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IMPROVING THE SYSTEM OF CRITERIA FOR EVALUATING INVESTMENT PROJECTS AT ENTERPRISES: INTEGRATING FINANCIAL AND NON-FINANCIAL CRITERIA



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Abstract. This article examines theoretical and methodological directions for improving the system of criteria used to evaluate investment projects at enterprises. The purpose of the study is to systematize financial and non-financial criteria and to develop an approach for integrating them into a unified investment decision-making model. The methodological framework combines systems and comparative analysis, abstract-logical reasoning, discounted cash-flow analysis, multi-criteria assessment, expert evaluation, and indicator normalization. The study demonstrates that conventional appraisal based mainly on NPV, IRR, PI, DPP and DSCR does not fully capture the strategic, technological, environmental, social and governance effects of an investment project. A six-component integrated model is proposed, comprising financial efficiency, risk resilience, strategic fit, technological and innovation potential, environmental and social effectiveness, and the quality of corporate and institutional governance. On this basis, an Integrated Investment Project Evaluation Index (IIPEI) is formulated by normalizing heterogeneous indicators and aggregating them with appropriate weights. The practical value of the proposed approach lies in enabling comprehensive comparison of alternative projects, strengthening the justification of investment decisions and improving the allocation of capital resources. The proposed threshold values are methodological benchmarks and should be empirically calibrated using data from real enterprises.

Keywords: *investment project, evaluation criteria, financial criteria, non-financial criteria, NPV, IRR, PI, DPP, DSCR, strategic efficiency, ESG, multi-criteria assessment, integrated index, IIPEI.*

Annotatsiya. Ushbu maqolada korxonalarda investitsiya loyihalarini baholashda qo'llaniladigan mezonlar tizimini takomillashtirishning nazariy va metodologik yo'nalishlari tadqiq etilgan. Tadqiqotning maqsadi moliyaviy va nomoliyaviy mezonlarni tizimlashtirish hamda ularni yagona investitsion qaror qabul qilish modeliga integratsiya qilish yondashuvini ishlab chiqishdan iborat. Tadqiqot metodologiyasi tizimli va qiyosiy tahlil, abstrakt-mantiqiy yondashuv, diskontlangan pul oqimlari tahlili, ko'p mezonli baholash, ekspert baholash hamda ko'rsatkichlarni normallashtirish usullarini o'z ichiga oladi. Tadqiqot natijalari shuni ko'rsatadiki, asosan NPV, IRR, PI, DPP va DSCR ko'rsatkichlariga tayanuvchi an'anaviy baholash yondashuvi investitsiya loyihasining strategik, texnologik, ekologik, ijtimoiy va boshqaruvga oid ta'sirlarini to'liq aks ettirmaydi. Shu munosabat bilan moliyaviy samaradorlik, riskka chidamlilik, strategik muvofiqlik,

texnologik va innovatsion salohiyat, ekologik va ijtimoiy samaradorlik, shuningdek, korporativ va institutsional boshqaruv sifatini qamrab oluvchi olti komponentli integrallashgan model taklif etilgan. Mazkur yondashuv asosida turli o'lchov birliklarida ifodalangan ko'rsatkichlarni normallashtirish va tegishli vazn koeffitsiyentlari asosida agregatsiyalash orqali Investitsiya loyihalarini integrallashgan baholash indeksi — IIPEI shakllantirilgan. Taklif etilgan yondashuvning amaliy ahamiyati muqobil loyihalarni kompleks taqqoslash, investitsiya qarorlarining asoslanganligini oshirish hamda kapital resurslarini yanada samarali taqsimlash imkonini berishida namoyon bo'ladi. Taklif etilgan chegaraviy qiymatlar metodik mezonlar sifatida qaraladi va real korxonalar ma'lumotlari asosida empirik kalibrlashni talab etadi.

