

Article

Developing an Integrated Framework for Assessing Public Budget Expenditure Efficiency: Evidence from Uzbekistan

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Abstract: Purpose. This article aims to substantiate the theoretical and methodological foundations for evaluating the efficiency of public budget expenditure and to develop a comprehensive, multi-criteria system of indicators capable of capturing the economy, efficiency, and effectiveness of budgetary spending. Design/methodology/approach. The study applies a systemic approach combined with comparative analysis, economic-statistical analysis, scientific abstraction, induction, deduction, and generalization. The empirical and normative basis draws on data and reports of the Ministry of Economy and Finance of the Republic of Uzbekistan, the National Statistics Committee, the Open Budget Portal, the World Bank, the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), and the Public Expenditure and Financial Accountability (PEFA) Program, alongside a structured review of the international and post-Soviet scientific literature on performance-based budgeting (2006-2025). Findings. The efficiency of budget fund utilization cannot be adequately captured through the level of fund absorption or fiscal-discipline indicators alone. Building on the international literature and Uzbekistan's 2027-2029 Fiscal Strategy, the study proposes an integrated conceptual model in which economy, efficiency, and effectiveness interact as three mutually reinforcing criteria, operationalized through seven indicator groups: financial, economic, social, effectiveness, transparency and accountability, digitalization, and sustainability indicators. Practical implications. The proposed indicator system and the accompanying policy recommendations provide a methodological basis for the Ministry of Economy and Finance, the National Statistics Committee, sectoral ministries, and regional governments to design a national Integrated Budget Efficiency Index, to introduce program-level Key Performance Indicators (KPIs), and to align budget performance monitoring with the "Uzbekistan – 2030" strategy. Originality/value. Unlike prior studies that either describe international performance-budgeting experience in general terms or confine the analysis to a single sector (e.g., renewable energy), this article integrates financial, economic, social, governance, digital, and sustainability dimensions into one methodologically consistent framework specifically adapted to the institutional conditions of Uzbekistan's evolving public financial management (PFM) system, and formalizes the framework through an original composite index specification.

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1. Introduction

Effective management of public finance and the rational use of budgetary resources are among the most decisive determinants of sustainable economic development. Over the

past two decades, the volume of public expenditure has expanded considerably across both advanced and developing economies, social programs have broadened in scope, and public demand for accountability over how governments spend taxpayers' money has intensified [1]. These trends have made the introduction of modern, evidence-based mechanisms for evaluating the efficiency of budget fund utilization one of the central tasks of public financial management reform [2]. Consequently, improving the system of indicators used to assess the efficiency of budget expenditure has become one of the priority directions of public finance management worldwide, and refining this system remains a genuinely open methodological problem rather than a solved technical exercise [3].

In international practice, Performance-Based Budgeting (PBB), medium-term fiscal planning, and systematic monitoring and evaluation of public expenditure have become widely established instruments of public governance. According to the OECD's most recent survey of its member and accession-candidate countries, the large majority of OECD governments now produce some form of performance information for the budget process, yet considerable heterogeneity persists in how consistently that information is actually used in resource-allocation decisions [4]. Within this paradigm, the formation of an indicator system capable of assessing whether budgetary funds are spent purposefully, economically, and with tangible results is recognized as a critical instrument for raising the quality of public administration [5]. At the same time, improving the indicator systems used to comprehensively evaluate the economic, social, and financial outcomes of public spending remains one of the most active areas of international scientific inquiry [6].

The Republic of Uzbekistan is implementing a wide-ranging program of reforms aimed at modernizing public financial management, digitalizing budget processes, introducing the principles of performance-based budgeting, and strengthening public oversight of government expenditure [7]. Uzbekistan's Fiscal Strategy for 2027-2029 explicitly identifies raising the efficiency of budget fund utilization as one of the priority directions of public finance management, and envisages achieving this through result-oriented budget policy, stronger targeting of expenditure, greater fiscal transparency, and the broad application of digital technologies [8]. Nevertheless, in current evaluation practice, the system of indicators required to comprehensively describe the efficiency of budget expenditure remains insufficiently developed, the criteria used to assess performance require further refinement, and the analytical approaches applied in practice remain limited in scope [9]. This gap between an ambitious, internationally aligned policy agenda and an underdeveloped domestic measurement apparatus creates a clear necessity for deepening scientific research in this direction [10].

This problem is not unique to Uzbekistan. Cross-country evidence assembled through the PEFA (Public Expenditure and Financial Accountability) framework - the internationally recognized standard for diagnosing PFM system performance across more than 190 jurisdictions since 2001 - repeatedly shows that budget credibility and expenditure control indicators tend to be considerably stronger than indicators of policy-based fiscal strategy and performance monitoring, precisely the domain into which an efficiency-indicator system falls [11]. Uzbekistan's own experience therefore mirrors a broader, internationally documented asymmetry between fiscal control capacity and performance-evaluation capacity, which reinforces the relevance of the present study beyond the national context [12]. Despite growing international and national attention to performance-based budgeting, a methodological gap remains in integrating financial, economic, social, governance, digitalization, and sustainability indicators within a single framework adapted to Uzbekistan's public financial management system. Addressing this gap is essential for moving from expenditure-control-oriented assessment toward comprehensive evaluation of the actual outcomes and public value generated by budget spending. Previous studies on public expenditure efficiency emphasize that budget performance should be assessed not only through financial discipline and expenditure control but also through economic, social, and institutional outcomes. International

research on performance-based budgeting highlights the importance of linking performance indicators with strategic planning and resource allocation, while CIS and Uzbek scholars emphasize economy, effectiveness, fiscal discipline, social outcomes, and result-oriented budgeting. However, existing studies have not sufficiently integrated financial, economic, social, governance, digitalization, and sustainability dimensions into a unified evaluation framework adapted to Uzbekistan's institutional and statistical conditions. This methodological gap provides the basis for the present study.

