

Terminal for Remote Sensing in Tax Administration

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Abstract - Reform and modernization of tax administration based on the extensive use of ICT is one of the key elements of the overall transition of the Republic of Serbia into the modern information society. The introduction of modern information systems increases the quality of services and improve efficiency, transparency, accountability and effectiveness of tax administration, all in order to ensure effective collection of taxes. Information technology allows the tax administration to more easily manage the tax system, through the establishment of rapid access to important information about the risks of managing and providing a higher degree of transparency of internal processes, thereby reducing risks to the administration. With a terminal for remote sensing, it is possible to get in a relatively short period of time information on all taxpayers who have not timely filed tax return or made a payment of tax.

Keywords: Information technology, Tax Administration, terminal for remote sensing

I. INTRODUCTION

Law on Tax Procedure and Tax Administration provides for the fundamental rights and obligations of taxpayers and tax administration as well as key business processes in tax administration, including the important role monitoring of tax liability, risk management, control and investigation of taxpayers. [6] The overall aim of the control is to taxpayers through efficient control and effective mitigation of tax risks provide a fair tax regime in the country. In order to achieve this it is necessary to (a) establish a system for monitoring the settlement of tax obligations and risk assessment, (b) defining the adequate approach taxpayers based on a detailed risk assessment and segmentation of taxpayers, and (c) the design and implementation of an effective system for the collection debt.

Program performance inspection, checking and verification of the legality and regularity of meeting tax obligations performed by the Tax Administration, is usually based on different data sources with the use of control methods. The control program it is important that the scope of the taxpayers who are subject to a control procedure based on selective, quantitative and comparative criteria, and the process begins by checking the tax returns and payments due from the taxpayer in the prescribed time.

Information technology is facilitating the efforts of the Tax Administration to administer the tax system, through

the establishment of rapid access to important information about the risk management and ensuring a higher degree of transparency of internal processes, thereby reducing risks to the administration.

II. TAX ADMINISTRATION REFORM

Tax reform after the 2000th has contributed to a significant increase in the transparency of the tax system, its decentralization and adaptation needs of the market economy, but it is nevertheless necessary that the trend continues, primarily to ensure effective tax collection. The current information system of the Tax Administration was not developed to a degree that would enable the desired level of support for all key business processes, including the control and management functions.

For all core business processes, it is necessary to collect the minimum amount of data to achieve efficiency and effectiveness of the process. [2] Data collected at a common place (Data Warehouse) should be available to managers at all levels of the Tax Administration. Also, the data should be available and the organizational units and agencies within the Ministry of Finance for the purpose of performing a variety of analyzes, particularly analyzes the macroeconomic and fiscal developments with the assessment of the effects of laws and other normative acts and measures of economic and fiscal policy. The primary goal is to develop a data warehouse infrastructure (EDW), and providing interfaces for key business processes in order to achieve communication with the EDW, which should make an integrated and consolidated data Tax Administration and other government agencies and organizations that provide unlimited opportunities for analysis data. Data analysis to support risk analysis process in tax administration, which are a prerequisite for the control of the taxpayer and more efficient use of internal resources.

In addition to providing management information for Tax Administration, Ministry of Finance, it is necessary to provide a system for risk analysis that provides a new approach to control the activities of Tax Administration based on risk analysis and automation of the election subject to control. The development of profiles of taxpayers according to the level of risk, impact on

reducing the time required to administer the revenues and the number of tax evasion or fraud. [3]

Through simplified administrative procedures attempt to provide timely and quality data management and control of public revenues [1] and thus contribute to the modernization and efficient operation of the Tax Administration.

Management at all levels of Tax administration based on planning business processes and resources needed for different time horizons and different activities. Management processes should have comprehensive information on what is happening in the Tax Administration in management information systems.

Management information system should make the following changes: [4]

- Establish a new approach to planning and conducting control activities Tax Administration implementation of the control system based on risk analysis and segmentation of taxpayers and the development of profiles of taxpayers according to the level of risk,
- Strengthening of tax control and increase the efficiency of tax inspections,
- Strengthen the function of the tax police in the detection of tax crimes and their perpetrators,
- Reduce the time required for the administration of public revenue and reducing tax evasion and fraud,
- Speeding up decision-making through the provision of high-quality reports on operational management,
- Improve business process planning tool availability of quality data about the performance of business processes with the ability to obtain quality analysis and statistical review.

The goals of management information system related to improve the overall performance of Tax administration by collecting information about the activities of various business processes, providing access to information to all responsible managers at all levels of management.

III. THE IMPORTANCE OF THE TERMINAL FOR REMOTE SENSING

Terminal for remote sensing is used for wireless transfer of data of daily reports from the cash register, for a given period, to the server in the Tax Administration, through the GPRS mobile phone network. On the basis of data transferred will be easy to determine which of the taxpayer failed to comply with its legal obligation, and therefore will reduce the need for direct control by the Tax administration.

