SOFTWARE AND HARDWARE FORENSIC TOOLS - AN OVERVIEW OF THE ACCOUNTING AND TAX FRAMEWORK IN PORTUGUESE NON-STATE INSTITUTIONS

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ABSTRACT

The main goal of this paper is to research the accounting and tax treatment of the hardware and software's good purchase by the private companies that provide forensic services. For this purpose, it studies accounting and taxation law in Portugal. Concerning to the accounting issues, it analyses the Portuguese Accounting Standardization System, and the other and, about taxation matters it assays the Value-Add Tax and the Corporate Income Tax law. The results show that accounting rules determine the recognition of computer equipment, as a tangible fixed asset. In the purchase moment, that equipment is a non-current asset, and the corresponding cost is the depreciation' recordation of each economic period. In taxation sphere, in particular, in Corporate Income Tax Law, the treatment is similar, and the depreciation is a deductible tax cost. Furthermore, the company does not support the VAT tax of the purchase because the entity is a VAT taxpayer.

Keywords: *Portugal, Accounting, Taxation, Hardware, Software, forensic activities, non-state, forensic tools*

1. INTRODUCTION

The digital age in which the world subsists is evident. Individuals and companies can not survey without technological resources (Mendonca, Goncalves, Ferro, & Ferreira, 2016). That dependence has been gaining more and more strength because users are dependent without their use (Wallin, Zannakis, & Molander, 2013). On the corporations' activity, technological evolution presents not only definite advantages but also, the relevant risk from its use. Computers equipment, mobile phones, internet services are indispensable and essential tools in companies. Enterprises have many reasons for the resource to digital media. They are, for example, to help the business starting and planning, to products and services marketing, to cost's production decrease, to salle's promotion, to employee's contract, to contact with corporation clients and potential ones, to streamline business transactions, to innovation's promotion. However, they do not exhaust, and there are several other motivations to the informatics tools use. However, the technological era not means only positive questions. Companies have to identify and manage technological risks, also. The cybersecurity and information security, are the main important question that worries managers, directors, and auditors, according to reports Flora and Rai (2018). One of the most relevant risks about cybersecurity is the fact that external entities can seize sensitive and stealthy data, meaning extensive damage to the brand and reputation of the company (Mirman & Santugini, 2014). Although the last point is relevant, information security is another point of concern for businesses. In that case, it refers to the confidentiality's protection, and the critical information's integrity and availability for the organization, so, it can represent misconducts as technological crimes (Mambetova, Shibzuhova, Shidov, Abanokova, & Mashukova, 2018). The cybercrime corresponds to wrongdoing using digital means as computer and internet. Between those practices, it is noted the obtain, hold, or use of data sources online. The entity's theft can represent high costs to companies of differences activities, such as banks, insurance companies, goods, and services suppliers' corporations in general (Harbawi & Varol, 2016).

This lousy behaviour implies not only direct costs but also indirect ones. Indirectly, enterprises lost the overall confidence because it falls into disrepute of society. Though computer equipment serves has meant to practice cybercrime, but also private, and public forensic institutions use it as forensic tools. Legal institutions need to recur digital equipment in order to can develop forensic activity to combat cybercrime (Kao, Chao, Tsai, & Huang, 2018). The scholars demonstrate their interest in to investigate the issue, so, it is why continue to publish relevant international research about it (Altayar, 2017; Broadhead, 2018; Irina & Alexander, 2017; Kuz'min, 2016; Nadir & Bakhshi, 2018; Olaoye, Ogundipe, & Dada, 2019; Varol & Sönmez, 2017; Xingan, 2018; Zhanna, 2019). Irina and Alexander (2017) investigate the legal questions about the activities' license of non-state legal institutions, and Varol and Sönmez (2017) researches about the relevance of web activities for computer forensics. Hence, it likely to understand that though exist specific research referring to this matter, the issue is still unresearched, and for the better understanding, there are no studies about Portugal case. In particular, it is relevant to comprehend better how is the accounting and tax treatment of forensic tools in the sphere of Portuguese private companies, in specific, in business and tax magnitudes. This research reports this gap by analysing the legal dispositions that approach the treatment of these items in accounting and tax dimensions. The research questions addressed by the study is: How are the hardware and software forensic tools of a private company treated in the accounting and tax field? What are the differences and similarities when we compare the two domains? For this purpose, the study investigates the most relevant Portuguese legal norms. Fourth sections compose this paper. First, the introduction, it refers to the subject's framing and explains why it is crucial and modernized to study this issue. Second, the background, it refers to the conceptual framework. Third, it explores the Portuguese case study, and it examines the accounting and tax legal norms. Also, it presents a results' schematization about the actual legal rules between both business and taxation domain. Finally, in the fourth point, the paper's conclusions.

