ХАРКІВСЬКИЙ НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ МІСЬКОГО ГОСПОДАРСТВА ІМЕНІ О. М. БЕКЕТОВА

Навчально-науковий інститут економіки і менеджменту

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на тему: **« Традиціні та сучасні методи оцінки інвестиційної діяльності підприємства /**

Traditional and Modern Methods of Evaluating Investment Activity of an Enterprise»

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ЗАТВЕРДЖУЮ

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2	Техніко-економічна характеристика підприємства та проведення аналізу фінансово-господарської діяльності	02.03.26 – 30.04.26	
3	Розробка пакету документів і проведення необхідних розрахунків для практично-рекомендаційної частини	13.04.26 – 02.05.26	
4	Виконання графічної частини	03.05.26 – 16.05.26	
5	Оформлення пояснювальної записки	17.05.26 – 23.05.26	
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CONTENT

INTRODUCTION

Relevance of the topic. Agricultural business in Ukraine currently has two survive and overcome severe crises. Export supply chains fail regularly, and freight rates remain highly unpredictable. Companies are forced to invest in complex intelligent systems and digitalization. Classic financial analysis methods are poorly suited and usually not enough for evaluating algorithm-based investments. Old formulas cannot fully assess assets that get smarter over time and autonomously drive down operating costs through machine learning. Developing combined economic model one that organically blends "digital twins", self-learning curves, and environmental metrics is a vital step for modern agricultural investment planning.

Research degree. The foundational principles of investment management have been deeply explored in the works of Madden B. J., alongside Ukrainian authors like I. Blank and V. Savchuk. The theoretical basis is solid, but the intersection of corporate finance and IT-solutions is academically limited. The effects of data accumulation, the predictive resilience of logistics, and the real impact of digital twins on discounted cash flows within the Ukrainian agricultural sector remain uncharted.

The main goal of this research is to develop and justify practical tools for a comprehensive financial and economic evaluation of an innovative IT project within the logistics division of a large agricultural enterprise.

To achieve the goal we address the following tasks:

1. Examine how digitalization now becomes alternative for classis approaches to measuring investment efficiency;
2. Analyze current financial state of the enterprise to estimate its investment capacity;
3. Calculate the project's economics based on the weighted average cost of capital (WACC) and CFROI metrics;

4. Assess how integrating ESG criteria helps attract better financing and drives sustainable development;
5. Show the impact of technologies on OPEX reduction and downtime risk minimization.

Object of the research is the process of economic justification and investment activity management at the enterprise.

Subject of the research is the methods, criteria, and financial tools used to evaluate the efficiency of an innovative investment project, using LLC "KERNEL-TRADE" as a case study.

Research methods. The calculations and conclusions rely on both general and specific cognitive methods. To assess the company's actual financial standing, we applied horizontal and vertical analysis, along with a system of financial ratios. to forecast how artificial intelligence would react to future crises, we utilized scenario modeling and elements of predictive analytics.

Information sources. The study's information base consists of the official financial statements of LLC "KERNEL-TRADE" for 2022–2024, current Ukrainian legislation, the European Sustainability Reporting Standards, and Carbon Disclosure Project ratings. Additionally, materials from scientific journals, monographs, and international financial databases were utilized.

CHAPTER 1 APPROACHES AND TOOLS FOR MEASURING INVESTMENT ACTIVITY

1.1 Concept and structuring of cash flows

To ensure high-quality analysis and informed managerial decision-making regarding the feasibility of investment implementation, it is necessary to thoroughly investigate the essence of an investment project, its content, formation logic, and main implementation stages. Currently, there is no single approach to defining the concept of an "investment project" in the academic literature, which indicates the multifaceted and complex nature of this phenomenon. For instance, H. M. Tarasiuk defines an investment project as a set of documents characterizing the project from its conception to the achievement of specified efficiency and volume indicators, encompassing the pre-investment, investment, operational, and liquidation stages of its implementation [17]. According to T. V. Maiorova, an investment project is a complex of actions, the ultimate outcome of which is both profit and a social effect [13]. However, the Law of Ukraine "On Investment Activity" defines an investment project as a "complex of measures (organizational and legal, managerial, analytical, financial, and engineering and technical), determined on the basis of the national system of values and tasks of the innovative development of the national economy, and aimed at the development of individual industries, economic sectors, production facilities, and regions, the implementation of which is carried out by subjects of investment activity using values in accordance with the provisions of this Law [2].

Therefore, summarizing the approaches of the before mentioned scholars and the Law of Ukraine, we suggest our own comprehensive definition. An investment project is a complex of interconnected actions and documents aimed at creating or improving the condition of assets, with the goal of achieving economic and/or social

changes within a defined timeframe, taking into account such components as implementation, risks, financial constraints, and strategic objectives.

As highlighted in the suggested definition, any investment project is distinguished by specific attributes, including costs, revenues, associated risks, and implementation timeframes. Identifying these parameters remains crucial for a comprehensive performance evaluation. The characterization of such projects can be approached from various angles, leading to diverse typologies; thus far, a single universally accepted classification methodology has yet to be established. Therefore, we will examine the categorization of fundamental investment project types across several primary indicators:

1. By project scale or size: small (implementation periods of up to a year, modest investment volumes, rapid economic outcomes); medium (investment volumes ranging from $10 million to $50 million); and large (investments exceeding $50 million USD, characterized by extended implementation lifecycles).
2. By implementation complexity: simple (lacking intricate technological or organizational challenges, and requiring straightforward resource inputs); and complex (involving sophisticated technological and organizational tasks alongside multi-component resource commitments).
3. By implementation timeframe: short-term (up to 3 years), medium-term (3 to 5 years), and long-term (more than 5 years).
4. By the nature of the target objective: educational (aimed at providing access to training and learning); innovative (focused on applying cutting-edge developments, mastering novel equipment, and introducing new product lines and services); research and development (tasked with designing an entirely new, previously non-existent product); and mixed (combining various multifaceted sub-objectives) [15].

Every enterprise generates monetary funds as a result of its operational activities, which are called cash flows. These cash flows represent a key element in evaluating an investment project's viability. Metrics such as net present value, internal rate of return, and profitability index, among others, are determined directly through the

analysis of cash inflows and outflows. According to the Law of Ukraine "On Investment Activity," the financial resources directed by an investor toward project realization are regarded as investments; these can take the form of monetary funds, securities, physical property, or property rights, deployed to secure a profit or achieve a specific social impact [1]. Various scholars offer differing interpretations of the cash flow concept. For instance, I. A. Blank defines cash flow as an aggregate of time-distributed monetary receipts and disbursements generated by an enterprise's economic activities [3]. Furthermore, F. F. Butynets emphasizes that cash flows constitute the most critical independent subject of financial analysis [5]. G. G. Kireitsev concurs with this view, noting that cash flows are central to maintaining an optimal balance between liquidity and profitability [10]. Furthermore, J. C. Van Horne provides an alternative, more generalized perspective, stressing that cash flows represent a continuous movement of monetary assets [5]. In our estimation, the fullest definition was given by R. A. Chemchykalenko, N. V. Bondarenko, and O. I. Kravchenko, who describe cash flows as "an economic phenomenon mediated by a set of time-distributed inflows and outflows of cash and cash equivalents, generated by an enterprise during the execution of its economic activities" [18]. However, within the specific context of an investment project, we suggest our own definition of cash flows as the receipts and expenditures of funds directly linked to the project's implementation throughout its entire lifecycle. As the cash flow analysis process is multi-component, the following stages are typically distinguished:

1. Identifying and categorizing all potential sources of cash inflows and disbursements which are directly linked to the project's execution.
2. Structuring cash flows across specific timeframes (depends on the investment project's overall duration).
3. Calculating the aggregate net cash flow for each period.
4. Applying discounting techniques to the cash flows. This step is crucial for accounting for the time value of money, fluctuations in purchasing power and for enabling accurate benchmarking against alternative investment opportunities.

5. Computing the final integral performance metrics.

Ultimately, structuring the cash flow analysis in this way guarantees a logical sequence in the evaluation process and prevents the occurrence of "lost" funds. The concept of cash flows includes a big amount of cash flows. Certain researchers have identified up to twenty-one separate criteria for their categorization. This confirms that cash flows represent a highly complex category, encompassing an extensive spectrum of processes and attributes within an entity's financial and operational framework. The classification outlined previously facilitates the structured organization of data based on specific criteria. Consequently, this enables a more profound analytical approach, thereby driving both superior resource management and the formulation of well-grounded decisions regarding the launch of investment initiatives.

Generally, financial streams are divided into inflows and outflows, representing the accumulation and disbursement of capital. The incoming cash flows of enterprises, which are formed as a result of investment activity, are the sum of cash receipts obtained from the realization of financial instruments, the repayment of previously granted loans, the accrual of interest for lending, dividends from investments in the corporate rights of other companies, and from the sale of fixed assets and other assets. The volume of such cash receipts in the reporting period is influenced by the scale of investments in the previous period, whereas outgoing cash flows depend on the volumes of investments in the current period. It is worth noting that the absolute size of the incoming flow provides an opportunity only to generally evaluate the scale and effectiveness of investment activity; for more information, a detailed analysis of the internal structure of the flow, the main sources of its formation, and the interrelationships between them is conducted.

The outgoing cash flow generated by an enterprise's investment operations represents the total expenses tied to acquiring financial instruments, making capital investments in non-current assets, and issuing loans to other firms. Planning the volume of these costs depends on several factors. On one hand, it is determined by the company having temporarily free funds and the current conditions for placing them. On the other hand, the company's overall investment strategy plays a deciding role, as

it can outline specific directions for building the investment portfolio over the planned period. For example, one of the planned measures might be buying shares of another business for the purpose of asset diversification or strategic partnership [7].

Therefore, outgoing cash flows from investment activity reflect the active phase of investing, which builds the potential for future income, and they must be closely linked to the long-term goals of the enterprise's financial development.

So, cash flows are a fundamental component of a company's investment activity, because decisions regarding the feasibility of investing and the determination of expected efficiency and risks are made based on their structure and analysis. Analyzing incoming and outgoing cash flows makes it possible to evaluate the structure of receipts and expenses, identify the sources of fund generation, and forecast financial results in the future.

1.2 The life cycle of an investment project

Every investment project evolves within its own distinct life cycle. To respond to challenges in a timely manner and make informed managerial decisions, it is crucial to analyze performance metrics at each of these stages. Currently, economic science lacks a universal standard regarding the exact number of phases in this cycle. For instance, A. A. Peresada defines it as the timeframe between the initial and final cash flow movements, identifying five fundamental stages: from idea generation and operational launch to stable functioning, and ultimately, decline or systematic renewal [15]. At the same time, N. V. Nechai employs a much more detailed eight-stage model, which separately examines intention formation, pre-investment analysis, asset creation, and final liquidation [14]. Such methodological variance is natural. The structure of the cycle heavily depends on the specific industry, the national economy, and the diverse interests of the stakeholders involved. Given that our research focuses on an enterprise

within the agricultural sector, we suggest adapting these approaches and highlighting the key phases as shown on Figure 1.

