

Tax literacy in the digital economy

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Abstract

Due to the digital economy the average taxpayer now has access to other income streams where the majority of transactions can be virtual transactions. Even though these transactions are virtual or takes place in the shared economy, it might still have a taxation effect for the taxpayer and they need the necessary taxation knowledge to be able to account for these transactions on their tax returns. Likewise, tax administrations are increasingly making use of advanced technologies to prevent and detect non-compliance. For some taxpayers this brings new challenges and knowledge requirements in respect of their interaction with revenue authorities.

Empirical findings has shown that taxpayer knowledge is a factor influencing tax compliance and accordingly, taxpayer education is generally one of the key approaches adopted by tax authorities to improve taxpayer compliance. The concept of 'tax literacy' is however proposed to be a wider concept than tax knowledge alone and needs further investigation in the context of its role in taxpayer compliance.

The aim of this paper is to illustrate the usefulness of a conceptual framework of tax literacy as a tool in identifying tax compliance risks for individuals in the digital economy. The risks addressed in this paper are limited to those which could result from deficits in taxpayers' knowledge and skills, as well as a lack of information resources.

Using fundamental concepts from the literature on 'literacy' and drawing on established theories in especially the 'financial literacy' domain, the concept of 'tax literacy' is explained in this paper and presented as a three-dimensional framework. Understanding that tax literacy is a process of '*making meaning*' from the interaction between tax awareness and contextual knowledge. The framework illustrates three elements of tax literacy, namely 1) tax awareness, 2) contextual knowledge and skills, and 3) meaning making or informed decision making. The first element, tax awareness, refers to individuals' understanding of their role in the fiscal exchange or social contract with government. This awareness forms the basis of the framework, as it is a necessary condition for being tax literate. The second element proposes procedural as well as a legal component of contextual knowledge and skills. The procedural context allows for a consideration of the knowledge and skills required to interact with tax authorities and having your records for tax purposes in order. The legal context refers to an understanding of how you are taxed. The third element propose that taxpayers' engagement in fulfilling their tax obligations is the result of a social construction of their awareness and knowledge, based on own perceptions. In other words, a combination of awareness, knowledge, skills and attitude are necessary to make decisions on acting in a tax compliant manner or not.

The usefulness of the proposed framework as a tool in identifying tax compliance risks for individuals in the digital economy was illustrated with highlighting examples of specialised knowledge requirements on a procedural and legal level as it pertains to individuals as taxpayers in the digital age.

Keywords: Tax literacy, disruptive technology, digital economy, conceptual framework, tax compliance, tax knowledge.

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1. INTRODUCTION

Whom of us can go one day without looking at your mobile phone or device or computer...or even one hour? With just the press of one button, you can be connected to the digital economy. Babu (n.d.: p. 1) summarise Tapscott's definition of digital economy as "information in digital form, facilitated by the digital devices (that) allows the free movement of vast amounts of information in the shortest time possible between people in different parts of the world". The digital economy (also referred to as the 'new economy') is "about dynamics, not static efficiency. It is more about new activities and products than about higher productivity. What is really new in the New Economy is the proliferation of the use of the Internet, a new level and form of connectivity among multiple heterogeneous ideas and actors, giving rise to a vast new range of combinations. There are some measurable effects on productivity and efficiency, but the more important long-run effects are beyond measurement" (Carlsson, 2004: p. 245). Hojaghan and Esfangareh (2011) went even further to state that digital economy is where providers and customers transact through the internet with electronic goods and services only. These goods and services are produced and traded with solely through the internet and web-based technology.

The use of devices and the Internet are changing the nature of products and services, how products are manufactured, and the way products and services are marketed and sold (Haltiwanger & Jarmin, 2002). The Internet also gives access to average taxpayers to new income streams through virtual transactions. These transactions can be concluded in the form of "real money" or virtual currencies (Switzer & Switzer, 2014). Even though these transactions are virtual or takes place in the digital economy or settled in virtual currencies, it might still have a taxation effect for the taxpayer and they need the necessary taxation knowledge to be able to account for these transactions on their tax returns. Often the tax consequences of these transactions are neither identified nor recorded for income tax or sales taxes (Cockfield, 2002). As stated by Basu (2001) the taxation of digital transactions can be complicated; the server on which the transaction is processed, the city from where the goods are shipped and the destination of the goods are all at different locations – where will the transaction be taxed? Therefore tax payers will need some tax knowledge and understanding to identify where and when tax consequences will be triggered. A lack of such knowledge or understanding may lead to tax non-compliance for individuals affected by the digital economy.

