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STUDY ON THE FINANCIALEVALUATIONAND MANAGEMENT OF SITE PREPARATION WORKS: IDENTIFICATION OF UNEXPECTED CONSUMPTIONS AND MANAGEMENT OF SITE RISKS

BURGOCI ALINA-ELENA[1], CIATARAȘ ȘTEFANY[1], IȘFĂNESCU ANAMARIA-GEORGIANA[1], NARIȚA VERONICA NICOLETA[1],TONEA ELENA[2]*

[1]University of Life Science“King Mihail” fromTimișoara, Faculty of Horticulture, Forestry and Plant Biotechnology

[2]University of Life Sciences“King Mihail”fromTimișoara, Faculty of Management and Rural Tourism,

Abstract: *Land preparation and embankment work represent the initial phase of any construction or landscaping project, but it is also the stage with the highestdegreeof technical and financial uncertainty. This paper analyzes the managerial and financial accounting mechanisms applied to embankment costs, with afocusonidentifying,recording and controlling unforeseen costs generated by geotechnical and meteorological risks. The study proposes the analysis of site risks and theoptimization ofprofitability margins.*

Key words: *earthworks, management accounting, unforeseen costs, site risks, cost control.*

Introduction

Site preparation is an essential stage in construction because it affects the cost, duration, and safety of the entire project. Activities may include site investigation and ground stabilization, demolition, excavation, drainage, and site organization. Costs may increase due to unforeseen soil conditions, weather, utilities, or organizational and communication problems. Careful cost estimation and ongoing monitoring, risk management, and clearly defined contractual responsibilities help prevent budget overruns and delays.

In this context, the present study aims to examine how the costs associated with site preparation works are estimated, monitored, and controlled. Particular attention is given to identifying unforeseen consumption of materials, labor, fuel, equipment, and time, as well as its relationship to the main technical, financial, contractual, operational, and environmental risks.

The analysis seeks to highlight both the causes of budget deviations and the tools that can be used to prevent or limit their effects.

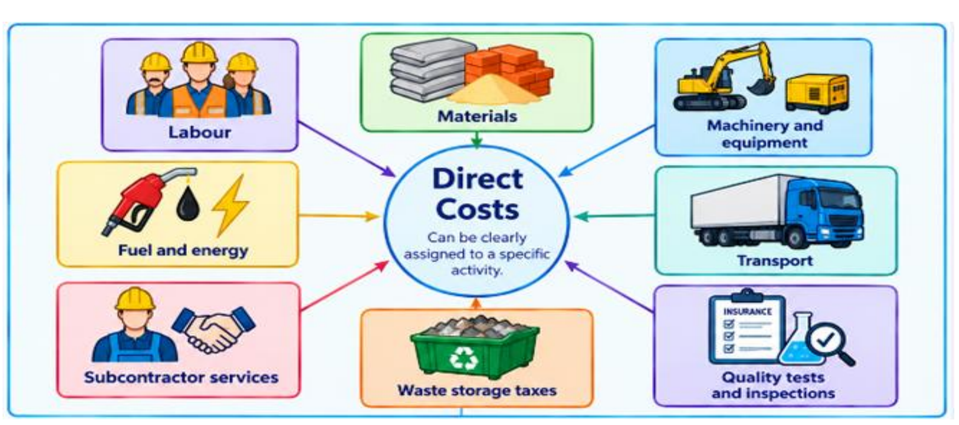
The importance of this topic stems from the fact that the efficiency of this stage affects the entire project. Problems that arise at the beginning of construction are difficult and costly to correct later, whereas adequate investigations, realistic planning, and continuous monitoring can significantly reduce uncertainty. By integrating financial assessment with technical management and risk management, site preparation works can be carried out more effectively in terms of cost, time, quality, and safety.

Material and method

The study aims to analyse the financial assessment, planning and management of site preparation works, focusing on unforeseen events and their impact on costs, resources, construction time and project efficiency.

The specific objectives are to identify the main site preparation activities and their direct and indirect costs, assess the causes of additional resource consumption, analyse technical, financial and operational risks, and propose measures to prevent budget and schedule deviations.

The methodology is based on comparing planned and actual quantities, resource use, costs and execution times. Risks are assessed according to their likelihood and potential impact, allowing appropriate preventive and corrective measures to be identified. The analysis covers all stages, from preliminary investigations and cost estimation to execution, monitoring and final acceptance of the works.



Results and discussions

The analysis revealed that site preparation works involve direct costs (materials, labour, equipment and fuel) and indirect costs required for the overall operation of the construction site. The comparison between planned and actual costs, based on an illustrative scenario, highlights higher actual expenditure across all analysed categories.

Unforeseen resource consumption may result from inaccurate initial estimates, unexpected soil conditions, material losses, low labour productivity, equipment breakdowns and construction delays. These factors can increase expenses and affect the project schedule.

Indirect costs may also rise when the construction period is extended, generating additional expenses related to personnel, machinery rental, security, energy and temporary facilities.

Continuous cost monitoring is essential for identifying deviations early. Comparing planned and actual expenditure, tracking material and fuel consumption, recording machinery operating hours and assessing labour productivity can improve financial control.

Preventive measures, such as additional site investigations, equipment maintenance, temporary drainage systems and improved resource planning, can help reduce unexpected costs. Digital technologies, including GPS monitoring, telematics and drone-based surveys, can further improve measurement accuracy and resource management.

Overall, realistic cost estimation and continuous monitoring are fundamental to the efficient financial management of site preparation works.

Table 1

Example of a risk register

Identified risk	Probability	Impact	Response measures
Soil with low bearing capacity	Medium	High	Additional boreholes and a ground-stabilisation solution
Unmapped utility networks	Medium	High	Utility detection surveys and trial excavations
Heavy rainfall	High	Medium	Temporary drainage and pumps kept available
Increase in fuel prices	Medium	Medium	Framework contracts and fuel-use monitoring
Machinery breakdown	Medium	Medium	Preventive maintenance and backup machinery
Contaminated soil	Low/medium	Very high	Laboratory analyses and a soil-management plan

Source: own processing

Conclusions

Site preparation works require accurate financial planning and continuous cost monitoring to ensure efficient project implementation. Unforeseen resource consumption and site-specific risks can lead to budget overruns and delays. Their impact can be reduced through proper preliminary investigations, systematic risk assessment and timely preventive measures.

Effective cost management is therefore essential for controlling expenditure, minimising risks and improving overall project performance.