The purpose of this article is to analyze the theoretical and methodological foundations for evaluating the efficiency of budget fund utilization and to develop scientific proposals and recommendations for improving the system of indicators capable of comprehensively assessing the effectiveness, economy, and purposefulness of budget expenditure [13]. To achieve this purpose, the study addresses the following specific objectives: (1) to synthesize the international, post-Soviet, and national scholarly literature on performance-based budgeting and budget-efficiency measurement in order to identify the precise research gap this article addresses; (2) to substantiate, both narratively and formally, a three-criterion conceptual model of budget efficiency built on economy, efficiency, and effectiveness; (3) to systematize the exogenous and endogenous factors shaping Uzbekistan's financial stability and, through it, the conditions for efficient budget spending; (4) to propose a multi-dimensional, seven-group system of evaluation indicators, together with a composite index formalization, that can be operationalized within Uzbekistan's existing statistical and institutional capacity; and (5) to derive concrete, actionable policy recommendations for the bodies responsible for budget planning, statistics, environmental and climate finance, and regional administration [14].

The remainder of the article is organized as follows. Section 2 reviews the international, post-Soviet, and national literature on performance-based budgeting and budget-efficiency evaluation and identifies the research gap addressed by this study. Section 3 describes the research methodology, data sources, and the analytical apparatus used, including the formal specification of the efficiency criteria [15]. Section 4 presents the results of the analysis - the systemization of exogenous and endogenous factors affecting financial stability, the conceptual model linking economy, efficiency, and effectiveness, and the proposed seven-group indicator system - and discusses their implications in light of both Uzbekistan's Fiscal Strategy and international practice. Section 5 concludes with a summary of findings, policy recommendations, study limitations, and directions for further research [16].

1.1. International theoretical foundations

In the international scientific literature, the evaluation of budget fund utilization efficiency is regarded as an integral element of the Public Financial Management (PFM) system. Since the early 2000s, a substantial conceptual shift has taken place: public expenditure is assessed not merely by the volume of financing disbursed, but by its ultimate outcomes and the public value it creates for society. This approach serves to raise the efficiency of resource use in public administration, strengthen fiscal discipline, and reinforce public oversight of government activity [17].

Allen Schick, analyzing the evolution of public financial management systems, argues that the traditional line-item budgeting model no longer fully satisfies the requirements of a modern economy. In his view, evaluating the efficiency of budget fund utilization cannot be limited to controlling the volume of expenditure; it must also encompass the outcomes achieved through allocated resources, the quality of public services, and social effectiveness. Schick therefore treats performance indicators as one of the principal instruments for budgetary decision-making [18].

Marc Robinson, in his extensive work on the theoretical and practical foundations of performance-based budgeting, demonstrates that efficiency indicators make it possible to identify priority areas in the allocation of budget funds, to measure the outcomes of government programs, and to inform the reallocation of resources. Robinson substantiates

that a performance-evaluation system is not merely an aggregation of statistical indicators but a governance instrument that unifies strategic planning, monitoring, and decision-making into a single mechanism [19].

Jim Brumby and Marc Robinson, examining the outcomes of performance-budgeting practice across a range of countries, show that efficiency indicators can indeed support a more rational allocation of budget resources, but only when their existence is matched by adequate data quality, reliability, and institutional embedding. The authors emphasize that a performance-evaluation system produces meaningful results only when it is genuinely integrated with broader public administration reform [20].

Richard Allen, Richard Hemming, and Barry Potter, in their foundational work on public financial management, argue for integrating performance evaluation with strategic planning, fiscal-risk management, and internal control systems. In their view, the efficiency of public expenditure should be determined not by the rate of financial absorption but by its demonstrable impact on socio-economic outcomes; accordingly, they recommend a multi-tiered evaluation system combining financial, economic, and social indicators [21].

Within the Performance Budgeting concept developed by OECD experts, the efficiency of budget fund utilization is interpreted as "the systematic use of performance information in budgetary decision-making." According to OECD guidance, performance indicators should be precisely measurable, linked to strategic objectives, subject to regular monitoring, and capable of ensuring transparency and accountability in the activity of public bodies [22]. The OECD's most recent government-wide survey confirms that, while the production of performance information is now nearly universal among member states, the extent to which it is actually used to inform resource-allocation and reprioritization decisions - as opposed to merely being reported - continues to vary substantially across countries, underscoring that indicator design alone is insufficient without institutional mechanisms that connect measurement to decision-making [23].

