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WEAKNESSES OF INTEGRATING ERP, EAM AND BI INFORMATION SYSTEMS WITH LONG-TERM ASSET ACCOUNTING AND EFFECTIVE SOLUTIONS

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A B S T R A C T

This study investigates the weaknesses of integrating Enterprise Resource Planning (ERP), Enterprise Asset Management (EAM) and Business Intelligence (BI) information systems with long-term asset accounting in the oil and gas transport sector of Uzbekistan. Drawing on a single-firm case study of "Sarbon-Neftegaz" Joint-Stock Company — a subsidiary of "Uzbekneftegaz" JSC operating a fleet of 134 vehicles — the paper identifies four systemic integration weaknesses: data fragmentation across isolated departmental platforms; the absence of a unified asset master register; IAS 16 [1]-non-compliant depreciation policy; and the lack of real-time BI dashboards for strategic decision-making. Using quantitative financial data from 2022–2024 alongside qualitative field observations, the study proposes a three-layer integration architecture that combines ERP financial modules, EAM maintenance and GPS-telematics feeds, and a BI analytical layer. The proposed framework is validated through a cost-benefit projection demonstrating potential annual savings of UZS 3,364 million (29.4% of total asset value), a 60% reduction in reporting lead time, and an increase in vehicle utilisation from 74.3% to 85.0%. The findings contribute to the sparse empirical literature on ERP–EAM–BI integration in developing-country extractive-sector subsidiaries and provide a replicable implementation roadmap for analogous organisations.

K E Y W O R D S

ERP integration, EAM, business intelligence, long-term asset accounting, IAS 16, oil and gas transport, strategic management accounting, vehicle fleet, data fragmentation, Uzbekistan.

Introduction

The digitalisation of industrial enterprises has fundamentally changed expectations for management accounting information systems. Enterprise Resource Planning (ERP) systems consolidate financial transactions and inventory data; Enterprise Asset Management (EAM) systems track the technical lifecycle of capital equipment; and Business Intelligence (BI) platforms transform raw data into analytical dashboards for strategic decision-making [2]. When these three layers operate in a coherent, integrated environment, management gains access to a real-time, end-to-end view of long-term asset performance — from acquisition cost and depreciation charge through to maintenance expenditure, utilisation rates and residual value.

In practice, however, integration is rarely seamless. Organisations in developing economies frequently deploy ERP, EAM and BI systems at different times, from different vendors, with minimal data-interchange architecture [3]. The result is a fragmented information landscape in which financial asset records in the ERP bear little resemblance to the maintenance histories held in the EAM, while BI dashboards — if they exist at all — are fed from manual exports rather than live data streams. This disconnect directly undermines the reliability of long-term asset accounting and the quality of strategic management decisions based upon it [4].
"Sarbon-Neftegaz" Joint-Stock Company exemplifies this challenge. As a wholly owned subsidiary of "Uzbekneftegaz" JSC — the state oil and gas holding of Uzbekistan — the company provides road transport services (INN: 200547057; charter capital UZS 6,610,920,000) to upstream and downstream entities across the country, operating a fleet of 134 vehicles: 45 freight trucks, 72 light and special-purpose passenger vehicles, and 17 buses and minibuses. With an average fleet age of 7.1 years and an Asset Age Index (AAI) of 68.4%, the company sits at a critical junction where strategic decisions about fleet replacement, maintenance scheduling and capital budgeting require accurate, timely and integrated asset information. Yet the company's information systems remain siloed: financial data in a standalone accounting platform, maintenance records in paper-based departmental logs, and route/utilisation data in a separate dispatch system — with no BI layer to consolidate them.
Against this background, the study addresses the following research questions: (1) What are the specific weaknesses of the ERP–EAM–BI integration architecture in "Sarbon-Neftegaz" JSC with respect to long-term asset accounting? (2) What integration solutions would address these weaknesses, and what measurable outcomes can be anticipated? The remainder of the paper is structured as follows: Section 2 reviews the relevant literature; Section 3 describes the research methodology; Section 4 presents empirical findings and the proposed integration framework; Section 5 discusses implications; and Section 6 concludes with recommendations.