GPRS terminal for sensing the cash register has two basic functions: (a) connection to server Tax Administration for wireless transmission of daily reports and (b) the relationship with the owner of the cash

register work of updating the list of items, tax rates and the like. [5]

Communication between the server and client side is authenticated and encrypted, protecting the system from abuse. Communicator occupies the same area as the cash itself, is under the counter and it makes a whole. The system components are:

1. Client side:

- Cash register,
- Communicator ITGcc-0x,
- Controller ITGcc-03A,
- Controller ITGcc-03B,
- Controller ITGcc-03C with built-in GSM / GPRS modem.

2. Server side:

- The central computer equipped with the program administrator,
- Communication subsystem with the required number of GSM or standard modems.

The communicator over fiscal report at the request of the operator panel. This report, as well as reports on the volume of sales, delivery server application that can come at any time. In the same way, a server at an arbitrary time table items delivered communicator which then updates the cash register.

Basic features of this solution are the following:

- Download daily fiscal reports,
- Download daily reports on sales volume for sold items and operators,
- Database update items in the cash register (adding and deleting, and changes in prices and tax rates of individual items),
- Generate fiscal reports requested by the server without the active participation of operators,
- Receipt of reports on the volume of sales of all items from the last day of the fiscal reports to the moment generating requirements,
- Getting reports of a certain volume of sales items from the last day of the fiscal reports to the moment generating requirements,
- Minimum commitment and skilled operators to trot,
- Currently up to date sales information at the cash register,
- Communicator can store in its memory up to 7 daily fiscal reports and 7 daily reports on sales volume. [5]

The communication between server of the Tax Administration with the terminals is carried out in several steps. Cashier daily report form to be entered in the fiscal memory and then pressing the button on the terminal before the expiration of a specified period for sending daily reports. Terminal automatically activates visual indication no. 1 and thus the need to remind the cashier pressed, at least 12 hours before the date and time for sending daily reports, which are received by the previous

command (manually activate the daily reading of the report of the fiscal memory). If it comes to automatic reading the daily reports from the fiscal memory terminal automatically detects the completion of the formation of the daily report at the end of each working day. After that, the terminal sends the fiscal cash register command to read the daily reports from the fiscal memory (via RS232), based on any kind of activation read daily reports from the fiscal memory.

Terminal reads the fiscal memory (RS232 interface) (a) if the cash register allows reading the last daily report of the fiscal memory, then at the end of every working day reading the last daily report of the fiscal memory and writes to memory terminals, (b) the cash register allows reading of all daily reports in a given period of time, then just read these daily reports and saved in the terminal, and (c) inhibit the cash register just read the entire fiscal memory, then read the entire fiscal memory, wherein the terminal ignores all readings daily reports are not intended to send, and allocates the read daily reports in a given period of time, which are intended to be sent. During Fiscal memory triggers a visual indication no. 2, which means that reading the fiscal memory is in progress.

Terminal formatted readings daily reports that are designed to send in unique formats, identical for all cash registers which includes turnover of the tax rates, data resetting and specify tax rates, and keeps them in memory buffer for sending via GPRS networks. During formatting and submitting daily reports via GPRS activated visual indication no. 3, which indicates that daily reports are not received correctly in the server of Tax Administration. All terminals in the network of mobile operator to pay a single IP address, which may be the address in server of the Tax Administration or a router that forwards traffic to the server Tax Administration.

Due to the large number of terminals to communicate and dynamic addressing, server of the Tax Administration connects directly to the GPRS logical node and is in the network service provider. Terminal at a given point in time given the date activated PDP context using the recommended standard FTP commands and sends the formatted sections daily reports as files over GPRS network to the server Tax Administration, according to the previously received command. Terminal reads the ftp message that consists of server response code and the Tax Administration with additional explanatory text file containing commands to define the next sending daily reports. Recommended batch file is immutable and contains a command to send daily reports of all starting from a daily report from the last daily report is sent correctly, the number of days between two successive sending data in server of the Tax Administration, and the time starts sending data.

If the terminal does not convey the correct information in the given point in time (due to, for example, system updates), the terminal after a predefined time (eg. 2 minutes) again sends daily reports, and not

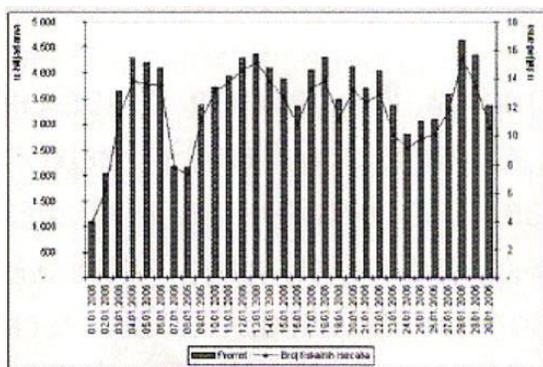
more than 2 times. If you send daily reports or were not properly received, the terminal will attempt to send daily reports on the following day at the same time. After successful communication with the Tax Administration server, terminal disables visual indication no. 3.