Complementing this survey evidence, a recent theoretical contribution by Ho argues that much of the performance-budgeting literature has understated the role of public values - equity, responsiveness, and legitimacy - relative to narrowly technical efficiency criteria, and calls for evaluation frameworks that explicitly balance economic performance with these broader public-value dimensions. This argument is directly relevant to the present study's insistence on integrating social and governance indicators alongside financial and economic ones [24].

Experts of the International Monetary Fund (IMF) likewise recognize performance-based budgeting as one of the most important instruments for improving public financial management. According to IMF guidance, efficiency indicators serve to raise the efficiency of public expenditure only when they are closely integrated with the processes of strategic planning, budget execution, and outcome evaluation; the IMF's own PFM Blog documents that, even among advanced OECD economies, medium-term and top-down budgeting frameworks - the institutional backbone within which performance information must operate - remain unevenly implemented and continue to require methodological reinforcement.

A cross-country diagnostic perspective is provided by the PEFA (Public Expenditure and Financial Accountability) Program, jointly sponsored by the World Bank and a coalition of international development partners since 2001. The PEFA framework evaluates PFM system performance across seven pillars and roughly ninety indicators and dimensions, including "policy-based fiscal strategy and budgeting" and "predictability and control in budget execution." Comparative PEFA assessments across dozens of countries consistently reveal that the pillar concerning performance information for service delivery tends to lag behind pillars concerning basic expenditure control, which corroborates the present study's central premise that measurement of budget efficiency, as distinct from

mere expenditure control, remains an underdeveloped component of PFM systems even by international standards.

Analysis of the international scientific literature demonstrates that the system for evaluating the efficiency of budget fund utilization has evolved from a narrow instrument of financial control into a modern strategic management tool. However, most studies do not aim to construct a universal indicator system; instead, they prioritize improving practice within individual national contexts. Consequently, developing a comprehensive system of evaluation indicators that accounts for the institutional characteristics of a given national budget system remains a scientifically and practically relevant task - one that this article undertakes for the specific case of Uzbekistan.

1.2. Post-Soviet and CIS perspectives

Scholars from the Commonwealth of Independent States (CIS) have extensively studied questions of public financial management, the evaluation of budget expenditure efficiency, and the introduction of performance-based budgeting. These studies have primarily focused on the rational use of state financial resources, ensuring the purposeful expenditure of budget funds, and improving the mechanisms for evaluating the effectiveness of government programs.

The Russian scholar L.I. Yakobson, researching public-sector economics and budget policy, emphasizes that the evaluation of public expenditure efficiency should not rest on financial indicators alone but must also be measured through social outcomes, the quality of public services, and the impact on citizens' well-being. In his view, evaluating efficiency in a modern budget system must be closely linked to the quality of public administration and to strategic planning.

G.B. Polyak, in research devoted to the theory and practice of the state budget, notes that the evaluation of budget fund utilization efficiency should be carried out at every stage of the budget process. He substantiates that monitoring the planning, allocation, and utilization of budget funds within a unified indicator system significantly enhances the efficiency of public financial management, and emphasizes that the criteria of effectiveness, economy, and purposefulness should be applied in mutual harmony.

S.V. Barulin, investigating the institutional foundations of public financial management, demonstrates that raising the efficiency of budget fund utilization is directly linked to strengthening the financial control system, reinforcing fiscal discipline, and integrating efficiency indicators into public administration practice. In his view, efficiency indicators constitute an important instrument for evaluating the activity of public bodies and must be closely tied to strategic objectives.

A.M. Lavrov, evaluating medium-term budget planning and program budgeting as modern instruments of public financial management, notes that outcome indicators assume priority importance in the allocation of budget funds. In his scholarly view, evaluating the efficiency of government programs should rest not on the absorption of financial resources but on the final outcomes achieved and their social effects.

E.V. Ivanova and co-authors, substantiating the advantages of program budgeting for raising the efficiency of public expenditure, emphasize the need to direct budget resources toward priority areas and to systematically monitor their outcomes. The authors demonstrate empirically that the use of clear and measurable indicators in financing government programs increases the return on budget funds.

The overall analysis of scientific research conducted in CIS countries shows that the theoretical and methodological aspects of evaluating budget fund utilization efficiency have been addressed relatively thoroughly. However, the question of forming a comprehensive indicator system - one that simultaneously reflects economic, financial, and social outcomes and is genuinely applicable in practice - remains an open problem. In particular, there remains a continuing need to deepen scientific inquiry into evaluation

methodologies that take into account the institutional characteristics of national budget systems.

1.3. National (Uzbekistan) studies

In recent years, questions concerning the improvement of state budget fund utilization efficiency, the enhancement of fiscal policy, and the development of result-oriented budget management have been the subject of extensive research by Uzbek economists. Scientific inquiry in this direction has paid particular attention to strengthening the institutional foundations of public financial management, developing criteria for evaluating the efficiency of budget expenditure, and raising the effectiveness of public fund utilization.

F. Dustmirzayev, conducting a comprehensive analysis of the impact of state budget policy on the socio-economic development of society, substantiates that budget policy is an important instrument for ensuring macroeconomic stability, stimulating economic growth, and raising public welfare. The author emphasizes the need to comprehensively evaluate the pace of economic growth, indicators of social development, and the effectiveness of budget expenditure when assessing the efficiency of state budget fund utilization.