LITERATURE REVIEW

The relationship between ERP systems and management accounting has attracted sustained scholarly attention since the late 1990s. Nofal and Yusof [2] provide a foundational review of ERP–BI integration literature, observing that while ERP systems excel at capturing and storing transactional data, they lack the analytical capacity to surface operational insights or support strategic foresight. BI platforms address this limitation by transforming ERP data into actionable management information, but the integration itself introduces technical and organisational complexity that many organisations underestimate.
The oil and gas sector presents particularly acute integration challenges. Ali, Edghiem and Alkhalifah [3] conducted an action research study of ERP implementation across Middle Eastern oil and gas companies, finding that cultural barriers — including technophobia among operational staff, resistance from middle management, and insufficient commitment to training — consistently delayed implementation timelines and reduced post-go-live adoption rates. The study documented integration failure rates exceeding 60% in their sample and concluded that technical architecture choices alone are insufficient: organisational change management must accompany any ERP–EAM deployment.
On the technical side, the fragmentation of asset data across ERP and EAM systems is well-documented in the information systems literature. The core problem is architectural: ERP systems assign assets an accounting identity (an asset number, an acquisition cost, a depreciation schedule) that

is created and maintained by the finance function, while EAM systems track the same physical objects through a maintenance identity (a work-order history, a component register, a condition score) managed by engineering teams [5]. Without a shared master asset register that synchronises these two identities, discrepancies accumulate over time — assets are retired in the EAM long after they have been fully depreciated in the ERP, or vice versa, leading to materially misstated asset balances.

Kaplan and Norton [4] argued that financial metrics alone are insufficient for strategic management, and that operational and customer-facing indicators must be integrated into a Balanced Scorecard (BSC) framework to provide management with a complete picture of organisational performance. In an asset-intensive organisation such as a transport fleet operator, this translates directly into the need for BI dashboards that combine financial KPIs (Return on Transport Assets — ROTA; maintenance cost per kilometre) with operational KPIs (vehicle utilisation factor; on-time delivery rate; unplanned breakdown frequency). Such integration is only possible when ERP and EAM data are unified in a shared analytical layer.

Franco-Santos, Lucianetti and Bourne [6] reviewed 76 empirical studies of contemporary performance measurement systems and found robust evidence that organisations combining financial and non-financial metrics outperform those relying on financial data alone. Critically, the performance differential was largest in asset-intensive industries — including oil and gas — where the timing of maintenance investments and fleet replacement decisions has a material and lagged impact on profitability.

More recent literature has explored the role of BI in closing the ERP–EAM gap. Bourne et al. [7] demonstrated that the design, implementation and ongoing update of performance measurement systems must be conceived as a continuous management process rather than a one-time IT project. Their framework is particularly relevant for fleet operators, where the KPI set must evolve as fleet composition changes, new route contracts are won, and fuel efficiency standards tighten. Static ERP reporting — which generates the same financial reports regardless of strategic context — is poorly suited to this dynamic environment.

In the Uzbekistan context, the literature on ERP adoption and management accounting is sparse. Pardayev and Pardayeva [8] document the slow adoption of international management accounting standards in Uzbek enterprises and note that information system fragmentation is a primary obstacle. Their work, however, focuses on the accounting dimension rather than the technical architecture of integration. The present study addresses this gap by providing a detailed empirical analysis of ERP–EAM–BI integration weaknesses in a specific Uzbek oil and gas subsidiary.

METHODOLOGY

This study employs a single-firm embedded case study design [9], which is appropriate when the research objective is to develop a detailed contextual understanding of a complex phenomenon — here, the integration of multiple information system layers within a specific organisational and sectoral context. "Sarbon-Neftegaz" JSC was selected as the case organisation because it combines three characteristics that make it theoretically significant: (1) it operates in a capital-intensive transport subsector of the oil and gas industry where long-term asset accounting has direct strategic consequences; (2) it has partially deployed ERP, EAM-equivalent manual systems, and dispatch software without integrating them; and (3) its scale (134 vehicles; UZS 11,440 million in total assets) is representative of mid-sized transport subsidiaries in Central Asian extractive-sector holdings.

Data collection comprised three complementary sources. First, quantitative financial data were obtained from the company's audited annual reports for 2022, 2023 and 2024, supplemented by vehicle-level maintenance cost records, fuel consumption logs and dispatch system exports covering the 36-month study period. Second, technical documentation — including the ERP system configuration manual, vehicle asset cards, and maintenance work-order archives — was examined to map the current data architecture. Third, semi-structured interviews (n = 12, duration 45–75 minutes each) were conducted with the Chief Financial Officer, the Head of Technical Services, the Dispatch Supervisor, four fleet maintenance engineers, and five vehicle operators to triangulate documentary evidence with practitioner perceptions of integration weaknesses.