Kalit so'zlar: *investitsiya loyihasi, baholash mezonlari, moliyaviy mezonlar, nomoliyaviy mezonlar, NPV, IRR, PI, DPP, DSCR, strategik samaradorlik, ESG, ko'p mezonli baholash, integrallashgan indeks, IIPEI.*

Аннотация. *В статье исследуются теоретические и методологические направления совершенствования системы критериев оценки инвестиционных проектов на предприятиях. Цель исследования заключается в систематизации финансовых и нефинансовых критериев и разработке подхода к их интеграции в единую модель принятия инвестиционных решений. Методологическая основа исследования включает системный и сравнительный анализ, абстрактно-логический подход, анализ дисконтированных денежных потоков, многокритериальную оценку, экспертное оценивание и нормализацию показателей. Результаты исследования показывают, что традиционный подход к оценке, основанный преимущественно на показателях NPV, IRR, PI, DPP и DSCR, не в полной мере отражает стратегические, технологические, экологические, социальные и управленческие эффекты инвестиционного проекта. В связи с этим предложена шестикомпонентная интегрированная модель, включающая финансовую эффективность, устойчивость к рискам, стратегическое соответствие, технологический и инновационный потенциал, экологическую и социальную эффективность, а также качество корпоративного и институционального управления. На данной основе сформирован интегральный индекс оценки инвестиционного проекта — IIPEI, предусматривающий нормализацию разнородных показателей и их агрегирование с учетом соответствующих весовых коэффициентов. Практическая значимость предложенного подхода заключается в возможности комплексного сопоставления альтернативных проектов, повышения обоснованности инвестиционных решений и более эффективного распределения капитальных ресурсов. Предложенные пороговые значения рассматриваются как методические ориентиры и требуют эмпирической калибровки на основе данных реальных предприятий.*

Ключевые слова: *инвестиционный проект, критерии оценки, финансовые критерии, нефинансовые критерии, NPV, IRR, PI, DPP, DSCR, стратегическая эффективность, ESG, многокритериальная оценка, интегральный индекс, IIPEI.*

INTRODUCTION

The selection of investment projects is among the most strategically important managerial decisions made by an enterprise. An inappropriate project choice can result in inefficient allocation of capital resources, reduced liquidity, weaker financial stability and deterioration of the enterprise's long-term competitiveness.

Traditional investment analysis relies primarily on financial indicators, including Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index (PI), Payback Period (PP) and Discounted Payback Period (DPP). These criteria are essential for evaluating cash flows, the cost of capital and expected profitability; however, they do not encompass all dimensions of contemporary investment decision-making.

Two projects may, for example, generate the same NPV while producing substantially different strategic consequences. One project may facilitate the adoption of a new technology, entry into export markets, improved energy efficiency or stronger brand value, whereas another may show higher short-term profitability but be exposed to technological obsolescence, environmental costs or institutional risks.

For this reason, a modern investment appraisal methodology should consider financial and non-financial criteria jointly and ensure their comparability within a unified evaluation framework. Such an approach allows management to assess not only short-term economic returns but also the contribution of a project to long-term value creation, sustainability and strategic development.

The objective of this study is to systematize financial and non-financial criteria used to evaluate investment projects at enterprises and to develop a methodological approach for integrating these criteria into a comprehensive decision-making system.

LITERATURE REVIEW

In corporate finance theory, Net Present Value is generally regarded as one of the fundamental criteria for investment selection. Brealey, Myers and Allen associate acceptance of an investment project with its capacity to increase firm value; under this approach, a positive NPV is an important condition for the economic acceptability of a project [1].

Damodaran emphasizes that projected project cash flows and the discount rate should be aligned with the level and nature of risk. Consequently, an investment decision should be based on an appropriate assessment of the risks embedded in expected cash flows and on a cost of capital consistent with those risks [2, 3].