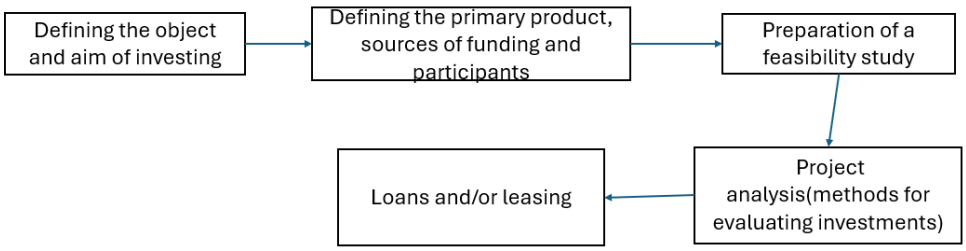

Figure 1.1 - Key phases of the life cycle of an investment project of an enterprise in agricultural sector

We find important focusing on the 4th and 5th stage, as they have special features in the agriculture sector. Project analysis (the 4th stage) has an aim to define if the project is implemented enough and what the future results would be, the costs involved and needed, calculating the projects effectivness (for all the participants), and choosing the best option. Which entails certain characteristics at stage 5. Especially considering the need on increased financial recourses in agricultural field and the fact that expenses often precede the receipt of actual income, i.e. they are incurred in advance. Because of these conditions, securing outside capital becomes a necessity. Taking a standard bank loan is the most frequent choice, yet it directly drives up overall production expenses. Leasing offers a practical alternative to this issue. It proves especially useful when the project operates with government backing.

Also, during the next stages, it is key to account the volatility at the agricultural market. True product demand often becomes visible only after resources are already tied up in production, this is the reasom to model these risks during the planning stage.

The project`s life cycle officially ends once it loses itsc economic relevance. At that moment, all assests muct be liquidated or withdrawn from circulation. The maing challenege for managers and auditors appears here – they need to objectively compare the initial forecasts against the actual outcomes, and effectively manage any residual assests.

Overall, life cycle analysis sycnchronizes all revenues and expenses over time, which is essential for applying such valuation metods as net present value, internal rate of return and discounted payback period. Relying solely on static indicators without a temporal context renders the assessment inaccurate and disconnected from reality. During the planning stage, the primary danger lies in flawed market capacity forecasts. As active implementation begins, the risk of budget overruns or schedule disruptions increases, whereas the operational phase is primarily vulnerable to demand fluctuations, aggressive competition, and regulatory shifts [15]. So, this approach helps identifying phase-specific threats. A clear understanding of each phase's duration allows the optimization of the financial strategy. This is important for capital-intensive agro-industrial projects, where management must calculate in advance exactly when the largest capital injections will be needed and which sources are most advantageous to utilize (equity, grants, or loans) [3]. Finally, lifecycle structuring clearly delineates areas of responsibility among contractors, creditor banks, and investors. It also establishes the framework for a high-quality post-project audit, enabling the enterprise to analyze managerial errors and refine its future investment strategies.

Thus, a deep life cycle analysis serves multiple functions. Firtsly, not only helps it to calculate pure financial returns, but also provides complete trandparency for all management-decisions, minimzes potenrial risks, and enables investors to achieve their global goales.

1.3 Methods of evaluating investment activity of an enterprise

Given the modern worlds` tough market competition, financial instability and limited capital, corporate leadership must accurately determine whether an initiative will generate revenue and whether it justifies the associated risks. This analytical process is important l for filtering out unprofitable ideas, benchmarking alternative options, and calculating the exact speed of capital recovery.

While scientists do not have a determined opinion on the iltimate objective of investing, we aligh with the classical opinion, where the primary goal is profit maximization. Historically, yet Adam Smith argued that expanding entrepreneurial capital directly correlates with an increase in overall public welfare - which itself is often a secondary objective of large-scale projects [11]. Also, modern businesses are mostly owned by shareholders. Their motivation is dividend growth, a benchmark that can only be achieved through the sustained continuous expansion of the company's net profit [22].

Methods of evaluating investment activity are classified into static and dynamic.

The static approach does not take temporal factor into account, instead relies on averaged figures. Due to their inherent margin of error, analysts typically reserve them for short-term, low-risk initiatives. However, they should not be discarded from the analytical process, as these methods are effective for preliminary calculations during the early stages of a project. Dynamic models strictly incorporate the changing purchasing power of capital over time. This characteristic makes them significantly more accurate and reliable, particularly when forecasting long-term outcomes within a volatile economic landscape [15].

In practice, analysts most frequently rely on two static indicators: ARR and PP. Let us focus on each.

The first one is accounting rate of return (ARR), which was made to evaluate the overarching profitability of an initiative; the formula is down below:

$$\mathrm{ARR} = \frac{\mathrm{AP}}{\frac{1}{2}(\mathrm{IC}+\mathrm{RV})}, \quad , \quad (1.1)$$

where AP represents the average annual profit;

IC is the initial capital outlay (assuming that these capital expenditures will be written off at the end of the project's life cycle);

and RV denotes the residual or salvage value of the assets, if this one exists. Corporate management typically benchmarks the resulting coefficient against the enterprise's target return on advanced capital.

The second one is payback period (PP), made to establish the absolute minimum timeframe, starting from the initial funding phase, required for the generated net cash inflows to completely offset the starting investment expenditures. In a base scenario. where the investment consists of a single upfront payment and the subsequent cash flows are relatively uniform, the applicable formula is:

$$PP = \frac{IC}{CF}, \tag{1.2}$$

where IC signifies the total volume of initial capital investments into the project;

CF is the average net cash flow.

Static methods remain a good choice for the preliminary analysis of investment decisions, especially during an initiative`s stage or when there is a lack of data to construct complex financial models. Their primary advantage lies in absolute mathematical simplicity. This makes the metrics highly accessible to a broad spectrum of users, ranging from mid-level corporate managers to private retail investors. However, these indicators carry significant limitations. For instance, the ARR relies heavily on standard accounting data to quickly estimate average yields, but it completely fails to account for implementation risks and the temporal distribution of incoming cash flows. As well as PP excellently illustrates the speed of capital recovery as a critical metric for highly volatile initiatives. Yet it has a major blind spot - it ignores all financial outcomes generated after the breakeven point is reached, making it impossible to assess overarching project profitability.

That is why in today`s business field, relying exclusivly on static methods is not enough. To obtain an objective overview, analysts must combine both static and dynamic models. Unlike static approaches, dynamic valuation methods are firmly grounded in the time value of money concept. The fundamental indicator within this

category is the net present value (NPV). It is calculated as the difference between the present value of future cash inflows and the initial capital outlay. If the capital investment IC is a single, upfront payment, the baseline formula applies:

$$\mathrm{NPV} = \sum_{\mathrm{k=1}}^{\mathrm{n}} \frac{\mathrm{CF_k}}{(1+\mathrm{r})^{\mathrm{k}}} - \mathrm{IC}, \tag{1.3}$$

where CF_k represents the net cash flow at the end of k period;

n is the total duration of the project;

and r denotes the discount rate.

In scenarios where capital investments are distributed over multiple periods, the equation becomes more complex, and the next formula applies:

$$\mathrm{NPV} = \sum_{\mathrm{k=1}}^{\mathrm{n}} \frac{\mathrm{CF_K}}{(1+\mathrm{r})^{\mathrm{k}}} - \sum_{\mathrm{j=0}}^{\mathrm{m}} \frac{\mathrm{IC_j}}{(1+\mathrm{r})^{\mathrm{j}}}, \tag{1.4}$$

where IC_j are capital investments which are distributed over multiple periods (m).

For practical simplicity, analysts often assume a constant discount rate. However, under volatile macroeconomic conditions where the rate fluctuates for each specific period, the denominator transforms into:

$$\prod_{k=1}^{n}(1 + r_k) \tag{1.5}$$

The decision-making rule here is straightforward: if NPV > 0, the initiative will expand the company's market value and increase shareholder wealth. Even at NPV = 0, the

project is generally positive, as it increases the operational scale of the enterprise without incurring financial losses.

The next indicator is the internal rate of return (IRR), and it closely relates to NPV. IRR represents the specific discount rate at which the NPV metrics equals zero. The formula is:

$$0 = \sum_{t=0}^{n} \frac{CF_t}{(1+IRR)^t} - \sum_{t=0}^{n} \frac{(C_0)_t}{(1+IRR)^t} \quad (1.6)$$

The economic essence of the IRR is that it defines the absolute maximum cost of capital (such as a commercial loan interest rate) that the project can sustain before falling into unprofitability.

For a deeper analysis, experts use the modified internal rate of return (MIRR). This metric fixes the main flaw of the classic IRR, because it assumes that all cash income is reinvested at the company's cost of capital, not the project's internal rate. Mathematically, MIRR is the rate that balances the present value of investment costs with the future value of the cash flows:

$$\sum_{t=0}^{n} \frac{(C_0)_t}{(1+r)^1} = \frac{\sum_{t=0}^{n}(1+r)^n}{(1+MIRR)^n} \quad (1.7)$$

Another important tool is the profitability index (PI**)**. It helps to evaluate a project's relative efficiency. The index is calculated by dividing the sum of the discounted cash flows by the initial investment size:

$$PI = \frac{\sum_{t=0}^{n} \frac{CF_t}{(1+r)^t}}{\sum_{t=0}^{n} \frac{(C_o)_t}{(1+r)^t}} \quad (1.8)$$

If PI>1, the project is considered effective because every invested dollar brings more than one dollar in return.

Finally, the discounted payback period (DPP) is used to find the exact time needed to recover the funds. Unlike the static method, DPP considers the time value of money. It shows the real time required for the accumulated discounted income to fully cover the initial costs. This makes the project's liquidity assessment much more objective, especially when dealing with inflation and financial risks [11].

All dynamic approaches are based on the time value of money concept, making them much more accurate than static tools. This allows for an objective comparison of financial results for initiatives with different lifespans and structures. Net present value is the most popular and informative tool. It calculates the absolute amount of expected profit, clearly demonstrating exactly how much the owners' wealth will grow. The Internal rate of return helps find the maximum discount rate at which the project remains profitable. This method is great for comparing alternatives, but it can fail when dealing with complex or non-standard cash flows. To avoid these issues, analysts use the modified internal rate of return. It fixes the main problem of the classic IRR by relying on a more realistic reinvestment rate for the generated income. The profitability index is a relative metric, making it perfect for choosing between projects with different budgets. However, because it ignores the overall scale of the investment, its conclusions can sometimes contradict the NPV results. The discounted payback period perfectly assesses liquidity and risk by showing the exact time needed to recover the funds. But its main drawback is that it completely ignores any profits earned after the breakeven point.