Scholarly literature produce mixed evidence on the relationship between tax knowledge and tax compliance. While the importance of tax knowledge for tax compliant behaviour is proven essential by some researchers, others find a weak correlation between tax knowledge and attitudes towards tax compliance (Cvrlje, 2015). An early study by Eriksen and Fallan (1996) supported the principle that attitudes towards tax compliance can be improved through better tax knowledge. Other empirical studies that found a significant positive effect of tax knowledge on tax compliance is that of Niemirowski, Baldwin and Wearing (2003); Mukhlis, Utomo and Soesetio (2015); Palil and Mustapa (2011); Oladipupo and Obazee (2016); Palil (2010); Saad (2014); Andreas and Savitri (2015); Ali and Ahmad (2014). However, a recent meta-analysis by Hofmann, Voracek, Bock and Kirchler (2017) on the relationships between compliance and certain socio-demographic categories shows inconsistent results, both regarding the direction of the relationship and its size. Although their analyses regarded "education" as a variable and not directly "tax knowledge", they do relate higher education with a better knowledge of tax law. Hofmann, et al. (2017) find that age and sex are the two socio-demographic

characteristics that are crucial in tax research; their observation of the influence of education (and thus indirectly tax knowledge) on tax compliance are that empirical results are unclear (see for example Engida & Baisa (2014) for a result where tax knowledge were not significantly correlated with tax compliance).

A major complication in interpreting evidence on the role of tax knowledge in tax compliance, is the fact that studies use different interpretations of what tax knowledge encompasses and use different measures to determine individuals' tax knowledge. Some examples of how tax knowledge is defined are:

- Palil and Mustapa (2011) divided tax knowledge into seven sub-categories namely; taxpayers' responsibilities and rights, knowledge about employment income, dividend and interest, personal relief, child relief, rebates and awareness on offence, penalty and fine.
- Mukhlis et al. (2015) merely propose tax knowledge to be the knowledge with regard to the public's understanding of tax and some matters relating to the taxation system.
- Oladipupo and Obazee (2016: p. 2) state that tax knowledge is the "level of awareness or sensitivity of the taxpayers to tax legislation".

There is a strong link between tax knowledge or understanding and financial literacy. It has been found that taxation should be an element of financial literacy due to it having an effect on the overall financial situation of persons (Brakin, 2014), and persons deal with taxes on a regular basis (Blechova & Sobotovicova, 2013).

Wassermann & Bornman (2018) (Manuscript in preparation) suggest that the concept of tax literacy can be defined to have universal meaning and to include common elements of the concept of tax knowledge. Thereby creating a new avenue for empirical research on the role it plays in influencing tax compliance behaviour. They performed a systematic review of empirical studies between 1996 and 2017 in which the role of tax knowledge (and where relevant "tax literacy") in influencing tax compliance were investigated. Their study reviews how tax knowledge/tax literacy is defined; what the elements of tax knowledge/tax literacy are; and how tax knowledge is measured.

Based on the systematic review and grounded in theories on "literacy" in general, Wassermann and Bornman (2018) proposed a conceptual framework of tax literacy consisting of 1) tax awareness, 2) contextual knowledge, skills and resources, and 3) meaning making or informed decision making. This will be briefly discussed in section 4 below.

The usefulness of the framework as a conceptual tool to identify the tax literacy requirements and/or problem areas of individuals as taxpayers in a digital economy has not been investigated. This paper therefore is a first attempt to apply the proposed framework in the context of natural persons only. There is a vast amount of literature on companies and multi-nationals operating in the digital economy published by the Organisation for Economic Cooperation and Development ("OECD"), but up to date the literature with regards to natural persons is scarce. If the application of the tax framework is found to be useful, future empirical studies can then use the framework to create a profile of the tax literacy of the population under investigation in various circumstances or industries. The role that tax literacy plays in their tax compliance

behaviour can then be investigated for the different elements of tax literacy individually and collectively.

