Spreadsheet Application for Determining Activity Priority of Control and Inspection Authorities

MAJA JOVANOVIĆ, SLOBODAN ANTIĆ & LENA ĐORĐEVIĆ MILUTINOVIĆ

Abstract The research objective of this paper is to analyze the complaint evaluation and management process, required for inspection control carried out by state control bodies. In response to identified needs of state bodies, related to initiating the official inspection control procedure, which implies complaints consideration and justification of statements made in the petition, as well as the petition evaluation procedure, the authors of the paper propose development of corresponding spreadsheet application. The application should facilitate and improve identification and quantification of activities and subjects of control characterized by significant risk, and in which there is significant public interest, i.e., eliminate possible misuse of complaint. The paper shows the direct contribution of automation to more efficient limited resource management of state bodies in the Republic of Serbia.

Keywords: • inspection planning process • risk assessment • spreadsheet application • evaluation of petitions • efficient management

CORRESPONDENCE ADDRESS: Maja Jovanović, M.Sc., Senior Advisor, Ministry of Finance of the Republic of Serbia, Kneza Miloša 20, Belgrade, Serbia, e-mail: maja.jovanovic@mfin.gov.rs. Slobodan Antić, Ph.D., Associate Professor, University of Belgrade, Faculty of Organizational Sciences, Jove Ilića 154, Belgrade, Serbia, e-mail: Slobodan.antic@fon.bg.ac.rs. Lena Đorđević Milutinović, Ph.D., Associate Professor, University of Belgrade, Faculty of Organizational Sciences, Jove Ilića 154, Belgrade, Serbia, e-mail: lena.djordjevic.milutinovic@fon.bg.ac.rs.

https://doi.org/10.4335/2023.3.26 ISBN 978-961-7124-14-9 (PDF)
Available online at http://www.lex-localis.press.

1 Introduction

With the adoption of the systemic Law on Inspection Supervision in 2015, the reform of inspection supervision was formally initiated in the Republic of Serbia (Stefanović et al., 2017; Rapajić et al, 2021). The law defines modern inspection standards and common rules and procedures for all inspections. The law introduces novelties, and among other things the obligation to plan inspection supervision and conduct supervision in accordance with the risk assessment. One of the essential missing links in the risk-based inspection system, aimed at making the law enforcement more efficient, is the specific criteria for the risk assessment. In the process of reforming inspection supervision, i.e. implementation of the system Law on inspection supervision, several analyses of the current situation in the field of inspection supervision were conducted. It was concluded that, in order to harmonize inspection practice, it is necessary to develop and adopt models of appropriate procedures for the work of inspectors. This especially important when there are already a number of related doubts about how to act. One such procedure that was concluded that it is necessary is a procedure that would refer to the assessment of petitions (i.e., applications), which come from third parties and initiate inspection supervision. It has been suggested that for the assessment of complex petitions it is expedient to form teams, which would triage petitions and assess the risk arising from them, since more complex petitions require knowledge and experience of several persons, which should be determined by the above procedure.

This paper provides a solution to the previously described problem. In particular, the paper deals with a procedure for the assessment of petitions proposed based on the risk assessment arising from the petition. The whole process is automated and implemented into the application that replicates the risk assessment of petitions and determines priorities in the actions of the authorities.

The aim of the research was to develop a tool in a spreadsheet environment which enables the prioritization of activities and entities, carried out on the basis of the established risk degree in the procedure of assessment of petitions. This aim was set at the very beginning of the research and was successfully achieved, so the model developed by the end-user gives the possibility of objective assessment of petitions and determination of priorities in acting proportionally determined risk. The model that has been developed represents the basic version and it is possible to develop and improve it in several directions, which will be discussed in the final part of the paper.

Starting from this point, the paper is organized as follows, after the Introduction, Section 2 presents research and analysis of the situation in the field of planning inspection supervision in which the problem of non-compliance of the authorities with the legislative framework and ways in which compliance can be achieved are illuminated. Section 3 describes the objectives of the research, while following Section 4 considers shortcomings and limitations of procedures for assessing petitions that are currently in

use in one of the inspection bodies in the Republic of Serbia, which was the premise of a detailed analysis. The proposed procedures are applicable to other inspection and control state authorities (republic, provincial and local inspections, the Anti-Corruption Agency, and other control bodies). Section 5 illustrates the development of the application based on an innovative methodology for the evaluation of petitions. Concluding remarks appear in Section 6, followed by future research directions.

