ORIGINAL SCIENTIFIC PAPER
UDK: 005.591.6:004]:336.1/.5(497.11)
005.92:004.63
DOI: 10.5937/EKOPRE1808131P
Date of Receipt: January 18, 2019

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DIGITALIZATION OF THE TAX ADMINISTRATION IN SERBIA

Digitalizacija poreske administracije u Srbiji

Abstract

Tax administrations (TAs) in the developed countries are entering the final phase of digitalization, where the complete change of tax paradigm is the final goal. That is a level in which a TA uses data submitted by individuals and legal entities to assess taxes, without the need for any further collection of the same. As a response to technological changes in society and business, digitalization permitted TAs to use technologies such as advanced analytics, pre-population, big data analytics, and blockchain. As a result, the TAs significantly increased efficiency, improved the level of services offered to taxpayers, and introduced new services. The tax administration in Serbia has taken the first step in the digitalization process. It concerns the transition from paper to digital data formats, database creation and investment in human capital and IT, which is a prerequisite for converging with the developed countries and a response to the needs of the digital society. Despite the progress made, the Serbian TA is still at the beginning of the process of transformation into a modern, digitally oriented system. Some recommendations for the next steps in Serbia and the security aspect of the TA digitalization process are also considered.

Keywords: *tax administration, digitalization, new technologies.*

Sažetak

Poreske administracije (PA) razvijenih zemalja sveta ulaze u završnu fazu digitalizacije čiji je krajnji cilj potpuna promena poreske paradigme. To je nivo na kome PA već poseduje sve raspoložive podatke o fizičkim i pravnim licima neophodne za obračun poreza, bez potrebe za bilo kakvim dodatnim prikupljanjem istih. Kao odgovor na tehnološke promene u društvu i načinu poslovanja, digitalizacija je ovim PA omogućila korišćenje savremenih tehnologija poput napredne analitike i naprednog popunjavanja poreskih dokumenata, analitike velikih podataka i blockchain-a. Kao rezultat, PA su značajno povećale efikasnost, unapredile nivo usluga koje nude poreskim obveznicima i ponudile nove usluge. Poreska administracija u Srbiji napravila je prve korake u procesu digitalizacije. Oni se tiču prelaska sa papirne na digitalnu formu podataka, kreiranja baza podataka i investicije u ljudski i tehnički kapital što je preduslov za hvatanje koraka sa razvijenim zemljama sveta i reakcija na potrebe digitalnog društva. Uprkos progresu koji je učinjen, PA Srbije se još uvek nalazi na početku procesa transformacije u moderan, digitalno orijentisan sistem. Neke preporuke za dalji tok digitalizacije PA Srbije, kao i bezbednosni aspekt čitavog procesa su takođe predmet ovog rada.

Ključne reči: *poreska administracija, digitalizacija, nove tehnologije.*

Introduction

Digitalization has the potential to transform the world economy much more than we see today, because it changes not only how we produce and consume, but the type of goods and services that are required. It has contributed to the development of new products and services and new forms of business. A significant amount of global business moves to online platforms. Estonia, for example, now offers digital identity (e-Residency) to the individuals who want to start a business in the country. The company can be started online without the need to appoint a local director or open a local bank account (they can use PayPal or other online payment services). Consumers also adopt new technology very fast. Under the influence of the Internet, social networks and mobile platforms, they also change needs and behaviour. The modern consumer expects new and different relationship with the producers and especially with the state administration. The question arises as to what extent is the state administration ready to respond to the challenges that digitalization sets in the 21st century?

In this paper, we will focus on one of the largest and most important sectors of the state, tax administration. For tax administration, digitalization represents both challenge and opportunity. Digitalization challenges go beyond the simple changing of communication channel with tax administration or the transformation of existing services from paper to digital forms. Using modern technology, operations that are now time-consuming can be instant. With people becoming digital and connected, they are now expecting that payment of taxes become a part of their natural environment. Taxpayers will expect that paying taxes should be no more complicated than booking a hotel online [25, pp. 23-45]. Also, they will expect more transparency and trust in order to allow TAs, at some moment, the automatic deduction of tax amounts out of their account like they are doing today with iTunes or Apple Store services, or with Netflix or Uber.

In order to satisfy modern taxpayers, TAs need to understand them better. TAs are already receiving the bulk of data by taxpayers, but most of those data are not used due to the lack of tools. Big data technology now offers TAs the possibility not only to better use existing data but also to create new services and values for taxpayers [25, pp. 47-72]. Some of the estimations show that by 2020 around 200 billion of different devices will be connected online. Besides our personal phones, most of the connected devices will be in factories, businesses, healthcare, public institutions, and so forth. Smart devices can give TAs all necessary data they need to track business processes, manage taxpayers, increase efficiency and save costs. Collecting and using dig data from third parties and combining it with tax data will help TAs to develop new e-services that target the specific needs of taxpayers. That will also help TAs to understand better and predict taxpayer's behaviour.

Serbian Tax Administration started digitalization process in 2005 by introducing online reading of cash registers. A few years later, first tax forms were digitalized (VAT, payroll taxes, personal income tax). A significant progress was made in 2017 by forming the Office for IT and e-Government. Important projects which are a prerequisite for the TA digitalization, such as State Data Centre, e-Payment, e-Paper or e-Inspector, were started. Today, it is possible to submit all tax forms online through the TA's specialized web portal "ePorezi" (*e-Taxes*). Although the possibility exists, most taxpayers still use the paper form for tax applications. Therefore, there is still a lot to be done in the process of digitalization of the TA in Serbia. As the Serbian TA efficiency is still on a low level compared with EU countries, digitalization can accelerate conversion to the EU standards.