2. BACKGROUND

According to Valdez (2018, p. 1), forensics "is an emerging field that applies science and law to solve crimes." The same author refers about the divisions of science's forensic, in specific: i) digital forensics, ii) forensic accounting, iii) forensic toxicology, iv) forensic odontology, and v) criminalistics. Relating to the digital forensics implies an examination of the electronic equipment available; it means to analyses cell phones, computers, administrative machines (print or fax). The digital forensics' actions do not result, necessarily, in proof of the entity's guilt or innocence. (Harbawi & Varol, 2016). Olaoye et al. (2019) defend forensic accounting is proper practice for fraud and control detection's activities, and it permits the discovery of non-legal financial behaviours by individuals or organizations. So, Mishra and Singh (2017) recognize this branch of forensic as a "method of investigating financial transactions and business situations," with the primary goal of detection of the fair about financial activities in order to detect potential fraudulent situations. The accounting's forensic implies exportation areas, they are, the litigation support, and fraudulent accounting research. Olaoye et al. (2019) consider that it includes the request of the accounting judgments and methods. It means an analysis of the organization's financial operations that implies the processes' actions of the recordation, the classification, the summarization, and interpretation (Valdez, 2018). Those practices imply for forensic accountant enough knowledge not only about misleading financial statements but also about legal procedures and concepts, to can develop that activity correctly. So, Özcan (2018) identifies forensic accounting areas that expertise's accountings realizes litigation support, they are: "a) detection of the tax evasion, and creative accounting practices; b) supporting anti-money laundering activities; c) giving an opinion on the firms' financial position and health; d) estimation of possible firm loss; e) the evaluation of firms' liquidation

process; f) determining the fundamental reasons for firms' bankruptcy." Also, that author evidences the division of forensic accounting practices in differences areas, such as the investigative auditing, litigation support, and criminal investigation. Being the first, the investigative auditing, consider has become one of the main gears of forensic accounting. Thus, it is the auditors' responsibility to practice investigative auditing's activity (Asare & Wright, 2018; Jenkins, Negangard, & Oler, 2018). It is because of that some judicial branch, as accounting ones, need to recur to private entities to develop this activity, they are the enable and authorized entities for their promotion. The development of that legal activities implies the resource to human and material means, in particular, to digital ones. Hardware and software are technological equipment essential to develop forensic activities by state or non-state organizations (Jenkins et al., 2018). So, the purchase of that tangible and intangible goods made part of the entities' life, and therefore it is essential to know the issues related to their accounting and tax treatment.

