IRSTI 06.81.55; 06.73.15 https://doi.org/10.26577/be1562202611

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THE EFFECTIVENESS OF INVESTMENT PROJECTS IN KAZAKHSTAN'S LOGISTICS SECTOR

The logistics sector of Kazakhstan plays a strategic role in ensuring national transit competitiveness and integration into global supply chains. This study considers Air Astana as a representative case of a capital-intensive logistics operator to bridge the gap between sector-wide investment trends and micro-level financial performance. The increasing scale of capital-intensive projects in transport and aviation infrastructure necessitates the development of methodological tools for evaluating investment efficiency under conditions of limited informational transparency. From a project management perspective, it is necessary to adopt value-based management tools, specifically EVA and ROIC, as primary mechanisms for monitoring and controlling value creation throughout the project lifecycle.

To understand how these significant capital flows translate into actual financial performance, a transition from a macro-level sector overview to a micro-level analysis of a specific market leader is necessary. The purpose of this study is to conduct a methodological synthesis and empirically test the indicators to assess the effectiveness of investment projects in Kazakhstan's logistics system based on portfolio management principles and value-based management (VBM) indicators. The research integrates a macro-level analytical synthesis of major greenfield logistics projects (2015–2024) with micro-level financial modeling of a representative capital-intensive operator.

The methodological framework combines project portfolio analysis, structural investment diagnostics, ROIC and EVA modeling, cash flow evaluation, and payback simulation, all adjusted for weighted average cost of capital (WACC). The study introduces an evaluation approach linking project governance quality with economic value creation by treating financial metrics as project KPIs.

The findings demonstrate that large-scale logistics investments in Kazakhstan generate positive economic value when ROIC exceeds the cost of capital. The application of cost management indicators enables project managers in transition economies to better navigate an environment of high-cost capital and ensure that infrastructure development aligns with the principles of long-term financial sustainability. At the same time, portfolio dominance of greenfield projects increases capital intensity and risk exposure. This requires advanced risk management as well as systematic training of project teams. The study contributes to the development of a project-oriented evaluation framework applicable to emerging transit economies and provides practical recommendations for improving investment project selection and governance in national logistics systems.

Keywords: investment project management, logistics systems, Project Portfolio Management, EVA, ROIC, economic effectiveness, Kazakhstan.

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Қазақстан логистика саласындағы инвестициялық жобалардың тиімділігі

Қазақстанның логистика саласы ұлттық транзиттік бәсекеге қабілеттілікті қамтамасыз етуде және жаһандық жеткізу тізбектеріне интеграциялануда стратегиялық рөл атқарады. Бұл зерттеуде Air Astana компаниясы капиталды көп қажет ететін логистикалық оператордың типтік мысалы ретінде пайдаланылады, бұл жалпы салалық үрдістерді микроэкономикалық көрсеткіштермен байланыстыруға мүмкіндік береді.Көлік және авиациялық инфрақұрылым салаларындағы капитал сыйымды жобалардың ауқымының ұлғаюы шектеулі ақпараттық ашықтық жағдайында инвестициялық тиімділікті бағалаудың әдіснамалық құралдарын әзірлеу қажеттілігін тудырады. Жобаны басқару тұрғысынан алғанда, жобаның өмірлік циклі бойында құндылық жасауды бақылау және бақылаудың негізгі тетіктері ретінде құндылыққа негізделген басқару құралдарын, атап айтқанда EVA және ROIC-ті қабылдау қажет.

Зерттеудің мақсаты- портфельдік басқару қағидаттары мен құнға негізделген басқару (VBM) көрсеткіштері негізінде Қазақстанның логистикалық жүйесіндегі инвестициялық жобалардың тиімділігін бағалаудың екі деңгейлі әдіснамасын әзірлеу және оны эмпирикалық тұрғыдан

нау. Ірі инвестициялық ағындардың нақты қаржылық нәтижелерге трансформациялануын талдау үшін салалық макродеңгейдегі шолудан нақты нарықтық көшбасшының қызметін микродеңгейде зерттеуге көшу негізделеді. Зерттеу 2015–2024 жылдар аралығындағы ірі greenfield форматындағы логистикалық жобалардың макродеңгейдегі портфельдік талдауын капитал сыйымды оператор қызметін микродеңгейде қаржылық модельдеумен ұштастырады.

Әдіснамалық негіз жобалар портфелін талдауды, инвестициялардың құрылымдық диагностикасын, ROIC және EVA көрсеткіштерін модельдеуді, ақша ағындарын бағалауды және капиталдың орташа өлшенген құнын (WACC) ескере отырып өтелу мерзімін модельдеуді қамтиды. Зерттеу шеңберінде қаржылық көрсеткіштер инвестициялық жобалардың негізгі тиімділік көрсеткіштері (KPI) ретінде қарастырылады. Жұмыста жобалық басқару сапасы мен экономикалық қосылған құнды қалыптастыру арасындағы байланысты айқындайтын интеграцияланған бағалау моделі ұсынылады.

Нәтижелер бойынша, Қазақстанның логистика саласындағы ауқымды инвестициялар ROIC капитал құнынан асқан жағдайда оң экономикалық қосылған құн қалыптастырады, ал greenfield жобаларының басымдығы капитал сыйымдылықты арттырып, портфельдік тәуекелдер деңгейін күшейтеді. Бұл тәуекелдерді басқарудың жетілдірілген тетіктерін дамыту мен жобалық командаларды жүйелі түрде даярлау қажеттілігін айқындайды.

Түйін сөздер: инвестициялық жобаларды басқару, логистикалық жүйелер, жоба портфелін басқару, EVA, инвестициялардың рентабельділігі, экономикалық тиімділік, Қазақстан.