Therefore, relying on just one single indicator is ineffective and risky, as no single method can cover all the project details. The best solution is a comprehensive approach that actively combines the results of several different evaluation tools.

However, traditional valuation methods have a major drawback: they rely on rigid cash flow forecasts and fail to account for the volatility of the business environment. To overcome this issue, analysts must apply specialized risk management tools. These include sensitivity analysis, scenario modeling, and break-even analysis. By utilizing these approaches, management can identify the project's actual safety margins and proactively develop strategies to minimize potential threats.

Sensitivity analysis is one of the most popular tools in this category. Its core idea is to test how changing just one specific input variable would impact the final success metrics, such as NPV or IRR. This method helps to note the project's weakest places. It also establishes the maximum allowable deviations where the investment still remains profitable [13]. Knowing this data, corporate leaders can effectively plan their response strategies long before a real crisis occurs. In its standard format, this method evaluates the fluctuation of only a single variable while holding all others constant. However, in real-world business models, metrics are often heavily interconnected, meaning this isolated approach can lead to an inaccurate picture. Experts recommend utilizing hybrid methodologies: combining sensitivity checks with comprehensive scenario modeling. This allows for the evaluation of the combined impact of multiple factors simultaneously [8]. This tool becomes absolutely indispensable when a project model contains numerous variables with high uncertainty. It clearly highlights the specific factors that hit the financial outcomes the hardest [9]. Once these vulnerabilities are identified, management can focus their efforts on continuously monitoring them or proactively hedging against these risks.

The standard algorithm for conducting this analysis consists of several steps:

1. Identifying the core risk drivers (e.g., projected revenue, discount rate, sales volumes, capital and operating expenditures).
2. Establishing the baseline figures for each of these indicators.
3. Incrementally altering one selected parameter (for instance, by ±5%, ±10%, and ±15%) while keeping everything else strictly frozen.

4. Recalculating the primary performance metric (typically NPV) for each new variation.
5. Visualizing the resulting data through a dedicated sensitivity chart.
6. Pinpointing the critical threshold, - the exact parameter value where the initiative crosses into unprofitability (i.e., when NPV=0$).

Another powerful risk management tool is scenario analysis. Its primary distinction from sensitivity testing is that it models the simultaneous fluctuation of multiple interconnected factors. This comprehensive approach accurately reflects the realities of modern business, where market shifts rarely happen in isolation. Usually, financial analysts create 3 scenarios using this method: the base-case one, where analysts use most probable market conditions and events in the world; the pessimistic scenario, where crisis events happen, for example: rapid demand drop or inflationary strikes; and the optimistic scenario creates an ideal environment for the project to be launched.

The procedure for scenario modeling involves these steps:

1. Isolating the critical drivers that fundamentally impact profitability.
2. Formulating several alternative pathways for how future events might unfold.
3. Recalculating the core financial indicators (NPV, IRR, PI) separately for each distinct model.
4. Comparing the resulting data and conducting a final evaluation of the threat levels [9].

Despite its widespread practical application, this method carries significant vulnerabilities. Its primary flaw is a high degree of inherent subjectivity. The ultimate results depend entirely on the quality and realism of the initial assumptions made by the expert. Also, executing this modeling properly demands extensive datasets and significant time.

A third essential tool for risk assessment is break-even analysis. The fundamental logic of this method is to identify the exact sales volume at which a company fully recovers all its expenditures, reaching a state of zero net loss, after which it begins to generate pure profit. As researchers T. R. Shveda and L. Y. Malyuta appropriately note, this metric serves as a critical baseline for evaluating overall corporate financial stability and guiding long-term strategic decisions [12]. Furthermore, scholars L. Y. Koshkalda and O. G. Radeva emphasize that pinpointing this critical production threshold unlocks additional managerial capabilities. Specifically, this analytical approach empowers leadership not only to maintain stricter budget control but also to strategically adjust the product mix and objectively measure the success of the injected capital [11].

Mathematically, this critical threshold is calculated in two dimensions. To determine the break-even volume in physical units, total fixed costs are divided by the unit contribution margin:

$$\mathrm{BEP} = \frac{\mathrm{FC}}{\mathrm{P}-\mathrm{VC}} \tag{1.9}$$

To calculate the break-even point in monetary terms (required total revenue), the following equation is applied:

$$\mathrm{BEP} = \mathrm{FC}/(1 - \frac{\mathrm{VC}}{\mathrm{P}}) \tag{1.10}$$

where FC represents the overarching fixed costs of the enterprise;

VC denotes the variable costs required to produce a single unit;

P stands for the selling price.

Rather than relying on a conventional tabular format, we can synthesize the strengths and weaknesses of these risk assessment instruments as follows:

Sensitivity testing is highly favored for its straightforward implementation and its ability to isolate and measure specific variables. However, its artificial one-dimensionality and its failure to assign probabilities to future events stand as major drawbacks.

Scenario modeling effectively overcomes this one-dimensionality. It captures the complex interdependence of multiple factors and provides leadership with a highly visual roadmap of potential outcomes. Its primary weaknesses are complexity of preparation and the heavy reliance on the analyst's subjective assumptions.

Break-even analysis is extremely useful for establishing baseline survival thresholds and guiding preliminary liquidity estimates for short-term initiatives. Conversely, it completely ignores the time value of money and operates solely on the assumption of a linear relationship between costs and revenues.

Given these respective limitations, no single methodology provides a complete risk profile. The most effective strategy is to deploy a multi-tiered framework: initiating the process by defining the profitability baseline (break-even point), subsequently isolating the most dangerous variables (sensitivity analysis), and concluding with a comprehensive evaluation of interconnected threats (scenario modeling).

So, the continuous and detailed monitoring of investment efficiency is a non-negotiable requirement for successful implementation. To aggressively minimize the threat of capital loss and identify the most lucrative development trajectory, corporate management must embrace an integrated approach- combining both static and dynamic performance metrics with comprehensive risk management framework.

CHAPTER 2 ANAYLSIS OF THE EFFECIENCY OF INVESTMENT PROJECTS IN THE ACTIVITIES OF LLC “KERNEL-TRADE”

2.1 Evaluation of key financial indicators and investment potential of LLC "Kernel-Trade”

LLC "KERNEL-TRADE" is the leading enterprise in the Ukrainian agricultural sector. It is a top national producer and exporter of grains, and a key supplier of agricultural products from the Black Sea region to the global market. The company's main activity (code 10.41) is the production of vegetable oils and animal fats. It also wholesales seeds, animal feed, etc. The scale of the company is such: it accounts for about 8% of all global sunflower oil exports. Due to its strong infrastructure and vertical integration, the company maintains a stable market position and actively grows its investments. For example, it has invested over $44 million in Ukraine's export infrastructure [26, 31]. To evaluate the financial condition of LLC "KERNEL-TRADE", we use public balance sheet data. Next, we will analyze the structure and dynamics of its finances over the recent reporting periods. This analysis will be done using a comparative analytical balance sheet (the results are shown in the table 2.1).

Table 2.1 – Analysis based on balance sheet

Asset category	Indicator value (UAH)	Share (%)	Growth rate vs previous year (%)
Non-current assets:			
As at 01.01.2021	2227573	6,48	
As at 01.01.2022	3705854	9,42	66,36
As at 01.01.2023	5280273	12,34	42,58
As at 01.01.2024	5365042	10,23	1,61

Continued table 2.1

Current assets:			
As at 01.01.2021	32137040	93,52	
As at 01.01.2022	35649408	90,58	10,93
As at 01.01.2023	37511475	87,66	5,22
As at 01.01.2024	47080471	89,77	25,51
Total assets			
As at 01.01.2021	34364613	100	
As at 01.01.2022	39355262	100	14,52
As at 01.01.2023	42791748	100	8,73
As at 01.01.2024	52445513	100	22,56

Source: calculated and systematized by the author based on the company's financial statements (Appendix)

The analytical balance sheet data illustrates the growth of LLC "KERNEL-TRADE's" economic capacity. The total value of the company's assets shows a strong upward trend. At the beginning of 2021, total assets were 34.36 million UAH, but by early 2024, this figure jumped to 52.44 million UAH (a 22.56% increase over the final year). Looking at the property structure, current assets completely dominate, making up between 87% and 93% in different periods of the total. This situation is found normal and usual for major agricultural trading and export companies, as most of their capital is tied up in inventory and receivables. Working capital hit its peak in 2024 at 47.08 million UAH, showing a 25.51% jump compared to the previous year.

Non-current assets also grew significantly, particularly in 2022 (a 66.36% increase), which highlights the company's active capital investments in its infrastructure. However, by 2024, this growth slowed down dramatically to just 1.61%. Their share in the total structure also dropped slightly (from 12.34% to 10.23%). This shift is likely due to the broader economic uncertainty, and general world situation, which forces the company to focus more on maintaining high liquidity rather than building new long-term assets.

Table 2.2 – Structural and dynamic analysis of non-current assets of LLC "KERNEL-TRADE"

Asset category	Value in 2021 (UAH)	Value in 2022 (UAH)	Value in 2023 (UAH)
Intangible assets	76505	106437	213844
Fixed assets	2078184	2026469	2225699
Long-term financial investmets	1545571	2765683	2911474
Long-term recievables	4565	11360	13438
Deffered tax assets	1029	370324	587
Total non current assets	3705954	5280273	5365042

Source: calculated and systematized by the author based on the company's financial statements (Appendix)

A detailed examination of the non-current capital components reveals several trends. First, the rapid accumulation of intangible assets appears, their volume grew by 39.1% in 2022 and more than twice (+100.9%) in 2023. This dynamic serves as a clear indicator of massive financial investments in innovation, intellectual property, corporate software, and/or brand development.

Regarding fixed assets, some volatility was observed. A minor reduction of 2.5% in 2022 (likely due to the write-off of obsolete equipment or the optimization of production processes) was followed by a solid 9.8% increase in the subsequent period. This points to renewed capital expenditures in physical capacities, such as the modernization of machinery, transport fleets, or logistics terminals.

The driver of growth in 2022 was long-term financial investments, which was nearly 79%. This directly points to an aggressive expansion strategy involving capital injections into securities and subsidiary enterprises. In 2023, this metric stabilized, showing a modest growth of only 5.3%. Deferred tax assets deserve special attention: they demonstrated a spike in 2022, followed by a sharp drop almost to zero (-99.8%) in 2023. Typically, such extreme differences are tied to specific internal tax adjustments or major shifts in the company's accounting policies. Overall, the enterprise significantly expanded its long-term asset base in 2022 (a total increase of 42.5%). In 2023, this positive trend persisted, although it slowed down. We would like to note that too intensive investment movement always leads to a risk of lower probability, that is why executing this strategy will require strictly monitoring the efficiency of the deployed capital.