3. FORENSIC TOOLS, HARDWARE AND SOFTWARE EQUIPMENT

3.1. Accounting perspective

Portuguese accounting and financial reporting standards - *Norma de Contabilidade e de Relato Financeiro* - determines accounting rules for items' recognition. In particular, NCRF 6 makes the regulation of the intangibles assets (AI), and NCRF 7 is the Portuguese accounting standard that explains about the treatment of tangibles fixed assets (TFA). On the other hand, Portuguese Conceptual Framework – *Estrutura Conceptual* (EC) – is a relevant document that explains accounting concepts determinants to understand Portuguese NCRF better (Gonçalves, Santos, Rodrigo, & Fernandes, 2017). Portuguese Conceptual Framework (EC) – exposes the concept of an asset (Monteiro, 2013). It determines the asset's concept, and it means it is a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow into the entity. TFA and AI observe the asset definition (Monteiro, 2013). Thus, the NCRF 7 determines accounting rules about tangible fixed assets, and it means about property, plant, and equipment. According to the § 6 of the same standard, is tangible fixed assets if it observes two conditions: i) that these assets help in the production of the goods and services supplied, the rental case, or, in administrative purpose; ii) is expected they be useful more than one period. The recognition criterion determines that the cost of a TFA is an asset, only if it will not be a problem that this item can generate future economic benefits for the entity, and it is possible to measure the item cost with reliability (NCRF7 §7). They are considered TFA's cost: a) the acquirement or building cost, b) later, the cost of asset addiction or replacement, c) assistance cost, d) costs of replacing parts of the asset. The assistance and replacing parts cost asset recognition depends on the observation of the recognition criterion mentioned in the NCRF 7 §7. The acceptance of an item as a TFA implies its measurement of the cost (J. Rodrigues, 2016). In that case, the cost is the value paid in cash or cash equivalents or the fair value. So, the cost of a TFA comprises 1) item's purchase price, 2) directly attributable costs to allocation's asset in local and necessary conditions for its correct function, 3) initial cost estimate of dismantling, removal, and site restoration in the TFA's location. The asset will be subject to depreciation and impairment losses. The determination of depreciation depends on the useful life considered by the managers about each TFA items. NCRF 6 determines the concept of intangibles assets. They are non-monetary assets without physical substance that can be identifiable. They are main characteristics: 1) the nonexistence of physical substance, 2) to be identifiable, 3) to have the control over the resource, and finally, 4) the existence of future economic benefits (§ 8 § 10). The first characteristic, the nonexistence of physical substance, is a particular feature of this kind of assets. A. M. Rodrigues (2011) consider that this feature is not fundamental for the definition of intangibles, because some intangibles may have solid substance, such as software (disk) or a certificate mentioning that a given patent

(Costa & Alves, 2014). Paragraphs 11 and 12 of NCRF 6 studies the identifiability. In these terms, for an intangible asset to be identifiable, it is necessary to meet one of the two following assumptions. The first condition is to be separable (individually or jointly), meaning that this asset can be separated or divided by the entity so that it can be sold, transferred, licensed, rented or exchanged. The second assumption is that it may result from contractual rights or other legal rights. It is not relevant if those rights are transferable or separable from the entity or other rights and obligations (Castro, Cunha, & Rodrigues, 2015). According to § 13 of NCRF 6, the control is related to the power to obtain future economic benefits flowing from the resource, and the power to restrict others' access to those benefits. In the opinion of Cañibano, Garcia-Ayuso, and Sanchez (2000), control is the entity's ability to exercise its rights (in other words, it is the possibility to claim rights or services legally) (Castro et al., 2015). The accounting standard adds that the entity's ability to control future economic benefits is related to legal rights, referring explicitly to the copyrights as an example. It also mentions that a team of qualified personnel, technical talent, client portfolio, and market share cannot be recognized as intangible assets due to the lack of control by the entity (E. P. d. Silva, Silva, & Jesus, 2010).
Paragraph 17 of the NCRF 6 refers to the existence of future economic benefits (FEB). The accounting rule indicates that revenues from the sale of products or services, cost savings, or other benefits resulting from the entity's use of the asset can be FEB's. It is the case of the use of intellectual property in a production process which can lead to the reduction of the costs of production. For the initial recognition of the item as an intangible asset, the entity needs to demonstrate that the asset satisfies two conditions (Borges, Rodrigues, & Rodrigues, 2010). First, it complies with the definition of an intangible asset, and second, it obeys to the recognition criteria set out in § 18 of the NCRF 6. the paragraphs § § 21 to 23 clarifies the second requirement. They declare that the recognition of the asset can only happen if, and only if: a) the expected future economic benefits that are attributable to the asset are likely to flow to the entity; b) that the cost of the asset can be reliably measured (Palma, 2011). Thus, the computer's software of a machine is an integrant part of the equipment, so, it is a TFA. If the software does not be an integrated part of the respective hardware, the software computer is an intangible asset. The forensic software tools respect the first condition, so, it means they are TFA and not an IA.

