

Ministry of Education and Science of Ukraine  
Kyiv National University of Construction and Architecture

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to the attestation graduation work  
to obtain a master's degree  
on the subject:

**Update of the development system for enterprises-stakeholders of construction on  
the basis of modern risk-adapted management approaches**

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## **Relevance of the study:**

In the context of rapid changes in the economic environment and high uncertainty, construction companies face the need for effective risk management. Taking into account the location, long-term investment, capital intensity of real estate and market characteristics, an updated development system based on risk-adapted approaches will minimise potential losses and increase project sustainability.

The application of risk-adapted management makes it possible to increase the level of predictability, structure development processes more clearly, improve interaction between stakeholders and avoid crisis situations such as the one that occurred in Ukrainian development in 2008. This study aims to develop innovative recommendations for stakeholder enterprises to improve the development system by integrating modern risk management methods at all stages of projects.

## Stages of a development project:

**Development** is an activity aimed at the comprehensive organisation of the investment process to create a real estate object for profit. It involves conceptual planning, land plot selection, design organisation, construction management, and finding end users.

**Development project:** An investment project that requires an integrated approach to management, covering all stages of the life cycle - from the pre-investment stage to the commissioning of the facility. The goal of the project is to ensure the physical, legal feasibility and market viability of the property.

**The role of the developer:** A developer is a person or company that initiates, finances, manages, and profits from the creation of a property. The developer's responsibilities include concept development, process management, partner search, financing, and legal support.

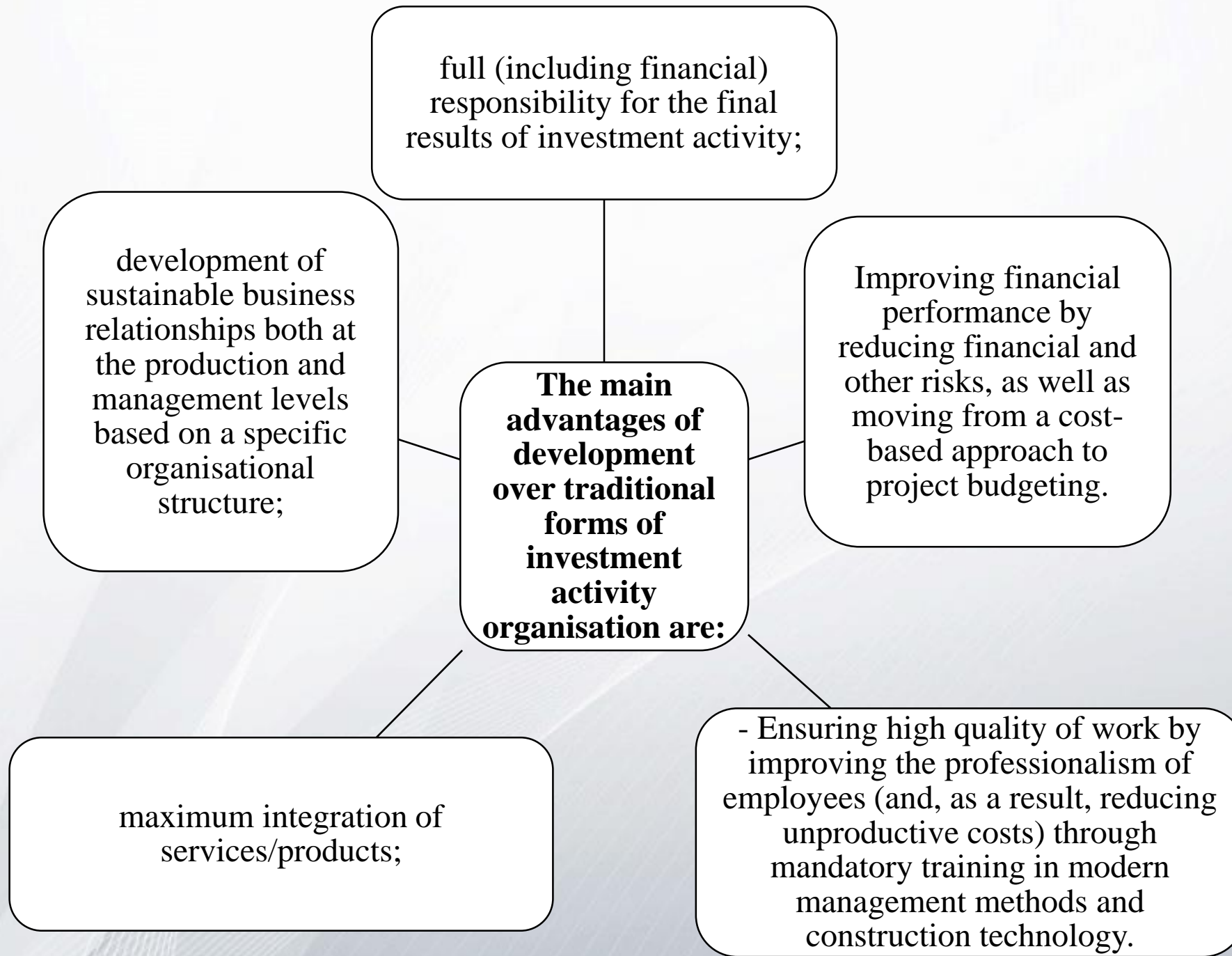
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graph TD; A[Pre-project stage: market analysis, strategy development, preparation of permits.] --> B[Design stage: development of a financial scheme, selection of an architectural and engineering team, and tenders.]; B --> C[Construction stage: work coordination, quality control, cost management.]; C --> D[Implementation stage: marketing, sales of space, facility management.];
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**Pre-project stage:** market analysis, strategy development, preparation of permits.

