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MODEL OF QUALITY AND EFFECTIVENESS OF MANAGEMENT OF INFORMATION SYSTEMS OF LOCAL TREASURIES BUDGET ACCOUNTING

Abstract: *The role of management of information systems of local treasuries budget accounting is to provide qualitative information support to management in process of decision making and to provide effective managing of key processes of budget accounting, in accordance with requests of management on all levels of decision making. From the aspect of effectiveness and request for quality, in accordance with request of users, this research includes the analysis of characteristics and goals of identified key processes, critical success factors (CSF), key performance indicators (KPI), standards for realization of users requests, results of processes and indicators of goals realisation measures. The aim of this paper is to present the model for evaluation of effectiveness and quality of management of information systems of local treasuries budget accounting, based on results of the analysis.*

Keywords: *quality model, model effectiveness, budget accounting, management of information systems, CFS, KPI*

1. INTRODUCTION

Dominant processes of globalization and ambient in which modern systems of budget accounting function, as a basic subject of public finances, have led to new requirements and needs for improvement of process of management and decision making in accordance with the requirements from the environment and developed concepts of modern informational-communicational technologies. In order to have efficient management of processes of budget accounting, it is necessary to improve the process of decision making and managing, by providing consistent information and by

developing information system that generates, processes and distributes those information. Process of management and decision making requires quality, effectiveness, efficiency, integration of processes, consistency and concurrent approach to data. Clearly structured data enables the harmonization of activities of gathering, registration, processing, memorizing and distribution of information to users on different levels of management and decision making, within the budget accounting of local treasuries.

Institutionalization of local treasuries allows the new approach to financial planning and management of processes within the subsystems which define the

basic functions of budget accounting of local treasuries. Research and analysis, based on studies and program documents of OECD (Organisation for Economic Co-operation and Development), World bank, International monetary fond and European Union, in the area of budget accounting and treasury activities in the countries of European Union and of the world, point out the sinificance of managing of public finances and processes of budget accounting and a need for development of integrated management of information systems of budget accounting on local level. The main goal of MIS of local treasuries budget accounting is to provide a qualitate information support to management in process of decision making and to enable effective managing of key processes of budget accounting, in accordance with requirements of management on all levels of decision making.

In order to determine the qualitative degree of result of implementation of MIS of localtreasuries budget accounting, approach to modeling of quality and effectiveness is presented in this work, from the aspect of defined criteria which

refer to inputs and their transformation into outputs. For the needs of defining of model of effectiveness and quality, results of modeling of MIS budget accounting of local treasuries are used in this work, through all fases of life cycle of development of IS (SDLC-System Development Life Cycle). In accordance with used process approach, from the aspect of support to management on operative, tactical and strategic level, this research includes: defining of performances of key characteristics of processes, recording of data significant for monitoring of characteristics of key processes (time, deviation, quality), identification of object of measuring, addition of new attributes of object of measuring significant for control and managing, identification of deviation from given values of characteristics of objects of measuring and change of system configurationn depending on change of key processes (addition, deleting and/or change of structure of activities and order of implementation of activities), that is, change of role and responsibility of system users.