3.2. Tax perspective

3.2.1. Value Add Tax

The PVAT Code establishes that the goods' transfer and the services effected within the Portuguese national territory are taxable operations for this tax (Palma, 2011). Therefore, those commercial operations are due's one when i) the taxpayer realizes that kind of transfers ii) they occur in Portugal, and finally, iii) they imply a payment price (article 1). For PVAT purposes, a transfer of goods' concept implies a tangible good's existence (Lança, 2012). They can be movable or immovable, so it approaches, in general, physical goods are material things, palpable, with physical reality. They are not included in this concept the goods' transfer of immaterial goods, as they do not observe the condition to have physical reality. The transfer of intangibles goods has services' provision treatment (Roriz, Pereira, Esteves, & Bastos, 2015).
In the PVAT sphere, between others, a taxpayer is individual or collective persons, that usually develops an economic activity (article 2. 1. a)). For those private companies that develop forensic activities are taxpayer, under this legal disposition (Neves, 2012). Article 6 of the PVAT Code determines the location rules for taxable operations. In particular, it explains the tax treatment of goods' transfers and services' provision location. This legal norm, in article 6, number 1 until n. º 5 gives the goods transfer's framework, and numbers six and following of the same article provides the provisions services' ones. The rules location are relevant for PVAT rates application.

The taxation occurs over the taxable amount of economic operations, in specific of the goods transfer and provision services. In that case, is the value on which the taxable person must apply the VAT rate. Thus, in that tax domains, the hardware's salles is a goods' transfer and software is a services survey, but both are subjects to a rate VAT of 23%, because those are not included in the list I and II of PVAT Code, that list determines the goods and services that are subject at the reduced and intermediate PVAT's rate. The company need to know the amount of tax paid to suppliers of acquirees goods and services, second, determine the amount of assessing the tax to the client, the pay Tax Authority payment will be the difference. However, the tax deduction requires conditions, and it means that it requires that the purchases were determinant to obtain PVAT taxable incomes. As well as, the document that proves the transfer needs to observe specific conditions foresees in article 36 of the PVAT Code.

3.2.2. Corporate Income Tax Law

Both companies, the hardware and Software seller company, and its buyer are a taxpayer in the Portuguese Corporate Income Tax Law (PCITL) because they are commercial companies. The PCITL establishes the taxable income is the profit, and also considers that the profit is the difference between net equity value in the begin and the end of the taxation period, within the correspondent tax corrections that planned in the Code. This legal disposition imposes a broad concept of taxable income because it extends to any equity increase (A. Silva, 2019). In this sense, the law imputes to the period all the incomes and expenses, including other positive or negative taxable profit components (Sarmento, Nunes, & Pinto, 2019). In this case, it is not essential for the payment or receipt moment, but it is determinant the consumption of that. Concerning the tax expenses, they are deductibles if they are essential to ensure corporate taxable incomes. Moreover, between them, the law recognizes the depreciation and amortizations, and the impairment losses, correct taxable costs for corporate income tax purposes, although it imposes proper formal conditions for its consideration (Sousa, 2018). The PCITL and Regulatory Decree no. 25/2009, of September 14 (DR 25/2009) constitute the legal precepts with greater relevance in the tax field when it comes to intangible assets. The depreciation and amortization of elements of the asset subject to depreciation are considered as expenses, considering the tangibles and intangibles assets as such (Martín Queralt & Moreno, 1998; Queralt, Serrano, López, & Ollero, 2019). This assumption is assumed by a taxation law, according to article 29, paragraph 1 a) do CIRC. Under the terms of no. 2 of the same legal disposition, assets that systematically suffer a loss of value is resulting from their use or overtime are considered subject to depletion. Article 16 of DR 25/2009 clarifies the tax treatment of intangibles, in its paragraph 1. It confirms the previous consideration and establishes that intangible assets can suffer amortization when they are subject to depletion, in particular, because they are of limited duration. It is possible to consider the tax expense of the amortization of intangible assets with a finite useful life, by this idea (A. M. Rodrigues, 2011). The depletion is made having as basis the specific conditions. According to article 2, § 1, a) of DR 25/2009, the acquisition cost constitutes a depreciable amount of the items purchased to third parties to be taken into consideration. In the case of elements built or produced itself, the depreciable cost is the cost of production. Article 45º-A of the CIRC provides that the cost of acquisition of the: a) industrial property elements (brands, licenses, production processes, models or other similar rights) acquired for the onerous title and not limited in time; and b) goodwill acquired in a business combination; are a tax expenditure. Since autonomously recognized in the individual accounts of the taxable person, by accounting standardization. The expenditure is accepted in equal parts, for the first 20 taxation periods, after the initial recognition. It should note that this provision was added to the CIRC through Law no. 2/2014, of January 16, which applies to taxation periods initiated or to tax events occurring since January 1, 2014.