In this article, we will analyze different experiences in the TAs digitalization process, with a significant focus on European practice. Serbian Tax Administration digitalization will also be analyzed in detail. Using world best practices, we will give some proposals for the next possible steps in the TA digitalization process in Serbia both in the short and medium terms.

Digitalization of TAs: the best practices

In the process of digitalization, some countries are leading, some are following, and others are still at the beginning. However, some steps in digitalization of the TAs are similar

in all countries. In the next paragraph, we will give a short review of the main tools and levels of digitalization with focus on best practices from different countries.

Automation and pre-population

Automation and process standardization are the first level of the TA digitalization. If taxpayers are submitting data in a standardized format, that can help tax authorities to use those data more efficiently. The use of third-party data is essential for supporting the tax administration in processing tax returns. Collecting more information and more data sources is important to extend the tax coverage, but also to provide existing taxpayers with better services.

At the beginning of the digitalization process, data used by tax authorities are mainly internal, with limited use of data from other governmental agencies. Most administrations in the world are still at this level, filing tax returns based on data obtained from taxpayers and mostly in paper form. With the automation of the process, TAs become able to use the full range of data sources, such as internal, other governmental sources and external sources. In this step, TAs need support from the other governmental organizations, and it is useful if that process is a part of the overall process of government digitalization. In Russia, for example, the assessment of property taxes is done based on inputs from the cadastre office and local government. Taxpayers can see all information online [6, p. 43]. In this step, investment in digital services and changes in the legal framework are required.

The next step is the simplification of tax return and all other tax procedures. Electronic filing of tax applications needs to be available in this step. Tax administration also needs to improve internal capacity and skills by developing both software solutions and human capacity. New jobs, such as data analyst, social network analyst, cyber security officer, and so on need to be developed for tax administration purposes. That is one more reason why political support is essential. Changes in education programmes and legislation will not be possible without that support. Also, gaining taxpayers' trust will be impossible, especially in developing countries, without government support.

When these phases are finished, the tax administration is ready for pre-filing of tax returns and advanced analytics. Some developed countries are already in this phase. In Australia, the tax office (ATO) gives the opportunity to taxpayers to pre-fill information directly into individual income tax returns [1]. Information provided by that system help the ATO to improve tax service, to offer faster and easier service for a taxpayer who files his returns online, but is more laborious and time-consuming for others. In this way, the ATO is stimulating taxpayers to use new technologies. In Denmark, the tax administration conducted an experiment on 40,000 taxpayers separated into two groups. Half of them self-reported their income, while the income tax of the second group was calculated based on third-party data. Using audit data, they concluded that the tax evasion rate was close to zero for income obtained from the third-party reporting. However, the tax evasion rate was considerable for self-reported income [19].

The final step is the so-called "no-return" approach where all taxpayers are connected in the system, and all tax data are available in real time (or near real time), with the possibility for clients to pay all taxes online [26, p. 190]. This step is yet to be reached for most of the countries. However, some predictions, for example in the UK, suggest that by 2020 there will be no need to file a tax return. The TAs will provide tax return based on data collected over the reporting period, and taxpayers will have the choice to accept or challenge it. That is the process of full automation of tax administration.

The use of pre-populated returns provides many benefits to taxpayers and TAs. The OECD report 'Survey of Trends in Taxpayer Service Delivery Using New Technologies' reported several major benefits [23, p. 13], such as reduced compliance problem for taxpayers, better confidence, improved image of the revenue body, faster processing of taxpayers' tax return information, quicker refunds and elimination of many errors.

On the other side, there are potentially two significant problems. First, if tax rates are different (i.e., in different geographic areas, business sectors, etc.), the tax administration needs to inform taxpayers about them every year. This problem is based on legislation and can be solved by unifying tax rates. The second potential problem is linked

with the adjustment of the pre-populated returns received by taxpayers. OECD reported that adjustment rate varied from 25 to 50% [23, p. 14]. Those costs can be lowered by automating adjustment process.

Finally, automation of TAs will lead to the potential use of other technological tools, such as advanced analytics and big data.

Advanced analytics

Advanced analytics is the process of "using statistical techniques to make predictions about causes and effects" [24, p. 14]. Establishing an effective advanced analytics function requires a wide range of organizational and technical challenges. Regarding organization, the analysis suggests that, in the early phase of development, centralization may be more appropriate [24, p. 14]. Once the organizational structure is established, the next step is to learn how to manage complexity and uncertainty. Although different types of software are available, the best results will occur through learning-by-doing process. The next step is to decide about analytics software, especially choosing between open sources and commercial analytics software. Finally, TAs need to manage data to ensure they are suitable for analytic purposes. In this process, IT division of the TA is essential.

Most of the advanced analytics projects fall into one of two categories [24, p. 18]:

- Predictive analytics – recognizing and understanding relationships in the data, and
- Prescriptive analytics – helping TAs to understand the impact of different actions on taxpayers.

Those two categories can also be combined in order to anticipate how individual taxpayer will respond to a specific TA action.