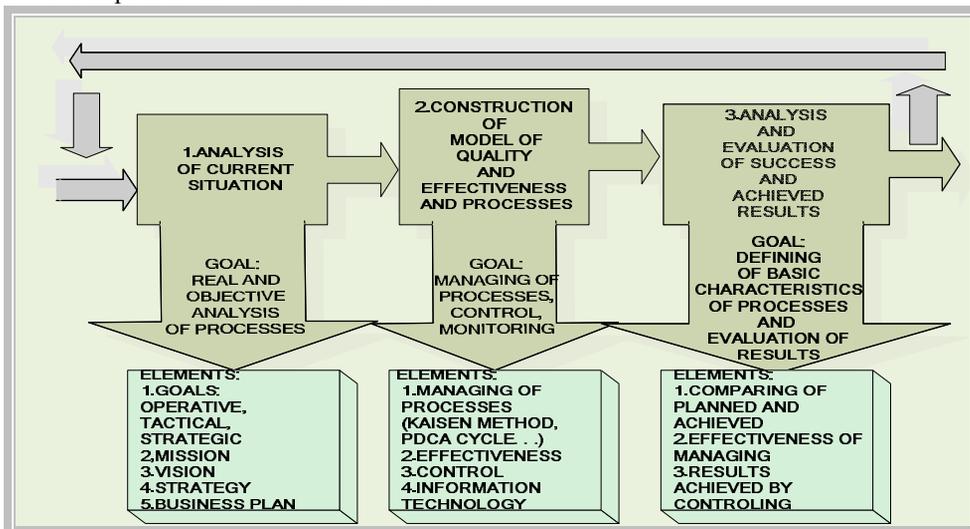


Figure 1: Phases of defining of models

Modeling of quality and effectiveness of the system is implemented through

different fases, Every fase has its own elements. This research introduces

elements of managing, control and effectiveness of processes, based on analysis of current state, defining of goals, mission, vision and strategy, by use of information technology, and then analyzes and evaluates achieved results (Figure 1).

2. QUALITY MODEL OF MIS OF LOCAL TREASURIES BUDGET ACCOUNTING

Defining of mission, goals, organisational structure, functional structure, information structure and management structure of the system, and in the other hand, defining of system users requirements, represents the basis preconditions for construction of integrated information system for support to local treasuries management in decision making.

Requirements of standard of quality management of information system of local treasuries budget accounting are defined based on key processes, users requirements on all levels of management and decision making, distribution of responsibility of management, critical factors of success (*CFS-Critical Success Factors*), and management of resources. Three groups of processes are identified from the aspect of QMS: key processes, management processes and processes of support.

Basic functions and processes are defined by identification of key processes, that is, functional areas of local treasuries budget accounting are defined, as logical parts of group of activities on which the achievement of goals of the system depends.

Identified key business processes are:

- P1 Processes of appropriation processing
- P2 Processes of planning of budget execution
- P3 Processes of taking over of obligations
- P4 Processes of payment requirements and of funds transferring processing
- P5 Processes of payment and
- P6 Processes of booking

Noting that the basic role of management structure (management of local treasuries budget accounting) is making of effective decisions, quality and effectiveness of goals of the system improves the process of decision making and enables more efficient monitoring and managing of process of budget accounting. Managing and providing of quality of processes of management of information system of local treasuries budget accounting is a basis of efficient and effective achievement of defined goals and projected effects of the system. Determination of goals represents a great help in defining of standards of evaluation of quality and results of processes and makes possible for the managing structure to evaluate and improve the system in critical activities of processes.

Model of goals of quality is defined based on the analysis of group of basic and individual goals and the results of key processes of the system. Every goal has its metrics (Figure 2).

Criteria for modeling of quality of budget accounting information system management are: (1) availability of information system and information to users and management; (2) harmonization with information system from the environment; (3) ability of information system to adapt to new conditions and

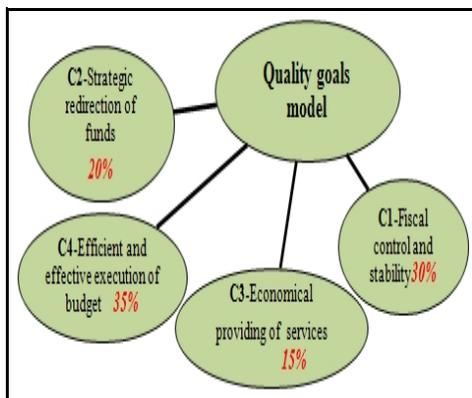


Figure 2 – Metrics of goals

requirements; (4) level of compatibility between users requirements and information system; (5) quality of output information; (6) level of security of data and model; (7) level of achievement of given goals of management; (8) simplicity, consistency, timing and frame of information; (9) adequate distribution of information; (10) providing of information support necessary for decision making in strategic management; (11) level of automation of processes.

Quality of the system observed as an analogy with the requirements, represents a totality of characteristics of the system that is based on the ability of the system to satisfy a certain need and satisfaction of system users by meeting their requirements. That means that quality of the system is a level which a set of system characteristics reaches by meeting users requirements and expectations.