This paper will proceed as follows: in the next sections the objective and method is presented wherafter a brief review of the development of the conceptual framework is offered. Section 5 presents the results of the study and identifies the tax knowledge requirements and problem areas for taxpayers in the digital economy. Section 6 highlights the risks relating to tax knowledge for the digital economy and the study is concluded in Section 7.

2. OBJECTIVE

The objective with this study is to consider the conceptual framework of tax literacy which proposes tax knowledge as an element of tax literacy, and to identify the tax knowledge requirements for individuals functioning in the digital economy. An awareness and understanding of these knowledge requirements may result in recognising the risk areas which may impede tax literacy among individual taxpayers.

3. METHOD

A qualitative approach was used in the study by means of a thematic search of appropriate literature. The OECD comparative information series on tax administration were largely used to report on the digitalisation of the interaction between taxpayer and tax authority. Other literature in the form of published scholarly articles, reports, blogs and media releases were sourced using academic databases (e.g. Scopus, Taylor & Francis, Ebscohost) to found documents that addresses tax challenges that results from digital disruption. These documents were systematically reviewed with a view to find knowledge requirements for the individual taxpayer functioning in the digital economy.

In the section on the discussion of findings in the present paper it can be seen how the tax literacy framework is used as a tool to identify the risks of tax non-compliance as a result of tax knowledge deficits or problem areas.

4. A FRAMEWORK FOR TAX LITERACY

4.1 Tax literacy defined

The concept of tax literacy is relatively new in the tax compliance literature. The authors of the present study argue that within the limited number of studies that have used the concept of tax literacy, few have properly defined it or given regard to different elements of tax literacy. Some studies regard tax literacy as a component of financial literacy or capability (see Chardon, 2011; Brakin, 2014). Definitions of tax literacy as used in in four other studies cited by Cvrlje (2015) all relate to an ability (or the knowledge and skills needed) to manage your tax obligation.

Various authors attempted to define financial literacy (see Blechova & Sobotovicova, 2013; Cvrlje, 2015; Brakin, 2014; Chardon, Freudenberg, & Brimble, 2016; Madikizela, 2016), but for this study the definition of financial literacy as per Wilson, Abraham and Mason (2014) is used to as the main guideline to define tax literacy.

Wilson, et al. (2014: p. 64) defines financial literacy as “an individual’s ability to obtain, understand and evaluate the relevant information necessary to make decisions with an awareness of the likely financial consequences”. It is further described as a meaning-

making process where informed decisions are made which will lead to favourable consequences.

Flowing from the above, tax literacy is defined as a dynamic process of developing skills and gaining the confidence to be aware of and understand the factors that influence your tax decision and of taxation consequences of your decision, to know where to get assistance on complicated tax issues and to use the knowledge to make informed choices and decisions with respect to various transactions. (Wassermann & Bornman, 2018 (Manuscript in preparation).)

4.2 Elements of tax literacy

It is therefore proposed that tax literacy consists of the following elements:

4.2.1 Tax awareness

Wilson, et al. (2014) observe that “awareness” is a pre-condition for literacy, awareness is thus the basis of the framework. This is confirmed by Hastuti (2014) who is of the opinion that tax is inevitable for all persons, and therefore tax awareness is the cornerstone with regards to tax compliance. Even as early as 1963 tax awareness (or consciousness) and the tax payer’s reactions as a result of the tax awareness has been researched in the United States (Enrick, 1963). In a further study during 1964 the researcher noted that it seems that the taxpayers are under a delusion of the extent of their tax awareness – they know less than they think they do (Enrick, 1964).