One of the main applications of advanced analytics is audit case selection. Faced with limited resources and relatively large numbers of taxpayers, TAs require a systematic risk-based approach for identifying which taxpayers to audit [22, p. 5]. Almost all countries in Europe with advanced digital TAs implemented automatic audit case selection in their work (Finland, France, Ireland, the Netherlands, Norway, Sweden, and the UK). Out of the 16 tax administrations surveyed by OECD in 2015, 15 indicated that they had deployed analytics to prioritize cases for audit [24, p. 20]. Some important lessons are learned from this survey:

- Most of the surveyed countries (i.e., France, Ireland, Mexico, the Netherlands, Norway, Sweden, Switzerland, and the UK) in choosing audit cases start from VAT non-compliance;
- Key part of the decision to build a model is an assessment of the next best alternative;
- Social network analysis (SNA) is vital in situations where individual-level assessment may fail to detect anything of concern. Countries like Ireland, Malaysia, the Netherlands, New Zealand, and Singapore use SNA to connect individuals with different risk groups;
- If resources permit, a multiple-model approach can offer advantages over the single-model. This is due the different nature of tax forms and different relationships in data;
- TAs need to develop so-called unsupervised models – models that search to identify unusual patterns in data. A good example is the Australian model, designed to identify incorrect income tax deductions. A database of tax returns is used to identify the atypical ones — a corporation with a significantly higher type or rate of deduction than competitors, for example [1].

The second important use of advanced analytics is for filing and payment compliance. The main objective is to secure an outstanding payment or return or to prevent the problems. In the UK, for example, the TA has a model that predicts which taxpayers are most likely to miss filing deadlines, and intervenes in advance to overcome a possible situation. They create a team of behavioural economists and social psychologists to try to improve government policy and services [20]. The similar predictive model has been developed in Canada. In its first year of implementation, non-filer model resulted in around 130 million CAD additional revenue. Today, several other models are used to improve the TAs effectiveness and enhance taxpayer services [2]. A few other countries in Europe, like Ireland, Finland, and Norway are also using these types of models. However, this way of using advanced analytics is more appropriate for countries with

dominant direct tax forms (CIT, PIT, property tax) and self-reporting tax application model.

On the other side, similar models are used to predict possible tax debt and to model the risk that some individual or company will fail to pay tax on time. Finland, Singapore, Ireland, and Sweden created models that attempt to assess the likelihood of insolvency or other potential payment problems. Australia and Norway use predictive analytics to send an SMS message to taxpayers found to be a payment risk [25, p. 26]. Models also help to identify which types of taxpayers show the greatest response and based on that, they are planning future interventions.

Some tax administrations started using advanced analytics, not only for control but also in support of taxpayer service. Ireland and Norway use different analytical techniques to predict which channels taxpayers use for communication. Then, they are using specific methods to encourage taxpayers to use digital communication channels or to prepare software user-friendly with a specific type of communication channel (i.e., for a smartphone). On the other side, Singapore tax authority uses some techniques to analyze the content of taxpayers' emails. They use knowledge from that source to deliver better service to taxpayers (i.e., to start some campaign in advance, or provide more guidance on the web site) and reduce the need for taxpayers to contact the TA.

Advanced analytics can also be used for deciding about tax strategy and policy. Countries like USA, UK, Finland, and China use this technique for tax gap analysis. Singapore is using advanced analytics to explore and predict the impact and reaction on the proposed policy changes. Of course, these types of models are different from previous (predictive) models because they use simulations and therefore, they are more linked with economic and mathematic theory. Finally, advanced analytics can be used for segmentation of taxpayers. Using cluster analysis, we can identify the groups of similar taxpayers and then create different services for them.

Applying big data to tax processes

Big data refers to datasets that are both big and high in variety and velocity, which makes them difficult to handle using traditional tools and techniques [8]. As far as TAs are concerned, they have always had access to large amounts of data. However, only recently technological progress has made it possible to create true value by way of combining these large datasets originating from different and heterogeneous data sources [16]. Creating value from big data is closely connected to the ability to take better decisions [7]. Big data is usually collected from a variety of sources – different organizations, internet of things (IoT) devices, social media accounts – which often requires collaboration between these organizations. In the case of TAs, there are some exceptions. Cooperation could be taken as granted since all these organizations are different public agencies, all working under the same mandate. Organizations feeding the data are usually required by law to do so – such as employers, businesses, even individual taxpayers. Electronic cash registers could be considered as IoT devices feeding information to the TAs, but other devices might do so in the future, as payment systems advance in their application in Serbia – such as smartphones (through contactless transactions and e-Payment systems). Finally, using data from sources such as social media accounts is somewhat anecdotal, but not without precedent.

Collection of big data takes place in many forms, including monitoring electronic communication, internet tracking (usually by way of "cookies," small packets of data left by websites on users' PCs), RFID, location information, video surveillance, financial information, and electronic record keeping. Whilst mere collection of this information can be intrusive, the privacy risks are multiplied when multiple pools of data are combined [4]. This has prompted a regulatory response from many jurisdictions, with the most prominent being the recent European Union General Data Protection Regulation (GDPR).[1] Such regulations include certain restrictions on further use of data – i.e., rules that personal information processed for one purpose cannot generally be used for other incompatible purposes[2] – making it more difficult

1 Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data.

