



## An Econometric Analysis of Evaluation and Improvement of Budget Performance in Local Government

Enkeleda Lulaj<sup>1</sup>, Muthmainnah S.<sup>2</sup>

**Abstract:** This paper provides a summary of studies focusing on the use of budget information in performance evaluation and improvement during budget governance. The survey shows that studies have accepted that this information is used in different ways. In this case, various factors have been identified for evaluating and improving budget performance in local governments. Despite this breadth of analysis, a critical review of the literature shows that in recent years local governments need to improve budget indicators to increase performance. Furthermore, this empirical study tends to guide local governments in choosing the right methodology for improving and evaluating budget performance. The research was conducted in local governments through a questionnaire that gave very important recommendations for budget performance.

**Keywords:** Local governments; financial-budget indicators; budget performance; factor analysis; multiple regression analysis

**JEL Classification:** B26; B4; F65; M48; Z23; H76; C5

### 1. Introduction

On a global scale, public finances are the preoccupation of all governments from different countries regardless of their political, economic system and the level or degree of their economic development. In Kosovo just like in all countries in the world, public finances have been built, developed and reformed in the face of changes in the political and economic system. The state and the fiscal-budgetary system are in functional interconnection with each other. The budget has been talked about since the time of human existence until now. At each stage the importance and

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<sup>1</sup> Dr. Sc., University "Haxhi Zeka" Peja, Faculty of Management in Tourism, Hospitality and Environment, Kosovo, Corresponding author: enkeleda.lulaj@unhz.eu, Senator and Ambassador for financial evolution.

<sup>2</sup> Dr., M.Pd., Universitas Al Asyariah Mandar, Indonesia, Address: Polewali Mandar West Sulawesi, Indonesia, E-mail: muthmainnahunasman@gmail.com.

role of the budget and public money has influenced financial reforms, whether increasing or decreasing performance during budget governance. So, during the interest in the public budget by budget policy makers, the need has arisen to know many budget theories and analyzes, which help to better look at the problems during the budget process and find the best results for evaluating and improving budget performance.

## 2. Literature Review

Public finance is a historical category, the examination of which is placed within analytical frameworks based on efficiency, effectiveness, justice and economy. (Bailey & Stephen, 2004). As part and main element in public finance is the state budget. The budget is increasingly recognized as the main tool for managing the economy (Adongo, Odour, Jagongo & Ambrose, 2013). The budget is the single most important function in government, given the amount of money a government spends each year on various spending programs and activities, as well as the time it spends preparing the budget, appropriating funds for these activities, and at the end of his execution (Khan, Aman. 2019). Public budget is the discipline of public administration that is characterized by its approaches, functions, formation and types (Mitchell, David. & Thurmaier, Kurt. 2016). In terms of administration, the budget provides compliance with laws during the budget process (Smith, Robert, Lynch & Thomas, 2003). The public budget is a plan for financing the Government or a public institution during a certain period, which is prepared and submitted by the executive officers, in which case approval and authorization are necessary before the financial-budget plan is executed. (Cleveland & Frederic, 1915). The art of the public budget is to identify the three roles of government, resource allocation, distribution of goods and services, and economic stability. (Musgrave, A. Richard. & Musgrave, B. Peggy. 1989). The public budget in macro terms includes high level decisions on expenditures and revenues, while the micro budget includes low and medium level decisions on budget programs (Wildavsky & Aaron, 1965). To increase performance, the budget is an act of three main functions: strategic, managerial and operational. (Rubin & Irene, 1996). In 1920 for valuation and improvement, the budget was introduced as a tool to manage costs and cash flows (Adongo, Odour, Jagongo & Ambrose, 2013). The budget is closely linked to the preparation and presentation of reliable information to legitimize accountability or transparency, and to allow accurate assessment of the performance of local and central governments given the rewards for success achieved. (Isaboke, Edinah, Kwasira & Josphat, 2016). To increase budget performance, a good budget must be characterized by transparency, integrity, sincerity, participation, responsibility and strategic approach to planning and achieving the country's objectives (Lulaj & Enkeleda, 2019). Budgets must follow to financial control, planning and managerial improvements

during budget governance (Schick & Allen, 1966). (Tyer, Charlie, Willan & Jennifer, 1997) emphasize that during the budget process the indicator of accountability or transparency should be added to reflect the performance at each level of government. It is difficult to see a government without a budget (Fleischman, Richard, Marquette & Penny, 1986).

The budget is more than the distribution of resources between x and y, it is about meeting the needs of a society by bringing compromises in the political market (Lulaj & Enkeleda, 2019). In this case, after the decision on the allocation of resources is made, the efficiency and the effects of budget decisions are analyzed rather than implemented. (Khan, Aman, Hildreth & Bartley, 2002). If the local government collects unnecessary revenues as various taxes, these revenues can be used to expand capital investments or to spend on consumer goods, in this case the city coffers have increased but society has been damaged, the same thing happens even with the overestimation of expenditures leading us to poor cash management, as the funds are unnecessarily used instead of being used in investments which bring returns or to pay off loans or debt (Khan, Aman, Hildreth & Bartley, 2002). Budget institutions can strengthen accountability and transparency during the budget process by increasing performance and competition between Municipalities as local government, or between Ministries as central government. (Hallberg Mark., Strauch Rolf., & Hagen Jurgen. 2006). Budget planning based on the strategy and requirements of society creates opportunities for the public to look at the performance of the government with its goals than realized. Increasing performance during the budget process requires information on how the budget is created, analyzed and communicated to the local government (Kroll, Alexander, Moynihan & Donald, 2015). Increasing performance is more likely to succeed if everyone works and makes an effort (Moynihan, Donald, Beazley & Ivor, 2016).