However, tax awareness is a complex issue and difficult to measure. Despite a lack of clear conceptualisation, studies measuring financial awareness defined it as “the ability to understand and analyse information and act accordingly”, it is a necessary condition for the whole literacy process (Wilson, et al., 2014: p.62). Wilson, et al. (2014: p.63) further points out that earlier studies showed that “individuals did not make good use of financial information”, a finding that he attributes to (at least in part) “a lack of financial awareness”. An analysis of Wilson’s (2014) conceptualisation results in defining individuals’ financial awareness as an understanding of the factors relevant to their decision-making and a prediction of the financial consequences of decisions made.

Hastuti (2014) refers to tax awareness as the ability of taxpayers to each take ownership of their tax calculations, payments and reporting, while Kamil (2015) concludes that awareness is that taxpayers “want to pay taxes”; which is more than the mere “continuing discussions” of tax that gave the subjects in the study by Enrick (1964) false security that they are conscious of tax issues.

In the context of tax literacy, we draw an analogy between “financial awareness” and “tax awareness”. Our understanding of tax awareness includes the notion of understanding or recognising factors relevant to our decision (where the decision relates to applying tax rules and procedures correctly); as well as the notion of understanding the tax consequences of the decision made.

The *factors relevant to making a tax decision* can be equated to those that have been proven to influence tax compliance. A vast amount of scholarly literature on the subject of tax compliance exist and it is clear that these factors are intricate and intertwined. Furthermore, some factors are based on taxpayer perceptions, which make it difficult to measure. These factors broadly include personal and social norms, opportunities for non-compliance, fairness and trust (as exhibited by the revenue authorities and

perceived by the taxpayers), economic factors and deterrence efforts by tax authorities (OECD, 2010). Other factors such as tax morale, taxpayer demographics and the fiscal exchange function are also relevant to making decisions in respect of personal taxation (see for example, Torgler (2011), Feld & Frey (2007), Torgler & Schaffner (2007), Kornhauser (2007) and Kirchler (2007)). Boll (2014) points out that there is no agreement among researchers on a single factor among the variety of social factors being the “key factor” to explain tax compliance.

A prediction of the tax consequences following a decision implies that one can make a judgement on whether you have applied the tax rules correctly and can predict the effect on your tax payable.

From the above it becomes clear that tax awareness is a combination of:

- Recognising the factors that will influence a decision; and
- Understanding the consequences of the decision.

Tax awareness is increased by knowledge gained by the taxpayer (Saira, Zariyawati, & Yoke-May, 2010). This knowledge is specific to the context in which the knowledge are applied and is thus referred to as contextual knowledge. Contextual knowledge is therefore the second element of tax literacy.

4.2.2 Contextual knowledge

In respect of the proposed definition of tax literacy two elements have been identified in respect of contextual knowledge:

- Procedural knowledge; and
- Legal knowledge.

(Wassermann & Bornman, 2018)

Tallaha, Zaleha Abdul Shukor and Hassan (2014) found that there is a difference between procedural tax knowledge and legal tax knowledge. The procedural context allows for a consideration of the knowledge, skills and resources required to interact with tax authorities and having your records for tax purposes in order. The legal context refers to an understanding of how you are taxed.

With regards to procedural knowledge, Bornman & Ramutumbu (2017) maintain that taxpayers need to be aware and have acceptable knowledge of the tax processes and their responsibility to adhere to the tax laws in their countries. This is the knowledge of how and when to file tax returns and supply information to the tax authorities. According to Oladipupo and Obazee (2016) the procedural knowledge is understanding of tax systems and processes, knowing the tax requirements, be aware when a person will be tax compliant and adhere to the timelines. Tallaha, et al. (2014) further warns that the ability to use an electronic tool to submit a tax return does not mean these returns are complete or filed correctly. Taxpayers therefore still need a certain level of legal tax knowledge to ensure that they are tax compliant.

Legal knowledge as an element of tax knowledge, has two dimensions - the understanding of legal terms and legislation (“knowing that something is taxable”) and

the ability to apply the legal knowledge to specific situations to be able to calculate the tax effect (“knowing how”) (Lai, Zalilawati, Amran, & Choong, 2013).

An expansion of awareness and knowledge will lead to more confidence (Saira, et al. 2010), which will assist with the *meaning making* process.

