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MODERNIZATION OF BUDGETING AND COST ESTIMATION SYSTEM IN INDUSTRIAL ENTERPRISES (A CASE STUDY OF JSC "QIZILQUMSEMENT")

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Abstract: Under conditions of intensifying market competition and economic reforms, the financial stability of large industrial entities depends on the flexibility of resource planning and cost estimation mechanisms. This article analyzes the financial performance of JSC "Qizilqumsement", one of the major representatives of the country's cement industry, for the first quarter of 2026, focusing on its generated net loss of UZS 32.8 billion. Grounded in the tasks set out in Order No. F59 of the President of the Republic of Uzbekistan concerning the reduction of production costs and increasing efficiency in state enterprises, the traditional static estimate system retained at the enterprise is comprehensively examined. To address and resolve this problem, a hybrid budgeting model based on the "High-Low Method" of management accounting is proposed for practical implementation.

Keywords: financial planning, static budget, flexible budget, cost center, cement industry, financial loss, high-low method.

INTRODUCTION

As structurally emphasized in Order No. F-59 of the President of the Republic of Uzbekistan, titled "On measures to reduce production costs and increase efficiency in state enterprises," increasing the efficiency of resource utilization and systematically optimizing production expenditures at large industrial enterprises are among the priority objectives of the state's economic policy. Today, budgeting is not merely the allocation of monetary limits for the next financial period; it is also an important management tool for mobilizing internal reserves and reducing operational risks. However, the intensifying competition in the cement production sector and the gradual liberalization of the strategic energy resource market indicate that traditional budgeting systems at enterprises do not fully meet modern requirements.

This empirical situation can be observed in the operations of JSC "Qizilqumsement", one of the leading entities in the construction materials market. According to an analysis of official financial statements, JSC "Qizilqumsement" generated a net loss of UZS 32.8 billion at the end of the first quarter of 2026. The analysis indicates that one of the main internal factors contributing to this negative financial result was the static nature of the cost planning and budgeting system used by the enterprise.

The traditional static budgeting model used by the enterprise relies on the baseline indicators of previous periods when planning costs and disregards the seasonal fluctuations characteristic of cement production. As a result, during the period of low activity in winter, the energy and other resource limits allocated to workshops remain unchanged even though actual production volume decreases. This increases the share of fixed costs attributable to each unit of product and creates conditions for hidden waste. Therefore, modernizing traditional budgeting methods and transitioning to a flexible budgeting model is an urgent issue of practical importance.

LITERATURE REVIEW

In the theory of management accounting and financial planning, the issues of adapting the budgeting system to the actual utilization level of production capacities have been extensively studied by international scholars. Srikant Datar, a renowned expert in the field of management accounting, highlights the shortcomings of static budgets in his research and emphasizes that flexible budgeting models yield high efficiency under conditions where production volumes and raw material prices fluctuate. This approach creates an opportunity to recalculate cost standards based on the actual volume achieved.

British economist Colin Drury puts forward the necessity of establishing responsibility centers and cost centers within the enterprise structure to control expenditures by their sources. In his view, transitioning from a general budget to individual workshop budgets and continuously analyzing deviations from standards ensures operational discipline.

Among our local scholars, A.A. Karimov, B.A. Hasanov, and A.K. Ibrohimov have developed the theoretical and practical foundations for organizing management accounting and product cost calculation in the industrial enterprises of our republic. Furthermore, the scientific works of TSUE (Tashkent State University of Economics) scholars cover the issues of cost optimization and the digitalization of budgeting. However, the specific features of applying flexible budgeting models with hybrid coefficients for workshops under the conditions of energy market changes and seasonal shutdowns in the cement industry have not been sufficiently disclosed as a separate research topic.

RESEARCH METHODOLOGY

In the course of the study, the mathematical "High-Low Method" of management accounting was applied to improve the system for planning energy costs in the workshops of JSC "Qizilqumsement". This method made it possible to clearly separate the fixed and variable components of mixed costs.

A practical calculation model was developed to reflect the seasonal dynamics of the enterprise's operations. The plant's maximum monthly capacity was assumed to be 120,000 tons (100% utilization) during the summer season and 72,000 tons (60% utilization) during the winter season. Under the existing static system, the total monthly energy budget is rigidly fixed at UZS 17,000 million for any production volume. The mathematical modeling algorithm was carried out in the following steps:

Step 1: Determining the rate of variable energy costs per unit of product (b):

$$b = \frac{\text{Total cost in the highest activity period - Total cost in the lowest activity period}}{\text{Production volume in the highest activity period - Production volume in the lowest activity period}}$$

$$b = \frac{\text{UZS 15,000 million - UZS 11,200 million}}{\text{120,000 tons - 72,000 tons}} = \frac{\text{UZS 3,800 million}}{\text{48,000 tons}} = \textbf{UZS 0.079166 million/ton}$$

Step 2: Calculating total monthly fixed workshop costs (a):

a = Highest period cost - (b × Highest period volume)

a = UZS 15,000 million - (0.079166 × 120,000 tons) = 15,000 - 9,500 = **UZS 2,000 million**

Thus, the general regression equation for energy costs across workshop facilities was formulated:

$$Y = 2{,}000 + 0.079166 \times X$$

Where: Y - planned cost budget (UZS million); 2,000 - monthly fixed cost volume; 0.079166 - variable cost standard per 1 ton of cement; X - actual or expected production volume (tons).

RESEARCH RESULTS

Using the formulated mathematical equation, the traditional static estimate and the proposed flexible budgeting system were comparatively modeled and presented in Table 1.