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Эффективность инвестиционных проектов в логистическом секторе Казахстана

Логистический сектор Казахстана играет стратегическую роль в обеспечении национальной транзитной конкурентоспособности и интеграции в глобальные цепочки поставок. В данном исследовании в качестве примера капиталоемкого логистического оператора используется компания Air Astana, что позволяет связать общие отраслевые тенденции с микроэкономическими показателями. Рост масштабов капиталоёмких проектов в сфере транспортной и авиационной инфраструктуры обусловливает необходимость разработки методологических инструментов оценки инвестиционной эффективности в условиях ограниченной информационной прозрачности. С точки зрения управления проектами необходимо внедрить инструменты управления на основе ценности, в частности, EVA и ROIC, в качестве основных механизмов мониторинга и контроля процесса создания ценности на протяжении всего жизненного цикла проекта.

Целью исследования является разработка и эмпирическая апробация двухуровневой методологии оценки эффективности инвестиционных проектов в логистической системе Казахстана, на основе принципов управления портфелем проектов и показателей стоимостного управления (VBM). Для анализа трансформации значительных инвестиционных потоков в реальные финансовые результаты обоснован переход от макро уровневого отраслевого анализа к микро уровневому исследованию деятельности конкретного рыночного лидера. Исследование сочетает макро уровневый портфельный анализ крупных логистических проектов формата greenfield за период 2015–2024 гг. с микро уровневым финансовым моделированием деятельности представителя капиталоёмкого оператора.

Методологическая база включает анализ портфеля проектов, структурную диагностику инвестиций, моделирование показателей ROIC и EVA, оценку денежных потоков и моделирование срока окупаемости с учётом средневзвешенной стоимости капитала (WACC). В рамках исследования финансовые показатели рассматриваются в качестве ключевых показателей эффективности (KPI) инвестиционных проектов. В работе предложена интегрированная модель оценки, связывающая качество проектного управления с созданием экономической добавленной стоимости.

Полученные результаты показывают, что крупномасштабные инвестиции в логистику Казахстана формируют положительную экономическую добавленную стоимость при условии превышения ROIC над стоимостью капитала, при этом доминирование проектов типа greenfield усиливает капиталоёмкость и повышает уровень портфельных рисков. Это обусловливает необходимость развития продвинутых механизмов управления рисками, а также системной подготовки проектных команд.

Исследование вносит вклад в развитие проектно-ориентированной методологии оценки инвестиций для транзитных экономик и формирует практические рекомендации по совершенствованию отбора и управления инвестиционными проектами в национальных логистических системах.

Ключевые слова: управление инвестиционными проектами, логистические системы, управление портфелем проекта, EVA, рентабельность инвестиций, экономическая эффективность, Казахстан.

Introduction

Logistics plays a key role in the economic development of the Republic of Kazakhstan. Logistics infrastructure is an important factor in the economic and transport strategy of the Republic of Kazakhstan. At the same time, the performance of the logistics systems depends on several directions, including air transportation. Major governmental and private investors prefer to invest in transport infrastructure and aviation logistics, huge warehouse complexes, and digital decisions. Recent reports support the trend: a methodological synthesis of strategic investment initiatives reveals a significant scale of capital commitment in this sector Bureau of National Statistics of Kazakhstan, (2024). According to recent industry analyses, the strategic modernization of the Trans-Caspian International Transport Route (TITR) and the expansion of the Almaty aviation hub have become the main drivers of investment growth in 2024–2025 (World Bank, 2024; OECD, 2025). This study fills the existing literature gap by transitioning from a macroeconomic description of the industry to a detailed financial analysis using the EVA indicator to account for the high cost of capital, which is typical of the Kazakh market. Nevertheless, as investment volume grows, the system evaluation of the EVA and long-term efficiency remains critically unexplored from a project governance perspective. Existing literature mostly focuses on macroeconomic descriptions or infrastructure volumes. There is a lack of research quantifying how project-level governance directly impacts economic value in the Central Asian context by applying VBM.

There is a limited number of empirical studies that assess the effectiveness of investment projects in Kazakhstan's logistics sector by using financial indicators. Recent academic work highlights that despite the growth of transit potential, there remains a gap in micro-level performance indicators for national logistics operators (Auezov & Karimov, 2024). Most studies focus on investment volume, infrastructure development, and macroeconomic impacts, while project-level efficiency within the organizational context, especially using cost-based indicators, is only partially considered. This creates a research gap that is addressed in this article.

The relevance of the topic can be defined by its theoretical and practical importance. From the theoretical perspective, this research contributes to the understanding of economical effectiveness of the investments in developing countries. The research focuses on the adaptation of value-based management (VBM) models to the specific conditions of developing markets, which can be described by partial informational transparency. In practice, it provides a framework to screen the project and monitor the efficiency within the national logistics system by aligning the project's profit with strategic value creation.

The object of the research is the investment landscape in the logistics sector of Kazakhstan, viewed as a complex of capital-intensive projects and infrastructure programs focused on aviation hubs.

As per the classical approach by Igoshin (1999), an investment project is considered not only as a set of documents but as a goal-oriented business activity aimed at achieving specific economic results. In the context of this research, this definition was extended to emphasize the role of the project as a significant element of the logistics system, where the project governance must align with the strategy of value creation.

In this study, an investment project is considered as a strategic management tool in the logistics system, which requires synchronized management of the capital structure and operational returns in order to ensure sustainability.

Implementation of the investment projects in an organization is always connected with its modernization, improvement of technological processes, establishment of new equipment, which leads to productivity growth, expansion of the business scale, and attraction of new resources.