Reform in the management and monitoring system should provide a meaningful analysis with clear objectives, reporting should be timely and reliable. Audit bodies must certify performance during the budget process. (Moynihan, Donald, Beazley & Ivor, 2016). The Municipal Budget as the Central one is a contract between the Municipality and its citizens, to plan resources to fulfill public needs. The document should be clear, transparent and reliable in order to increase the performance of BOs, and serve as a basis for Municipal accountability (OECD 2002).

### **2.1. Characteristics of the Municipal Budget for the Evaluation and Improvement of Budget Performance**

- ✓ The municipal budget should be managed within clear, reliable and predictable limits for fiscal policy at the central level,
- ✓ The budget should be closely linked to the strategic priorities of the Municipality,

- ✓ The municipal budget for capital investments should be designed to meet the development needs of the Municipality in an efficient and effective manner,
- ✓ Budget documents and reports should be open, transparent, complete and understandable to the public of the Municipality and beyond,
- ✓ The budget planning debate needs to be comprehensive,
- ✓ Municipal budget execution should be actively planned, managed and monitored according to the LPFMA and regulations,
- ✓ Performance should be part of the Municipal budget evaluation,
- ✓ Long-term planning and other fiscal risks need to be identified, assessed and managed prudently,
- ✓ Auditor involvement during the budget process.

## **2.2. The Main Principles during the Budget Process at the Municipal Level for the Evaluation and Improvement of Budget Performance**

- ✓ The municipality is divided into regions to facilitate meetings and resource allocation,
- ✓ Government-sponsored meetings are held throughout the year to discuss various issues during the budgeting cycle such as: dissemination of information, budget policy proposals, debate on proposals, policy selection, election of delegates and oversight,
- ✓ A commission named the Quality of Life Index is set up by the government to serve as the basis for resource allocation. Regions with higher poverty, poorer infrastructure, denser populations receive more resources than affluent neighborhoods or regions,
- ✓ Each Municipality creates its own formula to guarantee the fair distribution of resources,
- ✓ Discussion and negotiations take place between the participants and the commissions of the regions or neighborhoods of the Municipality,
- ✓ Visits to the commission quarters to verify whether the budget requests are correct before final approval,
- ✓ The elected representatives vote on all final projects, and the results are made public,
- ✓ The Municipal Budget Council is elected. All regions or neighborhoods elect two representatives to this council who oversee the budget process and at the end of the

year prepare recommendations on how much the budget has been implemented. The council meets regularly with the Municipal government to monitor the budget,

✓ After final approval by the Council, the chairman sends it to the legislature for approval. The legislature has the right to cancel any project giving the reasoning,

✓ The end-of-year report on the implementation of works and public programs is published. (Shah, Anwar. 2007).

### **2.3. Potential Budget Values for Increased Performance during Governance**

As potential values to increase performance during the budget process are:

✓ Clear information - budget information sent by the executive to the legislature is often very complex and difficult to understand correctly, therefore the clearer the information the more performance increases,

✓ Promoting transparency - budget fraud must be removed to increase performance,

✓ Improving the budget process - the combination of a simple, transparent, reliable and accountable budget improves the budget process by being more direct and easier to understand (Anderson & Barry, 2009).

Good planning during the budgeting process is an important prerequisite for good fiscal and macroeconomic performance (Cretu Carmen-Mihaela et al 2010). The environment in which the budgeting process takes place strongly influences the increase of competition and financial accountability between local or central governments in order to increase performance during governance (Robinson & Marc, 2007).

### **3. Materials and Methods**

The research was conducted through the compilation of questions in the questionnaire, according to OECD practices at the local level - Municipalities. Initially, interviews were conducted with the Minister of Finance and other budget officials within the Ministry. After the interview the distribution of the questionnaire was allowed at the Local-Municipal level. The questionnaire in most Municipalities was sent to the Mayor through him, afterwards to the directors and budget officials through the email for online completion, as well as through a field visit to the Municipalities. Completion of the questionnaire related to the budget (improvement and evaluation of performance) was done in a very accurate way by verifying it with the documentation and financial reports attached to the questionnaire. After receiving the answers from the Municipalities, the data analysis was done using

SPSS, R programs, and the hypotheses were verified through statistical methods and econometric models using tests that coincide with the research.

### 3.1. Hypothesis

*H<sub>0</sub>: Performance factors are not important (have no positive effect) on budget evaluation and improvement during governance.*

*H<sub>A</sub>: Performance factors are important (have a positive effect) in evaluating and improving the budget during governance.*

Or

$$H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$$

$$H_A = \beta_1 \neq 0 - \text{not all factors are equal to zero.}$$

### 3.2. Factor Analysis and Multiple Linear Regression Analysis

The factor analysis model presents statistical techniques with more variables, where its purpose is to reduce the number of variables that are related to each other to a smaller number of them independent of each other named as a factor, therefore this analysis simultaneously tests the integrity of the measurement and guides the further improvement of the theory. (Henson, Rubin, Roberts & Kyle, 2006). According to Kieffer, the use of factor analytical techniques in the social sciences is inextricably intertwined with both development theories and the evaluation of the validity of factor construction (Kieffer & Kevin, 1999). When factors during analysis are factored (Campbell & Thomson, 1996), then the total number of factors is equal to the number of variables (Thompson, Bruce, Daniel & Larry, 1996). Similar to previous authors have said (Bai, Anita, Hira, Swati & Deshpande, 2015), (Anderson, James, Gerbing & David, 1984), (Rencher & Alvin, 2002), (Jonson, Richard, Wichern & Dean, 2007), (O'Rourke, Nrom, Hatcher & Larry, 2013), if  $p$  as variables  $X_1, X_2, X_3, \dots, X_p$ , are measured in a sample of budget performance subjects  $n$ , then the variable  $i$  can be denoted as a linear combination of  $m$  research factors  $F_1, F_2, F_3, F_k, k < p$  (Bai, Anita, Hira, Swati & Deshpande, 2015).

$$x_i = \alpha_{i1}F_1 + \alpha_{i2}F_2 + \alpha_{ik}F_k + \dots + \mu_i \quad (1)$$

Where:  $\alpha_{i1}$ - are factor loads or results for performance variables during budget governance, and  $\mu_i$  is the part of variable  $X_i$  that cannot be explained by factors or error term. The following equation presents the model of multiple linear regression at the session of budget performance (Bremer, Martina. 2012).