4.2.3 *Meaning making or informed decision making*

If tax literacy is a process from which informed decisions are made, then meaning making is the key element of tax literacy. Wilson (2014) explains that awareness alone or knowledge and skills alone is not sufficient for being considered literate but that literacy equates to making sense of and understand the world in which we function. It was further reported by the World Bank (2015: p. 2) “that decision making is the product of an interaction between mind and context”. Thus where the mind makes sense of the interaction between tax awareness and tax knowledge.

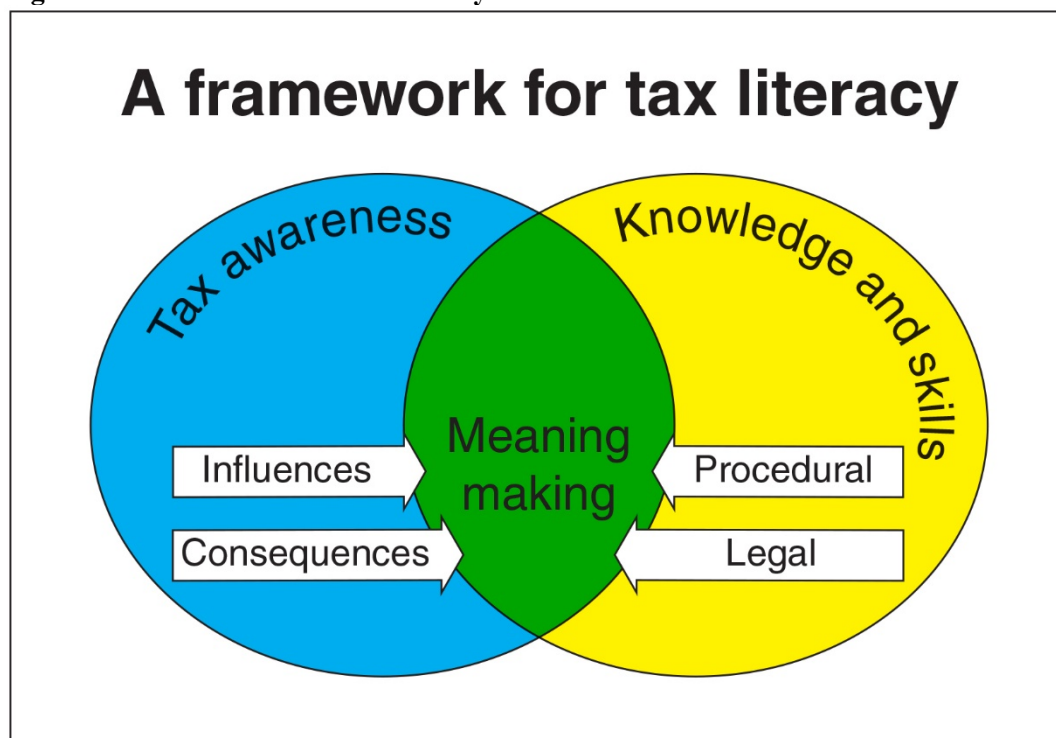
But it was also found that this meaning making process is influenced by other social factors, which could include an individual’s perceptions, his/her social norms, tax morality (willingness to pay taxes) and attitudes. These factors work in the subconscious, the individual is not even aware that it has an influence on his/her decisions. (World Bank, 2015). These factors vary from one person to another, and are influenced by the environment in which the individual functions (Wilson, et al. 2014). We depict this concept of meaning making to be the outcome when an individual’s tax awareness interconnects with his tax knowledge and an informed decision can be made.

It is important to note that tax literacy can only ensure that individuals make informed decisions, it cannot ensure that the “right” decisions are made.

The interaction between the three elements are illustrated in the framework below.

4.2.4 The framework

Figure 1: A framework for tax literacy



Source: Authors' own illustration.

Figure 1 presents the concept of tax literacy as a process. When an individual's tax awareness interconnects with his tax knowledge, he is able to make meaning of what he knows in order to bring about a desired outcome. In other words, he is able to make an informed decision about acting in a tax compliant manner or not. In this process, it is also recognised that other factors such as individual and social norms, perceptions, attitudes and tax morality exert an influence on the individual.