Investment project considers the creation of new objects of the social infrastructure, or if it is made within the existing business, it can increase the production capacity, increases the number of employees. From the PM perspective, these activities represent critical phases of the project lifecycle, where the final EVA directly depends on resource allocation and risk mitigation.

The subject of the research is the economic effectiveness of the investment projects. The research aimed to empirically test the link between capital investment and economic value creation by integrating financial KPIs into the project performance evaluation framework.

This article also examines whether publicly available data from Air Astana and national aviation statistics are sufficient to evaluate direct investment projects in aviation logistics, and what methodological adjustments are needed in the context of partial transparency.

Literature review

The issue of the effectiveness of investment projects in the logistics sector is considered in the works of several researchers. The first direction of the research is focused on the microeconomic effect of logistics infrastructure. Researchers underline that investments in transport networks directly affect the efficiency of the supply chain and national logistics costs Bowersox *et al., (*2003). Logistics is considered an important component of the larger economic system, where investments act as a catalyst for regional development and economic integration (Khan, 2004; Gwilliam, 2008) to the global supply chains (Iastremska *et al.,* 2023).

Some scholars analyze the investment process through the prism of their structural characteristics. The difference between investment in tangible and intangible assets and the difference in their effect was emphasized in those works. The authors state that the investment in intangible assets can have a more long-term effect; however, it needs a favorable institutional and financial environment for the realization Adarov & Stehrer (2019). In the context of national performance metrics, results often overlook the "opportunity cost" of invested capital. Given high interest rates and risks, EVA serves as a more accurate indicator, as project efficiency is adjusted to reflect the weighted average cost of capital (WACC). By incorporating a risk-adjusted cost of equity, EVA bridges the gap between financial reporting and strategic risk management. This transformation of the performance measurement framework is particularly important for emerging markets, where ignoring the cost of equity can lead to a misleading perception of a project's viability and long-term sustainability. However, the existing research suffers from the aggregation bias, as they evaluate the logistics investments at the industry level without any details of the financial performance of individual projects.

Other researchers consider the logistics sector as an innovative opportunity for organizational changes. Authors emphasize that the development of logistics services is closely connected with the establishment of new managerial and technological solutions, which increase the sustainability of supply chains and decrease the operational risks Grawe, (2009). In this context, the investments are usually analyzed through the perspective of innovative outputs rather than the rigorous financial performance of the fundamental investment projects Wang *et al.,* (2020). This, in its turn, leads to the necessity of applying VBM tools to bridge the gaps between innovations and earnings. To address the reviewer's recommendation for a more structured literature review, Table 1 summarizes key contemporary studies on Kazakhstan's logistics sector.

Table 1
Comparative Analysis of Logistics Sector Studies in Kazakhstan (2022–2025)

Author(s)	Year	Focus of Research	Key Findings/Research Gap
Iastremska et al.	2023	Global supply chain integration	Emphasizes TRACECA corridors but lacks project-specific financial KPIs.
Kargi	2022	Logistics and GDP correlation	Confirms macroeconomic impact but ignores micro-level VBM indicators.
Auezov & Karimov	2024	Digitalization of transport	Focuses on IoT and blockchain; ROI of digital investment remains unquantified.
Bureau of National Statistics	2024	Capital investment dynamics	Provides volume-based data without evaluating project governance efficiency.
OECD	2025	Central Asian Infrastructure	Highlights high capital intensity and the need for standardized efficiency metrics.

Note: compiled by the author

This synthesis demonstrates that while macro trends are well covered, there is a lack of empirical research using EVA and ROIC to analyze project-level performance in the context of Kazakhstan.

Some researches focus on the formation of logistics opportunities and their effect on the economic results. These works pay close attention to the fact that logistics can have not only a supportive function but also become an independent factor of competitiveness in conditions of world trade and transit economics Morash, (2001).

Strategic investment in logistics is considered an independent factor of competitiveness in transit economies. However, the effectiveness of these projects depends on the coherence of national trade strategies and corporate investment policies Kargi, (2022). There remains a significant gap in the literature regarding the use of leading indicators, such as economic value added (EVA), to monitor these large investments.

Comparative analysis of works allows us to reveal some common limitations. First of all, most researches based on the analysis of the inter-relationship between investment, innovations, and logistics performance, but does not consider the effectiveness of the investment projects as a separate object of analysis. Some researchers believe that the effectiveness of investment projects in logistics should be assessed based on multi-criteria models that take into account not only financial indicators but also socio-economic impact Solonina *et al.,* (2019). Secondly, the indicators used are common, and sometimes it is not possible to assess the results of some investment decisions. Thirdly, while the significance of logistics for transit economies is studied widely, the national uniqueness of Kazakhstan remains unstudied. There is a lack of empirical studies that could include macro-level portfolio information with micro-level financial analysis of the national logistics representatives, which shows the novelty of this research.

Methodology

The methodological base of the research is focused on a comprehensive evaluation of investment processes in logistics of Kazakhstan and the determination of the effectiveness of major investments in transport infrastructure and related activities. The study includes an integrated research framework: a methodological synthesis of strategically important logistics investment projects (based on fDi markets) and a micro-level case study of Air Astana for testing the value-based efficiency indicators. The selection of Air Astana as a benchmark entity is justified by the fact that its large-scale fleet and infrastructure renewal projects mirror the capital intensity and risk profile of the entire national logistics system. The following structural criteria were applied for project selection from fDi Intelligence (2024) in order to ensure the robustness and replicability of the macro-level analysis:

- temporal boundary restricted to 2015–2024
- geographic focus on joint logistics infrastructure within Kazakhstan
- functional alignment with strategic transportation clusters

As a result of the filtering, a localized portfolio of key infrastructure initiatives was identified. The rationale for choosing Air Astana as the primary empirical reference is powered by its systemic position as the national flag carrier and regional transit hub operator. In addition, it successfully executed an International Public Offering (IPO) in 2024 and provided audited financial disclosures via KPMG to provide data transparency and granular reliability, which is usually restricted or unavailable among state-owned or closely-held transport monopolies in Kazakhstan. This is a scientifically rigorous benchmark for stress-testing value-based efficiency metrics.