By use of methodologies directed to mechanisms of providing of quality,

management of budget accounting information system provides information support to monitoring and improvement of quality of processes through: monitoring of activities, verification of entered data, statistical analysis, gathering of data about every entity (from the process of planning to the process of realization of budget execution), relevant information for all participants of the system, access to any information in the system from one place, planning of activities and exchange of information from the whole system including internal and external users.

In order to have efficient system of management of local treasuries budget accounting and efficient managing of processes, possibilities of selection an Key Performance Indicators (KPI) were analyzed, as qualitative and quantitative indicators for measuring, monitoring and managing of results of process of budget accounting of local treasuries.

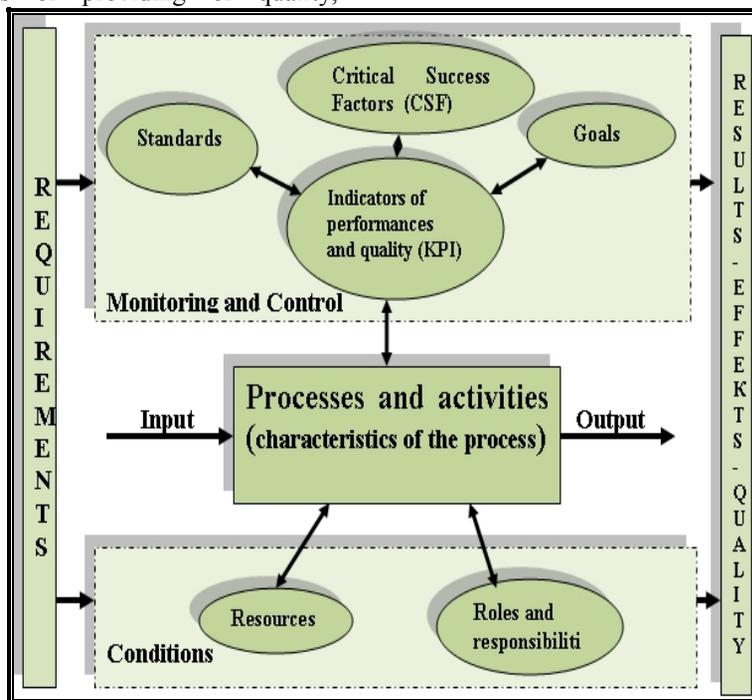


Figure 3 – Generic model of MIS quality

By affecting the key performance indicators, performances of the system and

achievement of goals are affected too, therefore, modeling of quality of management of information system of local treasuries budget accounting is based on defined goals (what) and strategy of system development (how), key success factors (areas areas we are focused on), key performance indicators (metrics) and key action initiatives. Precizely defined goals, which are based on satisfaction of users, are comparative and measurable and their concretization is performed through

identified processes of delegating of responsibility and authority, which is defines in the fase of system analysis. A plan of actions of achievement of defined goals is defined with the use of process approach, which represents a basic approach in managing with the use of goals. This plan of actions is presented through generic model of quality of management of information system (*Figure 3*).

C - PLANNING OF BUDGET	
Goal 1	Efficient, effective and integrated planning of budget
Goal 2	Real projection of income and outcome
Requirements and needs of users (input)	Information about structure of income from previous years, Information about initial appropriations and changes of appropriations, Information about obligations of payment and payment requirements
Critical success factors (information, decisions, assumptions)	Compatibility of budget with expected income and planned outcome; Providing of compatibility of real income with priorities of allocation of funds; Introduction of middle-term budget planning; Quantification of influences of budget measures (on republic level) on processes of budget accounting of local treasury; Involvement of all budget users in the process of preparation and planning of budget
Needed standards for satisfaction of users requirements (initiative)	Defined roles and responsibilities; Financial reporting which enables comparative analysis of needed data; Adequate documentation and reporting for comparison of planned and realized; Comprehensive and selective reviews and reports; Consistent reporting from previous periods; Approach to public data bases; Development of support to reliable internal statistics; Developed internet environment and approach to transparent data bases regarding economic trends and budget processes on the level of Republic
KPI	Deviation of Plan of budget from expected income (%)
Source of verification of goal	Reviews and reports which are provided by management of information system of local treasuries; budget accounting; Information from external environment; Public data bases