2 Article 5(1)(b) of the General Data Protection Regulation.

for TAs to access all free personal data available on a citizen or business in order to implement big data analytics and assess tax evasion scores. It is possible that future regulation (in democratic societies) will follow the same logic and place further restrictions on state actors in the indiscriminate use of large amounts of personal data in order to detect tax fraud.

Many governments from all over the world started adopting their big data strategies, which usually begin by their application in tax administrations, as these organizations gather and process millions of persons and companies who pay taxes. Their approach to implementing big data and big data analytics strategies are usually two-pronged: the first goal is to improve efficiency of a public agency, in this case the TA, in the delivery of its mandate, i.e., collection of taxes; the second one is to make it cheaper, or to require fewer employees to achieve better results.

The TA of the Netherlands, for example, has initiated various big data-driven programmes that have resulted in additional income between 750 million and 2 billion euros, making 5,000 staff obsolete, while employing 1,500 new staff, knowledgeable in big data analytics. The entire TA is shifting the focus of its employees towards big data analytics to detect tax evasion and fraud [17]. This is also the case with American Internal Revenue Service (IRS), which is one of the most advanced TAs when it comes to audit and detection of tax evasion. IRS also allows researchers to use long panels of tax returns to observe individuals over time [18], as such research is considered to greatly benefit policy analysis and making of informed decisions in the public sector. However, IRS's big data-driven software has been such a success that 65 new employees working on it have collected an additional 8.4 million USD of revenue per employee [12]. Significance on detecting tax evasion is quite clear having in mind that estimated lost revenue of HMRC (UK tax administration) is 20.6 billion GBP per year, that of IRS 115 billion USD, while as much as 50% of India's economy is in the grey sector [21]. Many other TAs have implemented big data collection and some form of big data analytics, advanced and otherwise – such as the Australian TA, that has allowed access to some of its services by way of SMS, and then online as of 2013, or the Brazilian state of Parana, that has implemented electronic VAT invoicing in order to detect tax fraud [25].

We can conclude that taking into consideration all examples mentioned above, and looking from a data point of view, the real challenge for TAs in the future is not anymore data collection, but big data analytics. Developing algorithms (software) that allow the efficient use of a vast amount of data available, in order to make better (and more efficient) decisions in the public interest, and using minimum resources, are some of the challenges digitalization puts in front of a tax administration in the 21st century.

Using blockchain technology in taxation

Blockchain is a technology that could potentially revolutionize the way we conduct payments, store data and perform transactions, and has the power to disrupt and strongly reorganize accounting and the way tax payments are processed. As the demand for data increases from tax authorities around the world, a key focus of the discussion was how to establish trust between taxpayers and tax authorities. Prerequisite for a high level of trust is transparency. Also, fewer intermediaries in the communication chain mean the higher level of security and lower transactional costs. Blockchain could help TAs solve all identified problems. Blockchain can remove a need for an intermediary by providing a secure, distributed record of online transactions. Technology can trace transactions, verify information, but can also insert business logic into a transaction using smart contracts (computer code which automates the 'if this happens, then do that' element of written contracts) [28]. Main benefits of using blockchain technology in tax administration are transparency, better control (restricted access to network and data), upgraded security, and efficiency (when information is updated, it is updated for everyone in the network at the same time).

Blockchain could be used for transactional taxes, such as VAT, withholding tax, stamp duties, and insurance premium taxes. Blockchain technology could also help with transfer pricing, payroll tax and much more [28]. For example, in most of the developed countries, digitalization process covered payroll taxes. However, there is a number

of government institutions involved in the process. Each institution holds their own register, often duplicating data held by other institutions. Implementing a blockchain can solve that situation. Intermediaries, responsible for calculating and transferring tax and social security payments from employee salaries to relevant institutions, will not be necessary anymore. Technology based on the blockchain could replace some intermediaries [5].

Another example is how blockchain can change the transfer pricing regime. First, blockchain can facilitate the tracking of the transaction and the identity of all involved parties. Documents can be written into a self-executing smart software, eliminating the possibility to be fake. Information stored on the blockchain is visible only to parties that have access to the system. The payments are automatically executed by software if they meet specific conditions [5].

Next example is linked with the possibility to use blockchain technology to upgrade VAT transactions. In most of the countries, VAT is the most significant revenue of the national budgets. For these reasons, tax authorities search for ways to raise efficiency in VAT collection. One of the solutions is implemented in Brazil, where electronic invoices are mandatory and are received by tax authorities in real time. European countries such as Hungary and Poland also implemented real-time VAT reporting solutions. However, the existing system is fraught with a variety of problems. It is highly reliant on businesses themselves to correctly calculate the amount of VAT due and submit it to the tax authorities. Also, the system makes it difficult for governments (if not impossible) to track VAT payments, resulting in fraud.

In the traditional VAT transaction, the VAT invoice is issued by the company, and the client pays the bill including VAT. Information about that transaction is recorded in the company's system. On the other side, the company pays its bills to the suppliers and calculates VAT to pay it to the tax authority. At the end of the process, the company can ask tax refund if they had paid more to the suppliers than their clients paid to the company over the defined period (monthly, quarterly, etc.).

Using blockchain, the process can be shorter and faster. The client pays the invoice to the company. At the same time, blockchain calculates invoiced VAT and divides it into the non-VAT and VAT part. The VAT is paid directly to the tax authority. The company pays the supplier's invoice. Blockchain calculates VAT residual (differences between input VAT and output VAT) and sends it to the tax authority [5, p. 13].