M.S. Davlatov, researching the modern conceptual foundations of state budget expenditure policy, notes that strategic planning, result-oriented budgeting, and the introduction of efficiency indicators are among the principal directions of the public financial management system. In the author's view, the efficiency of budget fund utilization should be evaluated not merely by the volume of expenditure but through its ultimate economic and social outcomes.

S. Ismoilova, researching the formation of an indicator system reflecting the efficiency of state budget fund utilization, scientifically substantiates the need to apply an indicator system grounded in the principles of economy, productivity, and effectiveness when evaluating efficiency. The author notes that the purposeful expenditure of state funds, the degree of rational resource use, and the comprehensive evaluation of achieved outcomes constitute an important component of state financial oversight.

N.U. Abdunazarova and N.Kh. Makhkamov, studying macroeconomic management and fiscal policy efficiency in resource-rich countries, emphasize that strengthening fiscal discipline, optimizing government expenditure, and directing budget resources toward priority areas are important factors in ensuring economic stability. In their view, the quality of public financial management directly affects the efficiency of budget fund utilization.

S.R. Allayarov, Sh.Kh. Mardonov, and G.M. Abdurakhimova, conducting a comparative analysis of retrospective and target-oriented approaches to evaluating fiscal policy effectiveness, substantiate the need to use, alongside financial indicators, indicators reflecting the social outcomes of government programs, their impact on economic growth, and the quality of public services when evaluating fiscal policy performance. This approach serves as an important methodological foundation for improving performance-based budgeting systems.

S.A. Voronin, J.A. Avliyakulova, and R.N. Amonov, analyzing the development trends of participatory budgeting in Uzbekistan, scientifically substantiate that expanding citizens' participation in budget processes constitutes an important institutional mechanism for raising the efficiency of public fund utilization, ensuring the transparency of budget expenditure, and strengthening the targeting of resources.

The analysis of the above scientific research shows that Uzbek scholars have examined, from various angles, questions concerning the enhancement of state budget fund utilization efficiency, the improvement of fiscal policy, the management of public expenditure on a result-oriented basis, and the development of efficiency indicators. However, existing studies have not sufficiently addressed the integration of a

comprehensive indicator system for evaluating budget fund utilization efficiency with international evaluation methodologies, the organization of performance monitoring under conditions of digital public finance, and the formation of efficiency indicators within a unified methodological system.

1.4. Research gap

Taken together, the international, post-Soviet, and national literature converges on three consistent observations. First, budget-efficiency evaluation has conceptually shifted from a narrow control function toward a strategic public-value function, yet cross-country diagnostic evidence shows that this shift remains incomplete in practice, with performance-monitoring capacity systematically lagging behind expenditure-control capacity. Second, CIS-based scholarship has thoroughly examined the institutional and theoretical foundations of efficiency evaluation but has rarely translated these foundations into an operational, multi-dimensional indicator system. Third, Uzbek scholarship has generated valuable sectoral and policy-level insights - on fiscal policy's socio-economic impact, on program budgeting, on participatory budgeting - but has not yet produced a single indicator system that simultaneously integrates financial, economic, social, governance, digital, and sustainability dimensions and that is explicitly calibrated to Uzbekistan's institutional and statistical capacity. This study is designed precisely to fill that gap: it develops an integrated indicator system for evaluating the efficiency of budget fund utilization and formulates scientific-practical proposals for improving this system.

2. Materials and Methods

The study employs a systemic approach together with comparative analysis, economic-statistical analysis, scientific abstraction, induction, deduction, and generalization. The systemic approach was used to treat budget efficiency as a multi-level phenomenon determined by the interaction of exogenous (external) and endogenous (internal) factors of financial stability, rather than as an isolated fiscal-accounting outcome. Comparative analysis was applied to juxtapose Uzbekistan's evolving evaluation practice against international frameworks such as the OECD's performance-budgeting guidance and the PEFA methodology. Economic-statistical analysis and generalization were used to systematize the qualitative and quantitative evidence gathered from official sources into the conceptual model and indicator system presented in Section 4.

The empirical and normative information base of the study was formed from the following sources: the Ministry of Economy and Finance of the Republic of Uzbekistan, including the text of the Fiscal Strategy of the Republic of Uzbekistan for 2027-2029; the National Statistics Committee of the Republic of Uzbekistan; the Open Budget Portal (openbudget.uz); and the data, guidance documents, and diagnostic frameworks of the World Bank, the IMF, the OECD, and the PEFA Program, together with relevant international, post-Soviet, and national scientific literature on public expenditure efficiency and performance-based budgeting.

Consistent with the three-criterion conceptual model substantiated in Section 4, the study formalizes budget efficiency through the following analytical apparatus.

The net fiscal outcome of budget fund utilization, or **budget result**, is determined as the difference between budget revenues and budget expenditures:

$$B = D - X \quad (1)$$

where B denotes the budget result, D denotes budget revenues, and X denotes budget expenditures.