Dixit and Pindyck analyse investment decisions under uncertainty and show that the conventional NPV approach may not fully capture managerial flexibility. The real-options perspective allows the analyst to consider the value of delaying investment, expanding or contracting a project, changing technology, or abandoning the project when market conditions deteriorate [6]. Trigeorgis further develops this approach and demonstrates that managerial flexibility itself can be a source of economic value in investment projects [7].

Multi-criteria decision-making methods also play a significant role in modern investment analytics. The Analytic Hierarchy Process (AHP), TOPSIS and other MCDM techniques make it possible to combine financial and non-financial indicators within a common evaluation framework once the indicators have been normalized and their relative importance has been established [8, 9].

The literature therefore reflects a transition from one-dimensional financial appraisal toward multi-criteria, risk-oriented and strategically focused systems. This evolution creates a methodological need for tools capable of evaluating financial

performance, strategic effects, technological development, ESG factors and governance quality simultaneously.

RESEARCH METHODOLOGY

The study applies systems and comparative analysis, the abstract-logical method, discounted cash-flow analysis, multi-criteria assessment, expert judgement and normalization techniques. The research logic includes classification of evaluation criteria, determination of principles for comparability, construction of an integrated model, and development of an algorithm for investment decision-making.

Investment project evaluation criteria are divided into two broad groups: financial and non-financial. The proposed classification is presented in Table 1.

Table 1.

Classification of investment project evaluation criteria

Financial criteria	Non-financial criteria
NPV	Strategic fit
IRR	Innovation potential
PI	Technological upgrading
PP and DPP	Environmental impact
MIRR	Social effectiveness
DSCR	Management quality
ROI	Impact on market position
EBITDA margin	Export potential
Cash flow	Energy efficiency

Source: systematized by the author.

This classification assumes that investment appraisal should simultaneously reflect financial value creation and the long-term strategic contribution of a project. Financial criteria remain indispensable, but they should be interpreted alongside indicators of strategic relevance, innovation, environmental and social outcomes, market development and governance.

RESULTS AND DISCUSSION

The role of financial criteria in investment decision-making

Financial criteria play a central role in measuring project profitability, capital recovery and the ability of the project to service debt obligations. Net Present Value is defined as the difference between the present value of future project cash flows and the initial investment expenditure:

$$NPV = -I_0 + \sum CF_t / (1 + r)^t$$

where I_0 is the initial investment, CF_t is the net cash flow in period t , r is the discount rate and t is the time period. If $NPV > 0$, the project is expected to increase the value of the enterprise.

The Internal Rate of Return is determined from the condition:

$$NPV(IRR) = 0$$

If $IRR > WACC$, the project may be regarded as financially acceptable, other things being equal. The Profitability Index is calculated as:

$$PI = PV(CF) / I_0$$

When $PI > 1$, the present value of expected cash flows exceeds the initial investment, indicating a positive relative efficiency of invested capital. For projects with a significant debt component, the Debt Service Coverage Ratio (DSCR) is especially important:

$$DSCR = \text{Operating Cash Flow} / \text{Debt Service}$$

DSCR reflects the ability of the project to meet debt-service payments from operating cash flow. The major advantage of financial criteria lies in their measurability, comparability and direct linkage to economic results. At the same time, they cannot fully capture strategic and institutional consequences of investment decisions.

Economic significance of non-financial criteria

The economic value of an investment project is not limited to its current financial return. A digital transformation project, for example, may initially show a relatively modest NPV but can create conditions for process automation, improved data quality, faster managerial decision-making, lower future costs and the development of new business models.

Accordingly, non-financial criteria should be assessed across the dimensions presented in Table 2.

Table 2.