2 Background

The basic starting point for the research related to the topic of this paper is legal regulations, primarily the Law on Budget System, the Law on Inspection Supervision and the Law on State Administration and their bylaws. Legal regulations are analyzed or logically completed and presented in a pre-existing environment. In addition to legal regulations, the basic starting point for the preparation of this paper is the Risk Assessment analysis of risk management and risk notification (BCRR, 2016), Planning Methodology of Inspection Supervision (BCRR, 2018), as well as the Methodological Guide for the analysis of the required number of inspectors for performing inspection supervision and performing official advisory services (USAID, 2017), Analysis of factors and other analyses and instructions of the Ministry of Public Administration and Local Self-Government as well as expert methodological instructions published on the website of the Coordination Commission (https://inspektor.gov.rs).

The adoption of the law is only the beginning of improving the work of inspections. In order for the law to achieve its purpose, proper implementation, i.e. compliance with the norms prescribed by the law, is necessary. To ensure compliance with the norms introduced by the reform of inspection supervision, and primarily by the adoption of the Law on Inspection Supervision, the Ministry of Public Administration and Local Self-Government has implemented the project "Analysis in the process of implementing the Law on Inspection Supervision", which includes, among other things, the party "Improving planning of inspection supervision (Part 2)". Within this process, through the cooperation of USAID BEP, the Coordination Commission and republic inspections, 147 special laws were analyzed and, of them, 117 were determined to be amended and/or amended. One of the essential missing links in the risk-based inspection system, to make law enforcement better, is the specific criteria for risk assessment. The Anti-Corruption Agency in the Model of the Local Anti-Corruption Plan, as a preventive anti-corruption mechanism, also speaks about this, in the part related to inspection supervision, anticipating the need and obligation to adopt / establish special criteria for risk assessment in the field of inspection supervision. To achieve legal completeness and to achieve full effectiveness in risk assessment, regulators in specific areas should be in accordance with Article 9(10) of the Treaty on the Functioning of the European Union. In accordance with Article 10 of the Law on Inspection Supervision, special elements of risk assessment are prescribed or determined in special laws and general acts, and this also includes specific criteria, i.e. general criteria from the Law on Inspection Supervision, which are

concretized and adapted according to individual areas of inspection supervision, and possible additional special criteria, i.e. other special criteria when required by regulations, standards and recommendations of the European Union. In addition, research has shown that there is a discrepancy in the conduct of inspection bodies and that there is a need to adopt a model of appropriate procedures for the assessment of petitions. The spreadsheet application proposed in this paper provides a solution to both problems, i.e., a proposal for harmonization of the budgetary inspection procedure with the legislative framework and a proposal for the procedure for assessing petitions that is applicable to all state authorities, and could accordingly ensure uniformity of inspection practice.

3 Planning of inspection supervision, procedure for evaluation of claims and determination of activity priority of budget inspection

3.1 Research objectives

The development of the application described in this paper arose in response to the expressed need of state bodies that when initiating the procedure of official / inspection control consider complaints (reports, requests, warnings of state bodies and other initiatives to initiate the procedure) and assess the justification of the reasons for initiating the procedure, state the statements made in the petition and conduct the petition evaluation procedure (Republic, provincial and local inspections, the Anti-Corruption Agency and other control bodies). Therefore, to initiate the procedure of inspection or official control, it is necessary to evaluate the allegations presented in the petition, i.e., to conduct the procedure of assessment of the petition.

The evaluation of petitions aims to identify supervised entities whose illegal actions can cause significant negative consequences for the public interest, goods and rights protected by law, i.e., it is necessary to identify users and activities that carry significant risk and include them in the work plan. The purpose of the entire procedure is to assess the justification of initiating the procedure of inspection or official control.

The analysis of the procedure of management and evaluation of petitions conducted by individual inspection bodies has identified several areas where there are certain inconsistencies and deviations from standardized procedures and identified opportunities for improvement and automation of procedures that will be the subject of this paper. The basic hypothesis (H0), on which the research is based, is that the development of spreadsheet models for the evaluation of petitions enables users to identify and quantify the activities of the subject of control that are characterized by significant risk and in which significant public interest is present. It is assumed that if the focus of control is placed on activities and entities with significant risk and which are of great importance for the public interest, it directly contributes to more efficient management of resources of state bodies.