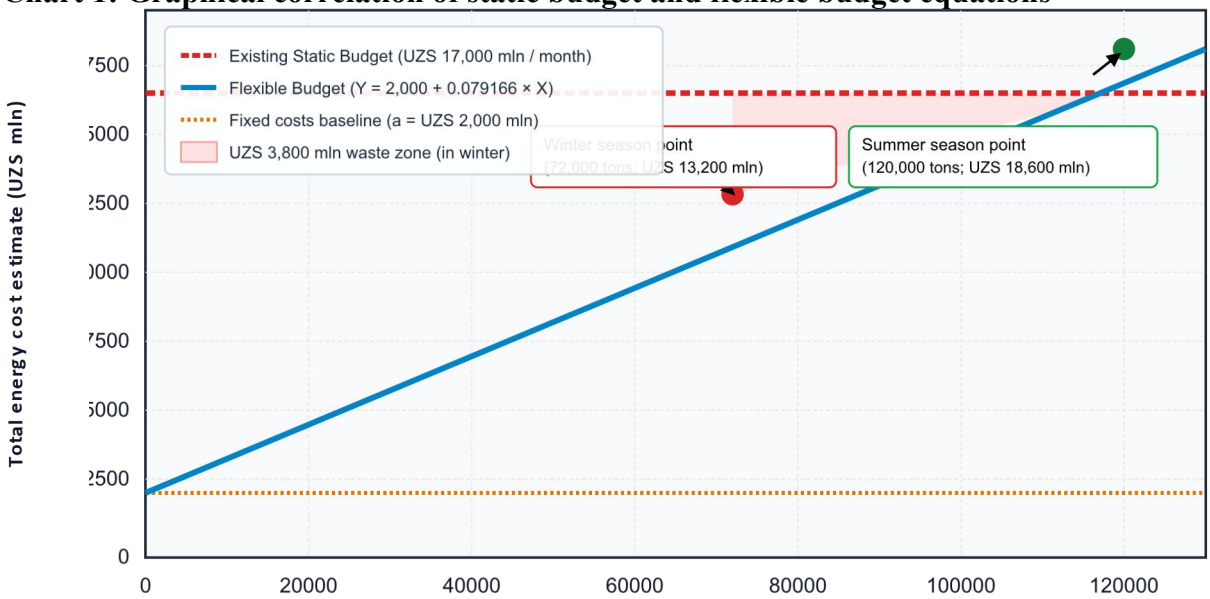
Table 1: Comparative Model of Traditional Static Budget and Innovative Flexible Budget System (in UZS million)

Budget Indicators / Production Volume	**Current Static Budget (At any volume)**	**Flexible Budget (At 60% capacity - Winter: 72,000 t)**	**Flexible Budget (At 100% capacity - Summer: 120,000 t)**
Clinker workshop budget	10,000	7,400	11,000
Cement grinding workshop budget	5,000	3,800	5,600
Fixed workshop costs (a)	2,000	2,000	2,000
TOTAL MONTHLY ENERGY BUDGET (Y):	**17,000**	**13,200**	**18,600**
Management Effect and Financial Result:	Variances are not exposed, hidden waste arises.	UZS 3,800 million excess unreasonable limit is cut and saved.	UZS 1,600 million additional resource is covered according to production needs.

Analysis of the results indicates that in the traditional static budget model, even when production volume changes, cost planning remains unchanged (a constant UZS 17,000 million). When the flexible budgeting system is implemented, the workshop budget during the low winter period is optimized down to UZS 13,200 million in accordance with actual needs. As a result, an unperceived monthly allocation surplus of UZS 3,800 million within the static budget is saved. During the peak summer season, the budget is automatically adjusted to UZS 18,600 million, ensuring uninterrupted plant operations.

To more clearly depict the impact of both planning models on enterprise costs, the correlation graph below was constructed.

Chart 1: Graphical correlation of static budget and flexible budget equations



Production volume (X, tons)

As seen from the graph, the static budget line is horizontal and does not adapt to changes in production volume (X). The flexible budget line starts from the fixed cost point (a = 2,000) and grows proportionally with volume. In the winter season (72,000 tons), the difference between these two lines constitutes a resource surplus and waste zone of UZS 3,800 million. The flexible budget serves to eliminate precisely this disparity.

DISCUSSION AND RECOMMENDATIONS

Based on the findings of the conducted study, the following practical recommendations are provided for modernizing the budgeting system in "Qizilqumsement" JSC and other industrial enterprises:

1. **Implementation of budgeting by cost centers:** Abandon the single master budget in favor of establishing each shop floor and operational unit as a distinct center of managerial responsibility.
2. **Application of a hybrid flexible planning model:** Apply the following equation when forecasting workshop expenditures:

Workshop Budget = a + (X_actual × b_standard)

Where: a – fixed workshop costs independent of output volume; X_actual – actual production output of the shop for the reporting period (tons); b_standard – standardized resource consumption rate per 1 ton of output.

3. **Regular variance analysis:** Perform monthly analyses of variances between actual costs and flexible budget standards, accompanied by stronger financial responsibility mechanisms.

CONCLUSION

The scientific and practical analysis demonstrates that rigid static budget systems are among the primary factors constraining the operational efficiency of industrial enterprises. The net loss of UZS 32.8 billion incurred by "Qizilqumsement" JSC in Q1 2026 is largely tied to the planning system's inability to adapt to seasonal fluctuations.

A flexible budgeting model based on management accounting's "High and Low Points Method" enables the elimination of resource waste during low winter periods. Implementing this model in practice serves to optimize operational costs and secure the financial stability of the enterprise.

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