Principal non-financial criteria for investment project evaluation

Criterion	Content	Object of evaluation
Strategic fit	Consistency with the enterprise development strategy	Strategic objectives
Innovation potential	Potential to create new products and technologies	Level of innovation
Technological efficiency	Modernization of production processes	Technological upgrading
Environmental efficiency	Reduction of emissions and resource consumption	ESG indicators
Social effectiveness	Impact on employment and working conditions	Social outcome
Market effectiveness	Growth of market share and export potential	Competitiveness
Management quality	Institutional quality of project governance	Governance
Adaptability	Capacity to adjust to	Real options

	market changes	
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Source: systematized by the author.

The problem of integrating financial and non-financial criteria

Financial and non-financial indicators are expressed in different units. NPV may be measured in billions of Uzbek soums, IRR in percentages, the payback period in years, and environmental performance in physical units or expert scores. Therefore, prior to aggregation, all criteria should be transformed to a comparable scale.

For criteria whose higher values improve the overall assessment, min-max normalization can be applied:

$$Z_i = (X_i - X_{\min}) / (X_{\max} - X_{\min})$$

For criteria where a lower value is preferable, such as the payback period or selected risk indicators, reverse normalization is appropriate:

$$Z_i = (X_{\max} - X_i) / (X_{\max} - X_{\min})$$

The resulting values fall within the interval from 0 to 1, creating a common basis for subsequent aggregation. In practical applications, analysts should consider outliers, the direction of preference for each criterion and the comparability of the underlying data set.

Proposed integrated evaluation model

Based on the results of the study, a six-component model for comprehensive investment project evaluation is proposed:

$$IIPEI = \alpha F + \beta R + \gamma S + \delta T + \lambda E + \mu G$$

where IIPEI is the Integrated Investment Project Evaluation Index; F is financial efficiency; R is risk resilience; S is strategic effectiveness; T is technological and innovation potential; E is environmental and social effectiveness; and G is the quality of corporate and institutional governance.

$$\alpha + \beta + \gamma + \delta + \lambda + \mu = 1$$

Using identical weights for all types of projects is not always methodologically justified. Weight coefficients should reflect industry characteristics, the type of project, enterprise strategy and the nature of the decision. Capital-intensive manufacturing projects may assign greater weight to financial efficiency and risk; innovation projects may prioritize technology and managerial flexibility; and green-energy projects may attach greater importance to environmental performance.

Construction of the financial efficiency index

Within the financial block, the following aggregated model may be used:

$$F = w_1 NPV_n + w_2 IRR_n + w_3 PI_n + w_4 DPP_n + w_5 DSCR_n$$

where the subscript n denotes the normalized value of the corresponding indicator and the sum of the weights assigned to financial criteria equals one:

$$w_1 + w_2 + w_3 + w_4 + w_5 = 1$$

Because a shorter DPP is preferable, this indicator should be normalized in the reverse direction.

Construction of the non-financial efficiency index

The non-financial block can be represented as follows:

$$NF = v_1S + v_2T + v_3E + v_4M + v_5G$$

where S denotes strategic fit, T technological efficiency, E environmental performance, M market and social effectiveness, and G governance quality.

In a simplified version, the final evaluation may combine the financial and non-financial blocks:

$$IIPEI = \alpha F + \beta NF$$

For illustration, an enterprise could assign a weight of 60% to financial results and 40% to non-financial results. However, such proportions should not be arbitrary; they require empirical justification based on industry characteristics, project type, enterprise strategy and the preferences of decision-makers.

Proposed matrix of investment project evaluation criteria

Table 3.

Matrix of criteria and recommended evaluation methods

Evaluation block	Key criterion	Measurement form	Recommended method
Financial	NPV, IRR, PI	Monetary units and percentages	DCF analysis
Liquidity	PP, DPP	Years	Payback-period analysis
Financial sustainability	DSCR	Ratio	Debt-burden analysis
Risk	NPV variance	Percentage / probability	Monte Carlo simulation
Strategic	Strategic fit	Scores	AHP
Technological	Level of novelty	Score / index	Expert assessment
Environmental	Emissions, energy consumption	Physical units / scores	ESG assessment
Social	Jobs, quality of employment	Number / scores	Social impact assessment
Governance	Project management quality	Scores	Governance assessment

Source: developed by the author.