It must be recognised that "tax awareness" and "meaning making" stays constant in all environments, whether it is traditional or digital. The focus for the remainder of this paper will be to determine if the requirements for "tax knowledge" are unique in the digital economy and if specific knowledge requirements of a procedural and legal nature can be identified.

The purpose of this paper is to explore and discuss only the tax knowledge element of tax literacy to highlight the unique tax knowledge requirements of the digital economy with the purpose to gain insight into the tax literacy requirements and risk areas of individuals.

5. TAX KNOWLEDGE REQUIREMENTS IN THE DIGITAL ECONOMY

A systematic review of a number of documents resulted in the identification of elements of tax knowledge required in the digital economy. The findings are discussed in this section under the categories of procedural and legal tax knowledge.

5.1 Procedural knowledge

Procedural knowledge considers the knowledge, skills and resources required to interact with tax authorities and having your records for tax purposes in order. There are thus two aspects to investigate, namely the digitalisation of the tax administration (affecting taxpayers' interaction with authorities) and the digitalisation of processes to record transactions and maintain records for tax purposes.

5.1.1 Tax administration

According to the OECD's (2015a: p. 243) comparative information on tax administration in advanced and emerging economies, "many revenue bodies have taken steps to exploit the use of modern computing technologies to transform their operations." The report observes that the reason for this is obvious given the exponential growth in the use of technology by citizens and businesses. Offering online services for attending to tax obligations should therefore be both easy and attractive for taxpayers to use.

The OECD (2015a) report provides internationally comparative data on aspects of tax systems and their administration in 56 advanced and emerging economies up to the end of the 2013 fiscal year for the countries concerned. Findings from surveys conducted suggest that the main types of online services now being used by large and growing numbers of taxpayers are:

- Provision of a comprehensive range of tax and other information, forms and calculators on websites.
- Electronic filing of tax returns for the major taxes.
- The provision of fully and/or partially completed pre-filled tax returns for personal income tax.
- A range of electronic payment options for all taxes.
- Access to secure detailed personal taxpayer information via online portals.
- Call centres using modern telephony facilities to provide more accessible phone inquiry services. (OECD, 2015a: p. 243)

In addition to the above, the OECD (2015a) report mention these possibilities for enhancing tax payer services:

- VAT e-invoicing system to support businesses and the revenue body's administration of the VAT.
- Automating data capture from third parties (e.g. from employers and financial bodies) that are required for routine tax administration processes (e.g. verification and prefilling of tax returns).
- Digital mailbox. (E.g. notices of assessment, taxpayer accounts) that are sent to taxpayers electronically via a secure portal.

What is notable, is that almost 60% of the revenue bodies surveyed report that the majority of their personal taxpayers filing returns used e-filing (either by themselves or

via tax professionals) for the 2013 year (OECD, 2015a). For 2014 and 2015 the OECD reports that two-out-of-three personal income tax return filers submit their returns online (this is for 35 tax jurisdiction surveyed) (OECD, 2017b).

The above facts suggest that taxpayers need sufficient information and communication technology skills (ICT skills) to interact effectively with their tax authority. An OECD (2016) report on “Skills for a digital world” indicates that on average, over 40% of workers using office software every day do not seem to have sufficient skills to use them effectively (this figure is based on research performed across 18 developed countries).

The OECD (2016) report refers to “digital literacy” as the ability to read and navigate autonomously digital content. In the report it is argued that the performance of 15 year old students in digital literacy is positively correlated with their performance in reading. It is further suggested that navigational skills (in other words to be able to “click” correctly when navigating through a webpage) have more to do with the ability to regulate and monitor cognitive processes or with spatial reasoning, than with mere technical aspect of browsing. The report confirms the importance of foundation skills as a basis for the acquisition of the skills that are and will increasingly be required in the digital economy: “reading and writing skills become increasingly relevant to fully grasp the benefits of technology rich societies” (OECD, 2016: p. 12).