The hypothesis is that while logistics investments provide a strategic foundation for growth, their Economic Value Added (EVA) is limited by the high capital intensity and cost of capital in the Kazakhstani economy. This requires a shift from simple operational monitoring to advanced project governance.

The choice of ROIC and EVA as primary metrics is theoretically justified by the concept of value-based management (VBM). According to Damodaran (2013), these metrics are important for assessing whether a project creates real economic value in emerging markets with a high cost of capital. Furthermore, the use of project portfolio management (PPM) methods allows for a structured comparison between large-scale greenfield projects and operational modernization Cooper *et al.,* (2021).

The mathematical apparatus from the empirical findings consists of the following foundational formulas Damodaran, (2013); Cooper *et al.,* (2021):

Compound Annual Growth Rate

$$CAGR = \frac{RI}{RF} - 1 \quad (1)$$

where:

RI- Initial Revenue;

RF- Final Revenue;

CAGR-Compound Annual Growth Rate.

2. Net Operating Profit After Taxes

$$NOPAT = EBIT \times (1 - TAXRATE) \quad (2)$$

where:

EBIT- Earnings Before Interest and Taxes;

TAXRATE- Corporate tax rate.

3. Return on Invested Capital:

$$IC = E + D \quad (3)$$

$$ROIC = \frac{NOPAT}{IC} \times 100\% \quad (4)$$

where:

ROIC – Return On Invested Capital, %;

IC- Invested Capital,

E-Total equity;

D- Interest-bearing debt liabilities inclusive of lease obligations;

4. Economic Value Added:

$$EVA = NOPAT - IC \times WACC \quad (5)$$

where:

WACC – Weighted Average Cost of Capital

RE – Cost of Equity;

RD Cost of Debt;

T – Tax rate

5. Nominal Investment Payback Period:

$$PP = \frac{IC}{ACFO} \quad (6)$$

where:

PP – payback period;

ACFO – Annual Cash Flow from Operations.

Methodology includes several stages that require step-by-step realization. The research process is organized as follows:

1. Macro-level data collection. The collection and systematization of quantitative data on strategic logistics investment projects within the national investment landscape. This operational phase entails the execution of the defined four-tier filtration matrix against raw fDi Intelligence records

2. Cost of Capital Benchmarking. To ensure objectivity under conditions of limited transparency regarding internal company data, the model utilizes industry WACC benchmarks as a baseline for assessing the cost of capital. The analytical bridge between sectoral macro-dynamics and firm-level micro-performance were institutionalized by contrasting capital deployment vectors

3. Dynamic Analysis. The next stage involved the analysis of the dynamics of logistics assets by calculation of the compound annual growth rate (CAGR) and provided an opportunity to assess the intensity of the investment development across the project lifecycle.

4. Structural analysis. The fourth stage completed the structure analysis of the capital investments by main directions, such as renewal, technical development, digitalization, and capacity building for project teams.

5. Efficiency Modeling. The last stage includes the calculation of Net Operating Profit After Tax (NOPAT), Return on Invested Capital (ROIC), and Economic Value Added (EVA) to evaluate the effectiveness of investments and to predict the approximate investment payback period (PP).

This research primarily employed quantitative methods, including financial analysis, index methods, structural analysis, and elements of financial modeling. It also included the calculation of the financial flows and cost of capital. Selected indicators were illustrated using data from one of Kazakhstan's major logistics companies, providing an opportunity to demonstrate the typical investment processes and project governance standards of this sector. This approach ensures the validity of conclusions and allows comparison of the theoretical models with real parameters of investment activities.

In this research, financial indicators (EVA, CAGR, and ROIC) are used in the framework of Project Management focused on value creation. The approach considers each investment as a strategic project where the initial goal is not limited by operational completion only, but also the maximization of stockholder value. The methodology switches from the descriptive analysis of data to the performance assessment of Project Governance, where the numbers serve as the final KPI to select projects effectively and execute.

Results and discussion

This study first analyzes a portfolio of major investment projects in the logistics sector of Kazakhstan to provide a systematic approach for evaluating the logistics efficiency of investments. The data, extracted from the Financial Times database, covers the period of 2015-2024 and shows the priorities of international investors (fDi Intelligence, 2024).

The considered project portfolio represents a total capital commitment of $8.27 billion and is divided into three main clusters:

1. Strategic Infrastructure and aviation hubs, including the expansion of Almaty International Airport, which cost equate to approximately $780 million or local currency equivalent, rather than billions; cf. TAV Airports, 2021 (TAV Airports, 2021).

2. Maritime and transit connectivity. The main focus of the projects directed by AD Ports Group was the Port of Kuryk (AD Ports Group, 2024).

3. Global 3PL and distribution networks powered by investments of the global leaders such as UPS, DB Schenker, CEVA logistics and DHL.

The high concentration of "Greenfield" projects within this portfolio heightens exposure to systemic risks, such as tenge exchange rate volatility, prolonged construction timelines, and geopolitical uncertainty. These factors necessitate the incorporation of an elevated risk premium, rendering EVA a critically important tool for "stress-testing" project viability.