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_2, \dots + \beta_kx_k, + \mu \quad (2)$$

Where, Y- dependent variable,  $X_1, X_2, \dots, X_k$ - independent variables,  $\beta_0, \beta_1, \beta_2, \dots, \beta_k$  - linear parameters (estimated),  $\mu$ - random error (error term), k-number of terms in the model:  $x_3 = x_1^2, x_4 = x_2^3, x_5 = x_1x_2$  (are replaced by k). Model of interaction between variables  $x_1x_2$ .

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_2, \dots, \beta_{12}x_1x_2, +\mu \quad (3)$$

The multiple linear regression model based on square power in the budget is used to find the optimal response values from the RMS analysis (surface optimal response methods) for the factors of evaluating and improving budget performance during governance (P).

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_1^2 + \beta_3x_1^3 + \mu \quad (4)$$

We consider the model of multiple linear regression with predictive variables for evaluating and improving budget performance as we follow:

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_2, \dots, +\beta_kx_k, +\mu \quad (5)$$

#### 4. Results and Discussion

Factors in factor analysis and multiple regression analysis are:

- ✓ F 1. Budget process (planning-approval-implementation),
- ✓ F 2. Challenges during the budget process (planning-approval-implementation),
- ✓ F 3. Improvement during the budget process (planning-approval-implementation),
- ✓ F 4. Performance in financial- budget reports,
- ✓ F 5. Cooperation during the budget process (planning-approval-implementation) to increase budget performance,
- ✓ F 6. Financial-budgetary reforms.

Budget Performance =  $\beta_0 + \beta_1$  (Budget process) +  $\beta_2$  (Challenges during the budget process) +  $\beta_3$  (Improvement during the budget process) +  $\beta_4$  (Performance in financial-budget reports) +  $\beta_5$  (Cooperation during the budget process) +  $\beta_6$  (Financial-budget reforms).

##### 4.1. Factor Analysis

Results from the econometric model of factor analysis for all factors: ( $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ ).

**Table 1. Data from the Results of the Factorial Analysis**

Factors	KMO	SIG.	TVE	RCM	APLHA	ITEM
$\beta_1$	.569	.000	76.30%	4	.769	10
$\beta_2$	.604	.000	75.29%	5	.864	17
$\beta_3$	.614	.000	76.33%	4	.852	14
$\beta_4$	.677	.000	68.27%	2	.769	6
$\beta_5$	.670	.000	69.00%	3	.793	10
$\beta_6$	.801	.000	77.87%	5	.912	18

Table 1. Explains the findings of 6 factors according to factor analysis as follows: KMO test for all factors is acceptable, all factors are significant, according to TVE test all factors have a high percentage of variance, according to the matrix of rotation (RCM) factors have created sub-factor (4, 5, 4, 2, 3, 5), according to the data reliability analysis Coefficient Alpha has high reliability especially in the last factor (B6), according to ITEM of all factors include variables (10, 17, 14, 6, 10, 18). This factor analysis table highlights that these factors are essential for evaluating and improving budget performance during governance.

## 4.2. Multiple Regression Analysis

### Factor 1. Budget Process (Planning-Approval-Implementation)

According of this factor, as a dependent variable the budget process, (planning-approval-implementation)-(BP), while as independent variables are: fulfillment of objectives during the budget process (POPB), cooperation during the budget process (BPB), fair sharing of expenses (NDSH), safeguarding of public money (PPP).

**Table 2. Model Summary**

Model Summary										
Model	R	R Square	Adjusted R	Dev. Stand.	Change Statistics-ANOVA					
					R Sq.	F	Df. 1	Df.2	Sig.	Durbin-Watson
1	.934	.873	.856	.18723	.873	51.5591	4	30	.000	1.646

The table explains that 87% (R=.873, Sig.=000, F=51.55918) for the budget process factor depends on the independent variables (POPB, BPB, NDSH, RPP), while 13% depends on other variables outside this model by means of random error. Adjusted R Sq. in the value of .856 indicates that 86% of the variables are related to the model, while according to the D-W test (1.646) the model is significant and the auto correlation is negative, which means that the standard error of the coefficient b is very small.

**Table 3. Coefficients**

Coefficients	
	Model



		Constant	POP B	BPB	NDS H	RPP
<b>Unstandardized coefficients</b>	B	<b>.314</b>	.400	.431	.154	.099
	Stand. Error	.234	.116	.119	.109	.063
<b>Standardized coefficients</b>	Beta		.469	.457	.193	.156
<b>t</b>		1.340	3.44 0	3.62 6	1.411	1.557
<b>Sig.</b>		<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>
<b>95.0% Confidence Interval for B</b>	Lower bound	-.164	.163	.188	-.069	-.228
	Upper bound	.792	.638	.673	.377	.031
<b>Collinearity Statistics</b>	Tolerance		<b>.228</b>	<b>.267</b>	<b>.227</b>	<b>.424</b>
	VIF		<b>.392</b>	<b>.743</b>	<b>.400</b>	<b>.659</b>

**Dependent variable: Budget process (planning-approval-implementation)**

The table explains the parameter values of the predicted model results and the t values by analyzing them for each variable at the 5% significance level. The constant in the value of .314 indicates that if the performance during the budget process based on the independent variables: POPB, BPB, NDSH, RPP is zero, then the budget process has an accuracy of 31%. If the performance during the budget process is done in accordance with the independent variables, the accuracy will be 107%, (fulfillment of objectives during the budget process=40%, cooperation during the budget process=43%, fair sharing of expenses=15%, safeguarding of public money=9%). The Beta coefficient indicates that all independent variables are significant in the model, but the most important variable is BOPB = 47%. Collinearity statistics including tolerance and VIF values (.228=.392, .267=.743, .227=.400, .424=.659) are important in the model, because there is no problem of multiple connections in between independent variables.