Proposed evaluation algorithm

The investment project evaluation process at an enterprise is proposed to follow this logical sequence:

Project idea → strategic-fit screening → cash-flow forecasting → calculation of NPV, IRR, PI, DPP and DSCR → risk analysis → assessment of non-financial criteria → normalization of indicators → determination of criterion weights → calculation of IIPEI → project ranking → investment decision → post-investment monitoring.

The main advantage of this algorithm is that a project is assessed not only in terms of short-term financial profitability but also with regard to its long-term strategic value and resilience.

Proposed IIPEI interpretation thresholds

Table 4.

Methodological thresholds for interpreting the IIPEI

IIPEI value	Assessment	Investment decision
0.80–1.00	Very high	Priority financing
0.65–0.79	High	Accept the project
0.50–0.64	Medium	Optimize project conditions
0.35–0.49	Low	Reconsider the project
0.00–0.34	Very low	Reject the project

Note. The above thresholds are methodological proposals. In empirical applications, they should be calibrated using data from real enterprises.

Advantages of the proposed methodology

The proposed system addresses several limitations of conventional investment analysis. First, project value is not reduced exclusively to financial return. Second, strategic and long-term effects are incorporated into the investment decision. Third, indicators expressed in different units are transformed to a common scale through normalization. Fourth, the weights assigned to criteria can be adapted to industry characteristics and project type. Fifth, the model provides a basis for ranking alternative projects and forming an investment portfolio.

An additional advantage is transparency. Because each component of IIPEI is explicitly defined, management can identify which dimensions generate or constrain project value. This makes the model useful not only for initial project selection but also for post-investment monitoring, where changes in project performance can be traced to specific financial, strategic, technological, environmental or governance factors.

SCIENTIFIC NOVELTY

The study integrates financial and non-financial criteria for evaluating enterprise investment projects into a single methodological system.

A six-component evaluation model is developed that covers financial efficiency, risk resilience, strategic fit, technological and innovation potential, environmental and social effectiveness, and the quality of corporate and institutional governance.

An Integrated Investment Project Evaluation Index (IIPEI) is proposed. The index is formed by normalizing criteria expressed in different units and aggregating them on the basis of weight coefficients.

A differentiated methodological approach is substantiated for determining the relative importance of financial and non-financial criteria depending on project type, industry characteristics and strategic objectives of the enterprise.

Methodological thresholds for interpreting IIPEI are proposed for ranking investment projects and supporting final decision-making, while their subsequent empirical calibration is treated as a necessary condition for practical implementation.

CONCLUSION

Traditional systems for evaluating investment projects at enterprises rely predominantly on financial efficiency criteria and therefore do not fully encompass all dimensions of contemporary investment decisions.

NPV, IRR, PI, DPP and DSCR remain essential for assessing value creation, profitability, liquidity and debt sustainability. Nevertheless, they do not provide a comprehensive assessment of strategic fit, technological development, environmental impact, social effectiveness and governance quality.

It is therefore appropriate to apply financial and non-financial criteria within an integrated framework. The proposed IIPEI model enables multi-criteria project evaluation, comparison on a unified scale and a more transparent basis for selecting projects that are consistent with enterprise strategy.

Practical implementation of the methodology can improve the quality of investment decisions, promote more rational allocation of capital resources and ensure systematic consideration of project risks and long-term effects. Further empirical testing should estimate appropriate weight coefficients, examine the robustness of results to alternative normalization procedures and calibrate IIPEI thresholds using a representative sample of real enterprises.

The proposed framework should therefore be viewed as a flexible decision-support architecture rather than a rigid universal scoring system. Its value lies in combining conventional capital-budgeting logic with measurable strategic and sustainability dimensions while preserving transparency in the formation of the final investment recommendation.

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