From the Project Portfolio Management (PPM) prism, the dominance of the "Greenfield" projects shows a specific risk profile. In comparison with "Brownfield" projects, "Greenfield" projects in Kazakhstan's logistics require professional Scope Management and Stakeholder Engagement to navigate direct environmental and regulatory complications. The effective initiation of high-value projects illustrates a maturing project maturity level in the national investment policy, changing the focus to the creation of long-term strategic assets. These projects show the systemic shift toward "greenfield" investments, meaning that new logistics capacities are created to meet international transit demand through structured project execution. The presence of such world leaders confirms the high investment attractiveness of Kazakhstan's logistics sector. However, it is necessary to provide a transition from a macro-level sector overview to a micro-level analysis of a specific market leader in the region.

The results of the research allow to evaluate dynamics of the investment development based on project KPIs such as compound annual growth rate (CAGR), net operating profit after taxes (NOPAT), return on invested capital (ROIC), economic value added (EVA), cash flow (CF), payback period (PP), discounted payback period (DPP). The study was focused on the data retrieved from the reports of the independent auditor, KPMG, about Air Astana. As a key investment player in the industry, its projects reflect the strategic development trends in logistics in Kazakhstan.

The shift from global databases to targeted disclosure at the individual company level allows for detailed testing of macro hypotheses in a controlled environment. The selected indicators serve as a comprehensive diagnostic system that reflects aspects of corporate metrics project management, transforming static accounting reports into dynamic indicators of operational performance. The performance assessment of the national airline serves as a benchmark to verify whether capital accumulation is translating into real wealth creation in the context of regional risk premiums.

1. Dynamics of logistics assets

In 2024, the cost of logistics assets of the national air company Air Astana increased from 387885 to 558341 mln KZT, so the annual growth rate (Table 2):

Table 2

Consolidated statement of financial position of Air Astana for the year ended 31 December, 2024

thousand tenge	31 December 2024	31 December 2023
Property, plant, and equipment	558 341 061	387 885 139
Intangible assets	160 112	1 289 132
Prepayments	10 287 430	8 387 087
Guarantee deposits	20 319 131	15 137 757
Deferred tax assets	25 521 921	16 836 902

Continuation of the table

thousand tenge	31 December 2024	31 December 2023
Trade and other receivables	330 819 610	474 617 960
Inventories	34 724 999	30 704 619
Prepayments	15 905 582	11 284 452
Income tax prepaid	6 825 905	6 027 011
Trade and other payables	10 922 813	10 693 524
Other taxes prepaid	7 242 317	4 657 876
Guarantee deposits	1 700 831	899 574
Cash and cash equivalents	256 622 307	124 552 167
Other financial assets	158 583	346 829
Total current assets	334 103 337	189 166 052
Total assets	952 063 811	619 312 543
Share capital	56 758 223	2 501 550
Functional currency transition reserve	(3 952 306)	-
Other reserves	1 455 281	-
Treasury shares	40 842 148	12 323 792
Reserve on hedging instruments, net of tax	(1 965 955)	(5 489 830)
Retained earnings	113 985 260	87 599 957
Total equity	207 171 647	96 984 465
Loans	273 582	-
Lease liabilities	376 385 720	247 233 366
Provision for aircraft maintenance	152 211 535	67 555 798
Employee benefits	429 540	283 191
Total non-current liabilities	529 300 377	315 072 355
Loans	29 406	187 279
Lease liabilities	90 259 057	79 546 636
Deferred revenue	47 155 403	38 350 318
Provision for aircraft maintenance	13 269 005	47 806 075
Trade and other payables	64 878 916	41 365 415
Total current liabilities	215 591 787	207 255 723
Total liabilities	744 892 164	522 328 078
Total equity and liabilities	952 063 811	619 312 543

Note: compiled by the author based on AIR ASTANA GROUP Integrated Annual Report, 2024)

The structural data presented in Table 2 empirically confirm the intensive allocation of capital. The increase in the net book value of fixed assets by 44% clearly indicates the accelerated implementation of the macro-corridor infrastructure expansion projects discussed at the industry level. Most importantly, the parallel increase in total assets to 952,063,811 thousand tenge was largely due to long-term lease obligations (376,385,720 thousand tenge), which indicates that the expansion of production capacity is closely related to long-term capital commitments. This active accumulation of assets directly confirms the central hypothesis: expanding the invested capital base automatically raises the absolute marginal level of capital expenditures – an obstacle that the firm must overcome to achieve positive EVA.

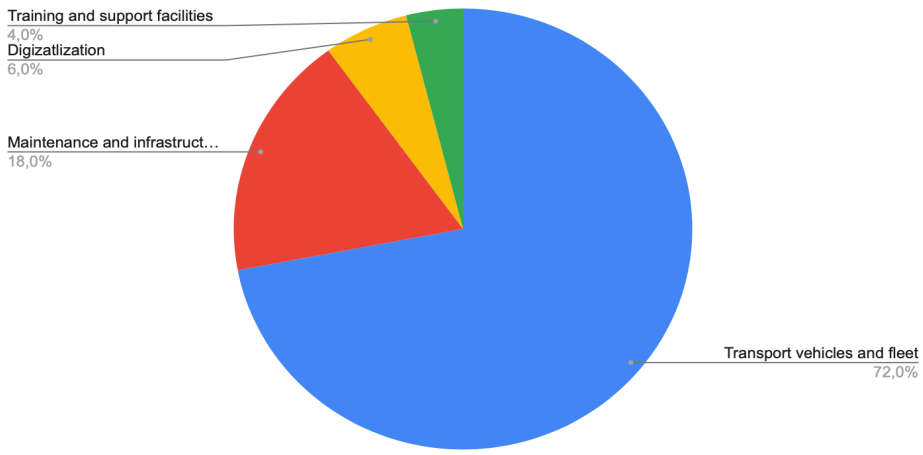
$$CAGR = \frac{387885}{558341} - 1 = 44\%$$

