cent) and 2021 (5.50 per cent) (Manuel dos Santos Foundation, 2023).

In sum, taking into account the information described above, tax revenue has been increasing due to the AT's efficiency in effectively collecting taxes. This increase has only been possible due to the availability of automated means, which have allowed the TA to be more proactive, hindering recurrent illicit operations in some sectors of activity.

4 Conclusion

Digital evolution has revolutionised production processes and the way we interact in business relationships.

The term digital evolution, from a hardware and software perspective, was developed for a particular area to increase productivity. The accounting and finance sector was no exception.

In Portugal, the accounting sector has been an example of how digital evolution has contributed to increased productivity and improved accounting information.

About the public sector, namely the Tax and Customs Authority (TA), the state entity responsible for collecting tax revenue, the evolution in operating processes has occurred through the computerisation of the TA. It is increasingly technologically capable, and one of the tax obligations that has had the most visible impact is the e-invoice system. The operation of this system has allowed the AT to obtain timely information from economic agents, enabling greater control of their activity and the effective delivery of VAT tax to the state coffers.

As a result of globalisation, economic operations have become increasingly complex, as economic agents operate both inside and outside the countries where they are based, so tax control by the state is increasingly difficult and depends on the availability of digital tools for this purpose.

This paper shows how important digital evolution has been, with IT tools playing a leading role in modernisation and efficiency in both the public and private sectors. It was thanks to the digital evolution of the TA, with the creation and availability of IT tools, that the state was able to increase tax revenue, especially VAT, and simultaneously reduce tax

evasion and avoidance. When analysing VAT revenue, there has been an increase in the amounts collected by the state.

One of the limitations of this work is that it only focused its analysis on the evolution of VAT tax revenue since state tax revenue is made up of several taxes. Another limitation is that we didn't survey accounting professionals about their perception of the effect that digital evolution has had on the accounting area.

In future research, it is suggested that accounting professionals be consulted to understand the positive and negative points they experience with the digital evolution of TA.

References

- Alexander, D., & Nobes, C. (1994). *An European introduction to financial accounting*. Londres: Prentice Hall- International.
- Allingham, M., & Sandmo, A. (1972). Income Tax Evasion: A Theoretical Analysis. *Journal of Public Economics*, 1, 323-338.
- Alm, J. (1996). What is an "optimal" tax system? *National Tax Journal*, 49, 117-133.
- Alm, J., Betty, J., & Michael, M. (1992). Estimating the determinants of taxpayer compliance with experimental data. *National Tax Journal*, 45, 107-114.
- Diário da República. (2012). Decreto-lei nº 197/2012, de 24 de agosto.
- Diário da República. (2012). Decreto-lei nº 198/2012, de 24 de agosto.
- Diário da República. (2019). Decreto-lei nº 58/2019, de 8 de agosto.
- Feinstein, J. (1991). An Econometric Analysis of Income Tax Evasion and Its Detection. *The Rand Journal of Economics*, 22, 14-35.
- Governo de Portugal. (2014). Relatório de Atividades Desenvolvidas - Combate à Fraude e Evasão Fiscais e Aduaneiras 2013. Lisboa: Secretário de Estado dos Assuntos Fiscais.
- INE (1997). *Estatísticas Receitas Fiscais*. Lisboa: Instituto Nacional de Estatística .
- INE (2021). Empresas em Portugal – Resultados definitivos 2021. Lisboa: Instituto Nacional de Estatística
- INE. (2022). *Estatísticas das Receitas Fiscais - 2021*. Lisboa: Instituto Nacional de Estatística.
- Klepper, S., & Nagin, D. (1989). Tax compliance and perceptions of the risks of detection and criminal prosecution. *Law & Society Review*, 23, 20-240.
- Mason, R., & Calvin, L. D. (1984). Public Confidence and Admitted Tax Evasion. *National Tax Journal*, 37, 489-496.
- Melnychenko, S., Volosovych, S., & Baraniuk, Y. (2020). Dominant Ideas of Financial Technologies in Digital Banking. *Baltic Journal of Economic Studies*, 6, 92-99.
- Melo, C. (2018). *E-fatura – A reforma digital da AT. Implicações no crescimento da receita fiscal*. Dissertação de Mestrado, Instituto Superior de Gestão, Lisboa.

- Mosteanu, N., & Faccia, A. (2020). Digital Systems and New Challenges of Financial Management Management - FinTech, XBRL, Blockchain and Cryptocurrencies. *Quality - access to Success*, 159-166.
- Neziraj, E., & Shaqiri, A. (2018). The impact of information technology in the decision-making process of companies in Kosovo. *Informatol*, 51, 13-23.
- OBEGEF – Observatório de Economia e Gestão de Fraude. (2023). Observatório de Economia e Gestão de Fraude. Obtido de Web site de OBEGEF: <https://obegef.pt/wordpress>
- Pereira, M. H. (2009). *Fiscalidade* (3.^a edição). Coimbra: Almedina.
- Pereira, M. H. (2011). *Fiscalidade*. Coimbra: Almedina.
- Petersone, M., & Ketners, K. (2017). Improvement of Customs and Tax Administration ICT System Performance. *Research for Rural Development*, 2, 263–269.
- Pommerehne, W., & Hannemann, H. (1996). Taxes rates, tax administration and income tax evasion in Switzerland. *Public Choice*, 161-170.
- Saniuk, S., Grabowska, S., & Gajdzik, B. (2020). Social Expectations and Market Changes in the Context of Developing the Industry 4.0 Concept. *Sustainability*, 12, 1-21.
- Sousa, A. M. C. (2018). *A implementação do Sistema e-fatura enquanto medida de progresso fi+scal: Estudo caso da sua influência no processo de tomada de decisão dos contribuintes*. Dissertação Mestrado em Finanças e Fiscalidade, Porto: Faculdade de Economia do Porto. Universidade do Porto.
- Tanzi, V. (2017). Corruption, complexity and tax evasion. *eJournal of Tax Research*, 15(2), 144-160.
- Taussig, F. (1920). *Principles Of Economics*. New York: The Macmillan Company.
- União Europeia (2015). *Evasão fiscal vs elisão fiscal: explore o nosso glossário sobre fiscalidade*. Temas | Parlamento Europeu (europa.eu). <https://www.europarl.europa.eu/topics/pt/article/20150529STO61068/evasao-fiscal-vs-elisao-fiscal-explore-o-nosso-glossario-sobre-fiscalidade>