While Equation (1) captures the aggregate fiscal balance, it is, on its own, an insufficient indicator of efficiency, because the state budget primarily serves economic and social development objectives rather than the accumulation of a fiscal surplus. Accordingly, the efficiency of budget fund utilization, E , is formalized as the joint product of two ratios - the degree of goal attainment and the return on expenditure relative to the outcome achieved:

$$E = (R / M) \times (R / X) \quad (2)$$

where E denotes the efficiency of budget fund utilization, R denotes the outcome achieved, M denotes the pre-established target, and X denotes the expenditure incurred. In this specification, the first ratio (R/M) captures **effectiveness** - the degree to which the pre-defined target has actually been met - while the second ratio (R/X) captures **productivity** - the amount of outcome generated per unit of expenditure. Their product thus penalizes budget spending that achieves either a low degree of goal attainment or a low return per unit of expenditure, and rewards spending that performs well on both dimensions simultaneously.

Building on this two-factor specification and on the three-criterion framework of economy, efficiency, and effectiveness substantiated narratively in Section 4, this study additionally proposes a composite formalization intended to guide the construction of an aggregate index. A **Budget Efficiency Index (BEI)** for a given budget program, sector, or territorial unit can be specified as a weighted geometric mean of its normalized sub-indices:

$$BEI = (Economy)^{w1} \times (Efficiency)^{w2} \times (Effectiveness)^{w3} \quad (3)$$

where *Economy*, *Efficiency*, and *Effectiveness* are sub-indices normalized to the [0, 1] interval (for example, via min-max normalization across comparator programs, sectors, or regions, following the general logic of composite-index construction used in international practice), and $w1 + w2 + w3 = 1$ are policy-determined weights that can be derived through statistical methods such as principal component analysis or the entropy method, consistent with the recommendation - substantiated below in Section 4 - that weighting should be determined statistically rather than assigned arbitrarily. The geometric-mean specification is deliberately chosen over a simple weighted arithmetic mean because it penalizes markedly unbalanced performance (e.g., high economy achieved through severe under-delivery of outcomes) more strongly, which better reflects the conceptual requirement that the three criteria operate in mutual harmony rather than as substitutes for one another. Equation (3) is proposed here as a methodological contribution of this study, intended to formalize - and thereby make empirically operational - the conceptual model developed qualitatively in Section 4; its full empirical calibration using Uzbekistan's program-level budget data constitutes a natural direction for subsequent research, as noted in Section 5.

On the basis of these analytical results, scientific proposals were developed for improving the system of indicators used to evaluate the efficiency of state budget fund utilization.

3. Results and Discussion

3.1. Policy context: Uzbekistan's 2027-2029 Fiscal Strategy

The Fiscal Strategy of the Republic of Uzbekistan for 2027-2029 identifies raising the efficiency of state budget fund utilization as one of the priority directions of public financial management. The Strategy envisages achieving this through orienting budget policy toward results, strengthening the targeting of expenditure, ensuring fiscal transparency, and broadly introducing digital technologies to raise the efficiency of public fund utilization. At the same time, the growing emphasis - in the allocation of budget funds - on evaluating the social and economic outcomes achieved, rather than simply the volume of financing disbursed, testifies to the gradual, phased introduction of performance-based budgeting principles into practice.

Analysis shows that the largest share of state budget expenditure is directed toward the development of social spheres, with social support for the population, education, healthcare, culture, and sports identified as priority areas of financing. In particular, the introduction of the Unified Social Registry, the enhanced targeting of social assistance, the direction of subsidies toward vulnerable population groups, the digitalization of education and healthcare services, and the improvement of public investment and public-private partnership projects all serve to raise the efficiency of budget fund utilization. In

addition, the introduction of digital platforms such as "Face-ID," "Narx AI" ("Price AI"), and "Capital Investments" is strengthening the justification of expenditure, reducing the human factor, and expanding the possibilities for monitoring the movement of budget funds in real time.

At the same time, the analysis conducted shows that the current evaluation system relies predominantly on indicators of fund-absorption rates and financial discipline, while mechanisms for comprehensively evaluating the ultimate socio-economic outcomes of expenditure remain insufficiently developed. In particular, there remains a continuing need to improve the system of indicators evaluating, within a unified methodological approach, the performance of government programs, the quality of public services rendered, the impact of subsidies, the return on public investment, and the level of digitalization. This situation demonstrates the need to develop a comprehensive indicator system - encompassing economy, productivity, effectiveness, transparency, accountability, and social impact - for evaluating the efficiency of budget fund utilization. Such an approach serves to raise the quality of public financial management, allocate budget resources rationally to priority directions, and further strengthen the efficiency of fiscal decisions taken.

3.2. Exogenous and endogenous factors of financial stability



Figure 1. Exogenous and endogenous factors affecting financial stability in Uzbekistan and their influence on the efficiency of state budget fund utilization (author's elaboration, based on the Fiscal Strategy of the Republic of Uzbekistan for 2027-2029).

Figure 1 systematizes the exogenous and endogenous factors affecting financial stability in Uzbekistan. These factors are closely linked to the priority directions envisaged in the Fiscal Strategy for 2027-2029 and carry substantial importance for raising the efficiency of state budget fund utilization. Specifically, changes in external economic conditions, instability in international financial markets, and fluctuations in exchange rates and commodity prices are exogenous factors that exert pressure on fiscal stability, whereas state budget policy, the quality of financial management,

digitalization, institutional reform, and the effectiveness of public investment are endogenous factors that make it possible to mitigate these risks.