Two auxiliary hypotheses were investigated in the paper:

H(1): The development of inspection planning in the Republic of Serbia is at a very low level, while the procedure and specific tools (programs) for the evaluation of applications, despite the expressed need for them, have not been established.

H(2): The development of a spreadsheet application for determining the priorities in the actions of state control and inspection bodies can greatly simplify, i.e. facilitate and speed up the work of employees in state bodies who evaluate applications.

3.2 Deficiencies and organizations of procedures for evaluation of claims currently applied

The analysis of the procedure of management and evaluation of petitions currently applied in the Sector for Budget Inspection of The Ministry of Finance of the Republic of Serbia revealed that there are certain inconsistencies in special regulations governing the work and conduct of budget inspection in the area of risk identification and management (Law on Budget Systems and Decree on the Work, Powers and Characteristics of Budget Inspection) with the Law on Inspection Supervision. Also, the incompleteness of the system and the need to develop comprehensively defined special criteria for risk assessment were noticed, to properly implement the risk assessment methodology in the process of planning inspections from the scope of budget inspection. This identifies opportunities for improvement and automation of procedures, which will be explained in detail below.

3.2.1 Dualism of legal provisions related to inspection planning

The inspection body carry out inspections according to a previously adopted plan based on the established situation in the field of supervision and systematically prepared risk assessment, while reports (petitions) from third parties are an additional source of information relevant for risk assessment and inspection planning and when justified, are the reason for performing inspection control (Stefanović, 2017). In this way, the nature and essence of modern inspection based on risk assessment and risk management and inspection planning according to assessed risks and priorities is clearly manifested, as opposed to the approach that is characteristic of the previous period when inspections were based solely on reports (Risk-based vs. Complaint-based inspection).

The analysis of the procedure of planning inspections of the budget inspection showed that although it is formally prescribed by general and individual legal acts that inspections are based on risk assessment, in practice there is no complete deviation from the fact that inspection controls are based on the handling of complaints (reports) of third parties (BCRR, 2019). Deviation from that approach is not possible, given that the Law on Budget System, which established the budget inspection, stipulates that the work program

of the budget inspection and its changes is determined by the Minister, and it is made primarily on the basis of applications, petitions, complaints and control requests, received from bodies, organizations, legal and natural persons (Official Gazette of RS, No. 31, 2019). Therefore, in such an established legislative framework, the specificity of the budget inspection is that it must find a way to base inspections primarily on the petitions submitted, in accordance with the provisions of the Law on Budget System, while on the other hand, having in mind the requirements of modern inspection supervision, or the Law on Inspection Supervision, inspections must be based on a risk assessment and proportionate to the assessed risk.

The assessment of petitions conducted by the budget inspection is part of the activities carried out during the planning of inspection and is regulated by the Rulebook on special elements of risk assessment, frequency of inspections based on risk assessment and special elements of the inspection program (hereinafter: the Rulebook), which declaratively states the commitment to act based on risk assessment, i.e. stipulates that the selection of inspection control entities is based on risk analysis and assessment and that in order to determine priorities in the budget inspection special elements for risk assessment are applied in areas of material and financial operations and purposeful and legal use of public funds, while the essential choice of control subjects is the result of subjective assessment (Official Gazette of RS, No. 90, 2018). Namely, the mentioned Rulebook defines that the numerical value of special elements for risk assessment is the result of subjective assessment, which is contrary to the provisions of the Decree on common elements of risk assessment in inspection issued by the RS Government and stipulates that values of the severity of harmful consequences and the probability of their occurrence, i.e. the result of an objective assessment, given that quantifying risk means determining all possible values of the risk variable and the relative probability for each value.