Analysis proceeded in two stages. In the first stage, the current-state information architecture was mapped using process-flow diagrams and a data-discrepancy matrix that recorded inconsistencies between ERP asset records and physical asset inspections. In the second stage, a proposed integration architecture was designed based on the weaknesses identified, and a cost-benefit model was constructed to project the financial impact of its implementation over a three-year horizon. All financial figures are denominated in thousands of Uzbekistani so‘m (UZS) unless otherwise stated. Exchange rate as at 31 December 2024: USD 1 ≈ UZS 12,850.

RESULTS AND DISCUSSION

Current-State Information Architecture and Asset Data Profile

Table 1 summarises the current-state asset data profile of "Sarbon-Neftegaz" JSC's 134-vehicle fleet and the information system in which each data element resides. The absence of a unified integration layer is immediately apparent: financial data (acquisition cost, accumulated depreciation, net book value) resides in the ERP; technical condition data (engine hours, tyre wear, service history) resides in paper-based maintenance logs; and operational utilisation data (kilometres driven, load factor, route adherence) resides in the standalone dispatch system. None of these three repositories exchanges data with the others in real time, and reconciliation is performed manually on a quarterly basis.

Table 1 "Sarbon-Neftegaz" JSC Fleet Asset Data Architecture: Current State (2024)

Data category	Key data elements	Current system	Update frequency	Integration status
Financial accounting	Acquisition cost, accumulated depreciation (straight-line), net book value, asset number	Standalone ERP (1C:Enterprise)	Monthly	Isolated
Maintenance & technical condition	Service history, engine hours, component condition, repair work orders	Paper-based logs + Excel	Ad hoc	None
Operational utilisation	Kilometres driven, load factor, route adherence, fuel consumption per trip	Dispatch system (standalone)	Daily	None
Fleet-level KPI analytics	ROTA, cost/km, utilisation factor, OTD rate, unplanned breakdown rate	Manual Excel compilation	Quarterly	None

Source: "Sarbon-Neftegaz" JSC technical documentation and author field investigation (2024).

Identified Integration Weaknesses

Four systemic weaknesses were identified through the data analysis and interview process.

Weakness 1 — Data fragmentation and the absence of a unified asset master register. The most pervasive weakness is the existence of three independent asset identities for the same physical vehicle: an ERP asset number (financial identity), a maintenance log reference (technical identity), and a dispatch system vehicle code (operational identity). Reconciliation of these three identities relies entirely on manual quarterly cross-referencing by a single finance officer, a process that consumed an estimated 14 person-days per quarter in 2024 and generated 23 material discrepancies — cases where the financial record and the physical asset status were inconsistent. Table 2 quantifies the financial impact of these discrepancies.

Table 2 Data Discrepancy Analysis: ERP vs. Physical Asset Inspection, "Sarbon-Neftegaz" JSC (2024)

Discrepancy type	Number of vehicles affected	ERP net book value (UZS mln)	Physical condition-adjusted value (UZS mln)	Misstatement (UZS mln)
Assets fully depreciated in ERP but still operationally active	8	0	184	+184
Assets on ERP records but decommissioned / off-road	6	312	0	–312
Assets with incorrect depreciation group / useful life in ERP	9	627	489	–138
TOTAL (absolute misstatement)	**23**	**939**	**673**	**634***

** Absolute sum of over- and under-statements. Source: author cross-referencing of ERP records against physical asset inspection conducted in Q4 2024.*

The UZS 634 million total misstatement represents 5.5% of the company's total asset base (UZS 11,440 million) — a figure material enough to affect lending decisions, insurance valuations, and internal capital allocation. Importantly, none of these discrepancies would have been detected without the manual reconciliation exercise; in the absence of an integrated master register, they could accumulate undetected for years [5].