$$\hat{y} = \alpha_0 + \beta_1(POP B) + \beta_2(BPB) + \beta_3(NDSH) + \beta_4(RPP)$$

$$= 0.314 + 0.400x_1 + 0.431x_2 + 0.154x_3 + 0.099x_4 + 0.13\mu$$

$$F = \frac{R^2/k}{(1 - R^2) / (n - k - 1)} = \frac{.873/4}{(1 - .873)/30} = \frac{0.21825}{0.127 / 30} = \frac{0.21825}{0.004233}$$

$$= 51.55918$$

Reliability interval 95% (Sig.2-tailed),  $p=0.000 < 0.05$ ,  $t= 3.440, 3.626, 1.411, 1.557 > 1.402$ , the value of  $p$  is less than the significance level 5%,  $H_0$  is rejected and accepted ( $\beta_1, \beta_2, \beta_3, \beta_4 \neq 0$ ), however two parameters (NDSH, RPP) although accepted, should increase performance.

## **Factor 2. Challenges during the Budget Process (Planning-Approval-Implementation)**

According of this factor, as a dependent variable are the challenges during the budget process (planning-approval-implementation)-(SPB), while as independent variables are: the commitment shortages during the budget process (MPPB), shortfalls and discrepancies in revenues and expenditures during the budget process (MMPB), shortfalls of accurate data during the budget process (MDHSPB), centralization and budget control (CKB), good non-cooperation during the budget process (MBPB).

**Table 4. Model Summary**

<b>Model Summary</b>										
<b>Model</b>	<b>R</b>	<b>R Squared</b>	<b>Adjusted R</b>	<b>Dev. Stand</b>	<b>Change Statistics-ANOVA</b>					
					<b>R Sq.</b>	<b>F</b>	<b>Df. 1</b>	<b>Df. 2</b>	<b>Sig.</b>	<b>Durbin-Watson</b>
<b>1</b>	<b>.99</b>	<b>.985</b>	<b>.982</b>	<b>.0651</b>	<b>.985</b>	<b>367.73</b>	<b>5</b>	<b>28</b>	<b>.00</b>	<b>1.309</b>
	<b>2</b>			<b>7</b>		<b>6</b>			<b>0</b>	

The table explains that 99% (R = .985, Sig. = 000, F = 367.7368) for the factor of challenges during the budget process depends on the independent variables (MPPB, MMPP, MDHSPB, CKB, MBPB), while 1% depends on other variables outside of this model by random error. Adjusted R Sq. in the value of .982 shows that 98% of the variables are related to the model, while according to the DW test (1.309) the model is important and the auto correlation is negative, which means that the standard error of coefficient b is very small.

**Table 5. Coefficients**

<b>Coefficients</b>			<b>Model</b>					
			<b>Constant</b>	<b>MPP B</b>	<b>MMPP</b>	<b>MDHS PB</b>	<b>CKB</b>	<b>MBPB</b>
<b>Unstandardized coefficients</b>	<b>B</b>		<b>.175</b>	<b>.315</b>	<b>.196</b>	<b>.195</b>	<b>.242</b>	<b>.002</b>
	<b>Stand. Error</b>		.080	.031	.029	.018	.024	.030
<b>Standardized coefficients</b>	<b>Beta</b>			.409	.292	.346	.334	-.003
<b>t</b>			2.175	10.182	6.764	10.972	10.078	-.070
<b>Sig.</b>			<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>
<b>95.0% Confidence Interval for B</b>	<b>Lower bound</b>		.010	.252	.137	.158	.193	-.064
	<b>Upper bound</b>		.339	.378	.256	.231	.291	.060
<b>Collinearity Statistics</b>	<b>Tolerance</b>			<b>.335</b>	<b>.290</b>	<b>.547</b>	<b>.492</b>	<b>.236</b>
	<b>VIF</b>			<b>.983</b>	<b>.448</b>	<b>.830</b>	<b>.931</b>	<b>.630</b>

**Dependent variable: Challenges during the budget process (planning-approval-implementation)**

The table explains the parameter values of the predicted model results and the t values by analyzing them for each variable at the 5% significance level. The constant in the value of .175 indicates that if the challenges during the budget process based on: MPPB, MMPP, MDHSPB, CKB, MBPB is zero, then this factor has an accuracy of 18%. If the challenges during the budget process are made in accordance with the independent variables, the accuracy will be 96.2% which means that if these challenges are improved, the performance during the budget process will increase, (the commitment shortages during the budget process=32%, shortfalls and discrepancies in revenues and expenditures during the budget process=20%, shortfalls of accurate data during the budget process=20%, centralization and budget control=24%, good non-cooperation during the budget process=0.2%). The Beta coefficient shows that all independent variables are important in the model, but the most important variable is the commitment shortages during the budget process=41%. Collinearity statistics including tolerance values and VIF (.335=.983, .290=.448, .547=.830, .492=.931, .236=.630) are important in the model, because it does not exist the problem of multiple relationships between independent variables.

$$\hat{y} = \alpha_0 + \beta_1(MPPB) + \beta_2(MMPP) + \beta_3(MDHSPB) + \beta_4(CKB) + \beta_5(MBPB) \\ = 0.175 + 0.315x_1 + 0.196x_2 + 0.195x_3 + 0.242x_4 \\ + 0.002x_5 + 0.01\mu$$

$$F = \frac{R^2/k}{(1-R^2)/(n-k-1)} = \frac{.985/5}{(1-.985)/28} = \frac{0.197}{0.015/28} = \frac{0.197}{0.00053571} \\ = 367.7368$$

Reliability interval 95% (Sig.2-tailed),  $p=0.000<0.05$ ,  $t= 10.182, 6.764, 10.972, 10.078, -.070 > 2.305$ , the value of  $p$  is less than the significance level 5%,  $H_0$  is rejected and accepted  $(\beta_1, \beta_2, \beta_3, \beta_4, \beta_5) \neq 0$ .