Accordingly, the Budget Inspection recognized the need for the budget inspection to be based on risk assessment and that it is necessary to quantify the result of risk level assessment, however, the method of risk quantification regulated by this Ordinance is not adequate and requires correction, as it does not specify relative the probability for each value is already the result of the subjective assessment of the employees. The experience and integrity of employees who evaluate applications play a key role in assessing whether there is justification for initiating proceedings, while supervision is mainly based on "external impulses" - applications from citizens, workers, and competitors in a particular job. In this way, all controlled entities are placed on the same level regardless of the risk that characterizes them or the importance they have. The consequence of such a relationship is the creation of favorable conditions for budget inspection resources to be spent unnecessarily on low-risk entities, business and activities, which have the largest share in the structure of control entities and which cause consequences that are insignificant or low, while the identified irregularities, to the greatest extent, can be classified as errors of a formal nature, unintentional, negligible exceeding of the deadlines

prescribed for the submission of various reports or documentation, etc. On the other hand, often, significant subjects and activities, which cause serious harmful consequences for the public interest, property or other resources, get out of control and remain out of it, so that they become visible only after serious damage has been done.

Given the above, it can be concluded that the budget inspection has not fully harmonized with the Law on Inspection, which was adopted in order to introduce into inspection practice the principles of modern inspection based on risk assessment and risk management, as well as inspection planning according to assessed risks and priorities, i.e. to eliminate or significantly reduce arbitrariness, inequality, corruption and other possible abuses in initiating and conducting inspections, as well as to reduce objections to the frequency of inspections in some and the absence of this supervision in other economic entities. However, although due to the mentioned specificity of budget inspection it is not possible to completely deviate from the procedure based on reports, some purposeful harmonization of procedures and introduction of an adequate system of risk assessment related to petitions is not only possible but necessary given that budget inspection resources are both human and financially severely limited and insufficient to meet the needs of inspections. Namely, the Department of Budget Inspection has systematized 28 and filled only 11 jobs for inspectors. The Budget Inspection has the authority to carry out inspection control over more than 36,000 users of public funds, while annually it receives about 300 reports (representations). In the course of one year, the budget inspection carries out about 30 inspection controls. Given that the budget inspection annually controls less than 0.05% of supervised entities, while the inspection procedure is initiated on the basis of 7% of submitted applications and requests for inspection control, it is clear that in addition to the legal obligation there is a real need to prioritize inspection supervision through risk assessment and timely response when high and critical risk is assessed. Classification of controlled entities according to risk, depending on the severity and probability of potential harmful consequences, establishes planning of inspections and independence from citizens' reports, inspection resources are oriented towards entities, areas and activities in which control is most needed, causing the greatest damage to the budget and where the best results will be achieved in public risk management, protection of public goods, rights and interests. Establishing a methodology for risk assessment and prioritization of inspections enables timely undertaking of prescribed measures and actions that consequently result in compliance with the law and prevention of illegal spending and damage to public funds.

In addition, according to (BCRR, 2016), the misuse of the petition, which occurs in various forms, must first be identified in the assessment process, and later eliminated from the proceedings, i.e. it is necessary that the risk arising from the petition be assessed according to appropriate criteria. Given that the law stipulates that inspections are not carried out on the basis of risk assessed as insignificant, it is necessary to base the assessment of petitions on analysis and risk assessment based on objective assessment and resulting in quantified risk, which will ensure that inspections when it is meaningful

and purposeful, so that resources (time, resources, people) are effectively and efficiently allocated and spent on the subjects of control that are not insignificant from the aspect of the damage they can cause. In that sense, having in mind all the above, we can freely say that the assessment of allegations (existence of reasons for initiating inspection control procedures) in petitions or, conversely, possible abuse of petitions, as well as adequate selection of control subjects, which is directly dependent on petition assessment, is one of the important issues related to the initiation the budget inspection procedure, given the function delegated to it by the Law on Budget System. The current situation requires certain corrections and changes that will enable the selection of control subjects to be the result of objective and not subjective assessment, i.e. to quantify the risk and thus the budget inspection procedure harmonized with the provisions of the Law on Inspection Supervision.