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**Implementation stage:** marketing, sales of space, facility management.



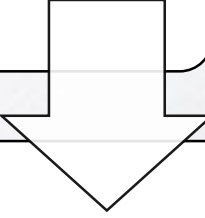
Project management encompasses the management of resources, duration, cost, quality, personnel, logistics, communications, and risk. Risk management is an important part of this process.

Risk management aims to minimise project deviations from goals by optimising interaction with the external environment, which contains risk factors that usually occur outside the project.

**The goal of risk management** is to: Increasing the likelihood of favourable events and reducing the impact of unfavourable events, which contributes to the stability and efficiency of project implementation.

## Stages of risk management:

**Development phase:** identifying risks, analysing them, quantifying them, and creating models for risk control, such as a risk tree and a decision tree.



**Implementation phase:** continuous monitoring of risks and, if necessary, implementation of measures to mitigate them, as the external environment is dynamic.

## Methods of risk minimisation:

- Diversification of risks between participants.
- Risk transfer (insurance).
- Hedging (futures, options).
- Creation of a reserve fund.
- Limitation of expenses.

Real estate transactions are among the most risky due to the market's specifics - localisation, dependence on the regional economy, long-term investments and low liquidity.

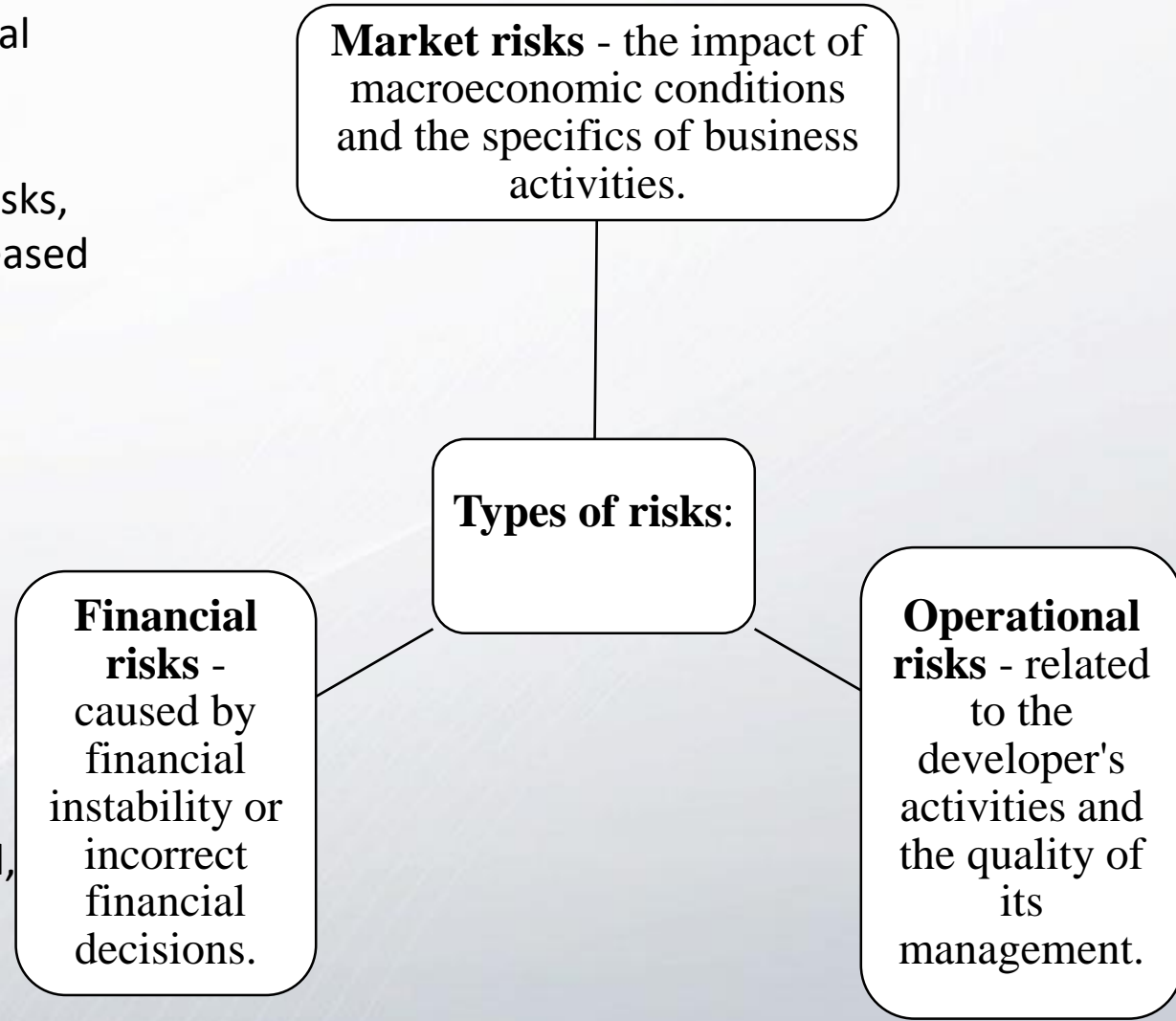
Inadequate legal framework and legal uncertainty create risks, in particular related to the loss of property rights and increased costs.

Different risks affect each other, which complicates their analysis and control, requiring a developer to take a comprehensive approach to risk management.

**Risk factors:**

**Internal** - arise as a result of the investor's activities (shortcomings in strategy, financial management).

**External** - unfavourable environmental conditions (political, economic and legal).



## **Methods to minimise risks:**

combining different sources and methods of financing (equity participation, bank loans, 'in-kind financing' by contractors) to prevent funding disruptions;