The increase in assets shows the modernization of logistics infrastructure, including vehicle renewal, technological development, and digitalization. This growth rate of 44% provides a micro-level validation of the intensive capital inflow, which was defined in portfolio analysis. As per global market research, the global logistics industry revenue is expected to increase, representing a CAGR of around 7.2% from 2025 to 2030 (Grandview, 2025). This means that Kazakhstan's logistics sector demonstrates considerably faster growth of assets, which necessitates advanced Project Resource Planning and strategic scalability to manage such intensive expansion. This can be attractive for foreign investors and motivate them to invest in Kazakhstan's logistics in the long term.

2. The structure of capital investments.

As per the annual report of Air Astana, the distribution of investments of Air Astana corresponds to the typical model of capital-intensive industries:

Figure 1
The distribution of investments of Air Astana in 2024



Note: compiled by the author based on Air Astana annual report, 2024

The major part of the investment in 2024 was spent on the transport vehicles and fleet, which is typical for capital-intensive spheres and leads to a high depreciation burden. From the Project Management standpoint, the focus on tangible assets is another piece of evidence of the "Greenfield" investment model. Other investments were split between maintenance, digitalization, and capacity building for project teams, which support operational effectiveness throughout the project lifecycle. This, in turn, opens new investment horizons: investments in technologies, automation, and AI within the industry to optimize processes and costs.

3. Evaluation of the investment effectiveness

Table 3
Consolidated statement of profit or loss of Air Astana for the year ended 31 December 2024

thousand tenge	2024	2023
Passenger revenue	585,810,042	521,074,736
Cargo and mail revenue	12,413,214	10,284,481
Other income	5,427,382	3,810,285
Total revenue and other income	616,152,033	535,169,502
Fuel and oil costs	(143,373,122)	(127,357,770)

Continuation of the table

thousand tenge	2024	2023
Employee and crew costs	(106,675,293)	(88,102,136)
Depreciation and amortization	(88,717,693)	(73,944,311)
Handling, landing fees, and route charges	(56,732,135)	(48,241,120)
Passenger service	(55,787,727)	(46,124,472)
Engineering and maintenance	(55,443,453)	(49,388,554)
Selling costs	(20,777,116)	(18,444,763)
Insurance	(6,013,245)	(5,011,359)
Consultancy, legal, and professional services	(3,874,604)	(2,631,258)
IT and communication costs	(3,224,735)	(2,980,328)
Aircraft lease costs	(2,384,213)	(1,000,743)
Property and office costs	(2,200,684)	(1,766,071)
Taxes	(2,043,010)	(1,787,829)
Impairment loss on trade receivables	-36,532	-57,402
Other operating costs	(6,545,924)	(7,045,247)
Total operating expenses	(553,829,486)	(473,883,363)
Operating profit	62,322,547	61,286,139
Finance income	10,376,957	6,757,281
Finance costs	(30,618,503)	(22,765,053)
Foreign exchange loss, net	(9,939,963)	(6,280,403)
Profit before tax	32,141,038	38,997,964
Income tax expense	(6,618,444)	(8,258,890)
Profit for the year	25,522,594	30,739,074
Basic and diluted earnings per share (tenge)*	73.156	100.454

Note: compiled by the author based on the source (AIR ASTANA GROUP Integrated Annual Report, 2024)

As per tax law, a flat tax rate of 20% was applied to EBIT, yielding the following NOPAT calculation:

$$NOPAT = 62322547 \times (1 - 0.2) = 49858038 \text{ thousand of KZT}$$

The company saves about 50 billion KZT of operational revenue, which shows the high effectiveness of operations. While NOPAT confirms operational sustainability, a positive EVA figure of 22.79 billion tenge demonstrates that the company is not merely profitable in an accounting sense but also generates real economic wealth in excess of its cost of capital. A high NOPAT value can inform investors that the company can generate stable cash flow and recoup the invested capital.

As per the financial report of Air Astana, equity in 2024 was 207 171 647 thousand KZT, and interest-bearing debt, inclusive of lease obligations, was compiled to calculate total invested capital:

$$IC = 207171647 + 115038430 = 322210077 \text{ thousand KZT}$$

$$ROIC = \frac{49858038}{322210077} \times 100 \approx 15.47\%$$

As per the latest research, the estimated WACC for air companies is around 8.4% (Gurufocus, 2025). This indicator serves as a conservative estimate, taking into account Kazakhstan's country risk and the high cost of debt servicing for transport operators during the current period. This benchmark is in line with industry reports for 2025 for Central Asian transport operators, reflecting current risk premiums and the cost of debt capital in the region (KPMG, 2025). The WACC value is used as a benchmark es-

timate, as there is a lack of disclosed company-specific capital investment data for the current reporting period. The ROIC of Air Astana in 2024 was around 15.5%, which exceeds the WACC of 8.4% showing that the company is creating value for its shareholders. It shows that the company is managing its assets well and generating stable revenue.

$$EVA = 49858038 – (322210077 \times 0.084) \approx \approx 22792392 \text{ thousand KZT}$$

The economic value added of the company in 2024 was approximately 22.79 billion KZT, which indicates that the company's revenue exceeds the cost of capital. The Positive EVA confirms that Air Astana's operations provide value for its shareholders. It also demonstrates that the large-scale infrastructure investments have a strong potential to generate economic value.