3.2.2 Dualism of criteria defined by bylaws

The Rulebook (Official Gazette of RS, No. 90., 2018), which is a bylaw of the Law on Inspection Supervision, and the Decree (Official Gazette of RS, No. 93., 2017), which is a bylaw of the Law on Budget System, prescribe different criteria used in the same risk assessment and analysis procedure, while omitting some of the criteria necessary for a proper and comprehensive risk assessment in applications. The Decree defines six criteria, while the Rulebook defines five other criteria. Since the assessment, as we mentioned, is subjective, and the criteria are not harmonized, employees who evaluate applications are not able to identify and quantify the activity and control subjects that are characterized by significant risk or in which there is significant public interest. In addition, differently defined criteria make it difficult for employees to identify possible abuses of the petition, because the criteria used are not adapted to that purpose. In that sense, it is necessary to determine the criteria by which the risk identification will be performed first, and then the risk quantification. Namely, risk identification implies that for each criterion, situations are identified that may cause negative consequences for public goods, rights and interests that are protected by law. Risk quantification involves the evaluation of identified risks, quantification of the impact of risk events, determining the probability of their occurrence and the range of possible values.

In the process of evaluation of petitions, the Budget Inspection applies additional analyzes that have no basis in procedures or legal regulations, but employees conduct it on the basis of arbitrary choice of method and manner in which it will be conducted, while evaluation, as the end result of analysis, is subjective and arbitrary. Given that this analysis has a good logic and foundation and it is based on a broader view of the subject of control, its significance and activities, it is necessary to systematize this analysis, establish clear criteria and quantify the results, and then include it in the official procedure of processing and evaluation of petitions. Accordingly, certain amendments and refinements of the current procedures and procedures carried out by the budget inspection are necessary. It is necessary to determine the methodology for assessing the petition

based on assessment and objective quantification of risk, in accordance with the legislative framework governing inspection supervision.

3.2.3 Data collection, processing, and IT tools of the inspection

Employees of the budget inspection, who receive applications, enter data from applications in the table of applications kept in the spreadsheet program Microsoft Excel. After receiving and recording, the application is processed, which is mainly reflected in the manual assessment of the allegations in the applications on the Application Assessment Form, and in accordance with the special elements for risk assessment prescribed by the said Ordinance. These activities take a lot of time for employees, as data processing is manual and it is necessary to read the application in detail and analyze the subject of control using publicly available data and registers, using only their logic, experience, and knowledge to determine risk by subjective feeling. At the same time, if the employee as an individual is very responsible, this activity can be very stressful, having in mind the responsibility and consequences of deciding on the level of assessed risk. In such circumstances, in which the process of planning inspections and evaluation of applications is carried out without the use of handy IT tools for systematic processing, analysis and evaluation of applications, in addition to the need to supplement and refine the current application evaluation procedures, that is, establishing a purposeful and legally harmonized methodology for the assessment of petitions, which would be based on an objective and quantified risk assessment, it is necessary to automate the whole procedure of evaluation of petitions and determination of priorities in the actions of the body since it consists of a series of logical-arithmetic, mathematical and other operations necessary for decision-making. Therefore, we can conclude that average employee's evaluation of complaints takes 2-3 hours and is an activity that is marked as highly stressful and responsible.

In addition to the above reasons, the results of expert analyzes (Kovačević, 2017) point out that in order to harmonize the practice of inspection bodies and standardize actions in the same or similar situations, where necessary, it was expedient to develop and adopt models of appropriate procedures, including the procedure for the evaluation of petitions (applications) submitted by third parties and on the basis of which the inspection control is initiated.

4 Spreadsheet application based on innovative performance evaluation methodology

Research and analysis of the described problems resulted in certain propositions that were offered as a possible solution to the existing dualisms and inconsistencies, and they were developed and implemented in the spreadsheet application for determining priorities in the actions of control and inspection bodies, which will be described below. The application was developed using the Microsoft Office Excel spreadsheet environment.

According to (Kostić, et al., 2014; Antić & Đorđević, 2018; Djordjevic et al., 2019), a great advantage of the spreadsheet environment is the possibility of research modeling, which through the identification of tasks leads to a better understanding of the problem and finding the best solution. Another reason why the authors opted for the spreadsheet model is primarily because of its ease of use and the ability of domain experts in the field to update and modify the model in a simple way (Đorđević Milutinović et al., 2023). Also, the spreadsheet model is easy to use, so that employees who do not have specific knowledge and skills in this area can perform objective and relevant processing and evaluation of applications. Developed model is implemented as spreadsheet application.