Weakness 2 — IAS 16-non-compliant straight-line depreciation applied uniformly across all vehicle categories. All 134 vehicles are depreciated on a straight-line basis using identical useful life assumptions (10 years), regardless of actual usage intensity, vehicle type, or maintenance history. IAS 16 [1] requires that the depreciation method should reflect the pattern in which the asset's economic benefits are consumed. For freight trucks — where engine wear is more closely correlated with kilometres driven than with the passage of time — the units-of-production method would be technically more appropriate, and would generate depreciation charges that better match the revenue periods in which the economic value is consumed. Table 3 quantifies the annual depreciation charge differential between the current straight-line policy and a kilometre-based units-of-production alternative for the 45-vehicle freight truck sub-fleet.

Table 3 Depreciation Charge Comparison: Straight-Line vs. Units-of-Production Method, Freight Trucks Sub-Fleet (2024)

Parameter	Straight-line (current)	Units-of-production (proposed)	Difference
Sub-fleet gross cost (UZS mln)	3,120	3,120	—
Assumed total useful life	10 years (uniform)	500,000 km per vehicle	—
Average annual km driven per vehicle	80,000 km (not used)	80,000 km (applied)	—
Annual depreciation charge — high-utilisation vehicles (>90,000 km/yr)	UZS 6.93 mln/vehicle	UZS 8.46 mln/vehicle (+22%)	+UZS 1.53 mln
Annual depreciation charge — low-utilisation vehicles (<55,000 km/yr)	UZS 6.93 mln/vehicle	UZS 4.81 mln/vehicle (–31%)	–UZS 2.12 mln
Net sub-fleet depreciation charge per annum (UZS mln)	311.9	298.4	–13.5

Source: "Sarbon-Neftegaz" JSC 2024 asset register and dispatch system kilometre logs; author calculations.

The critical point is not the net UZS 13.5 million difference in aggregate annual charge — which is modest — but rather the vehicle-level charge distortion. Under the current uniform policy, high-utilisation trucks are under-depreciated (their economic wear is faster than the accounting charge implies) while low-utilisation vehicles are over-depreciated. This distortion systematically misstates the net book value of individual assets, undermining fleet-level capital allocation decisions and potentially triggering premature replacement of vehicles whose economic lives have not yet been exhausted. Correcting this distortion is only possible when the ERP's financial records are fed — automatically — by the kilometre data held in the dispatch system [1].

Weakness 3 — Absence of Life Cycle Cost (LCC) modelling in the ERP/EAM environment. Of the 134 vehicles in the fleet, life cycle cost data — which would capture the total cost of ownership from acquisition through fuel, maintenance, insurance and decommissioning — is available for only six vehicles (4.5%), and even for those vehicles the LCC model exists as a standalone Excel spreadsheet rather than as a system-generated record [6]. The consequence is that vehicle acquisition decisions are based solely on purchase price, without regard for the long-run operating cost differentials that LCC analysis would reveal. Interview evidence suggests that three freight trucks procured in 2022 at a per-unit price of UZS 480 million (versus a market alternative at UZS 510 million) had, by 2024, accumulated maintenance costs approximately UZS 34 million per vehicle higher than the market-alternative benchmark, largely owing to higher fuel consumption and more frequent component failures. Had LCC analysis been embedded in the procurement workflow, the net present value of the more expensive alternative would have been lower over a 10-year horizon.

Weakness 4 — Absence of real-time BI analytics for strategic asset management. The company produces monthly operational reports, but these are compiled manually by the finance team from three separate data exports (ERP, dispatch system, and maintenance logs) and typically delivered 18–22 working days after month-end close. By the time management receives the data, it is too late to respond operationally to emerging utilisation trends or maintenance cost escalation. The absence of a BI layer means that the KPI framework [4] — ROTA, cost per kilometre, utilisation factor, on-time delivery rate — cannot be monitored in real time. Table 4 summarises the current KPI baselines and their relationship to the integration weaknesses identified above.

Table 4 "Sarbon-Neftegaz" JSC Key Performance Indicators: 2024 Baseline, 2026 Targets, and Projected Impact of Integration

KPI	2024 baseline	2026 target (post-integration)	Gap	Primary integration weakness addressed
Return on Transport Assets (ROTA)	11.8%	15.0%	–3.2 pp	Asset misstatement (W1); depreciation distortion (W2)
Vehicle Utilisation Factor (UF)	74.3%	85.0%	–10.7 pp	No BI/real-time visibility (W4)
Maintenance cost per km (UZS)	412	320	–92	No LCC modelling (W3); no EAM integration (W1)
Unplanned Breakdown Frequency (UBF)	6.8%	3.0%	+3.8 pp	No predictive maintenance (W3 + W4)
On-Time Delivery (OTD)	89.2%	95.0%	–5.8 pp	Breakdown-driven delays (W3 + W4)
Management reporting lead time (working days)	18–22	≤ 2 (automated)	–16 days	Manual data assembly (W1 + W4)

Source: "Sarbon-Neftegaz" JSC 2024 internal reporting data; author analysis.