We are still in the very early stages of understanding what blockchain can do for the tax authorities. Using blockchain in full capacity in taxation will call for the important changes in national databases and network systems, but also in the legal system, reforming laws on databases and intellectual property [5, p. 11]. Although the benefits of blockchain technology on a governmental level are hard to overlook, in the long run blockchain can be a driving factor in implementing real-time, automated tax processes for both legal entities and individuals.

Security and tax digitalization

Tax administration digitalization might simultaneously lead to new risks related to data security. As one of the goals of tax administration is taxpayer protection, new mechanisms within the digital paradigm need to be enforced. The recent data breach, such as Marriott (data of about 327 million guests have been accessed by an unauthorized party), Facebook (about 90 million user accounts have been compromised by hackers), Sacramento Bee (personal data of 19.4 million California voters exposed) and other, show the high importance of cybersecurity. Taxpayers' trust in tax authorities is crucial for successful digitalization, and if the population lacks trust, it will be harder to maintain the process.

There are three levels of tax data protection: taxpayers, tax preparers (intermediaries), and tax administration. Most of the attacks on taxpayers are in the form of "phishing" – the use of fake emails and websites to trick individuals into supplying confidential information. For example, emails claiming to be from tax authority which promises a tax refund, but they are actually an attempt to get people to hand over confidential information. Cyber-attacks on tax preparers or tax administration enable gathering data on numerous taxpayers and are consequently more interesting for cybercriminals than attacks on the individual taxpayers.

In the USA, for example, tax preparers have a crucial role and are obliged to create and implement security plans [15]. The IRS has developed a comprehensive checklist on the operation, physical environment, computer systems, and employees in order to assist tax preparers in the development of a security plan [14]. Tax data security challenges have to be assessed at the tax administration level as well. In Norway, for example, the IT security testing of tax administration is often performed by the external independent third parties [29, p. 9].

Besides described cyber-attacks, additional concern on tax data protection relies upon adequate protocols and procedures regarding data access. Namely, tax administration employees might disclose and/or copy individual tax data or aggregate data for the indefinite number of taxpayers if security mechanisms and proper control (actions of all individuals in information system have to be stored; potential to copy and/or send data have to be restricted) is not a part of the tax administration IT system. Also, some protocols for international information exchanges are created such as the Foreign Account Tax Compliance Act (FATCA) in the USA, and the Common Reporting Standard (CRS) in the OECD countries. The most important part of those protocols is cybersecurity.

Norwegian Tax Administration (NTA), based on its experience with international data exchanges and security, is giving to other tax administrations the following advice:

- "Build the necessary foundation for trust by implementing layer upon layer of both technological and organizational security concerning the protection of the integrity, confidentiality, and availability of the information received;
- Use the planned exchange of international tax information strategically in your communication with the population. Target specific segments of the population with well-chosen appeals to nudge their behaviour towards compliance and pursue other segments vigorously with adequate measures.
- Do not underestimate the time and effort necessary to test both your own IT solutions and the information you will receive from other jurisdictions..." [29, p. 9].

Of course, it is not possible to be 100% protected, but the security risks must be analyzed and managed. For example, the Spanish Tax Agency (AEAT) has accepted the Corporate Risk Map for the analysis and management of different kind of risks, based on Enterprise Risk Management methodology[3] [27, p. 11]. They also created an internal security unit, in addition to external security consultants, which analyzes the impact of data security on tax administration digitalization projects.

Digitalization of the TA in Serbia

Serbia is still at the beginning of the TA digitalization process. According to the World Bank Doing Business Report, Serbia is ranked 79th according to the "paying taxes" indicator, although in the total "doing business" score it is ranked 48th out of 190 countries. At the same time, paying taxes is one of the three worst indicators for doing business in Serbia, out of ten measured by the World Bank [32]. Digitalization, as a part of the tax reform in Serbia, is essential for reducing the cost of doing business, and productivity increases of both private and public sector.

State of play

Some first steps in the TA digitalization in Serbia were done by introducing mandatory online communication between the TA and cash registers (June 2005) for all legal entities.[4] In mid-2011, the TA started a portal ePorezi (*e-Taxes*). Through that portal, taxpayers can submit various tax reports. The first three tax forms for which it was possible to file a tax application through this service were VAT for legal entities, property tax, and payroll taxes. In the beginning, taxpayers were obliged to fill out the form, in order to register for ePorezi, and submit it personally to the Tax Administration in paper form. Later on, the TA reviewed this procedure, and taxpayers are now able to register for online tax applications electronically.

The new service ePorezi has revealed some main drawbacks of e-tax services in Serbia in general – an

3 See more about ERM on https://www.theirm.org/media/886062/ISO3100_doc.pdf.

4 Exceptions for very small enterprises and for some specific sectors (lawyers, taxi drivers, etc.) are defined by the Law.

obsolete system architecture. For example, authentication requires the use of an electronic signature, stored on a national ID card's contact chip, which is a standard practice. Still, anyone trying to access these services requires an additional piece of hardware, a smart card reader, which is not a part of any standard home/office configuration. While reasonably cheap and easily accessible, the smart card reader is something only more tech-savvy users will purchase and install at home or work. This effectively reduces the number of potential (individual) users. Furthermore, obtaining this electronic signature on the national ID card is free of charge, but (another) visit to a local police station is a must, as e-signature is not installed by default when an ID card is issued. This is also why many taxpayers who would be willing to test drive the system and perhaps use it in the future, opt out. The system architecture and security features are designed in such a way that these electronic signatures can only be used from a Microsoft Windows-based computer. This excludes from using these services ever-growing population of those who use their smartphones and tablets as their primary (or only) computer, or those who opt to use a different operating system, such as Linux or iOS. This can be changed by introducing cloud-based services.