The measures envisaged in the Fiscal Strategy - enhancing the targeting of social protection, modernizing education and healthcare systems, improving the mechanisms for selecting and monitoring public investment, developing public-private partnerships, and optimizing subsidies - are all aimed at strengthening the endogenous factors presented in Figure 1. In particular, improving tax-budget policy, raising the effectiveness of financial oversight and audit, ensuring openness and transparency, developing innovation and the digital economy, and rationally managing public debt are among the principal institutional factors for raising the efficiency of budget fund utilization.

From this standpoint, the system of factors presented in Figure 1 serves as the conceptual foundation for forming the system of indicators used to evaluate the efficiency of state budget fund utilization. Taking these factors into account, it is expedient that efficiency evaluation should not be confined to financial indicators alone, but should be comprehensively assessed through indicators of economy, efficiency, effectiveness, transparency, accountability, the level of digitalization, and the contribution to fiscal sustainability. This serves to raise the quality of public financial management, rationally allocate budget resources to priority directions, and strengthen the socio-economic effectiveness of fiscal policy.

3.3. The conceptual model: economy, efficiency, and effectiveness

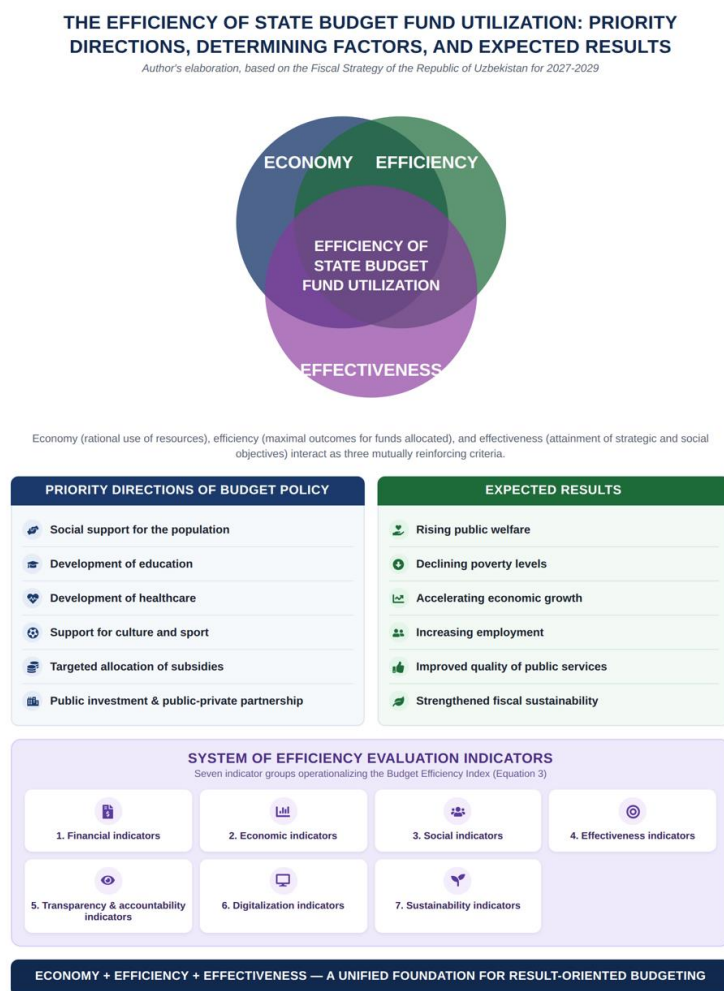


Figure 2. The efficiency of state budget fund utilization: priority directions, determining factors, and expected results (author's elaboration, based on the Fiscal Strategy of the Republic of Uzbekistan for 2027-2029).

Figure 2 presents the efficiency of state budget fund utilization through an integrated approach and depicts the close interrelationship among the stages of budget planning, allocation, execution, and evaluation. It illustrates, as a unified system, the priority directions of budget policy, the principal factors determining efficiency, the expected results, and the indicators used to evaluate efficiency. Such an approach makes it possible to evaluate the efficiency of budget fund utilization not solely through financial outcomes, but also from the standpoint of economic, social, and institutional effects.

The left-hand side of Figure 2 presents the priority directions of budget policy, encompassing social support for the population, the development of education and healthcare systems, support for culture and sport, the targeted allocation of subsidies, the improvement of public investment, and the development of public-private partnership projects. These directions are consistent with the priority tasks established in the Fiscal Strategy and reflect the principal areas of budget-fund consumption.

At the center of Figure 2, the three principal components forming the efficiency of budget fund utilization - **economy**, **efficiency**, and **effectiveness** - are represented as mutually intersecting elements. Economy describes the rational use of available resources; efficiency describes achieving maximum outcomes for the funds allocated; and effectiveness characterizes the degree to which incurred expenditure achieves strategic and social objectives. The harmonious interaction of these three factors constitutes the conceptual foundation of budget fund utilization efficiency.

Consistent with this approach, the efficiency of state budget fund utilization in the conditions of Uzbekistan should be evaluated on the basis of three interrelated, fundamental criteria - **economy**, **efficiency**, and **effectiveness**.