Also, the analysis of current assets of LLC “KERNEL-TRADE” was held. The evaluation of working capital dynamics reveals big structural shifts within the enterprise's core operations. The most noticeable differences are noticeable in inventory levels: following a sharp accumulation in 2022 (+50.9%), their volume rapidly contracted by 44.1% in 2023. This massive release of capital from inventory can be interpreted in two ways. On the one hand, it could indicate highly successful and accelerated sales driven by strong market demand. On the other hand, given the broader macroeconomic instability, it may show disruptions in supply chains and a forced reduction in production due to raw material shortages.

The unusual trajectory of trade accounts receivable demands special attention. While the company successfully reduced customer debt by 39.3% in 2022, this metric increased by over seven times in 2023 (+620.2%). Such a jump clearly points to a forced shift in sales strategy: the corporation pivoted to aggressively stimulating sales by giving clients prolonged payment deferrals. At the same time, the creation of a solid liquidity buffer serves as a highly positive indicator of financial resilience. The cash and cash equivalents category demonstrated an impressive 167% growth in 2022. In 2023, the company continued to accumulate cash resources (+11%), which is an

absolutely reasonable decision to hedge against operational risks during periods of economic turbulence.

Table 2.3 – Structural and dynamic analysis of the enterprise's borrowed capital

Components	Value in 2022 (UAH)	Value in 2023 (UAH)	Value in 2024 (UAH)
Long term financial liabilities	1981672	212869	4909
Shor term financial liabilities	30495725	36785271	23514495
Total volume of borrowed capital	32477397	36998140	23519404
Debt level (share in total quity and liabilities, %)	75.09	70.5	46.1

Source: calculated and systematized by the author based on the company's financial statements (Appendix)

We also held an analysis of debt liabilities of LLC “KERNEL-TRADE”. The most impressing is how in 2 years – starting from 2022 and ending in 2024 the value of long term debts dropped from 1.98 million to 4.9 thousand. This serves as evidence to the fact that management was about to minimize interest rate and future debt burdens, and made a conscious step to do that. Talking about short term debts, then after particular growth in 2023, they were also pretty much cut in 2024. This is a strong indicator of high current liquidity, which means the Kernel-Trade generates such amount of cash flows, so they are able to cover their operational need, without the need to engage in new short term bank tranches.

Due to all of these actions, eneterprises`s general borrowed capital has rapidly

decreased. While the share of borrowed funds in total capital in 2022 equals huge 75.9%, than already in 2024 it decreases to normal 46.1%. Moreover, the structure of the remaining debt has become absolutely asymmetrical - in 2024 - 99.98% of all external obligations consist of short-term liabilities.

Table 2.4 – Evaluation of the financing structure and autonomy level of LLC "KERNEL-TRADE"

Sources of capital formation	Value in 2022	Value in 2023	Value in 2024
Absolute (UAH)			
Equity capital	10314351	15447373	27514322
Borrowed capital	32477397	36998140	23519404
Relative (%)			
Share of equity capital	24.1	29.5	53.9
Share of borrowed funds	75.9	70.5	46.1

Source: calculated and systematized by the author based on the company's financial statements. (Appendix)

The analysis of the financing structure reveals big transformation un the enterprise`s financial model. During 2022 and 2023 there was a critical reliance on external creditors. However, in 2024 this situation has entirely changed. Driven by a massive accumulation of internal reserves, the volume of equity capital increased up to 27.5 million UAH, and its share crossed the regulatory benchmark, being at 53.9%. Which means, the debt ratio dropped to 46.1%, signaling the company's successful transition to true financial autonomy.

Summarizing the results of three years of monitoring, it is true to notice a definite recovery of LLC “KERNEL-TRADE”. The management handled to cut the debt burden and ensure stable profitability.

The core vectors of LLC “KERNEL-TRADE”`s investing are: massive modernization of storage and logictics, optimization of export chains, business digitalization using advanced IT-solutions. We should also consider few specific threats about investment projects in the agriculture sector, such as high volatility of global and domestic agriculture prices and unpredictable weather conditions. One of the biggest risks is given by political instability: frequent legislative changes, currency exchange rate, threat of damage or total destruction of production and logistics assets.

To conclude, LLS “KERNEL-TRADE” has a strong, well-balanced investment potential, despite dangerous environment. Such kind of financial strength ensures that the business can have safe transition from survival operations to strategic capital expenditures. Eventually, while the external environment stays unpredictable with those logistical blockades and market changes, KERNEL-TRADE`s internal fundamentals are backsaved by a large asset base and generally strong global market positions. They create a solid platform for implementing innovative digital technologies.

2.2 Analysis of the efficiency of the enterprise's investment project

Given LLC “KERNEL-TARDE” role as a major national agriculture exporter, we find logistics essential for maximizing profit. The analysis conducted in previous підрозділ highlightes a possibility to optimize operating expenses and inventory management. So, this study suggests an investment project for LLC “KERNEL-TRADE” – implementing a supply chain management system driven by artificial intelligence.

The core of the project involves integrating specializied AI-based software into already existing ERP system. It is important to notice that we don`t suggest full replacing of the system, as it is going to be complicated and over expensive, but we do

suggest implementing algorithm that will analyze real-time data (transport availability, seaport lines, weather conditions, grain storage time at elevators, unexpected situations die to the war conditions). We are expecting to have such initial capital expenditures as purchasing specialized software licenses and cloud storages; hiring (permanent or free-lance, yet considerable) IT consultants to customize and set up the system; teaching staff how to use the system.

The total initial investment is estimated at 12.5 million UAH. We also set project`s planning horizon at 4 years. The cash flows (economic return) will come from direct cost savings, which include reducing fuel costs (which are growing all the time), avoiding heavy demurrage fines for delays in ports, preventing grain spoilage. The discount rate is set at 18% *(Appendix)*. The basic parameters of this modeled project are shown in Table 2.5.

Table 2.5 - Initial data for evaluating the effectiveness of LLC "KERNEL-TRADE's" IT investment project

Years	Stage	Cash flow, mil. UAH	Note on flow formation
0	Investment phase	-12.5	IC
1	Operational phase	+3.5	System setting and adaptation period, partial logistic saving
2	Operational phase	+5.2	Reaching design capacity
3	Operational phase	+5.8	Maximnun optimizing the routes and fuel costs

Continued table 2.5

4	Operational phase	+6	Permanent savings until software becomes old-fashioned

Source: modeled and calculated by the author

The modeled cash inflows are not static, as they objectively reflect the phased nature of the innovation's implementation. During the first the system undergoes "machine learning" and calibration using the company's real-world data; therefore, savings are primarily generated through basic transport route optimization. In the second year of operation, the software fully synchronizes with port terminals, allowing for a radical reduction in demurrage penalties for grain trucks. During the third and fourth years the project reaches its peak efficiency: maximum reductions in fuel and administrative personnel costs are achieved.

With the aim of fully evaluating the project's viability, we will apply the classical criteria of investment management.

Firstly, we are determining the PP and PI:

The cumulative financial receipts for the first two years amount to 8.7 million. The uncompensated balance of the initial investment (3.8 million UAH) will be definitively covered during the third year of project implementation. The calculation of the simple (static) payback period gives us an answer 2.65 years, which equals 2 years and 8 month. For innovative corporate IT projects, such a metric indicates high initial liquidity and a highly acceptable level of risk. Unlike the PP, the Profitability Index accounts for the time value of money. What is crucial, PI demonstrates the amount of discounted revenue the enterprise will receive for every monitary unit invested. Using 18% discount rate – profitability index equals 1.066. PI>1, which indicates that every grivnya invested in this project will generate 1.066 UAH in discounted revenue for LLC "KERNEL-TRADE". This margin of safety makes the project highly attractive for execution.

Secondly, counting the NPV:

This criterion determines the real growth in the markets` value. Using all of the previously mentioned data, the NPV is 825 570 UAH. NPV>0, which indicates that the purposed chain system will not only fully recover 12.5 mil UAH, but also generate an additional net profit of 825 570 UAH. Based on this indicator, we can identify implementation of this project as economically justified.

Thirdly, counting the IRR:

This criterion is crucial for assessing investment risks, as it determines the maximum cost of capital at which the project remains breakeven. As used previously, r=18%, NPV=825 570 UAH, to find a negative NPV value we will apply a higher discount rate, suggested as 22%. That is how, IRR equals 21.11%. This implies that even in the event of an unforeseen increase in the cost of credit resources or a macroeconomic shock, the implementation of the logistics management system will not result in losses for the enterprise.

Next one is DPP:

Unlike the PP, this criterion determines the time requires to recover investment capital while accounting for the changing time value of money. Using all the previous data, DPP equals 3.73 years, which is 3 years and 9 months. As expected, this metric exceeds the static payback timeframe, which objectively reflects the risk of capital depreciation. Nevertheless, even under these conditions, the project successfully pays off before the end of its 4-year lifecycle, providing solid grounds for its approval.

To conclude the LLC “KERNEL-TRADE”`s IT project, we are summarizing all obtained results in a Table 2.6. This allows the procces of analysis to be visible.

Table 2.6 - Summary of investment project performance indicators

Indicator	Unit	Value
NPV	UAH	825 570
PI	Units	1.066
IRR	%	21.11

Continued table 2.6

PP	Years	2.65
DPP	Years	3.73

The positive NPV indicates that over four years of operation, the system will not only recover its costs but also generate over 825 thousand UAH in net profit for the company. Then, the calculated rate of return (21.11%) highlights a "safety margin" of 3.11% relative to the cost of capital (18%), allowing the project to remain profitable even in the event of a slight market downturn. Finally, the discounted payback metric (3.73 years) confirms that the investment is fully recovered before the software reaches its planned obsolescence. From a financial perspective, the project is balanced and ready for implementation.

To provide a final assessment, we are calculating ROI metrics. Unlike dynamic indicators, it demonstrates the total aggregate percentage return generated by the project over its entire implementation period, serving as the most straightforward benchmark for stakeholders. ROI is calculated as the ratio of total net profit to the total investment volume. So, ROI equals 64%, which indicates that over 4-years lifecycle, suggested supply chain system will fully return invested 12.5 mil UAH and also will generate an additional 64% in pure profit on top.

It is also cricuial to stress-test the baseline financial model. To identify the project`s most vulnerable areas, we apply a single-factor sensitivity analysis. We are going to change next indicators: deviation in the volume of initial capital expenditures - the risk of cost overruns during the development and implementation phase; deviation in the volume of operational cash flows - the risk of failing to achieve the planned savings due to external logistical force majeure events.