The model itself, as well as implementing application, must have defined input parameters, output values or results, as well as the calculation section or module, consisting of relations that show how the calculation of output values was performed on the basis of inputs (Antić & Đorđević, 2018). The basis of the calculation section of the application is an innovative methodology for the assessment of applications based on a three-level risk assessment that introduces three categories of criteria for risk assessment, presented in (Jovanović, 2020). For each individual criterion, it is necessary to define a factor of importance and issues that identify all interests, goods and rights that will be endangered in the event of risk, and which may arise from the business or actions of the supervised entity. According to the appropriate criteria, the severity of harmful consequences and the probability of their occurrence are estimated so that the estimated degree of risk is obtained. The criteria are determined at least once a year and are updated during the year if necessary. In the application presented in this paper, determining the criteria for risk assessment, determining the significance factors for each criterion and scoring the definitions of the criteria, is done manually and represents the input to the model. As an improvement of the basic version of the application, it is possible to upgrade with a module whose functionality is reflected in the automation of the following activities: determining the criteria for risk assessment, determining the significance factors for each criterion, scoring criteria definitions.

By applying the innovative methodology that is the basis of the calculation part of the application and introducing an adequate system of risk assessment related to petitions, it is possible to purposefully harmonize the conduct of the budget inspection with the provisions of the Law on Inspection Supervision, and thus ensure that inspections of the budget inspection are based primarily on the submitted petitions, while at the same time they are based on risk assessment and proportionate to the assessed risk. The spreadsheet application for determining priorities in the actions of inspection and control bodies consists of three modules, related to registration of records, or data entry, evaluation of the application and register of applications.

The first module called Application Records is used to enter application data and application records in the single Application Register. The user enters the application data in the application registration form. Each application is automatically assigned a unique

application number which is later used for evaluation, printing, and data retrieval. The user received a message about the successful registration of the application and the entry of data in the register of applications. The entry of entered data in the Register of Applications is done automatically. The Register of Applications represents database of developed spreadsheet application.

The second module, called Application Assessment, is used to determine the degree of risk borne by the application and includes risk assessment from three segments: general risk assessment, application risk assessment and risk assessment of the subject of control. The user in the application evaluation form selects the application to be evaluated and defines the criteria options for all three levels of evaluation. Based on the selected values, the model automatically evaluates the application and enters the data on the evaluation of the application in the database Register of Applications. At the end of the process, the user receives a message about the successful entry of data on the evaluation of the application in the register of applications. This module represents an innovation in relation to the previous way of assessing applications, bearing in mind the fact that the methodology for determining risk is diversified and based on objective assessment. In this manner, the biggest shortcoming of the previous way of working, which was based exclusively on the subjective assessment of the employee, was eliminated. This three-step risk assessment approach is an innovation of the author.

The third module is the Register of Applications. By pressing the button, the user activates the registry search worksheet. The search can be performed according to several criteria and several arguments at the same time. The registry search process is automated. Within the application, two forms were created and standardized: Records of reporting irregularities and Application Risk Assessment. The user has the option of printing and saving the specified forms. It is only necessary to select the unique application number to be printed from the drop-down menu by clicking on the button from the drop-down menu and clicking on the print button starts automatic printing. If the user is not connected to the printer, he should select the name and location of the document that will be saved in PDF format in the dialog box that opens.

The application, which is the intellectual property of the author of the application and may not be used, reproduced, distributed and modified without authorization, is marked version 1.B.1 and is a version adapted to the procedure of budget inspection. The first digit one (1) in the version designation says that it is an originally developed model in a spreadsheet environment with a unique graphical interface, organized data, activities and logical connections between them. The letter mark (B) in the version mark means that the model is adapted exclusively for the purposes of budget inspection. Letter B will be replaced by the number zero or other letters during further refinement of the model, creating a basic universal version and special adaptation to a particular group of users (eg 1.0.1 will be a version of the model specifically tailored to the needs of all inspection bodies, while version 1.P.1 was intended exclusively for tax inspection). The third digit

in the model designation, which also bears the designation one (1), refers to the number of changes to the basic model in relation to the number of amendments to legal regulations.

Launching the spreadsheet application, that implements the model, opens a user login dialog (Figure 1). Model users are defined by an administrator who has access to all model content, while user access is variable and depends on predefined permissions and approvals that are implemented in the Login worksheet which only the model administrator has access to (Figure 2).