TABLE I. THE MINIMUM GENERAL TECHNICAL REQUIREMENTS

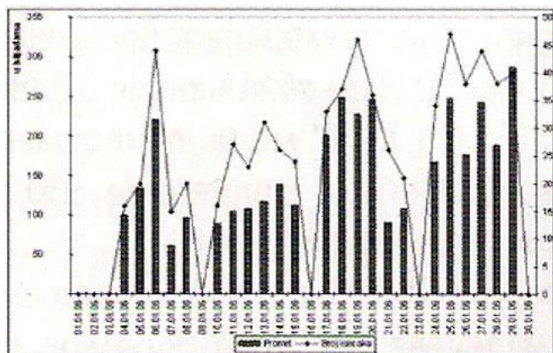
Request	Meaning
Type of wireless network	GPRS
Real-time clock	Yes
Connection with fiscal cash registers	RS232
At least one connection to enhancement	RS232, so the additional device logically related to the fiscal trot when the terminal is not communicating with fiscal cash registers
Visual indication no. 1	Request for pressing the terminal, if it exists
Visual indication no. 2	Fiscal memory is in progress
Visual indication no. 3	Daily reports are received correctly in the server IRS
Reset	Delete command in the terminal
External Antenna	Connection option for areas with weak signal
Sealing	The seal prevents unauthorized access to the hardware and software of the terminal and SIM card
Update software terminal	Replacing the EPROM memory or through the internal connector or through external connectors in combination with an internal jumper in the case Flash or EEPROM memory
Mains supply	220 V - 15 % ... 220 V + 10 %
Temperature range (min)	0 °C ... 40 °C
Range of storage (min)	-10 °C ... 50 °C
Humidity	(90 ... 95) % at (40 ± 2) °C

Based on the received data via GPRS terminals on recorded transactions at cash registers, can reliably determine a taxpayer who does not record all traffic through the cash register and not issued fiscal snippets. Data on registered taxpayers traffic arriving on the same day to the central tax administration, regardless of where the cash registers in Serbia. After collecting data on recorded transactions at the cash registers, the Tax Administration the selection of taxpayers to be subject to tax control. Example of using GPRS data in the Tax Administration can be seen in the comparative data of three different taxpayers from certain groups of activities, based on which we can see the trend of recording over cash registers and issuing fiscal clippings, within a period of one month.

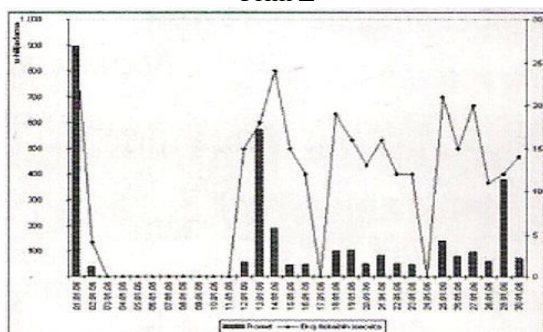
Firm X



Firm Y



Firm Z



IV. CONCLUSION

Management information system of tax administration contributes to improving the capacity of the tax administration relating to the activities of control and collection of tax revenue, as well as the capacity relating to the affairs of detecting tax crimes and their perpetrators, and performed by the Tax Police. Improving the management of the budget and fiscal management, capacity building control and collection of tax and customs administration contributes to the consolidated revenue collection for the consolidated budget of Serbia, it seems coherent tax policy at central and local levels and improving cost management.

The main objective of the introduction of fiscal cash registers to create level playing field for all who are engaged in the trade of goods, reduction in the level of underground economy and increase revenue in the budget of the Republic of Serbia. In addition, the terminal for remote sensing provides the taxpayer wireless remote commands to fiscal cash register, such as the unit of measurement of price changes, update the database, read the list of products sold or services performed, etc.

The introduction of cash registers and terminals for remote sensing data is completed fiscal process in Serbia and thus are able to be more efficient and cost-effective way to conduct audits of taxpayers.

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The taxpayer is required to terminal for remote sensing at the time of the cash register keeps attached to the fiscal coffers through its interface. It is also necessary that the taxpayer provide the reading of all daily reports from the cash register during the given period using a terminal for remote sensing. It is particularly important to stress that the presented trends likely to find a taxpayer that is not recorded in the cash register and not issued fiscal snippets.