It is often assumed that young people naturally or automatically acquire digital literacies, but interestingly, according to the OECD (2016: p. 23) report, evidence shows that “young people entering the workplace make the least use of information processing skills, including ICT skills, in comparison with prime age workers”. It is argued that ICT skills are acquired mainly through use. Further, proficiency in ICT skills facilitates practice - and practice reinforces proficiency, in other words the ICT skills of an individual will deteriorate if not used. In the context of fulfilling one’s tax obligation, this could imply, that if an individual did e-filing once, he may not be able to get it right next time.

It is thus evident from the above discussion that the ability to read and navigate autonomously digital content (or digital literacy) is an essential component of the procedural knowledge required by individual taxpayers to interact effectively with tax authorities.

Another aspect of procedural knowledge has to do with taxpayers’ ability to record transactions electronically and maintain records of the amounts they have used in their tax returns, including those they have done through e-filing. According to the South African Revenue Service (2018) these records should be kept for prescribed times, and can be kept in digital format.

5.1.2 Digital record keeping

Due to an increase in the use of digital records, and the storing of paper records in digital format, there is a demand for new skills to be able to understand the digital records and processes to store information (OECD, 2016). The change in the way information can be stored digital is exponential, but these new ways of storage also creating material risks, if not stored correctly information can be lost (Rothenberg, 1995).

The World Bank (2015) has identified a few areas of digital competence that could assist with correct record keeping. The following competencies are applicable to tax knowledge requirements:

- Information: identify, locate, retrieve, store, organise and analyse digital information, judging whether it is relevant, which tax period it relates to and the purpose of the information.
- Content creation: create and edit new content; integrate and re-elaborate previous knowledge and content. (A good example is to correctly edit programmes to take changes in tax rates into account.)
- Problem-solving: identify digital needs and resources, make informed decisions on most appropriate tools according to the purpose or need, solve conceptual problems through digital means. (This could relate to obtaining tax asset registers, to identify new assets acquired or assets disposed of, and preparing information for taxation audits.) (Adapted from World Bank, 2015: Box 7.)

It is therefore proposed that these competencies pointed out above are needed by taxpayers to adhere to digital tax records requirements.

The discussion above highlighted the fact that there are distinctive knowledge requirements on a procedural level necessary to make informed decisions about your tax obligation when operating in the digital economy). The next section points out that there are also specific *legal knowledge* requirements unique to the digital economy. The analysis provided below serves to gain insight into the legal knowledge required in order for a person to be considered tax literate in the digital economy.

5.2 Legal knowledge

Legal knowledge refers to an understanding of what tax laws mean (Oladipupo & Obazee, 2016) and knowing how to apply tax rules to a particular transaction. The digital economy provides unique challenges to tax authorities as well as taxpayers as is evident from an OECD report on the tax challenges of digitalisation (OECD, 2017a). Although the OECD report focuses on challenges experienced by multi-national corporations and cross-border transactions, it is clear that transactions such as providing digital goods and services, selling goods online and providing services via a website requires a consideration of unique legal rules and procedures.

The individual operating in the digital economy may be transacting in business enhanced by the internet such as home-sharing (e.g. Airbnb) or ride-sharing (e.g. Uber) or providing services to clients found via a website (e.g. connecting tutors with pupils, or house cleaners with home owners) (Nellen, 2015). Individuals may also have made purchases online; sold goods, information or services online; generated income from online games or gambling; cashed out virtual money; generated income from a personal blog or YouTube; or own digital assets (Nellen, 2015).

Bornman and Wessels (2018) analysed a large amount of scholarly literature on the topic of the sharing economy and identified three main legal knowledge requirements for the individual operating in the sharing economy. They found that the uncertainty around employee or contractor status is frequently documented – especially in relation to Uber (or other ride-sharing platforms). Further to this, the registration, collection and remittance of transient occupancy tax in the case of home-sharing platforms was a

dominant theme throughout the home-sharing literature. A third theme identified by Bornman and Wessels (2018) relates to the use of personal assets for commercial purposes and the accompanying tax deductibility of expenses in this regard.