Economy describes the degree of budget fund utilization at minimal expense while maintaining established quality requirements. This criterion manifests through optimizing government procurement, justifying expenditure, using resources rationally, and strengthening budget discipline. In the conditions of Uzbekistan, ensuring economy is directly linked to the development of electronic government procurement, digital financial-management systems, and mechanisms for monitoring budget expenditure.

Efficiency expresses the degree of outcomes achieved for the financial resources allocated. Here, the quality of services rendered through state budget funds, the commissioning of infrastructure facilities, and the indicators achieved in education, healthcare, and social-protection spheres are evaluated in relation to the volume of resources deployed. This criterion envisages achieving the highest socio-economic effect through the maximal utilization of available resources.

Effectiveness, in turn, expresses the degree to which budget expenditure achieves established strategic objectives. This indicator makes it possible to evaluate the degree of fulfillment of priority tasks set out in government programs, national development strategies, and budget policy. Effectiveness finds its expression, above all, in such ultimate socio-economic outcomes as rising public welfare, declining poverty levels, accelerating rates of economic growth, increasing employment, and improving the quality of public services.

The mutual harmony of these three criteria makes it possible to comprehensively evaluate the efficiency of state budget fund utilization. This requires not only that budget funds be spent economically, but also that the resources allocated achieve maximal outcomes, and that these outcomes correspond to the country's strategic development objectives. Accordingly, it is expedient that evaluating the efficiency of budget fund utilization should not be confined to financial indicators alone, but should apply an integrated evaluation system encompassing financial, economic, social, and institutional outcomes.

From this standpoint, it is appropriate that evaluating the efficiency of budget fund utilization in the conditions of Uzbekistan be carried out on the basis of a comprehensive system of indicators encompassing **financial, economic, social, effectiveness, transparency and accountability**, and **digitalization** indicators. Such an approach creates a reliable methodological foundation for objectively evaluating the performance of state budget expenditure, strengthening fiscal stability, directing budget resources toward priority directions, and raising the efficiency of public financial management.

As a result, the proposed conceptual model unifies the principles of "economy - efficiency - effectiveness" within a single system and, by formally operationalizing them through Equations (2) and (3), serves as a scientific-methodological foundation for improving result-oriented budgeting mechanisms, raising the transparency of state expenditure, and strengthening the efficiency of fiscal policy.

3.4. The proposed system of evaluation indicators

Formalizing the seven indicator groups depicted at the base of Figure 2, Table 1 presents the proposed multi-dimensional system of indicators for evaluating the efficiency of budget fund utilization, together with illustrative indicators for each group and their principal data sources within Uzbekistan's existing statistical infrastructure.

This seven-group system is deliberately designed to be operationalized through the Budget Efficiency Index specified in Equation (3): the financial and economic indicator groups feed primarily into the *Economy* sub-index, the effectiveness and social indicator groups feed primarily into the *Effectiveness* sub-index, and the transparency-and-accountability, digitalization, and sustainability indicator groups collectively inform the *Efficiency* sub-index by capturing the institutional conditions under which resources are converted into outcomes. Such a multi-criteria (multicriterial) approach enables the evaluation of budget policy from several perspectives simultaneously and provides a methodological foundation for comprehensively analyzing the efficiency of budget fund utilization, consistent with the international emphasis - documented in Section 2 - on linking performance measurement to actual budgetary decision-making rather than treating it as a reporting exercise in isolation (OECD, 2025).

Table 1. Proposed system of indicators for evaluating the efficiency of budget fund utilization

Indicator group	Illustrative indicators	Principal data source(s)
1. Financial indicators	Budget execution rate; expenditure structure by function; fiscal deficit level	Ministry of Economy and Finance; Open Budget Portal
2. Economic indicators	GDP growth attributable to public investment; investment volume financed from the budget; output growth in budget-financed sectors	National Statistics Committee
3. Social indicators	Employment rate; poverty-headcount ratio; coverage of education and healthcare services	National Statistics Committee; sectoral ministries
4. Effectiveness indicators	Degree of program-target attainment; beneficiary satisfaction rate; social-return-on-investment estimates	Sectoral ministries; program monitoring reports
5. Transparency and	Open-data index score; external/internal audit findings closure rate; quality of budget reporting	Ministry of Economy and Finance; Chamber of Accounts

Indicator group	Illustrative indicators	Principal data source(s)
accountability indicators		
6. Digitalization indicators	Share of digitally rendered public services; share of automated budget-execution processes; use of AI-based expenditure analytics	Ministry of Digital Technologies; Ministry of Economy and Finance
7. Sustainability indicators	Environmental impact of budget-financed projects; long-term fiscal-sustainability metrics; contribution to Sustainable Development Goal (SDG) indicators	Ministry of Ecology, Environmental Protection and Climate Change; National Statistics Committee

Source: author's elaboration, based on the seven indicator groups presented in Figure 2 and the Fiscal Strategy of the Republic of Uzbekistan for 2027-2029.

Figure 2 makes it evident that raising the efficiency of budget fund utilization is achieved not merely by increasing the volume of expenditure, but through the rational use of resources, the assurance of effectiveness, the development of digital governance, the strengthening of transparency, and the regular evaluation of efficiency on the basis of a modern indicator system. In this respect, the proposed model carries important scientific and practical significance for improving the public financial management system and introducing the principles of result-oriented budgeting into practice.