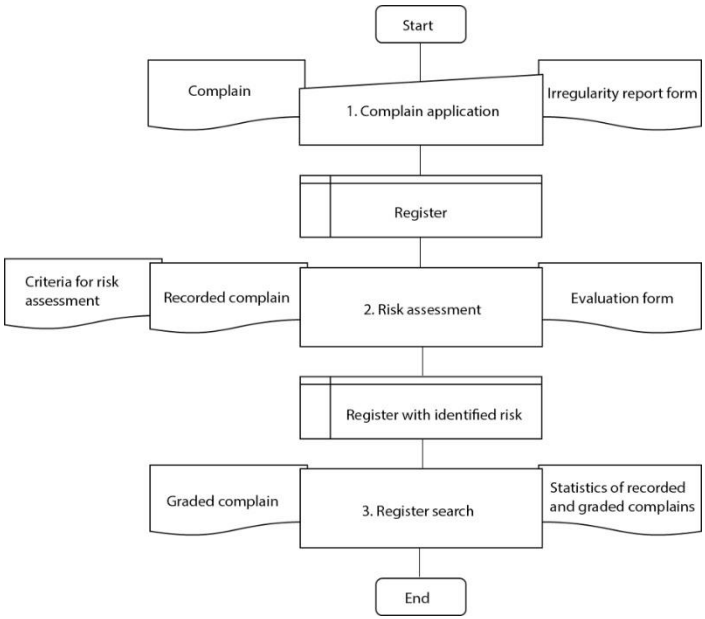
Figure 1: User login form

While working in the model, the user fills the forms or searches for data from a database that is formed on the basis of data entered by the user. Based on the data entered in the user form, the model performs calculations and enters basic or recalculated values into the database.

Figure 2: Application cover page

The control model consists of a series of logically related activities shown in the activity flow diagram in Figure 3.

Figure 3: Activity flow diagram



The flowchart data shows the flow and sequence of activities that the user performs through the model. The flowchart also shows the inputs and outputs of the model. From the displayed flowchart of the model, it is possible to identify the activities that the user can perform, as follows (Figure 4):

- Recording of applications (petitions);
- Evaluation of applications and determination of the degree of risk;
- Search the register of applications;
- Automatic filling and printing of forms of registered and evaluated applications.
- Insight into the statistics of registered and evaluated applications.

Testing the spreadsheet application for determining priorities in the actions of control and inspection bodies, which implements an innovative method of three-level segmentation of risk, confirmed that the application of the application can identify and quantify the activities of the control entity, which is characterized by significant risk in that way, they eliminate possible misuse of petitions. Also, it was confirmed that the application of the model significantly simplifies, facilitates and speeds up the work of persons engaged in the tasks of evaluating petitions and determining priorities in the actions of bodies. The assessment of objections is no longer a highly stressful and responsible activity that can sometimes take more than 3 hours, but a routine operation that takes no more than 20 minutes of the employee's time (including the time needed for the analysis and search of publicly available data) and implies a relaxed and pleasant work.

Figure 4: Application home page (activity selection)

In addition, the spreadsheet application is an adequate response to the expressed need for procedures and specific IT tools for the evaluation of petitions, which is recognized in relevant professional circles, both at the level of budget inspection and at the national level.

Future directions of developing the spreadsheet application for determining priorities in the procedure of budget inspection will refer to more detailed development of the application and setting measures for application protection. All future changes in legislation and some other circumstances that are important for the operation of the model will be implemented in the model.

5 Conclusions

After the presented research results, the following conclusions are imposed:

- research presented in the paper confirmed research questions and proved the basic hypothesis, as well as two special hypotheses;
- the developed spreadsheet application is based on national legislation and provides users with compliance with it;
- the application improves and automates the process of planning inspections, related to the segment related to risk assessment in petitions and allows users to objectively assess the risk associated with petitions, ranking petitions and determining priorities in dealing with identified risk;
- the application enables the strengthening of the analytical function of the inspection and other control bodies that can use it in their work (primarily the Anti-Corruption Agency of the Republic of Serbia), since it enables the aggregation of data on reports into a database used for collecting, monitoring and analyzing the situation in the field of inspection;
- by applying the inspection control application, they are focused on activities, i.e. control subjects that are characterized by significant risk and in which there is a significant public interest, which directly contributes to more efficient management of budget inspection resources;
- spreadsheet application provides the basis for a better schedule of inspection supervision and allocation of scarce resources, in proportion to the amount of assessed risk in the subjects of control, in order to achieve more efficient and economical work.