The portal ePorezi also has a peculiar weakness, quite unusual for a digital online tool – it has working hours. The ePorezi portal is unavailable during the night, when it goes down for around six hours due to "regular maintenance", making it effectively accessible 75% of the time. Also, its capacity seems to be inadequate, as it sometimes crashes during peak days;[5] still, the Tax Administration does not extend reporting deadlines by default due to unavailability of its online portal, as reporting can be done in paper form or via post as well. This introduces uncertainty in the exclusive use of online tools and requires having alternative ready, placing an unnecessary burden on businesses and citizens.

As of January 2019, taxpayers can submit most of the taxes online. They can also see the current status of tax debt by tax forms. This is a good step forward. However, individuals have not seen much of an improvement with digitalization, except in terms that they are now able to use the digital form for submitting a tax application (vs. visiting the local tax office or sending an application by post). In fact, the Serbian TA needs to incentivize users to switch to digital by providing new services and improved functionality and for example, delivering tax returns, a detailed list of payments by taxpayer and tax form, tax history, etc.

However, we need to have in our mind that the best results regarding user penetration were achieved when people or businesses had been legally compelled to change over how they communicate with the TA [7]. In fact, most countries have not resorted to making an e-application mandatory until the percentage of electronic submissions has not reached a very high level – 97.4% in Portugal [3, p. 33] and 74.4% in Slovakia [10, p. 30], to name a few. Some European countries still do not mandate exclusive use of digital tax reporting.

To help in that process, it is important that TAs set a clear objective and follow it. Changes in objectives can result in a lack of trust. For example, digital reporting of the annual personal income tax in Serbia became mandatory five years ago. However, since 2016, the process has been reversed, and the self-reporting of annual PIT has also become possible in person or by post. This has led to a significant, steady and ongoing decrease in the number of electronic submissions. Lesson learned from 2015 when the TA introduced mandatory electronic submission of annual PIT shows that it is possible for taxpayers to submit an online application. However, when the possibility to choose between electronic and paper form were introduced again, most of the taxpayers used the second one.

Another example – VAT application – shows the opposite. Taxpayers were able to communicate electronically with the Tax Administration and submit VAT application starting from June 2011. The process was slow in the beginning. In November 2012, the Tax Administration received electronically only 0.36% of the total VAT applications submitted. One year later, the TA received 12% of VAT application electronically. Finally, in July 2014 all VAT applications were filed electronically.

5 It is usually not the portal itself that crashes, but its web interface, reporting errors 500 (internal server error) and 504 (gateway timeout error).

Reporting the payroll taxes is another example of successful digitalization process.[6] Starting from 1 March 2014, a system of centralized collection of the payroll tax implies that a tax application for payment of taxes and contributions to salaries and other remuneration of employees can be submitted exclusively in electronic form. The effects of this reform were numerous. First, the possibility of paying payroll tax on one payment account, instead of 20 different accounts in the previous period, was introduced. This has led to significant savings both for the state and for taxpayers and commercial banks. The World Bank estimated that, on this basis, the annual costs of the business of all legal entities were reduced by about 13 million euros. On the other hand, given that the TA processes about 300,000 payroll tax applications per month, the need for a significant number of employees in the TA (estimated around 400) has been dropped. Those employees were allocated to other duties (tax control, monitoring, evaluation, analysis, etc.). After this reform, it is no longer possible to pay off earnings before taxes and contributions are paid. About 200,000 employees became more secure. The errors that were large in the case of paper reports in the previous period were reduced, which led to an increase in the efficiency of the TA.

Most of the observed problems can be solved with legal changes (i.e., system working hours) or with infrastructure investments. Lack of available data can be solved by creating a single database that would connect databases of tax administration, pension insurance fund, health insurance fund, unemployment fund, customs, police and cadastre. This step has already been started by creating the State Data Centre and the information system eZUP. Most of the state institutions are storing or sharing their data through this system. This is an underlying assumption for the big data and advanced analytics, and the first step of the so-called "on-line" control and tax collection. The new system, eInspektor is one of the examples of automation of the work of state services. Primary goals are the coordination of the work of state inspections, raising the efficiency of supervision, standardization of the work of inspections and access to data by all inspections. The project is still in the pilot phase, but when it finishes, 41 inspections, including tax inspection will be involved.

Important steps are done in the area of security by creating the National Centre for the Prevention of Security Risks in the ICT Systems of the Republic of Serbia (CERT). The main task of the CERT is to provide data security of Serbian national ICT infrastructure. This includes "effective response and resolution of incidents when they occur, preventive activities in order to minimize the number of possible incidents and raising of awareness of state authorities on ICT security" [31].