Tabla 1- Analysis of goals

For needs of research about achieved results, from the aspect of quality and effectiveness of MIS of local treasuries budget accounting, based on the defined vision of the system, for the group of basic goals, critical factors of success of the goals, processes which participate in the ralization of goals, of management of information system, needed resources, standards for meeting users reqirements (standards for satisfying users needs),

indicators of measurability of defined goals and a source of verification of goals have been analyzed.

In *Tabla 1*, operative instruments of quality control for defined goals are presented: C1-efikasno, effective and integrated budget planning and C2-real projection of income and outcome, for a group of goals- Planning of budget.

3. MODEL EFFECTIVENESS

For needs of analysis of management of budget accounting information system, based on defined key information about need and ways of fulfilling users demands, methods and techniques that focus on effective and efficient achievement of goals with the concept of establishing of process-oriented organizational structure were used. Process-oriented organizational structure is a consequence of integrated development of system.

In process of development of information system management, process inputs are defined by requirements, needs and goals of management and other system users, by regulations, standards and other specifications. Performances of processes are differentiated as: quality performances (reliability, durability), quantity performances (volume, flows, completeness), time performances (speed, delivery, availability, distribution), execution performances and value performances (costs, price). Given goals of the process serve as a basis for determining of goals of subprocesses and activities. Primary business processes, processes of support and managing processes which are defined in the process of system development, represent a basis for forming of network of performances which is based on a model of network of standards of system performances. Structure of network based on this model incorporates: (1) structure of value for system users which presents the character of defined requirements and expectations of system users; (2) structure of primary and secondary business processes and activities which enable a full realization of users requirements on all levels of managing and decision making, including external users; (3) managing processes that give initiative, direction and safety of realization through formulation and implementation of strategy and (4)

standards and attributes of different aspects of system quality, as logical product of realized structure of the system and connections between individual subsystems, which provides a coordinated approach to business activities and achieved results. Based on key goals and influences on system quality and satisfaction of interested parties, identified in the process of defining of quality model, for needs of modeling of effectiveness of the system, goals of typical processes and measures of success were defined. Based on these goals and measures, analysis on the level of activities and on the level of processes was performed. On the level of processes, process lists were made, based on these lists, measures and goals of processes were analyzed through questions: Are the defined goals of key processes connected to each other and to goals of the system, Are the business processes decomposed into logical and efficient processes and subprocesses and Is the managing of processes and of performances of processes adequate? On the level of activity, these questions were analyzed: Are the activities and standards that refer to users requirements in accordance with the requirements of processes, Does the system meet the requirements of activities and Are the phases of activities, in logical order, compatible with expected results and defined characteristics of process quality? Basis for analysis of quality and effectiveness of processes of budget accounting and identification of processes which need to be promoted, consists of: defined responsibilities and ownership over processes of accounting, identified critical success factors (*CSF*) and establishing of adequate system of measuring of quality and effectiveness of processes. The aim of realization of this activity is to define the results of processes, adequate indicators of quality of processes and effects of certain processes, through identified key success

factors and defined goals for every process. An example of process analysis is presented-Preparation of plan of budget execution (Tabla 2). Target effectiveness

standards were formulated for every process and activity, that is, requirements of performances of processes were defined.