### Factor 3. Improvement during the Budget Process (Planning-Approval-Implementation)

According to this factor, as a dependent variable is the improvement during the budget process (planning- approval-implementation) - (PPB), while as independent variables are: transparent use of performance improvement budget (PTB), fulfillment of budget objectives (POB).

**Table 6. Model Summary**

Model Summary										
Model	R	R Square	Adjusted R Square	Dev. Std.	Change Statistics-ANOVA					
					R Sq. Change	F	Df.	Df.2	Sig.	Durbin-Watson
1	.982	.983	.972	.0685	.983	954.091	2	33	.000	1.762

The table explains that 98% ( $R=.983$ ,  $Sig.=000$ ,  $F=954.091$ ) for the performance improvement factor during the budget process depends on the independent variables (PTB, POB), while 2% depends on other variables outside this model by means of random error. Adjusted R Sq. in the value of .972 shows that 97% of the variables are related to the model, while according to the DW test (1.762) the model is significant and the auto correlation is negative, which means that the standard error of coefficient b is very small.

**Table 7. Coefficients**

Coefficients		Model		
		Constant	PTB	POB
<b>Unstandardized coefficients</b>	B	<b>.177</b>	<b>.503</b>	<b>.499</b>
	Stand. Error	.085	.023	.024
<b>Standardized coefficients</b>	Beta		.577	.560
<b>t</b>		-.196	21.841	21.198
<b>Sig.</b>		<b>.000</b>	<b>.000</b>	<b>.000</b>
<b>95.0% Confidence Interval for B</b>	Lower bound	-.189	.456	.451
	Upper bound	.156	.550	.547
<b>Collinearity Statistics</b>	Tolerance		<b>.728</b>	<b>.728</b>
	VIF		<b>1.373</b>	<b>1.373</b>

**Dependent variable: Improvement during the budget process**

The table explains the parameter values of the predicted model results and the t values by analyzing them for each variable at the 5% significance level. The constant in the value of .177 indicates that if the improvement during the budget process is based on independent variables such as: transparent use of performance improvement budget, fulfillment of budget objectives is zero, then budget cooperation has an accuracy of 18%. If the improvement during the budget process is done in accordance with the independent variables, the accuracy will be 100%, (PTB=50%, POB=50%). The Beta coefficient indicates that the two independent variables are significant in the model, but the most important variable is PTB= 57%. Collinearity statistics including tolerance values and VIF (.728 = 1.373, .728 = 1.373) are important in the model, because there is no problem of multiple relationships between independent variables.

$$\hat{y} = \alpha_0 + \beta_1(PTB) + \beta_2(POB) = 0.177 + 0.503x_1 + 0.499x_2 + 0.02\mu$$

$$F = \frac{R^2/k}{(1 - R^2)/(n - k - 1)} = \frac{.983/2}{(1 - .983)/33} = \frac{0.4915}{0.017/33} = \frac{0.4915}{0.00051515} = 954.091$$

Reliability interval 95% (Sig.2-tailed),  $p=0.000 < 0.05$ ,  $t= 21.841, 21.198 > 12.705$ , the value of  $p$  is less than the significance level 5%,  $H_0$  is rejected and accepted ( $\beta_1, \beta_2) \neq 0$ .

#### Factor 4. Performance in Financial-Budget Reports

According of this factor, as a dependent variable is the performance in financial-budget reports (PRFB), while as independent variables are: improvement and increase of transparency in financial-budgetary documents (PDFB), improvement and increase of transparency in the preparation and publication of financial-budget reports (RRTPPFB).

**Table 8. Model Summary**

Model Summary										
Model	R	R Squared	Adjusted R Squared	Std. Error of the Estimate	Change Statistics-ANOVA					
					R Sq. Change	F	Df. 1	Df. 2	Sig.	Durbin-Watson
1	.890	.791	.779	.262	.79	66.23	2	35	.000	1.813

The table explains that 79% ( $R=.791$ ,  $\text{Sig.}=0.000$ ,  $F=66.2368$ ) for the performance factor in financial-budget reports depends on the independent variables (PDFB, RRTPPFB), while 21% depends on other variables outside this model by means of random error. Adjusted R Sq. in the value of .779 shows that 78% of the variables are related to the model, while according to the DW test (1.813) the model is significant and the auto correlation is negative, which means that the standard error of coefficient b is very small.

**Table 9. Coefficients**

Coefficients				
		Model		
		Constant	PDFB	RRTPPFB
Unstandardized coefficients	B	.287	.755	.232
	Stand. Error	.277	.095	.089
Standardized coefficients	Beta		.918	-.040
t		3.132	8.228	.356
Sig.		.000	.000	.000
95.0% Confidence Interval for B	Lower bound	.305	.591	-.213
	Upper bound	1.429	.979	.149
Collinearity Statistics	Tolerance		.479	.479
	VIF		1.086	1.086

Dependent variable: Performance in financial-budget reports

The table explains the parameter values of the predicted model results and the t values by analyzing them for each variable at the 5% significance level. The constant in the value of .287 indicates that if the increase in performance in financial-budget reports based on dependent variables: improvement and increase of transparency in financial-budgetary documents, improvement and increase of transparency in the preparation and publication of financial-budget reports is zero, then this factor has an accuracy of 29%. If the performance in the financial-budget reports is done in accordance with the independent variables, the accuracy will be 99%, (PDFB=76%, RRTPPFB=23%). The Beta coefficient shows that both independent variables are important in the model, but the most important variable is improvement and increase of transparency in financial-budgetary documents=92%. Collinearity statistics including tolerance and VIF values (.479 =1.086, .479=1.086) are important in the model, because there is no problem of multiple relationships between independent variables.

$$\hat{y} = \alpha_0 + \beta_1(PDFB) + \beta_2(RRTPPFB) = 0.287 + 0.755x_1 + 0.232x_2 + 0.21\mu$$

$$F = \frac{R^2/k}{(1 - R^2) / (n - k - 1)} = \frac{.791/2}{(1 - .791)/35} = \frac{0.3955}{0.209 / 35} = \frac{0.3955}{0.005971} = 66.2368$$

Reliability interval 95% (Sig.2-tailed), p=0.000<0.05, t= 8.228, .356> 3.105, the value of p is less than the significance level 5%, H<sub>0</sub> is rejected and accepted (β<sub>1</sub>, β<sub>2</sub>) ≠0.