Another type of transaction to consider is the provision of digital goods and services. Included in digital goods are games, music, documents, software and even ringtones. Examples of digital services are online gaming, communication services, website hosting and virtual worlds. In respect of the income from provision of the digital goods and services the individual will have to consider tax legislation to determine the source of the income and where the transaction should be subject to income tax. Sales taxes have to be considered as well. Expenses incurred to provide the goods and services must be measured against deduction criteria to determine whether it can be deducted for taxation purposes as incurred, or will only be deducted over a number of years due to it being of capital nature or for research purposes. (Nellen, 2015). To complicate this even more, tax legislation differs from country to country with regards to rules for deductibility of expenses and allowances on capital assets. Furthermore the individual should be aware in which country (or even countries) the transaction will be taxed. Eventhough the individual has tax knowledge regarding his country of residence, there might be tax consequences in another country as well. In the event of double taxes (taxed in more than one country) the individual should then know whether there are any double tax treaties or taxation provisions available to grant relief against double tax.

In respect of transactions in virtual currencies there are three levels for which the knowledge requirements should be considered; mining of virtual currency, using the virtual currency and holding the virtual currency. The mining of virtual currencies might be seen as a trade causing the profits to be subject to income tax. Virtual currency is seen as an asset and might have either or both income and sales tax consequences if sold or donated. If used as a form of payment, the transaction will be subject to the normal tax rules. Merely holding the virtual currency will not have immediate tax consequences, but it will be included in the individual's estate upon death or liquidation. (Nellen, 2015).

Some of these challenges have been addressed in the OECD Base Erosion and Profit Shifting Project (OECD, 2015b), and the OECD has issued various reports, the latest being the 2018 interim report on "Tax challenges arising from digitalisation" (currently under embargo) to assist taxpayers and tax collectors with the detecting and taxing of transactions in the digital economy.

These themes pointed out above, provide evidence that there are specific legal knowledge requirements that co-determine the tax literacy of an individual functioning in the digital economy.

6. RISK AREAS IDENTIFIED

In the previous section it was noted that tax knowledge consists of legal and procedural knowledge. The following risk areas can be identified flowing from the requirements for the tax knowledge component of tax literacy in respect of individuals:

6.1 Procedural knowledge

With respect to Tax administration it was found taxpayers might be lacking both information and communication technology skills, as well as reading and writing skills.

Where records are kept in digital format the risks are that the digital information might get lost, that the individual keeping the records does not have the necessary competencies to know how and which records to keep, and which of those records to reproduce when needed.

6.2 Legal knowledge

Legal knowledge refers to an understanding of what tax laws mean and knowing how to apply tax rules. With the digital economy providing unique challenges, the following risks have been identified:

In the sharing-economy the employee or contractor status, applicability of occupancy taxes, tax treatment of personal assets and deductibility of other expenses are possible pitfalls.

With regards to the provision of digital goods and services the source and tax location of the income, the type of tax applicable to the transaction, tax treatment of expenditure and allowance on capital assets (including research development costs) could be possible risks. Double tax and possible relief should also be considered.

The tax knowledge required in respect of virtual currencies is dependant on whether the currency is mined, used or held.

7. CONCLUSION AND RECOMMENDATIONS

This paper set out explaining the tax literacy framework as a process in which tax awareness and tax knowledge interacts in meaning making of various transactions. An individual's tax awareness and meaning making are influenced by social and environmental factors which varies in different contexts, but it is argued that specific tax knowledge needed by individuals to effectively comply with their tax obligations in the digital economy can be identified. To this purpose, the two elements of tax knowledge as identified by the tax literacy framework were used in this paper.

To understand the knowledge requirements applicable to the digital economy this paper systematically reviewed literature on the digital economy in order to identify specific legal and procedural tax knowledge needed in the digital environment.

Our findings proof that there are unique tax knowledge challenges in the digital economy. In order to be a tax literate person, one needs to be aware of these challenges to be able to make informed decisions with regards to your tax obligations. Our findings further prove that the proposed elements of tax knowledge (procedural and legal tax knowledge) according to the tax literacy framework appears to be valid and useful in exploring knowledge requirements for taxpayers.

Taxpayers and tax authorities alike should take note of the risk areas identified to devise strategies for dealing with tax issues in the digital economy.

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