Thus, it is possible to deduce that the provisions of this article apply only to intangibles acquired and that intangible assets generated internally are not included in this standard. On the other hand, it refers to intangibles with indefinite useful lives. Accordingly, the amortization of goodwill acquired in a business combination is accepted in equal parts for the first 20 tax periods after the initial recognition (Article 45-A, n. º 1, b)). Under paragraph 1 and h) of no. 2 of article 23 of the CIRC, impairment losses are recognized as tax expenses. It is necessary, however, to fulfil the criteria set by Article 31-B of the CIRC. This article addresses impairment losses on non-current assets. It determines that impairment losses on non-current assets arising from proven abnormal causes can be accepted as tax expenses. Some examples of these causes are disasters, the natural phenomena, the speedy technical innovations or significant changes, with an adverse effect, in the legal context. However, in order for this to be possible, the taxable person must obtain the approval of the Tax and Customs Authority, upon a duly substantiated statement (n. º 2 article 31-B of the CIRC).

4. CONCLUSION

The goal of this paper is to research the accounting and tax treatment of the hardware and software's good by the private companies that provide forensic services. For this purpose, it studies accounting and taxation law in Portugal. In accounting sphere both, hardware and software, have a tangible fixed asset treatment. This recognition occurs due to observing the TFA's critters recordation, they are i) that assets help in the production of the goods and services supplied, the rental case, or, in administrative purpose; ii) is expected they be useful more than one period. The TFA's recognition implies the allowance of depreciation's recordation. In that case, the manager determines useful lives' goods, and the accountability of depreciation takes into consideration the lives period of the equipment. Also, the item can suffer impairment losses. In taxation terms, the study identifies two areas, the corporation income tax and valued add taxation. In the first domain, the computer equipment's purchase implies the payment of VAT. This tax is not considered a cost because, being a private forensic activity company a taxpayer, it can have the possibility to recover the supported tax in the purchase. In the second ones, the PCITL assumes the same sense of accounting law, and hardware and software have a TFA consideration. At the same way, it is possible to recognize depreciation as a tax expense, allowing its consideration as a harmful component in the determination of corporate income tax law's taxable income. Nevertheless, the depreciation needs to observe taxation law rules. It means that the amount determined under accounting rules can be different from the value accepted for tax purposes, imposing with that differentiation a fiscal correction in the taxable income statement of the private forensic entity. The study explains the accounting and tax framework of computer equipment in Portuguese private companies with forensic activities. It analyses the national legal rules, and it made efforts in order to understand the hardware and software treatment in accounting and tax areas. However, this investigation presents a case study only in Portugal. Also, it made descriptive and explorative research for the reason that it only explores the legal rules of one jurisdiction, being both limitations of that research. It would be stimulating, as future research, to develops the accounting and tax treatment in case of the public entities, to understand the primary treatment's difference in both matters, accounting, and taxation domains.

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