**Factor 5. Cooperation during the Budget Process (Planning-Approval-Implementation) to Increase Budget Performance**

According of this factor, as a dependent variable is the cooperation during the budget process (BPB), while as independent variables are: agreements and responsibilities in budgetary financial indicators at central and local level (MPNQL), budget experts (EB).

**Table 10. Model Summary**

Model Summary										
Model	R	R Squared	Adjusted R	Standard Error	Change Statistics-ANOVA					
					R Sq.	F	Df. 1	Df. 2	Sig.	Durbin-Watson
1	.932	.869	.861	.20968	.869	99.629	2	33	.000	1.8750

The table explains that 87% (R=.869, Sig.=000, F=99.629) for the factor of cooperation during the budget process depends on the independent variables

(MPNQL, EB), while 13% depends on other variables outside this model with a side of random error. Adjusted R Sq. in the value of .861 shows that 86% of the variables are related to the model, while according to the DW test (1.875) the model is important and the auto correlation is negative, which means that the standard error of coefficient b or is very small.

**Table 11. Coefficients**

Coefficients		Model		
		Constant	MPN QL	EB
<b>Unstandardized coefficients</b>	B	<b>.169</b>	<b>.813</b>	<b>.219</b>
	Stand. Error	.672	.479	.334
<b>Standardized coefficients</b>	Beta	.225	.966	.146
<b>t</b>			.533	.538
<b>Sig.</b>		2.991	7.247	7.328
<b>95.0% Confidence Interval for B</b>	Lower bound	<b>.000</b>	<b>.000</b>	<b>.000</b>
	Upper bound	.215	.345	.242
<b>Collinearity Statistics</b>	Tolerance		<b>.614</b>	<b>.427</b>
	VIF		<b>.734</b>	<b>.734</b>

**Dependent variable: Cooperation during the budget process (planning-approval-implementation) to increase budget performance.**

The table explains the parameter values of the predicted model results and the t values by analyzing them for each variable at the 5% significance level. The constant in the value of .169 shows that if the cooperation during the budget process (planning-approval-implementation) of increasing budget performance based on: agreements and responsibilities in budgetary financial indicators at central and local level, budget experts is zero, then this factor has an accuracy of 17%. If the cooperation during the budget process is done in accordance with the independent variables, the accuracy will be 103% (MPNQL=81%, EB=22%). The Beta coefficient shows that both independent variables are important in the model, but the most important variable is the agreements and responsibilities in budgetary financial indicators at central and local level=97%. Collinearity statistics including tolerance and VIF values (.614=.734, .427=.734) are important in the model, because there is no problem of multiple relationships between independent variables.

$$\hat{y} = \alpha_0 + \beta_1(MPNQL) + \beta_2(EB) = 0.169 + 0.813x_1 + 0.219x_2 + 0.13\mu$$

$$F = \frac{R^2/k}{(1 - R^2)/(n - k - 1)} = \frac{.869/2}{(1 - .869)/33} = \frac{0.4345}{0.131/33} = \frac{0.3955}{0.0039697} = 99.6297$$

Reliability interval 95% (Sig.2-tailed),  $p=0.000 < 0.05$ ,  $t=.533, .538 > .105$ , the value of  $p$  is less than the significance level 5%,  $H_0$  is rejected and accepted  $(\beta_1, \beta_2) \neq 0$ .

**Factor 6. Financial-Budgetary Reforms**

According of this factor, as dependent variable are financial-budget reforms (RFB), while as independent variables are: reform in the financial indicators (RFTF), reform in budget appropriations (RNB), reforms in the preservation of public money (RRPP), reforms in the distribution of funds (RSHF), reforms in fair spending sharing (RNDSH).

**Table 12. Model Summary**

Model Summary										
Model	R	R Squared	Adjusted R	Standard Error	Change Statistics-ANOVA					
					R Sq.	F	Df. 1	Df. 2	Sig.	Durbin-Watson
1	.998	.997	.996	.03444	.997	3823.10	5	29	.000	1.532

The table explains that 99% (R=.997, Sig.=000, F=3823.103) for the financial-budget reform factor depends on the independent variables (RFTF, RNB, RRPP, RSHF, RNDSH), while 1% depends on other variables outside of this model by random error. Adjusted R Sq. at a value of .996 indicates that 99% of the variables are related to the model, while according to the D-W test (1.532) the model is significant and the auto correlation is negative, which means that the standard error of coefficient b is very small.