By combining the empirical data from Tables 2 and 3, the total invested capital amounts to 674119412 thousand tenge (including equity and consolidated financial leases). Operating profit (EBIT) of 62322547 thousand tenge yields a Net Operating Profit After Tax (NOPAT) of 49858038 thousand tenge. This indicates an empirical Return on Invested Capital of 15.5%, adjusted for lease amortization. This positive spread in returns exceeding the conservative Weighted Average Cost of Capital (WACC) benchmark of 8.4% results in an absolute EVA of 22.79 billion tenge, thereby validating the key hypothesis that structured corporate project management effectively mitigates the capital intensity inherent in logistics investments within Central Asia.

The positive EVA in this case is a key indicator of Project Lifecycle Management efficiency, confirming that the structure of project governance allows for managing the cost of capital effectively. From the PV viewpoint, it demonstrates that the strategic decision to invest more in fleet modernization was reinforced by diligent Risk Mitigation and Resource Allocation strategies.

Stable added value dynamics indicate that the chosen project management model is successfully adapting to the region's macroeconomic risks. To more fully assess investment attractiveness, it is necessary to compare current profitability with the rate of return on investment, which allows one to determine the liquidity of the project portfolio.

4. Investment payback period.

Payback period can be calculated as the simple payback period (PP) and the discounted payback period (DPP). Simple PP shows the number of years necessary for the return of investments through the operational cash flow without considering the time value of money. Discounted payback period considers the fact that future cash flows cost less than cash today by discounting with the use of WACC. It is necessary to calculate a simple payback period, as PP indicates the nominal rate of return on an investment, taking into account that the calculation is only illustrative, as the risks were not considered.

Annual cash flow from the operation of Air Astana in 2024 was equal to 172 537 380 thousand KZT (Table 4).

Table 4

Consolidated statement of cash flows of Air Astana for the year ended 31 December 2024

thousand tenge	2024	2023
OPERATING ACTIVITIES		
Profit before tax	32 141 038	38 997 964
Adjustments for:		
Depreciation and amortization of property, plant and equipment, and intangible assets	73 944 311	88 717 693
Gain on disposal of property, plant, and equipment	717 693	(1 571 644)
Change in impairment allowance for trade receivables, advances issued, guarantee deposits, and cash and cash equivalents	(539 856)	(34 680)
Provision for obsolete inventories	165 712	(283 369)
Change in vacation reserve	552 061	(144 194)
Accrual of provision for aircraft maintenance	44 656 280	39 127 998
Change in customer loyalty program provision	1 909 682	1 265 804
Foreign exchange loss, net	939 963	6 280 403

Continuation of the table

thousand tenge	2024	2023
Finance income, excluding impairment	(10 241 249)	(6 538 656)
Finance costs, excluding impairment	30 594 906	22 567 976
Income from the early return of the engine	(1 270 825)	-
Equity-settled share-based payment	2 841 547	-
Cash generated from operating activities before changes in working capital	186 624 398	173 611 913
Change in trade and other receivables	(842 175)	(379 194)
Change in prepaid expenses and advances issued	(4 788 757)	(2 566 744)
Change in inventories	768 943	(7 660 076)
Change in trade and other payables and aircraft maintenance provision	(8 373 871)	(8 210 386)
Change in deferred revenue	1 503 495	657 999
Change in other financial instruments	419 210	(58 864)
Cash generated from operating activities	175 311 243	155 394 648
Income tax paid	(12 997 706)	(19 602 319)
Interest received	10 223 843	6 430 778
Net cash generated from operating activities	172 537 380	142 223 107
INVESTING ACTIVITIES		
Purchase of property, plant, and equipment	(45 980 710)	(19 063 263)
Proceeds from the sale and leaseback	42 484 321	-
Proceeds from disposal of property, plant, and equipment	1 283 449	2 272 424
Purchase of intangible assets	(1 775 326)	(961 955)
Placement of bank and guarantee deposits	(5 972 685)	(4 553 517)
Withdrawal of bank and guarantee deposits	1 428 975	1 312 348
Net cash used in investing activities	(8 531 976)	(20 993 963)

Note: compiled by the author based on the source (Air Astana Group Integrated Annual Report, 2024)

$$PP = \frac{322210077}{172537380} = 1.87 years$$

This means that the payback period, as per data from 2024, was about 1.87 years. The short payback period shows the high operational effectiveness and rapid capital recovery, which is a critical factor in Project Risk Management. It is important to note that this payback period calculation is illustrative and based on operational cash flows in relation to total invested capital. Since capital expenditures are not presented as a separate investment project in the financial statements, this result indicates that the company's overall asset turnover is high. However, such rapid recovery rates are in line with the high demand associated with the expansion of the regional transit hub.

Based on the analysis of the project efficiency, the following recommendations were proposed to improve the management of logistics investment projects.

1. Establishment of flexible management: Considering the high volatility of the international transit routings, logistics projects should shift from rigid waterfall planning to agile governance to allow for ceaseless scope adjustments.

2. Entering the standards into KPI dashboards: In order to keep the high level of EVA, the managers must establish financial monitoring in real time at all stages of the project lifecycle.

3. Enhanced risk integration: The dependence on "Greenfield" projects requires the integration of the Quantitative Risk Analysis, i.e., Monte Carlo simulations on the stage of feasibility for protection of investments from inflation and geopolitical fluctuations.