<i>Goals of processes</i>	<i>Proces</i>	<i>Activity</i>
Compatibilty between projections and budget planning, and needs of budget users Defining of strategic frame of priorities	Preparation and making of plan of budget execution	P 2.1.1-Making of projection of budget outcome P 2.1.2-Commnatibiliy between projection of budget income and plans of budget execution P 2.1.3-Considering and adopting of plan of outcome of budget users
Critical success factors (CSF)		Planning of cash limitations for budget users Managing of budget sources
Result of process	Making Izrada of plan of spending for budget users in accordance with determined volume of outcome	
Indicators (characteristics) of quality of processes	Relation between planned budget outcome and planned outcome for previous year (substraction) (%)	
	Participation of budget users in process of preparation and formulation of budget (yes/no)	
Effect achieved by achievement of goals	Development of sector strategies and planning of outcome; Providing of compatibility between real outcome and priorities; Unique process of budget planning; Preparation of initial limits	

Tabla 2: Analysis of effectiveness of the process

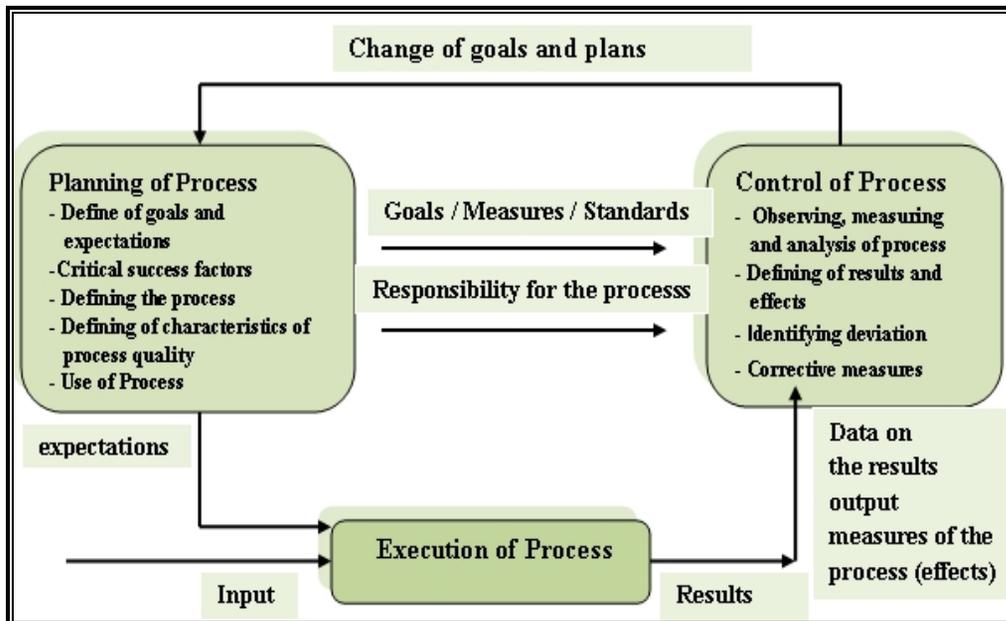


Figure 4: Process effectiveness model

With the aim of providing of improvement of business processes, management of processes within the effectiveness model, includes: (1) planning of processes, based on defined goals and characteristics of quality of processes; (2) managing of execution of processes and their continuous improvement in order to achieve expected results; (3) introduction of actions which enable shortening of time needed for managing and optimal using of resources; (4) control and measuring of quality of basic processes and all added activities and (5) introduction of system of monitoring of results of business processes with the aim of identifying a deviation and implementing corrective measures (*Figure 4*).

4. CONCLUSION

Requirements for information and measuring of quality and effectiveness with a purpose of achieving continuous improvement of processes by focusing on the goals, processes and users requirements are dominant questions in the area of budget accounting of local treasuries. Other then needs for development and implementation, management of information system of

local treasuries budget accounting, in accordance with tendencies and trends which exist in the countries of EU and the countries of the world, there is also a need for introduction of system of quality, control, monitoring and defining of system success indicators, in accordance with developed methodology which is implemented within the studies of PEFA.

Models of quality and effectiveness which are directed to meeting the requirements of users, managing of processes, measuring of realization of goals, monitoring of the results of processes, monitoring of necessary standards and providing of basis for continuous improvement of processes are presented in this paper.

Besides that, use of standard regulations and treasury procedures which are in accordance with international norm of quality, effectiveness, efficiency, transparency and responsibility on all levels of managing and decision making is provided, within MIS budget accounting.

Introduction and development of integrated systems of management in the area of public finances is an imperative, therefore, establishing of architecture of IMS is necessary, which could be a subject of further studies.

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