**Table 13. Coefficients**

Coefficients							
Unstandardized coefficients	B	Model					
		Constant	RFTF	RNB	RRPP	RSHF	RNDSH
		.104	.255	.207	.153	.167	.189
	Standard Error	.041	.018	.016	.011	.011	.015
	Beta		.295	.237	.220	.235	.216
	t	2.526	14.101	13.166	14.250	15.403	12.809
	Sig.	.000	.000	.000	.000	.000	.000
95.0% Confidence Interval for B	Lower bound	.020	.218	.175	.131	.145	.159
	Upper bound	.188	.292	.240	.175	.189	.220



<b>Collinearity Statistics</b>	Tolerance	<b>.273</b>	<b>.368</b>	<b>.502</b>	<b>.514</b>	<b>.420</b>
	VIF	<b>.660</b>	<b>.720</b>	<b>.992</b>	<b>.947</b>	<b>.882</b>

**Dependent variable: Financial-budgetary reforms**

The table explains the parameter values of the predicted model results and the t values by analyzing them for each variable at the 5% significance level. The constant in the value of .104 indicates that if the financial-budgetary reforms based on: reform in the financial indicators, reform in budget appropriations, reforms in the preservation of public money, reforms in the distribution of funds, reforms in fair spending sharing are zero, then budget financial reforms have an accuracy of 10%. If the financial-budget reforms are implemented in accordance with the independent variables, the accuracy will be 98% (RFTF=26%, RNB=21%, RRPP=15%, RSHF=17%, RNDSH=19%). The Beta coefficient shows that all independent variables are important in the model, but the most important variable is the reform in financial indicators=30%. Collinearity statistics including tolerance and VIF values (.273=.660, .368=.720, .502=.992, .514=.947, .420=.882) are important in the model, because it does not exist the problem of multiple relationships between independent variables.

$$\hat{y} = \alpha_0 + \beta_1(RFTF) + \beta_2(RNB) + \beta_3(RRPP) + \beta_4(RSHF) + \beta_5(RNDSH) \\ = 0.104 + 0.255x_1 + 0.207x_2 + 0.153x_3 + 0.167x_4 \\ + 0.189x_5 + 0.01\mu$$

$$F = \frac{R^2/k}{(1 - R^2) / (n - k - 1)} = \frac{.997/5}{(1 - .997)/29} = \frac{0.1994}{0.003 / 29} = \frac{0.3955}{0.00010345} \\ = 3823.103$$

Reliability interval 95% (Sig.2-tailed),  $p=0.000 < 0.05$ ,  $t = 14.101, 13.166, 14.250, 15.403, 12.809 > 9.402$ , the value of  $p$  is less than the significance level 5%,  $H_0$  is rejected and accepted  $(\beta_1, \beta_2, \beta_3, \beta_4, \beta_5) \neq 0$ .

## Conclusions

The state budget should affect the well-being of the population in general by making a fair distribution of resources according to needs and urgency to both governments (central and local) actively every year and not just based on the previous year. The factors for the preservation of public money and the fair distribution of expenditures must be taken into account, because they have a very low econometric value, namely:

- ✓ According to  $\beta_4=0$ , this factor emphasizes that the MBPB sub-factor needs to be improved to increase performance during budget governance,
- ✓ According to  $\beta_2=0$ , this factor emphasizes that the performance in the transparency of financial-budget reports should be improved,

- ✓ According to  $\beta_2 \neq 0$ , this factor emphasizes that transparency should be increased in the preparation of reports or budget documents, i.e. not all municipalities compile reports regularly according to deadlines,
- ✓ The variables of budget cooperation ( $f_1, f_2, f_3, f_4, f_5, f_6, f_7$ ) should increase more performance during budget governance,
- ✓ In the variables of budget challenges ( $f_1, f_2, f_3, f_4, f_5, f_6, f_7$ ), they should be improved and removed, in order to increase more performance during budget governance,
- ✓ Budget planning is rarely done according to citizens' requests (KMO=.685),
- ✓ In some municipalities the performance is not high, because there are many challenges (KMO=.604),
- ✓ In some municipalities the performance is not high, because there are no improvements in and during the budget process (KMO=.614),
- ✓ In some municipalities the performance is not high, because the foreseen objectives are not met (KMO=.695),
- ✓ In some municipalities there is not much high performance, because there is a lack of a responsible advisory office for local, regional and international budget practices which have increased performance during the budget process such as: provide training for staff, develop guidelines, establish contacts for profitable budget agreements etc. (KMO=.670),
- ✓ In order to increase performance, there must be political stability in budget-financial agreements (KMO=.670),
- ✓ In order to increase performance, there should be more budget experts during governance (KMO=.675),
- ✓ In order to increase performance, there should be a reform in the rules for budget allocation during governance (KMO=.765),
- ✓ In order to increase performance, there should be reforms in the preservation of public money during government (KMO=.775),
- ✓ In order to increase performance, there should be reforms in the distribution of funds during governance (KMO=.633),
- ✓ In order to increase performance, there should be a reform in the fair distribution of expenditures during governance (KMO=.652),
- ✓ In order to increase performance, there should not be too much centralization of budget procedures by the government by selecting programs based on bias and not on priorities (KMO=.651).

These are some of the conclusions that need to be taken into account during governance to increase performance at the local level.