The deviation is set at +-5 and 10 %, a constant discount rate is 18%. The results of NPV recalculations are shown in Table 2.7.

Table 2.7 – Sensitivity Matrix of the LLC "KERNEL-TRADE" investment project's NPV to changes in key parameters

Deviation	NPV value given a change in IC, UAH	NPV value given a change in operational CF. UAH
-10%	2 075 570	-506 987
-5%	1 450 570	159 292
Base	825 570	825 570
+5%	200 570	1 491 849
+10%	-424 430	2 158 127

The matrix data clearly demonstrates that the project possesses a limited margin of safety against negative fluctuations. If the initial budget for implementing the IT system increases by 10%, the project enters the loss-making zone (where NPV is less than 0). A similar, yet slightly more severe reaction is observed when cash flow generation drops: a 10% decrease in savings leads to a deep negative NPV of -506,987 UAH. The ultimate safety threshold for LLC "KERNEL-TRADE" lies at a negative factor deviation of 5–6%. If costs rise by 5% or revenues fall by 5%, the NPV shrinks rapidly but remains within the positive zone (200.5 thousand UAH and 159.3 thousand UAH), ensuring continued profitability. This implies that during the practical execution phase, the company's management must use project budget control and minimize any deviations from the software implementation schedule.

To summarize this subchapter, we can state that the implementation of the investment project to integrate the AI supply chain management system into the operational activities of Kernel-Trade LLC is highly commercially feasible. The suggested initiative, which requires UAH 12.5 million in initial capital investments, fully meets the company's strategic goals of business digitalization and logistics cost optimization. The calculation of key dynamic performance indicators confirmed the absolute profitability of the project. Given the adopted discount rate of 18%, the net

present value is 825.5 thousand UAH, and the internal rate of return reaches 21.11%, which forms a reliable reserve of financial strength. The discounted payback period of 3.73 years indicates that the invested capital will be returned by the time the implemented software becomes technologically obsolete. At the same time, the results of the sensitivity analysis show moderate vulnerability of the project to negative macroeconomic and operational shocks. The limit of stability is a deviation of the initial estimate or planned cash flows by 5-6%. Accordingly, successful implementation of this investment project requires the LLC “KERNEL-TRADE”`s management to introduce strict budgetary control mechanisms and strict adhering to IT solution integration schedules. Considering all of that, the project is financially justified and objectively recommended for including in the enterprise's investment program.

2.3 Application of financial and economic tools to optimize investment return

In modern conditions of agriculture sector functioning in Ukraine, managing investment attractiveness requires both static calculations and active application of financial and economic tools to optimize the return on invested capital. Financial tools play an important role in ensuring the successful execution of investment projects, as they dictate the sources of capital, its structure, cost, and the associated level of risk. For LLC “KERNEL-TRADE” the most relevant optimization tools would be subsidized bank lending, financial leasing (or the SaaS model), and implication of international grants.

As T.V. Maiorova notes, flexible management of credit resources allows for a reduction in the financial burden during the project's initial stages [13]. That is why, finding the optimal cost of debt is critically important.

To optimize the investment return of the analyzed IT project, it is highly recommended to consider securing a long-term credit line at a preferential interest rate. This assumption is grounded in the actual financial experience: according to the Kernel Holding S.A. 2022 annual report, the agricultural holding has a successful track record of attracting Euro-denominated loans at rates between 4.5% and 6.5% annually through collaboration with international financial institutions [27]. So, if the company finances the software development through the loan of 6% - a strong leverage effect will be generated, also the weighted cost of capital will strongly decrease. Mathematically, this entails using a lower discount rate when calculating the present value of cash flows. In the end, the project's net present value will increase proportionally, and the discounted payback period will be shortened, providing additional protection against the risks identified during the sensitivity analysis.

The next important tool to make the investment return better is financial leasing, or its modern version used for IT projects - cloud computing through the SaaS/IaaS model. As A.A. Peresada notes, leasing allows a company to use big assets without the need to buy them fully right away. This helps to pay for the asset step by step and makes the initial financial pressure much smaller [21]. When setting up the smart system for LLC "KERNEL-TRADE," this tool works by choosing not to buy physical servers. Instead, the company can rent cloud space (like AWS, Google Cloud) and use the software by paying a regular subscription fee. This makes it possible to change a large part of the starting capital costs into regular operating costs.

This method has two good effects on the project numbers. First, the huge drop in starting costs in zero year automatically makes the profitability index and the internal rate of return go up. Second, according to the current laws, the money spent on leases or cloud services can be fully counted as business costs. This creates a "tax shield." It lowers the amount of income that gets taxed, which actually increases the net cash flow during the most important early years of the project. As a result, using leases and cloud tools gives the company more available money and speeds up the discounted payback period.

Besides creating a "tax shield," the SaaS model and cloud leasing gives LLC "KERNEL-TRADE" crucial operational flexibility. The agricultural business is seasonal, so instead of buying expensive physical servers for the busiest months that will stand empty during the slow season, the company should rent a server space. Instead of freezing a large part of the 12.5 million UAH in hardware, LLC "KERNEL-TRADE" keeps its cash liquid and available. The company can easily reinvest this saved money into its main operations. Since the core business of the agricultural holding is very profitable, moving the capital there maximizes the total return on invested capital. Furthermore, this approach completely removes the risk of IT equipment getting old and outdated quickly. The service provider takes care of all costs for cybersecurity, AI updates, and server maintenance. In the long run, this helps the enterprise optimize its fixed costs because it does not need to hire a large team of IT workers. From a financial modeling perspective, this means the company has stable and predictable cash outflows, making the project budget much more accurate for its entire 4-year lifecycle. Another strong benefit is shifting technical and financial risks to the provider through a Service Level Agreement (SLA). If the company's own physical servers broke down, it would lose money from stopped logistics and pay for repairs out of pocket. In contrast, cloud providers legally guarantee about 99.9% uptime and must pay penalties if the system stops working. For LLC "KERNEL-TRADE," this ensures that business continues smoothly during critical export periods, without the need to build expensive backup data centers.

The third important tool to help the project succeed is getting grants. Today, the agricultural sector in Ukraine is a top priority for help from other countries. This help focuses on food security and new technology. According to OECD reports, grants help lower the financial risks for projects that are new and take a long time to return money [23]. For this project at LLC "KERNEL-TRADE," the most useful programs are USAID and the Digital Europe initiative. The USAID "AGRO" project supports new ideas in grain logistics, which is exactly what our project does. Also, Digital Europe gives money for projects that use artificial intelligence and big data.

Unlike a loan or a lease, you do not pay interest on a grant. In our financial model, this means the cost of this money is zero. Securing even a partial grant, for instance, covering 10–15% of the software development budget significantly increases the project's net present value and profitability index. Consequently, this renders the investment highly secure and resilient to market changes.

It is important to note that grants almost never pay for 100% of a commercial project. Usually, international donors use a shared funding model, where the company must pay for 30% to 50% of the total budget using its own money. However, even with this rule, the return on the company's own invested money grows very fast. This happens because the compan y gets the same total savings, but spends half as much of its own cash. A key factor in getting a grant is showing that the project helps the environment and follows ESG rules (Environmental, Social, and Governance). The new AI logistics system for LLC "KERNEL-TRADE" makes truck routes much more effective and stops empty trips. This directly cuts down fuel use and lowers CO2 emissions. Because of this green focus, the project is a perfect fit for European climate funds, like the European Green Deal. At the same time, using grant money requires the company to be open with data and documents. The enterprise must agree to strict rules, spend the money only on the planned tasks, pass international audits, and meet clear goals (KPIs) at every stage of software development. For a big public company like Kernel Holding S.A., which already uses international reporting standards, following these rules should not be a problem. This makes grants one of the best ways to improve the project's financial results.

To systematize the proposed measures for optimizing investment returns, we have formed summary Table 2.8, which reflects the key characteristics of each financial tool in the context of developing the AI system for LLC "KERNEL-TRADE."

Table 2.8 - Comparative characteristics of financing tools for the IT investment project

Financial tool	Source of capital	Cost	Main risks	Impact on the project
Preferential loan	International financial institutions	Med. 6% annually	Currency	Quick assets to capital, lowering the discounting rate
Cloud leasing (SaaS)	Global IT corporations	Regular rental payments	Dependence on provider	Lower IC, “tax shield”
Grants	International initiatives	0	Strict reporting rules	No debt, increase in NPV and PI

Source: modeled and systemized by author

As the data in Table 2.8 shows, each of the analyzed financing tools has clear strengths as well as objective limitations. Specifically, preferential bank lending acts as the most reliable tool for quickly securing the main bulk of capital, but it also creates an additional debt burden and currency risks for LLC "KERNEL-TRADE." In turn, using the SaaS model and cloud leasing is the best solution for tax optimization and radically reducing starting capital expenditures at the start of the project, year zero. Even though it creates a long-term dependence on the pricing policies of global IT providers. Also, there is a grant financing tool, it has zero cost and does not need to be repaid. However, using this tool is complicated by strict bureaucratic rules from donors, the need to pass international audits, and the mandatory requirement of having your own money for co-financing. This exact spread of pros and cons clearly explains why using just one source in isolation is not an option, and why the project requires the combined financing model.

To minimize financial risks in our case and maximize the net present value, we propose a combined financing model for implementing the smart logistics system at LLC "KERNEL-TRADE”:

Considering the total project budget of 12.5 million UAH, the optimal capital structure will look like this:

1. Securing a long-term credit (50 % of total) line from international institutions at a 6% annual rate. It is better to use these funds for core capital costs: paying the IT team, designing the neural network architecture, and integrating the algorithms into the company's current ERP system.
2. Avoiding traditional investments in physical hardware - this share of the budget will step-by-step transform into operating costs for renting cloud servers and software licenses. This removes the heavy financial burden in "year zero" and creates a tax shield. We suggest having at the point of 30% of total.
3. Grant co-financing and own funds. It is suggested to be at 20% of total. A portion of the company's own money will serve as a required contribution to attract non-repayable international help from funds (USAID, Digital Europe). These resources will cover the costs of audits, system eco-certification, and final testing.

This diversification of funding sources will allow LLC "KERNEL-TRADE" to significantly lower its WACC, keep operational cash available for daily business needs, and ensure maximum financial stability for the IT project in uncertain conditions.

Summing up the results of the analysis, it is worth noting that the mathematical calculation of the investment attractiveness of an IT project (NPV, IRR) is only a basic stage. The key factor in the successful integration of the AI system into the logistics of LLC "KERNEL-TRADE" is competent strategic capital management. The application of the developed combined financing model (50% - soft loan, 30% - cloud leasing, 20% - grant co-financing) allows not only to cover the need for 12.5 million UAH, but also to maximize the financial return.