4. Capacity creation and PM training: Instead of the traditional approach, emphasis should be placed on systematic training and certification of project

teams. Specialized professional development programs for new projects must be created to ensure operational processes meet the quality standards.

Limitations and future research directions

Several limitations need to be clearly stated to ensure the scientific rigor of this study. First, while the Air Astana case clearly illustrates macroeconomic trends and business growth dynamics, the empirical analysis at the micro level is limited to the example of a single market leader. Consequently, corporate investment dynamics may differ significantly for state-owned railway monopolies or low-profit surface infrastructure operators in Kazakhstan. Second, due to the limited public availability of information on the level of barriers for specific projects, this model uses a normalized industry WACC (8.4%) when calculating the economic value added (EVA). Finally, this study covers the financial reality up to the reporting period of 2024, leaving the analysis of long-term changes in the project life cycle for future observations.

In this regard, promising areas of further research should include:

- Expanding the analytical scope by building comparable financial models for several companies, including other large operators in the air transport, surface transit and dry port sectors of the Republic of Kazakhstan;
- Conducting longitudinal investment performance studies to track the full implementation and work cycle of logistics projects over a 5-10 year period; and
- Integrating non-financial operational KPIs, such as regional transit speeds, infrastructure capacity utilization indicators, and project risk management indicators, into project management systems aimed at creating economic value.

Conclusion

The conducted study confirms the relevance of the evaluation of the economic effectiveness of investment projects in the logistics sector of Kazakhstan using a methodological synthesis of strategic trends and empirical modeling. It also proves that the economic effectiveness of Kazakhstani logistics is fundamentally driven by the quality of strategic Project Management. Thus, the investment success is a result of effective project governance, which allows for the transformation of capital into sustainable economic value. The results evidence that logistics, particularly air transport, has a key role in the economic well-being of the Republic of Kazakhstan. Investments in logistics currently have a stable, positive dynamic, shifting towards high-value infrastructure development.

The link between macroeconomic trends and microeconomic value creation is substantiated by the fact that aggressive asset accumulation significantly outpaces the global benchmark average annual growth rate of 7.2%, thereby expanding the capital base and necessitating stricter project oversight. Portfolio analysis reveals a systematic shift toward high-cost “greenfield” configurations, underscoring the need to transition from purely operational control to advanced, value-based project portfolio management. Company-level financial modeling demonstrates that achieving a positive EVA margin (22.79 billion tenge) and reducing payback periods (1.87 years) while remaining within the bounds of regional risk premiums requires mature project lifecycle frameworks. Identified limitations regarding data transparency and reliance on normalized WACC proxies highlight the need to adapt value-based project portfolio management methodologies to the unique institutional landscape of Central Asian markets. Ultimately, the adoption of value-based criteria for project portfolio management provides a robust decision-making framework for government institutions, international financiers, and corporate executives alike.

In general, the results of the article show that investment projects in the logistics sector of Kazakhstan are economically effective and show high potential for value creation. The results of the research contribute to the existing approaches of assessment by integrating value-based KPIs into project governance frameworks and can be used by the investors, government, and managers during the decision-making processes.

The research revealed that the growth of the fixed assets illustrates the processes of the modernization of logistics infrastructure, including the renewal of the vehicles, technological development, and digitalization. From a Project Management standpoint, such a high growth rate necessitates advanced Resource Planning and Scalability. In comparison to the global average CAGR of 7.2%, Kazakhstan has higher indicators that improve its investment climate and can motivate local and foreign investors to invest in the logistics sector of Kazakhstan.

The project portfolio analysis of logistics projects, valued at $8.27 billion, further supports this trend. The study revealed that the major part of these initiatives is “greenfield” investments, which require specialized Scope Management and Risk

Mitigation to navigate environmental and regulatory complexities.

The financial analysis of the projects provided an opportunity to calculate the illustrative payback period. In this research, the payback period of the object was 1.87 years, which proves the sector's operational effectiveness. In the context of Project Risk Management, a short payback period corresponds to the world practice in the sector of logistics, where the investments can be characterized by the speed of pay-off. This confirms the ability of Kazakhstan's investment projects to create economic value in the short-term period as well as to save the potential of long-term development within the project lifecycle.

At the same time, the research revealed some limitations connected with the availability of information and the transparency of public data. The reliance on benchmark estimates for some indicators, like WACC, emphasizes the importance of more detailed corporate disclosure. This gap highlights the need to adapt project-oriented methodological approaches to better account for the specific risks and long-term factors influencing investment decisions in emerging markets.

Conflict of Interest

The authors declare that there are no conflicts of interest that could have influenced the results of the study or their interpretation.

Author Contributions

AND: contributed substantially to the conceptualization of the study, identification of the research problem, formulation of the research objectives, tasks, and hypotheses, development of the methodological approach for assessing the effectiveness of investment projects in Kazakhstan's logistics sector, interpretation of the obtained results, preparation of scientific conclusions and practical recommendations, scientific editing of the manuscript, and overall coordination of the research process.

NAB: was responsible for the collection, systematization, and processing of statistical, analytical, and financial data; performed calculations of investment project performance indicators (ROIC, EVA, CAGR, and PP); prepared tables, figures, and analytical materials; conducted the literature review; and prepared the initial draft of the manuscript.

KM: provided scientific consultation throughout the study, contributed to the improvement of the methodology and verification of the results, conducted an expert assessment of the analytical findings, proposed recommendations to enhance the scientific validity of the research, and carried out the final review of the manuscript prior to publication.

All authors participated in discussing the research results, reviewed and approved the final version of the manuscript, and agreed with its content and conclusions.

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Received: 17 February 2026
Accepted: 20 June 2026