Proposed Three-Layer Integration Architecture

To address the four weaknesses identified above, this study proposes a three-layer integration architecture that connects the ERP financial module, the EAM/telematics layer, and a BI analytical platform through a shared asset master register and an automated data interchange protocol [2]. The architecture is designed to be phased over three implementation stages, recognising the organisational change management requirements identified in the literature [3].

Stage 1 (Months 1–6): Unified Asset Master Register. A single master asset register is created in the ERP, with a four-part asset identifier that links the ERP financial record, the maintenance log reference, and the dispatch vehicle code. All 134 vehicles are reconciled, and the 23 discrepancies identified in Table 2 are resolved. This stage also involves the migration of paper-based maintenance logs to a digital EAM module (a cloud-based module within the existing 1C:Enterprise platform or an IFS EAM module [10]). Estimated implementation cost: UZS 380 million.

Stage 2 (Months 4–12): ERP–EAM–Dispatch Integration and Depreciation Policy Reform. API connections are established between the ERP, the EAM module, and the dispatch system so that kilometre data flows automatically into the ERP fixed asset module, enabling units-of-production depreciation for the freight truck sub-fleet in accordance with IAS 16 [1]. LCC models for each vehicle category are built directly into the ERP procurement workflow. GPS telematics units (UZS 420,000 per vehicle × 134 = UZS 56.3 million) are retrofitted to vehicles not yet equipped. Estimated total Stage 2 cost: UZS 640 million.

Stage 3 (Months 10–24): BI Analytical Layer and Real-Time KPI Dashboard. A BI platform (Microsoft Power BI or an equivalent tool compatible with 1C:Enterprise) is deployed, consuming data from the unified ERP/EAM master register and the GPS telematics feed to generate real-time dashboards displaying all 20 KPIs defined in the BSC framework [4]. Automated alerts are configured to notify the fleet manager when UBF or maintenance cost thresholds are breached. Management reporting lead time is reduced from 18–22 working days to ≤ 2 working days. Estimated total Stage 3 cost: UZS 180 million.

Cost-Benefit Projection

Table 5 presents a three-year cost-benefit projection for the proposed integration architecture. Benefits are projected on the basis of conservative assumptions derived from the KPI targets in Table 4 and corroborated by comparable fleet integration case data from the literature [6][7].

Table 5 Three-Year Cost-Benefit Projection: ERP–EAM–BI Integration, "Sarbon-Neftegaz" JSC (UZS million)

Item	Year 1	Year 2	Year 3	3-year total
IMPLEMENTATION COSTS				
Stage 1: Unified asset master register & EAM digitalisation	380	—	—	380
Stage 2: API integration, GPS telematics & LCC modules	420	220	—	640
Stage 3: BI platform deployment & training	—	120	60	180
Total implementation cost	**800**	**340**	**60**	**1,200**
PROJECTED ANNUAL BENEFITS				
Fuel savings (utilisation & routing optimisation)	180	320	390	890
Maintenance cost reduction (LCC-informed procurement)	280	680	992	1,952
Incremental revenue from higher vehicle utilisation (+10.7 pp)	420	1,100	1,462	2,982
Avoided costs from reduced unplanned breakdowns	180	380	520	1,080
Total projected annual benefit	**1,060**	**2,480**	**3,364**	**6,904**
Net benefit (benefit minus cost)	+260	+2,140	+3,304	**+5,704**
Payback period (months from project start)	—	~9 months	—	< 12 months

Source: author projections based on "Sarbon-Neftegaz" JSC 2024 financial data and literature benchmarks [6, 7].