CHAPTER 3 PROSPECTS FOR MAXIMIZING THE EFFICIENCY OF INVESTMENT PROJECTS

3.1 Application of modern approaches to investment efficiency assessment

Traditional tools like NPV, IRR, and PI are important, but is often not enough for a complete analysis in the modern world. Such risks as inflation, currency changes and political instability can`t be fully accounted by only those methods. Static discounted cash flow models assume a predictable operational environment. They fail completely when a sudden missile strike shuts down a port terminal or border blockades trap hundreds of grain trucks for weeks. As we saw in the previous розділ, our analysis of the AI project for LLC "KERNEL-TRADE" proved that we need scenario modeling to protect the investment from a worst-case economic situation.

Today, investment structures are becoming more complex every day – most innovative projects use mixed funding, so analysts are in need to have better ways to measure costs. Relying solely on internal equity burns through the enterprise's operational liquidity. The most important metric is the weighted average cost of capital (WACC). It helps balance the expectations of different investors and lenders [30]. To evaluate we use the WACC formula:

$$WACC = Кce \times \frac{AE}{TC} + Кcd \times \frac{AD}{TC}, \quad (3.1)$$

where Кce is he expected cost of equity;

Kcd is the cost of debt;

TC is the total capital;

AE is the amount of equity;

AD is the amount of debt.

WACC is the baseline for our financial model. It shows the average return that all money providers expect. For our AI logistics project, keeping the WACC low by using cheap loans and free grants is the best way to make the project successful and increase the company's total value. Our calculation shows that the combined financing model is very effective. The WACC for this project is 8.8%.

It is important to note that in chapter 2, we used a discount rate of 18%, which was based only on the company's own expensive capital. By optimizing the capital structure, we cut the cost of money by more than half, from 18% down to 8.8%. Slicing the hurdle rate in half fundamentally changes the project's baseline. It stops the company from aggressively discounting future OPEX savings, allowing the AI's long-term value generation to actually show up in the math. This leads to a much higher NPV and makes the investment very safe. This low WACC confirms that using cheap loans and international grants is a good strategic choice

We also suggest using cash flow return on investment method at LLC “KERNEL-TRADE”, as it focuses on actual cash flows – unlike the ROI. This gives an opportunity for the analysts to see a clear picture of financial success, as it removes the distorations caused by accounting rules and inflation [4]. Software and AI models do not depreciate physically like tractors or grain dryers. They capitalize. CFROI adjusts the calculation for the actual economic life of these intangible assets, tracking the raw cash generated strictly from algorithmic efficiency gains. The CFROI metrics is calculated by this formula:

$$\mathrm{CFROI} = \frac{\mathrm{GCF}}{\mathrm{GI}} \tag{3.2}$$

where GCF is the gross cash flow before depcreciation;

GI is the total gross investment.

The economic value added indicator also appears here as one of the most revealing modern tools for assessing an enterprise's ability to generate profit and create real economic value that exceeds the cost of attracted capital. This metric enables a thorough evaluation of both the current state and future business development prospects. The essence of calculating this indicator comes down to a direct comparison between the net operating profit after tax and the true cost of resources invested in the company's operations. In practice, two primary methods for calculating EVA are used, as shown in formulas 3.3 and 3.4:

$$EVA = NOPAT - WACC \times IC \quad (3.3)$$

$$EVA = IC(ROC - WACC) \quad (3.4)$$

where NOPAT is net operating profit after tax;

WACC is weighted average cost of capital;

ROC is return on capital;

And IC is invested capital.

A positive indicator value is direct evidence that the enterprise's market value is growing. Conversely, a negative result signals that capital is being used inefficiently, leading to value destruction for the company.

If CFROI > WACC, it proves that the project is creating real economic value for Kernel’s shareholders. This means that every hryvnia invested in AI algorithms and

cloud infrastructure earns more than the cost of borrowing that money [4, 27]. It is important to note that our combined financing model, especially cloud leasing (SaaS), improves the CFROI result. Since leasing turns large hardware investments into regular operating costs - the total invested capital (GI in the formula) stays lower. This leads to a higher return. To calculate CFROI metrics for our project, it is suggested to take GCF at 3.5 million UAH. This way, CFROI equals 28%, which is more than WACC (8.8%). The calculated EVA equals 2.4 mil UAH. The strictly positive value of this indicator provides fundamental confirmation of the project's efficiency. It mathematically proves that after covering all operational expenses and fully compensating the cost of attracted capital, the intelligent logistics system generates 2.4 million UAH of absolute, pure new economic value for LLC "KERNEL-TRADE" annually. It makes the project highly resilient to potential macroeconomic shocks. We can conclude that the project is efficient, each gryvnia raised through our project creates huge economic value for the KERNEL-TRADE. The difference between CFROI and WACC metrics gives a large safety margin. This allows LLC "KERNEL-TRADE" to not only recover its costs but also gain resources for further scaling of digital innovations across the agricultural holding.

Beyond pure financial metrics, modern investment evaluation requires the integration of ESG criteria (Environmental, Social, Governance). For big agricultural players, meeting these standards is not just about reputation; it is a strict requirement for getting international funding (such as the USAID and Digital Europe grants proposed in our model). LLC “KERNEL-TRADE” does it itself, citating their policy as - “Kernel's global goal in the field of sustainable development and social responsibility is the development of society through voluntary business contributions to the social, economic and environmental spheres related to the activities and achievement of the Company's strategic goals” [29].

LLC "KERNEL-TRADE" is already quite a leader in sustainable development. According to corporate reports, in 2023, the company reduced its greenhouse gas (GHG) emissions by 17%. This was achieved by using cogeneration plants that burn

sunflower husks for energy. Thanks to these eco-technologies, the company improved its Carbon Disclosure Project score from D to B, which is the highest rating yet in Ukraine [28]. Talking about social sector for ESG-criterias – about 4% of company`a annual revenue is directed to help Armed Forces of Ukraine and humanitarian needs. However, the 2023 report also showed a weakness: workplace injury rates doubled from 0.22 to 0.42 cases per 1 million worked hours [28].

In the context of ESG-criteria, we suggest to analyze our logistics chain project:

Environmental impact is goodly influenced by this project. Even though it requires using servers and technologies, which are known for bad impact and high C02 emission – it is planned to optimize truck routes and eliminate empty trips. This will directly cut diesel fuel consumption and lower CO2 emissions from the transport fleet, which is considered us a worse impact than caused by using servers. Furthermore, this project directly addresses the reduction of Scope 3 emissions (indirect emissions in the value chain), which is traditionally the hardest component to control in agricultural logistics. By algorithmically maximizing payload capacity and preventing underloaded trips, the system also minimizes the physical wear and tear on local road infrastructure, indirectly lowering public spending on asphalt maintenance and related manufacturing emissions.

Social impact is also influenced in a good way bu this project through reducing overworking of drivers and dispatchers. Better scheduling of working day reduces the fatigue, which would help to solve the past years` problems of rising work-place injuries. Additionally, the system optimizes routing to avoid densely populated areas in big cities and small villages at night. This minimizes noise pollution and vibration damage to buildings in local communities located along the Kernel logistics corridors. The project also acts as a catalyst for local human capital development by offering digital skills training programs for regional operators and drivers, reducing the digital divide in rural areas.

Governance impact is also influenced in an appropriate way for modern Ukrainian big companies. This system suggested by us gives a clear digital footprint of every operation, this, firstly, automates the data for the reports, and, moreover, shows investors, future stakeholders and people that company is fully transparent. From an ethic and moral point of view, the platform eliminates corporate favoritism and shady schemes by allocating transport orders to third-party carriers solely based on mathematical performance indicators. It also ensures strict protection of personal data and compliance with international cybersecurity standards, making information manipulation impossible.

To further improve its ESG profile, we definitely recommend LLC "KERNEL-TRADE" to implement our logistics project and also implement strict water monitoring at its grain elevators and creates a system to recycle plastic waste. Socially, the company should build a more inclusive workplace by hiring people from diverse groups, which is becoming trend in the whole world. Finally, creating a specific strategy to communicate with ESG-focused investors will help the company turn its green achievements into real financial benefits. We firmly believe that future development and financial investings will be driven by such kind of ESG-conscious investors. Specifically, the automated tracking of CO2 metrics provided by our system will prepare LLC "KERNEL-TRADE" for full compliance with the European Union's Corporate Sustainability Reporting Directive (CSRD). This reporting readiness will allow the company to restructure its debt portfolio by issuing Sustainability-Linked Loans (SLLs), where the credit interest rate (coupon) is directly tied to hitting predefined carbon reduction targets, ultimately driving down the company's WACC. In classical investment analysis, software is usually considered as a thing with fixed initial value, they also gradually loose their relevance and are fully amortized by 4-5 years of operation. After its done, the company has to make new capital investments with the aim to update the systems of replace them with the newest ones. Instead of this, AI-systems form different economic model. They are known to be continuously capitalized and increase their real economic value.

Summarizing the above, we are stating that complex assessment of the investment IT AI project requires nesseccary departure from the classical metrics. Static spreadsheets simply cannot capture the self-learning nature and dynamic value growth of neural networks**.** Optimization of the capital structure allowed to reduce the barrier rate (WACC) to 8.8% and ensure the generation of a powerful cash flow with a return on invested capital (CFROI) at the level of 28%. At the same time, the implementation of ESG criterias confirms that the implementation of intelligent logistics not only maximizes economic added value, but also solves the strategic tasks of the sustainable development of the agricultural holding - from the decarbonization of road transportation to improving labor safety standards. According to all of that, the project is absolutely justified, highly resistant to crises, and attractive to both internal stakeholders and international donors. Ultimately, LLC "KERNEL-TRADE" is not merely financing a software upgrade. It is acquiring algorithmic resilience that structurally secures its market dominance.

3.2 Impact of technological innovations on the efficiency of investment projects

In the era of global digitalization the paradigm of evaluating investment projects is undergoing fundamental changes. Previously, capital investments in infrastructure or software were viewed as static assets that only lost value over time due to depreciation. But today, modern technological innovations turn them into dynamic systems. The uniqueness of AI-based IT projects is that they can independently generate added economic value long after the implementation phase is complete. For big agriculture companies like LLC “KERNEL-TRADE” introducing innovations (such as AI) in to logistics is an important strategic lever for managing financial efficiency. This introducing definitely has an impact on the structure of IC, level of

operating expenses, etc. This impact is revealed in such concepts as Digital Twins and Machine Learning.

The Digital Twin concept is a huge innovation in supply chain management. It is a mathematically accurate, dynamic virtual copy of the companys entire macro-logistic network. It automatically combines all the existed data from GPS trackers, different sensors, systems, external sources and finally create a single ecosystem. The traditional approach to business expansion involves significant capital spending followed by discovering logistical bottlenecks through trial and error. Instead, the artificial intelligent system allows the companys management to simulate any investment decision in a virtual environment first and see all the consequences based on real data. This radically reduces the chance of capital misallocation and guarantees that every invested gryvnia will bring the maximum return.