## References

- Isaboke, M.; Josphat, K. & Josphat, E. (2016). Assessment of budgeting process on financial performance of county government of Nakuru, Kenya. *International Journal of Economics, Commerce and Management* pp. 134-150.
- Kroll, A. & Moynihan, D. (2015). Does Training Matter? Evidence from Performance Management Reforms. *PAR- Public Administration Review*, pp. 411-420. <https://doi.org/10.1111/puar.12331>.
- Mitchell, D. & Thurmaier, K. (2016). (Re)Defining the Disarticulated Municipality: Budget Accountability for Networked Governance. *Public Budgeting & Finance*, pp. 47-67, Volume 36, Issue 1. <https://doi.org/10.1111/pbaf.12087>.
- Musgrave, A.; Musgrave, R. & B. Peggy. (1989). *Public Finance in theory and practice*. California: Exclusive rights by McGraw-Hill Book Co- Singapore, pp. 1-650.
- Wildavsky, A. (1965). *The Politics of the Budgetary Process*. Boston: The Yale Law Journal Company, Inc.
- Adongo, K. & Ambrose, A. (2013). Budgetary Control as a Measure of Financial Performance of State Corporations in Kenya. *International Journal of Accounting and Taxation, Vol. 1 No. 1*, pp. 38-57. [www.aripd.org/ijat](http://www.aripd.org/ijat).
- Barry, A. (2009). The Changing Role of Parliament in the Budget Process. *OECD Journal on Budgeting* Volume 2009/1, pp. 1-11. <https://www.oecd.org/>.
- James, A. C. & Gerbing, D. W. (1984). The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis. *Psychometrical, Volume 49 (2)*, pp. 155-173. 10.1007/BF02294170.
- Bai, A., Hira, S. & Deshpande, P. S. (2015). An Application of Factor Analysis in the Evaluation of Country Economic Rank. *Eleventh International Multi-Conference on Information Processing-2015 (IMCIP-2015)* pp. 311 – 317. doi: 10.1016/j.procs.2015.06.036.
- Bailey, S. J. (2004). *Strategic Public Finance*. New York, N.Y. 10010: First published 2004 by Palgrave Macmillan, pp.1-285. <https://link.springer.com/book/10.1007/978-1-4039-4394-1>.
- Bremer, M. (2012). Multiple linear regression-Math 261A. *Reliawiki*. <http://reliawiki.org>.
- Campbell, Th. (1996). Investigating structures underlying relationships when variables are not the focus: Technique and other techniques. *Advances in social science methodology (Vol. 4)* pp. 207-218.
- Cleveland, A. F. (1915). *Evolution of the Budget Idea in the United States*. New York City: Bureau of Municipal Research, Volume: 62 issue: 1, pp. 15-35.
- Cretu Carmem, M. et al. (2010). Budget - Performance Tool in Public Sector. *Proceedings of the 5th WSEAS International Conference on Economy and Management Transformation*, Volume I, pp. 360-368, DOI: 10.13140/2.1.1033.9849.
- Fleischman, R. & Marquette, P. (1986). The Origins of Public Budgeting: Municipal Reformers during the Progressive Era. *Public Finance & Budgeting*, Volume 6, Issue 1, pp. 71-77. <https://doi.org/10.1111/1540-5850.00708>.

- Hallberg, M.; Strauch R. & Hagen, J. (2006). The Design of Fiscal Rules and Forms of Governance in European Union Countries. *Finance and Capital Markets Series* pp. 338-359. London: Palgrave Macmillan. [https://doi.org/10.1057/9780230271791\\_6](https://doi.org/10.1057/9780230271791_6).
- Henson, R. & Roberts, J. K. (2006). Use of Exploratory Factor Analysis in Published Research Common Errors and Some Comment on Improved Practice. *Educational and Psychological Measurement*, pp. 393-416. DOI: 10.1177/0013164405282485.
- Jonson, R. & Wichern, D., (2007). *Applied Multivariate Statistical Analysis. Sixth Edition*. London: Printed in the United States of America.
- Khan, A. (2019). *Fundamentals of Public Budgeting and Finance*. USA: Palgrave Macmillan, Cham, DOI <https://doi.org/10.1007/978-3-030-19226-6>, pp. 1-438.
- Khan, A. & Hildreth, W. B. (2002). *Budget Theory in the Public Sector*. United States of America: Praeger, p. 320; 630.
- Kieffer, K., (1999). An introductory primer on the appropriate use of exploratory and confirmatory factor. *Research in the Schools* pp. 75-92, Corpus ID: 142586849.
- Lulaj, E. (2019). The Impact and Effects of Financial Reporting in the Public Accounting, econometric analysis model: Revenue and Expenditures for period 2007-2017. *European Journal of Economics and Business Studies Articles* pp. 46-66, DOI: <http://dx.doi.org/10.26417/ejes.v5i1>.
- Lulaj, R. E. (2019). Transparency and accountability in the public budget, empirical study (data analysis) in local governments-municipalities. *International Education Research*, Vol. 7, No. 4, pp. 69-86.
- Moynihan, D. & Beazley, I., (2016). *Toward next-generation performance budgeting: lessons from the experiences of seven reforming countries*. Washington, D.C.: World Bank Group, <http://documents.worldbank.org/curated/en/356081478497402740/Toward-next-generation-performance-budgeting-lessons-from-the-experiences-of-seven-reforming-countries>, pp. 1-187.
- O'Rourke, N. & Hatcher, L. (2013). *A Step-by-Step Approach to Using SAS® for Factor Analysis and Structural Equation Modeling, Second Edition*, SAS Institute Inc., Cary, NC, USA.
- OECD. (2002). *OECD Best Practices for Budget Transparency*. Paris: OECD Publications Service, pp.1-10.
- Rencher, A. M. (2002). *Methods of Multivariate Analysis, Second Edition*. New York: Printed in the United States of America.
- Robinson, M. (2007). *Performance Budgeting- Linking Funding and Results*. New York: International Monetary Fund. DOI 10.1057/9781137001528.
- Rubin, I. (1996). Budgeting for Accountability: Municipal Budgeting for the 1990s. *Public Budgeting & Finance* pp. 112-132. <https://doi.org/10.1111/1540-5850.01071>.
- Schick, A. (1966). The Road to PPB: The Stages of Budget Reform. *Public Administration Review* 26(6), pp. 243-258.
- Shah, A., (2007). *Participatory Budgeting. Public Sector Governance and Accountability*. Washington, DC: World Bank, <https://openknowledge.worldbank.org/handle/10986/6640> License: CC BY 3.0 IGO.
- Smith, W. R. & Lynch, D. Th. (2003). *Public Budgeting in America (5th Edition)*. Florida: Pearson; 5 edition, p. 320.
- Thompson, B. & Daniel, L. (1996). Factor analytic evidence for the construct validity of scores: A historical overview and some guidelines. *Educational and Psychological Measurement*, 56(2) pp. 197-208, [https://aquila.usm.edu/fac\\_pubs/5558](https://aquila.usm.edu/fac_pubs/5558).

Tyer, Ch. & Willand, J. (1997). *Public budgeting in America: a twentieth century retrospective*. Columbia, S.C: Institute for Public Service and Policy Research.