During the development of the model and implementing application, the characteristics of the user were taken into account and special attention was paid to the interactivity of the model. The user constantly manages the process of evaluation of petitions and during the work receives information on whether an operation has been completed and whether it is necessary to take another activity and what are the consequences if the activity is taken or not taken. In this way, the passivity of the participants was overcome and the interaction between the user and the model was achieved, and the possibility of an error in the assessment was reduced.

Prerequisite for the application is the harmonization of the regulatory framework, especially amendments to bylaws by introducing an adequate risk assessment system. The model introduces a change in the procedures of the budget inspection in the part

concerning the determination of criteria and requires adjustment of the legislative framework. Inspections continue to be based primarily on the submitted petitions, while at the same time they are based on risk assessment and are proportionate to the assessed risk. The developed model or spreadsheet application, which is the subject of this paper, can be implemented in practice as an extremely efficient, effective and economical solution that would provide support to inspection bodies in their work. The developed application is a basic version and can be developed and improved in several directions, apply to other inspection bodies in the Republic of Serbia, as well as to inspection bodies in neighboring countries, which modern standards of inspection have almost developed, or they have this process at an early stage.

References:

Antić, S. & Đorđević, L. (2018) Control models and applications in spreadsheets, In: Benković, S. (ed.) *FINancial management, Accounting and Curricula development for capacity building of public administration - FINAC* (Belgrade: Faculty of organizational sciences), pp. 245-277.

Balkan Center for Regulatory Reform (BCRR), Group of authors (2016) *Risk Assessment, Risk Management and Risk Reporting Analysis* (Belgrade: Balkan Center for Regulatory Reform).

Balkan Center for Regulatory Reform (BCRR), Group of authors (2019) *Functional Analysis of Republic Inspections with Capacity Analysis* (Belgrade: National Alliance for Local Economic Development - NALED).

Djordjevic, L., Lecic-Cvetkovic, D., Makajic-Nikolic, D., Babarogic, S. & Omerbegovic-Bijelovic, J. (2019) Spreadsheet Error Detection and Debugging Approach for Dynamic Discrete Inventory Control Models, *International Journal of Industrial Engineering: Theory, Applications and Practice*, 26(5), https://doi.org/10.23055/ijietap.2019.26.5.4727.

Đorđević Milutinović, L., Raković, L. & Antić, S. (2023) Characteristics of Spreadsheet-Based Shadow IT in Serbian Companies, In: Mihić, M., Jednak, S. & Savić, G. (eds.) *Sustainable Business Management and Digital Transformation: Challenges and Opportunities in the Post-COVID Era, SymOrg 2022, Lecture Notes in Networks and Systems*, vol. 562, (Wiesbaden, Germany: Springer), pp. 148–171, https://doi.org/10.1007/978-3-031-18645-5_10.

Jovanovic, M. (2020) *Development of a model for the assessment of petitions and determining priorities in the conduct of budget inspection* [Master thesis] (Belgrade: Faculty of Organizational Sciences).

Kovačević, A. (2017) *Methodological Instruction for the Analysis of the Required Number of Inspectors for Performing Inspection Supervision and Performing Official Advisory Visits* (Belgrade: USAID).

Kostić, K., Antić, S. & Đorđević, L. (2014) *Enterprise information systems in Excel* (Belgrade: Faculty of Organizational Sciences).

Official Gazette of RS, No. 31. (2019) *Law on Budget System*.

Official Gazette of RS, No. 90. (2018) *Rulebook on special elements of risk assessment, frequency of inspection based on risk assessment and special elements of inspection program, for control within the scope of budget inspection*.

Official Gazette of RS, No. 93. (2017) *Decree on the work, powers, and characteristics of the budget inspection*.

Rapajić, M., Lapčević, M. & Miladinović, V. (2021) Tax control and inspection supervision in the Republic of Serbia: Characteristics of the legal framework and the need for coordination, *Ekonomika,* 67(4), pp. 75-90.

Stefanović, M., Radovanović, D. & Jolović, D. (2017) *Guide for the application of the Law on Inspection Supervision – amended 2017* (Belgrade: Ministry of public administration and local self-government and USAID).