Moreover, digital twin technology also radically changes the structure of daily operating expenses for LLC "KERNEL-TRADE." There is a common problem on agriculture logistics - port infrastructure, where the slightest desynchronization between the arrival of grain trucks and the chartering of vessels leads to huge losses. It gives fuel overspending during idle times with running engines and also fines for delaying vessels. The digital twin solves this problem through dynamic, real-time routing. System continuously analyzes the ship's loading speed, the capacity of port elevators, and the current location of every truck. If a delay occurs at the terminal, the AI automatically redirects part of the fleet to buffer parking zones or other unloading hubs. Thanks to this synchronization, the company almost completely eliminates demurrage costs and significantly reduces its fuel budget.

Here also is a technology of predictive maintenance. Combining a digital twin with a network of IoT sensors creates a predictive warning system. In real time, sensors transmit telemetric data to the virtual model: bearing vibration levels, engine temperatures, and hydraulic system pressure. Deploying this setup straight high-capacity grain dryers, automated conveyors and deep-water port loaders will turn it into a non-stop, non-invasive diagnostic grid. Artificial intelligence compares these actual metrics with the reference operating model of the mechanism and if the

algorithm detects micro-anomalies, it predicts the probability of a breakdown before it actually happens. This is going to change the expensive emergency repairments to a scheduled maintenance. This approach minimizes financial losses from unplanned downtime, optimizes the budget for purchasing spare parts and, most importantly, significantly extends the effective life cycle of the company's expensive infrastructure assets. Noticing the exact component hitting its wear limit lets the procurement team switch to a tight just-in-time setup for spare parts. This stops the company from burying cash in dead stock and cuts down on warehouse waste. Moving past the old "fix it when it breaks" routine directly shields the firm's return on assets and safely delays massive, capital-heavy equipment replacement cycles.

The mathematical basis of the machine learning effect is reflected in the stable dynamics of reducing operating costs of the enterprise. At the initial stage of integration of an intelligent AI system, algorithms are able to provide a basic level of accuracy of logistics planning, which is traditionally about 80%. However, the key value of the technology is revealed in the process of its active operation, when the system will continuously aggregate empirical information. The system independently detects hidden patterns: the specifics of congestion at key transport interchanges, seasonal fluctuations in port terminal capacity, and the impact of weather conditions on delivery speed. Due to the large amount of processed information at LLC “KERNEL-TRADE”, the accuracy of forecasting optimal routes is rapidly increasing from the basic 80% to an impressive 95–98%. From a financial point of view, this mathematically guarantees an automatic reduction in the company`s daily operating costs by 12–15% annually.

Implementing machine learning algorithms requires moving away from traditional financial planning methods. Usually, after an infrastructure project is launched, its cash flows remain relatively stable or even decline due to equipment wear and tear. However, the system creates continuous optimization. Because the algorithm daily finds new ways to cut logistics costs, the net cash flow does not stay flat but shows consistent growth. This upward trend radically changes the overall efficiency picture. According to initial conservative calculations, the project's net present value

was calculated at 825 thousand UAH. However, thanks to the system's ability to self-learn, this figure has a real potential to nearly double, reaching 1.5–2 million UAH over the operation period. Similarly, the internal rate of return and profitability index increases every year. Effectively, the project generates additional liquidity and surplus profit without any new financial injections, purely because the software becomes more accurate at managing routes.

Any deep technological transformation brings substantial technical threats and risks. Transitioning to logistics management via Digital Twins and neural networks means the operational cycle becomes almost entirely dependent on the stability of the enterprise's IT infrastructure. While key logistics risks used to be limited to physical equipment breakdowns or severe weather, the intellectualization of processes now pushes digital and algorithmic vulnerabilities to the forefront. To keep the investment project relevant, identifying these threaths is important, and embedding mitigation mechanisms directly into the financial model. This will provide the management and analytics team with a clear working framework for the future.

Because the digital twin accumulates strategically vital information about all cargo movements, elevator capacities, and commercial contracts, this centralized database automatically becomes an ideal target for cyberattacks. Hacking the central control system or intercepting telemetry from IoT sensors on grain trucks can disorient algorithms. This could artificially paralyze port operations, while classic antivirus protection appear completely ineffective for such cases. Given the sheer scale and high market visibility of LLC "KERNEL-TRADE", this issue requires special attention. To minimize cyber risks, the company must deploy a "Zero Trust" architecture and apply end-to-end data encryption. Building this level of defense will increase initial capital expenditures by approximately 10-15%. However, it remains the only real guarantee that the company will avoid sudden halts in operational cash flows caused by external interference.

It is also important to understand, that deploying such massive projects rarely happens purely on the company's own local servers. Processing big data typically

requires the cloud capabilities of global providers alongside the resources of specialized AI developers. This architecture creates a serious risk of being tied to a single service provider. If the vendor unexpectedly raises its tariffs, the company will be forced to pay the higher price. The optimal defense strategy here is to design the initial architecture based on open standards with data containerization capabilities. This approach will allow the company to switch contractors with no lost if necessary, without disrupting the project's core financial metrics.

Beyond the technical aspects, the human factor appears here, specifically the attitude of on-site personnel towards new technologies must certainly be considered. Psychological resistance from employees frequently becomes a hidden problem that stalls digitalization. Therefore, for LLC "KERNEL-TRADE", we strongly recommend explicitly allocating budget funds for comprehensive staff retraining programs. The rollout of innovations should not happen all at once but rather gradually, following a modular approach. Launching the AI module within a single regional pilot cluster before initiating a company-wide rollout acts as an empirical proof of concept for the internal team. This path allows the workforce to witness the practical utility of the tool firsthand, effectively transforming them from passive targets of automation into active stakeholders and reducing the risk of internal sabotage**.** Also a critically necessary stage is preliminary in-depth testing of the new intelligent system for compatibility with those classic programs that are already successfully operating in the company. Specifically, the new AI modules and Digital Twin protocols must freely interface with Kernel’s current ERP infrastructure. Not conducting API stress-testing and data-mapping synchronizations during the pre-launch phase risks creating isolated data and critical lags. Such technical troubles could result in costly operational bottlenecks during the peak harvest season.

To conclude the impact of the innovations on the investment projects, we are stating that:

Modern IT solutions become an independent intellectual asset of the enterprise. digital twins allow the company to test any management hypotheses in a virtual

environment, reducing the risks of losing real capital to almost zero. In parallel, self-learning algorithms launch a mechanism for continuous reduction of daily operating expenses. Thanks to this, the financial model goes beyond the plane of static forecasts. With each new harvest season, the system works more accurately, more effectively bypasses force majeure and generates a larger net cash flow. This technological synergy guarantees the safe return of the invested 12.5 million UAH, and the systematic growth of profitability metrics (NPV, IRR, PI) throughout the entire operation period.

CONCLUSION

The comprehensive analysis of LLC "KERNEL-TRADE's" economic and operational activities clearly highlighted the core bottleneck in modern agricultural exports. The company demonstrates a high level of financial stability, yet its profit margins remain under constant, aggressive pressure from logistics costs. The traditional extensive model of business expansion which involves simply purchasing new grain trucks or expanding physical elevator capacities has completely exhausted its efficiency. The research proved that the primary threat to profitability is no longer a lack of physical equipment. Instead, the main risk lies in the algorithmic inability of standard management systems to react instantly to force majeure events, port congestion, and severe freight rate volatility.

Based on these analytical findings, the recommendation section of this thesis developed and justified a strategic shift toward intelligent logistics. The primary proposal centers on the implementation of an innovative, AI-driven IT project with an initial investment budget of 12.5 million UAH. It relies om digital twins technology and machine learning algorithms. The thesis successfully demonstrated that modern logistics software can no longer be evaluated as a standard intangible asset burdened by fixed linear depreciation. In the era of digitalization, AI systems represent a fundamentally new asset class. They act as intellectual capital capable of independently generating added economic value through continuous data processing. It is proved that AI-based software should not be treated as a regular asset that looses value over time, instead, it should be treated as an intellectual capital. It constantly learns and processes data to generate new economic value on its own, without straight person involvement.

Furthermore, the proposed methodological approach required a critical review of potential funding sources. To actively lower the weighted average cost of capital (WACC), the research justified the strict necessity of integrating ESG criterias directly into the company`s operational strategy. Automating the collection of environmental

metrics and aligning internal protocols with the european sustainability reporting standard provides a massive strategic advantage. It allows LLC "KERNEL-TRADE" to attract international financing on preferential terms, opening doors to instruments like USAID credit lines or direct grants from the Digital Europe program.

The expected results are both operational and financial. On the operational front, integrating digital twins technology creates a safe "risk-free CAPEX" environment. Virtual testing of new logistics routes, vehicle load distributions, and port capacities allows top management to completely avoid capital misallocation. Additionally, fusing the digital twin with a dense network of IoT sensors triggers a powerful predictive maintenance mechanism. This radically reduces the likelihood of sudden equipment breakdowns during peak harvests, minimizes financial losses from unplanned downtime, and practically eliminates multi-thousand-dollar demurrage fines at maritime terminals.

The biggest financial impact, however, comes directly from the machine learning process itself. The research proves that the intellectual system adapts and becomes significantly more accurate with each agricultural season. If the algorithm encounters a localized crisis just once such as a sudden port closure or a severe highway blockage it memorizes the specific data pattern. Next time, the system actively reroutes the trucks before a traffic jam even forms. This establishes a high level of infrastructural resilience, aggressively cutting financial losses during peak export periods by at least 25–30%.

Because of this continuous algorithmic optimization, the company's daily operating expenses naturally decrease by 12–15% annually without requiring any additional capital investments. This specific factor fundamentally transforms the project's financial model from a static projection into a dynamic, upward-trending ecosystem. According to the applied calculations, the net cash flow breaks out of standard fixed patterns. Consequently, the baseline net present value, which was highly conservatively estimated at 825 thousand UAH, gains the solid mathematical foundation to rapidly grow to 1.5–2 million UAH over the assets life cycle. The cash

flow return on investment (CFROI) is on at a highly competitive level of 28%. Eventually, the proposed technological and methodological solutions fully satisfy the research objectives, delivering a resilient, future-proof framework that guarantees rapid capital payback and systematic, long-term value growth for the enterprise.