3.5. Discussion in light of international practice

The conceptual model and indicator system proposed above are consistent with, and extend, the international literature on performance-based budgeting and public expenditure efficiency discussed in the Introduction.

First, the three-criterion structure of economy, efficiency, and effectiveness mirrors the "3Es" tradition long established in Western public-sector auditing and performance-management practice, while the explicit inclusion of transparency, accountability, digitalization, and sustainability as distinct indicator groups responds directly to Ho's (2023) call for evaluation frameworks that give due weight to public values rather than narrowly technical efficiency criteria alone. Second, the emphasis - in both Equation (3) and the discussion of Table 1 - on statistically derived weighting rather than arbitrary weighting addresses one of the most persistent methodological criticisms leveled at composite governance and performance indices internationally, namely that subjectively assigned weights can obscure rather than reveal genuine performance differences. Third, situating the proposed indicator system explicitly within the PEFA diagnostic architecture and the OECD's performance-budgeting guidance is intended to ensure that Uzbekistan's national framework remains commensurable with the frameworks used to assess PFM systems internationally, which is a precondition for meaningful cross-country benchmarking and for attracting development-partner support of the kind documented in recent PEFA country assessments.

At the same time, the existing international literature cautions against over-reliance on imported composite indices, which may be affected by unreliable underlying data, subjective weighting, or missing-data imputation. Several of which - as international assessments of similar tools have shown - can be undermined by unreliable underlying data, subjective weighting, or missing-data imputation that masks genuine national specificities. The seven-group system proposed in Table 1 is therefore deliberately anchored in data sources that already exist, or are already being developed, within Uzbekistan's own statistical and administrative infrastructure (the Ministry of Economy

and Finance, the National Statistics Committee, the Open Budget Portal, and sectoral ministries), rather than presupposing data collection capacity that does not yet exist. This design choice reflects the CIS and national literature's recurrent emphasis on the need for evaluation methodologies that are explicitly adapted to the institutional characteristics of the national budget system, rather than transplanted wholesale from abroad.

3.6. Recommendations

Based on the findings, several practical measures are recommended to improve the efficiency of state budget fund utilization in Uzbekistan. First, an **integrated Budget Efficiency Index** should be introduced to combine indicators of economy, effectiveness, financial discipline, service quality, social impact, and achievement of strategic objectives, with indicator weights determined through objective statistical techniques such as principal component analysis or entropy-based methods. Second, **Key Performance Indicators (KPIs)** should be established for each budget program to assess final outcomes rather than merely the level of fund absorption, with results published regularly through the Open Budget Portal. Third, public expenditure assessment should incorporate the **Outcome-Cost principle**, including systematic application of cost-benefit analysis to determine the economic and social returns generated by budget resources. Fourth, digital monitoring of public expenditure should be expanded through an integrated platform capable of supporting real-time analysis and the application of artificial intelligence technologies. Fifth, **ex-ante and ex-post evaluations** of major public investment and subsidy programs should be strengthened through mandatory cost-benefit and fiscal-risk assessments, accompanied by disclosure of evaluation results. Sixth, the use of **open data and public oversight** should be expanded to strengthen transparency, accountability, and external scrutiny of government expenditure. Seventh, a **results-based rating system for local budgets** should be developed using indicators of financial independence, expenditure efficiency, social outcomes, and investment activity. Eighth, budget-efficiency indicators should be aligned with the **Uzbekistan-2030 Strategy** and the medium-term Fiscal Strategy and periodically benchmarked against relevant international public financial management frameworks. Finally, before nationwide implementation, the proposed indicator system should be empirically calibrated using program-level data, piloted across selected budget programs or regions, and evaluated through appropriate quantitative and quasi-experimental methods to determine whether specific reforms produce measurable improvements in budget efficiency.

4. Conclusion

The study demonstrates that the efficiency of state budget fund utilization should be evaluated not only through the level of budget execution or compliance with financial discipline, but also through the actual economic, social, and institutional outcomes generated by public expenditure. The findings indicate that an effective assessment framework should integrate the principles of economy, effectiveness, and efficiency while considering service quality, social impact, transparency, digitalization, and long-term fiscal sustainability. In Uzbekistan, increasing expenditure on social protection, education, healthcare, public investment, subsidies, and public-private partnerships does not automatically guarantee improved socio-economic outcomes, which highlights the need for stronger result-oriented evaluation mechanisms. The conceptual framework developed in this study, including the two-factor efficiency specification and the composite Budget Efficiency Index, provides a methodological basis for linking budget expenditures with measurable outcomes and strategic development objectives. Overall, improving the system for evaluating budget efficiency can strengthen fiscal sustainability, transparency, accountability, and the institutional quality of public financial management while ensuring a higher economic and social return on government expenditure. The proposed approach can therefore contribute to the further development of result-oriented budgeting and the modernization of Uzbekistan's public financial management system in accordance with national strategic priorities and internationally recognized practices. The main

limitation of this study is that the proposed Budget Efficiency Index has not yet been empirically calibrated using program-level or regional budget data. Future research should therefore test and validate the proposed indicator system across selected budget programs, sectors, and regions of Uzbekistan and determine appropriate indicator weights using statistical methods.

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