Next steps

What are the possible next steps in the TA digitalization, based on previous analysis? First, the TA needs to clearly define digitalization objectives (both in the short and medium term). In Serbia, the objective can be to reach the level of digitalization of Hungary, Poland or the Czech Republic (full process automation, e-accounting, pre-population of as much as possible tax forms, advanced analytics, etc.). Second, as digitalization has an impact on different sectors, it is necessary to cooperate with other government stakeholders. Services like eInspektor or eZup are good starting points. Third, the TA needs to be fully transparent to the taxpayers in this process, to try to consult them and to put the effort in order to implement their suggestions as much as possible. Finally, a partnership with the private sector solution providers from an early stage can also be helpful for reducing costs for both the TA and taxpayers. However, above all of that, successful digitalization demands investment in new competences and skills (i.e., more technical and IT skills), changing employment structure (more people capable of working with new technologies), and major organizational changes in the TA (centralization of some functions, new sectors, etc.).

Starting from possible objectives, in the short term, the full process automation of data collecting and sharing needs to be finished. Services such as the State Data Centre and eZUP need to be fully implemented and used by the TA. Also, the TA needs to create all the

6 Payroll tax in Serbia is composed of the national tax on personal income, and pension and health insurance contribution.

necessary conditions to use services like e-Payment or e-Inspector which are not in use now. Technical and legal preconditions for that step exist. Law on tax procedure and tax administration needs to be amended in order to support digital tax receipts, online payments, etc.[7]

The portal ePorezi needs to be upgraded to be able to work on different platforms and operating systems. Online applications need to be mandatory for some tax forms. In the beginning, online application and online tax report for annual PIT for individual taxpayers is possible after minor legal adjustments. Also, in the period between 6 months and one year, all online communications with the TA need to be mandatory for legal entities. That would require some changes in the TA, especially on the organizational level. That will enable accurate and precise tax accounting, so that the TA, but also every taxpayer, has a daily electronic insight into the state of their tax account (in all tax liabilities). The uncontrolled accumulation of the debt of certain taxpayers will be avoided, and the costs of administration both for the TA and for taxpayers will be reduced.

The next possible step is pre-population of some tax forms, and that can be done with just a few legal adjustments. At this moment, it is partially doable because of intersystem connectivity through the State Data Centre and the access which the TA has to both financial and personal data of its users. The TA has been already receiving most of the information needed directly from third parties such as employers and banks. Thus, the TA has all the data necessary to pre-populate the form and leave it to the user only to double-check it, or to add a missing income, which is the subject of self-reporting. In Estonia, for example, about 95% of tax returns are done through e-filing. The country offers one-click tax return, where the taxpayer just needs to verify and submit, and receives a refund in 5 days [13, p. 9]. Serbian TA has all technical prerequisites to do the same. Based on experience from Finland, the information received from third parties has such a wide coverage that the pre-filled tax return is, in fact, the final tax decision for 80% of the individual taxpayers [11, p. 9]. It is also necessary to leave the possibility of reviewing tax application, but this could also be done online.

The process can be started immediately with a pilot test of a very limited form of a pre-populated return involving one segment of taxpayers. Property tax application can be a good example. Notaries (and courts) are required to notify the TA on any changes of ownership of a real estate in the country, and they forward all the data needed to fill out the tax application with this notice. However, the TA only sends out a warning to a taxpayer notifying them they need to apply to pay the property tax (and eventually file charges if warnings are ignored). The TA is unable to assess the tax without this application, even though no new data will be available in the application.

Another good example for pre-population in Serbia is annual PIT. At this moment, all data required for annual PIT evaluation are received by the TA from third parties (employers must send all payroll tax information to both taxpayers and the TA). Taking that into consideration, we think that this tax form can also be easily pre-populated. By starting a small pilot project covering these tax forms, and on the basis of the data received from third parties, the TA can send the pre-filled return to the taxpayers. Based on this pilot test results, the TA can do the same for other self-reported tax forms.

One of the next possible steps in the TA digitalization process, discussed for many years in Serbia, concerns online cash registers which send data about transactions to the TA in real time. Although controversial in Serbia, comparative data suggest that introducing online cash registers opens many possibilities in the areas of fighting the grey economy, tax audit and data mining. For example, as Hungary introduced relevant legislation, upwards of 200,000 online cash registers have been installed, and they transmitted over 10 million pieces of data daily to the Hungarian TA [30, p. 36]. In this way, the Hungarian TA avoided cases when there was only one cash register at a store which was "under repair" for extended periods, where the cash register was seldom used, or when receipts were issued, but under a false or obsolete VAT number. Apart from such obvious improvements, advanced data mining is also available, and TAs can make the use of big data available to them – such as targeting specific

7 Detailed analysis of necessary changes should be undertaken.

establishments that do not show increased activity when their next-door neighbours do, particular businesses in particular weather and the time of day, and at a certain location (i.e., ice cream vendor at a river bank during a hot summer day), etc. This data can even be cross-referenced with the number of employees for whom business is paying contributions – if there are three cash registers operating and sending data, but only two reported employees, then such vendor would be a potential candidate for an audit. Hungarian TA recorded a surplus of around 630 million euros in one year after the introduction of online cash registers.