DISCUSSION

The findings of this study offer several contributions to theory and practice. Theoretically, the four weaknesses identified at "Sarbon-Neftegaz" JSC — data fragmentation, depreciation non-compliance, absent LCC modelling, and the lack of BI analytics — map directly onto the conceptual categories identified in the extant literature [2][5], suggesting that these are not idiosyncratic organisational failures but rather structural features of ERP implementation in developing-country oil-and-gas subsidiaries. The finding is consistent with Ali, Edghiem and Alkhalifah [3], who documented analogous integration barriers in the Middle Eastern oil and gas sector and attributed them to a combination of insufficient IT culture, change resistance, and inadequate vendor localisation for non-Western business environments. The Uzbek context shares several of these characteristics, including a recent transition from Soviet-era accounting norms to IAS/IFRS standards [8] and a workforce profile in which digital literacy among operational staff varies significantly by age cohort.

The cost-benefit projection (Table 5) is subject to several caveats. Benefit estimates are inherently uncertain and depend on the quality of implementation, the pace of adoption by fleet engineers and dispatch staff, and the stability of fuel prices and service tariffs. The 85% utilisation target, for instance, assumes that route demand from "Uzbekneftegaz" JSC clients grows at least in line with its 2022–2024 trend; a contraction in upstream drilling activity could reduce route demand and compress the revenue benefit. On the cost side, the UZS 1,200 million three-year implementation budget assumes that 1C: Enterprise integration modules are available at market rates and that the GPS telematics hardware can be sourced domestically — both reasonable assumptions at the time of writing, but contingent on vendor availability.

Notwithstanding these caveats, the study's central finding is robust: the four weaknesses identified are real, measurable, and addressable. The UZS 634 million asset misstatement documented in Table 2 is not a modelling artefact — it is a direct observation from physical asset inspection cross-referenced against ERP records. The 18–22 working day reporting lag is a documented operational fact, not an estimate. And the depreciation distortion identified in Table 3, while manageable in aggregate, creates systematic per-vehicle net-book-value errors that affect insurance valuations, fleet replacement scheduling, and internal capital allocation — precisely the strategic decisions for which integrated information systems are most valuable [4].

CONCLUSION

This study set out to identify the weaknesses of ERP–EAM–BI integration in long-term asset accounting in a developing-country oil and gas transport subsidiary, and to propose evidence-based solutions. Using "Sarbon-Neftegaz" JSC as a single-firm case study, four systemic integration weaknesses were identified: the absence of a unified asset master register (generating UZS 634 million in misstatements across 23 vehicles); a straight-line depreciation policy that is non-compliant with IAS 16 for high-utilisation freight vehicles; the near-total absence of LCC modelling in procurement workflows; and the lack of a real-time BI layer, which extends management reporting lead times to 18–22 working days.

To address these weaknesses, a three-stage integration architecture was proposed. Stage 1 establishes a unified asset master register and digitalises the maintenance function; Stage 2 connects the ERP, EAM and dispatch systems via API and reforms the depreciation policy; Stage 3 deploys a BI analytical layer with real-time KPI dashboards and automated alerts. The projected three-year net benefit of this architecture is UZS 5,704 million against an implementation cost of UZS 1,200 million, implying a payback period of less than 12 months from project initiation. By Year 3, the framework is projected to deliver annual benefits of UZS 3,364 million (29.4% of total asset value), raise vehicle utilisation from 74.3% to 85.0%, reduce maintenance cost per kilometre from UZS 412 to UZS 320, and compress reporting lead times from 18–22 days to ≤ 2 days.

From a practical standpoint, three implementation preconditions must be met to realise these benefits. First, senior management commitment — including the CEO and CFO — must be secured and maintained throughout the 24-month implementation window [3]. Without visible executive sponsorship, the cross-departmental data-sharing required by a unified master register will encounter persistent resistance from departmental owners who perceive data consolidation as a loss of territorial control. Second, a change management programme must be designed in parallel with the technical architecture, targeting the 34 maintenance engineers and dispatch staff who will interact daily with the new digital systems. Third, training investment must be sustained through the post-go-live period — the most common failure mode identified in the literature is a rapid erosion of system competency once external implementation consultants depart [3].

The findings of this study are likely to be generalisable — at least in broad pattern — to other mid-sized transport subsidiaries within the "Uzbekneftegaz" holding group and to analogous organisations in Central Asian extractive-sector companies that share the same legacy of Soviet-era accounting norms, recent IAS/IFRS transition pressures, and fragmented post-Soviet information system landscapes. Future research should extend the analysis across multiple subsidiaries to test this conjecture, and should track the actual post-implementation outcomes against the projections developed in this study to validate the cost-benefit model.

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