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APPENDIXES

Appendix A

Таблиця - Баланс «Кернел-Трейд» станом на 31.12.2022

Назва рядка	Код рядка	На початок звітного періоду, тис. грн	На кінець звітного періоду, тис. грн
1	2	3	4
I. Необоротні активи Нематеріальні активи	1000	76 505	106 437
первісна вартість	1001	185 400	232 472
накопичена амортизація	1002	108 895	126 035
Незавершені капітальні інвестиції	1005	0	0
Основні засоби	1010	2 078 184	2 026 469
первісна вартість	1011	2 469 154	2 586 123
знос	1012	390 970	559 654
інші фінансові інвестиції	1035	1 545 571	2 765 683
Довгострокова дебіторська заборгованість	1040	4 565	11 360
Відстрочені податкові активи	1045	1 029	370 324
Усього за розділом I	1095	3 705 854	5 280 273
II. Оборотні активи Запаси	1100	14 763 821	22 273 369
Виробничі запаси	1101	8 973 380	8 116 688
Готова продукція	1103	2 972 546	5 702 421
Товари	1104	2 817 895	8 454 260
Дебіторська заборгованість за продукцію, товари, роботи, послуги	1125	5 155 172	3 126 946
Дебіторська заборгованість за розрахунками: за виданими авансами	1130	6 702 637	4 003 700
з бюджетом	1135	3 782 416	4 804 541
у тому числі з податку на прибуток	1136	179 188	0
Інша поточна дебіторська заборгованість	1155	675 149	107 538
Поточні фінансові інвестиції	1160	3 683 695	828 487
Г роші та їх еквіваленти	1165	886 518	2 366 894
Готівка	1166	2	12
Рахунки в банках	1167	886 516	2 366 882
Усього за розділом II	1195	35 649 408	37 511 475
III. Необоротні активи, утримувані для продажу, та групи вибуття	1200	0	0
Баланс	1300	39 355 262	42 791 748
Пасив			

Продовження таблиці

Назва рядка	Код рядка	На початок звітного періоду, тис. грн	На кінець звітного періоду, тис. грн
І. Власний капітал Зареєстрований (пайовий) капітал	1400	9 358 912	9 358 912
Резервний капітал	1415	20 236	20 236
Нерозподілений прибуток (непокритий збиток)	1420	2 659 899	935 203
Усього за розділом І	1495	12 039 047	10 314 351
Інші довгострокові зобов’язання	1515	16 361	2 814
Довгострокові забезпечення	1520	831 235	0
Усього за розділом ІІ	1595	847 596	2 814
Ш. Поточні зобов’язання і забезпечення Короткострокові кредити банків	1600	3 335 500	15 060 095
Поточна кредиторська заборгованість за: довгостроковими зобов’язаннями	1610	37 711	14 731
товари, роботи, послуги	1615	1 200 944	3 539 677
розрахунками з бюджетом	1620	237	123
у тому числі з податку на прибуток	1621	0	0
розрахунками зі страхування	1625	3	2
розрахунками з оплати праці	1630	2 091	2 052
за одержаними авансами	1635	5 688 276	7 836 177
Поточні забезпечення	1660	35 968	2 016 321
Інші поточні зобов’язання	1690	16 167 889	4 005 405
Усього за розділом ІІІ	1695	26 468 619	32 474 583
Баланс	1900	39 355 262	42 791 748

Таблиця - Баланс «Кернел-Трейд» станом на 31.12.2023

Назва рядка	Код рядка	На початок звітного періоду	На кінець звітного періоду
I. Необоротні активи Нематеріальні активи	1000	106 437	213 844
первісна вартість	1001	232 472	369 028
накопичена амортизація	1002	126 035	155 184
Основні засоби	1010	2 026 469	2 225 699
первісна вартість	1011	2 586 123	2 963 898
знос	1012	559 654	738 199
інші фінансові інвестиції	1035	2 765 683	2 911 474
Довгострокова дебіторська заборгованість	1040	11 360	13 438
Відстрочені податкові активи	1045	370 324	587
Усього за розділом I	1095	5 280 273	5 365 042
II. Оборотні активи Запаси	1100	22 273 369	12 444 402
Виробничі запаси	1101	8 116 688	5 879 152
Готова продукція	1103	5 702 421	2 463 302
Товари	1104	8 454 260	4 101 948
Дебіторська заборгованість за продукцію, товари, роботи, послуги	1125	3 126 946	22 521 044
за виданими авансами	1130	4 003 700	4 049 751
з бюджетом	1135	4 804 541	4 810 112
Інша поточна дебіторська заборгованість	1155	107 538	94 137
Поточні фінансові інвестиції	1160	828 487	533 236
Гроші та їх еквіваленти	1165	2 366 894	2 627 789
Готівка	1166	12	3
Рахунки в банках	1167	2 366 882	2 627 786
Усього за розділом II	1195	37 511 475	47 080 471
Баланс	1300	42 791 748	52 445 513
I. Власний капітал Зареєстрований (пайовий) капітал	1400	9 358 912	9 358 912
Резервний капітал	1415	20 236	20 236
Нерозподілений прибуток (непокритий збиток)	1420	935 203	6 068 225
Усього за розділом I	1495	10 314 351	15 447 373
Інші довгострокові зобов’язання	1515	2 814	24 380
Усього за розділом II	1595	2 814	24 380
Ш. Поточні зобов’язання і забезпечення Короткострокові кредити банків	1600	15 060 095	18 211 119
За довгостроковими зобов’язаннями	1610	14 731	51 034
товари, роботи, послуги	1615	3 539 677	3 268 475
розрахунками з бюджетом	1620	123	582 695

розрахунками зі страхування	1625	2	43
розрахунками з оплати праці	1630	2 052	5 398
за одержаними авансами	1635	7 836 177	7 370 754
Поточні забезпечення	1660	2 016 321	241 422
Інші поточні зобов’язання	1690	4 005 405	7 242 820
Усього за розділом III	1695	32 474 583	36 973 760
Баланс	1900	42 791 748	52 445 513

Таблиця - Баланс «Кернел-Трейд» станом на 31.12.2024

Назва рядка	Код рядка	На початок звітного періоду	На кінець звітного періоду
I. Необоротні активи Нематеріальні активи	1000	213 844	175 542
первісна вартість	1001	369 028	405 138
накопичена амортизація	1002	155 184	229 596
Основні засоби	1010	2 225 699	2 134 588
первісна вартість	1011	2 963 898	2 813 925
знос	1012	738 199	679 337
інші фінансові інвестиції	1035	2 911 474	3 547 048
Довгострокова дебіторська заборгованість	1040	13 438	20 399
Відстрочені податкові активи	1045	587	206 329
Усього за розділом I	1095	5 365 042	6 083 906
II. Оборотні активи Запаси	1100	12 444 402	7 383 543
Виробничі запаси	1101	5 879 152	3 593 952
Готова продукція	1103	2 463 302	1 647 487
Товари	1104	4 101 948	2 142 104
Дебіторська заборгованість за продукцію, товари, роботи, послуги	1125	22 521 044	24 796 034
за виданими авансами	1130	4 049 751	2 480 491
з бюджетом	1135	4 810 112	2 776 107
Інша поточна дебіторська заборгованість	1155	94 137	67 847
Поточні фінансові інвестиції	1160	533 236	737 999
Гроші та їх еквіваленти	1165	2 627 789	6 707 799
Готівка	1166	3	5
Рахунки в банках	1167	2 627 786	6 707 794
Усього за розділом II	1195	47 080 471	44 949 820
Баланс	1300	52 445 513	51 033 726
I. Власний капітал Зареєстрований (пайовий) капітал	1400	9 358 912	17 077 992
Резервний капітал	1415	20 236	20 236
Нерозподілений прибуток (непокритий збиток)	1420	6 068 225	10 416 094
Усього за розділом I	1495	15 447 373	27 514 322
Інші довгострокові зобов’язання	1515	24 380	4 909
Усього за розділом II	1595	24 380	4 909
Ш. Поточні зобов’язання і забезпечення Короткострокові кредити банків	1600	18 211 119	1 230 000
За довгостроковими зобов’язаннями	1610	51 034	16 614
товари, роботи, послуги	1615	3 268 475	1 467 097

розрахунками з бюджетом	1620	582 695	82 543
розрахунками зі страхування	1625	43	9

Продовження таблиці

розрахунками з оплати праці	1630	5 398	10 026
за одержаними авансами	1635	7 370 754	4 214 747
Поточні забезпечення	1660	241 422	288 605
Інші поточні зобов’язання	1690	7 242 820	16 204 854
Усього за розділом III	1695	36 973 760	23 514 495
Баланс	1900	52 445 513	51 033 726

Таблиця - Звіт про власний капітал 2022 рік

Стаття	Код рядка	Зареєстрований (пайовий) капітал	Додатковий капітал	Нерозподілений прибуток (непокритий збиток)	Всього
Залишок на початок року	4000	9358912	20236	2659899	12039047
Коригування:					
Інші зміни	4090			-5400	-5400
Скоригований залишок на початок року	4095	9358912	20236	2654499	12033647
Чистий прибуток (збиток) за звітний період	4100			-1719296	-1719296
Разом змін у капіталі	4295			-1719296	-1719296
Залишок на кінець року	4300	9358912	20236	935203	10314351

Таблиця - Звіт про власний капітал 2023 рік

Стаття	Код рядка	Зареєстрований (пайовий) капітал	Додатковий капітал	Нерозподілений прибуток (непокритий збиток)	Всього
Залишок на початок року	4000	9358912	20236	935203	10314351
Інші зміни	4090			-5322	-5322
Скоригований залишок на початок року	4095	9358912	20236	929881	10309029
Чистий прибуток (збиток) за звітний період	4100			5138344	5138344
Разом змін у капіталі	4295			5138344	5138344
Залишок на кінець року	4300	9358912	20236	6068225	15447373

Таблиця - Звіт про власний капітал 2024 рік

Стаття	Код рядка	Зареєстрований (пайовий) капітал	Додатковий капітал	Нерозподілений прибуток (непокритий збиток)	Всього
Залишок на початок року	4000	9358912	20236	6068225	15447373
Інші зміни	4090			-25166	-25166
Скоригований залишок на початок року	4095	9358912	20236	6043059	15422207
Чистий прибуток (збиток) за звітний період	4100			4373035	4373035
Внески учасників: Внески до капіталу	4240	7719080			7719080
Разом змін у капіталі	4295	7719080		4373035	12092115
Залишок на кінець року	4300	17077992	2023	10416094	27514322

Structure of IC (12.5 mil UAH):

5.5 million UAH: Buying and licensing of the core AI software and machine learning algorithms.

4 million UAH: Hardware upgrades, specifically the purchase and installation of IoT telemetry sensors for the proprietary grain truck fleet and elevator conveyor networks.

2 million UAH: Deployment of secure cloud infrastructure and Zero Trust cybersecurity architecture to protect commercial data.

1 million UAH: System integration with the existing legacy ERP software and comprehensive retraining programs for dispatchers and warehouse personnel.