Similar examples can be found in some other countries in the region. Croatia, for example, introduced online cash registers in 2013 using some form of an online digital certificate and specialized software solution. The certificate is used for digital signing (registration) of receipts and subject identification during online data exchange with the TA. The receipt needs to be certified before it is printed and delivered to the customer. After issuing a receipt, the software automatically sends all data in real time to the TA. The lack of Internet can cause problems, as during this offline period receipts are signed with a certificate but not sent to the TA. To prevent possible frauds, strong enforcement methods and trained personnel are in place. Using this model, the Croatian TA achieved excellent results in the field of tax collection and fight against the grey economy. Similar models are used in Slovenia and the Czech Republic.

In the medium term, and after online fiscalization, organizational changes and infrastructure investments mentioned in the previous part, and advanced analytics is something TAs can start to use. That can lead to the improvement of tax accounting and creation of the e-accounting system. Changes include a broad range of accounting and financial information, i.e., general ledgers, trial balances, and journal entries, etc., submitted in electronic form monthly or quarterly. Such actions can help TAs to be more strategic, to predict possible tax debt, and prevent other problematic situations (i.e., tax fraud). This should be the first phase of future e-audit. In order to reach an e-accounting level, TAs need to invest more in digital capacity and expertise.

Next step is to understand better taxpayers' needs and specificities and to classify them in different groups (not only by size) in order to offer them better and more adequate services. The TA can start using social network analysis on the basis of EU and UK experience. Advanced analytics can also be used for different types of models which can simulate potential reactions of taxpayers on policy changes. That is one of the crucial steps for the success of the digitalization process.

Finally, since our digitalization process is at the beginning, we can use experience from other countries and other sectors and try to jump a few steps forward – for example, possibilities for using blockchain technology. Creating a national data centre based on the existing technology can be, on a certain level, the limitation for further development. In that sense, it would be helpful to launch a pilot project on using blockchain in VAT transactions. This pilot project is important to resolve questions as to how blockchain changes tax administration, what legal changes are necessary to support blockchain, how tax data can be made fit for blockchain, which accountant and auditor standards we need to change, and many other questions. One of the possible gains from using blockchain in VAT transactions is the elimination of tax returns, which is an important step toward digitalization of the TA.

Concluding remarks

Serbia is still at the beginning of digitalization of the tax administration. Starting from Ernst & Young analysis of levels of digitalization, the TA in Serbia is somewhere between level 1 called "e-file" and level 2 called "e-accounting" [9, p. 2]. That is the level in which legal entities or individuals are required or have the option to use a standardized electronic form for filing tax returns. Also, income data (i.e., payroll, financial) are also filed electronically and matched annually. In the e-accounting level, corporate entities are required to submit accounting or other source data to support filings (invoices, trial balances, etc.) in a defined electronic format at a defined frequency. This is not done yet for all tax forms, and Serbia is lagging behind compared with other CEE countries. For example, Hungary or Poland

have already reached the e-accounting level of the TA digitalization.

Still, from the existing digitalization process, we need to shift to a level in which the paradigm of the process is completely changed. That is the level in which legal entities and individuals are required to submit additional data, and the TA also starts to assess external sources data (i.e., bank statements). The TA begins to match data across tax types, potentially across taxpayers and jurisdictions in real time or near real time. On the next step, all data are analyzed by the TA and cross-checked to filings in real time or near real time to prevent fraud, unintended errors, and to map the geographic economic ecosystem. The TA sends taxpayers electronic audit assessments with a limited window to respond. The final phase of digitalization, called "e-assess," is the level in which TAs use submitted data from individuals and legal entities to assess tax without the need for tax forms. Taxpayers have a limited window of time to audit government-calculated tax [9].

We concluded that digitalization could help the Serbian TA, in the medium term, to close the efficiency gap and converge faster to the highest EU standards, but also to make doing business in Serbia more competitive. Some countries (emerging markets especially) may jump from zero to advanced in a very short period using new technologies in tax administration (good examples are Ireland or Estonia). Others may be struggling with legacy systems, and the progress may be slower. Serbia is now at the point where the TA needs to choose which way of digitalization it will take.

In the end, there are some open questions regarding the digitalization process. Although most of the individuals and businesses in the future will be digitalized, there will always be some groups that may never use modern technology: elderly, those living in the locations with limited access to the Internet, industries that have less access to technology, people with less confidence in technological changes, etc. They will still require support, and the TA needs to service them as well. That leads to a different segmentation of taxpayers by identifying similar behaviour patterns. That will help the TA to predict which taxpayers will use certain types of services, how to address them, and what additional support they need. This is especially important for the younger population (future taxpayers) and intermediaries (accountants, tax advisors).

How digitalization will influence "taxpayer morale" is the next open question. One of the key considerations for tax administrators is that if taxpayers are operating in a user-friendly environment where they know that all tax activities are transparent and safe, will that significantly reduce tax evasion? If yes, digitalization may also be branded as a part of government's efforts to fight against illegal economy and corruption as well.

Last question, but not less important, is security. It is true that new technologies can raise efficiency and transparency, but are all taxpayers (especially corporations) ready to go public with the level of taxes they pay? Also, having all data online makes businesses more exposed to possible frauds. Recent examples have shown that more data leaks than ever before. The question is, do the digitalization and new technology also bring a new level of security? Answer to that question is still not clear.

Acknowledgments

This paper is part of the project "Advancing Serbia's Competitiveness in the Process of EU Accession," no. 47028, in the 2011-2018 period, financed by the Serbian Ministry of Education, Science and Technological Development.

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