entering into direct long-term agreements with suppliers of construction materials;

holding tenders, bids, competitions when selecting contractors;

insurance when entering into construction contracts;

engaging specialised brokerage firms or establishing subsidiaries specialising in the implementation of projects under development, etc.

AKRON GROUP is an Austrian company specialising in commercial property investments in Europe since 1995. It manages offices, logistics facilities and shopping centres in 8 countries, including Ukraine (representative office opened in 2008). The company provides investment opportunities to institutional and private investors, offering high returns with manageable risks.

AKRON GROUP's key principles:

- **Focus on properties** with high value potential.
- **Investment flexibility** to attract different types of investors.
- **Social responsibility**: participation in charity projects, support for young artists and children in difficult circumstances.

The company uses modern IT tools for communications, holds corporate events, and adheres to high standards in PR and media relations.



The analysis of risk management in AKRON Management LLC shows that the company is at the initial level of maturity of the risk management system. Key aspects:

**1. Formation stage:** Risk management is only developing. Risks are assessed before entering projects, including through technical, financial and legal due diligence.

**2. The role of the project manager:** Project managers are responsible for risk management, but often lack the time and resources for comprehensive management, so the approach is intuitive.

**3. Disadvantages of the system:** Processes are unstable, not standardised, and depend on the abilities of managers and the team, which makes project results unpredictable and subject to chance.



The development project of AKRON Management LLC in Kyiv is a business centre on Sadova-Kudrinska Street, located next to the Palace of Sports metro station.

The project involves the reconstruction of a historic building and the construction of a new 26,000 sq m complex for offices, retail, restaurants and underground parking.

Key implementation steps:

- Together with the architects, the project concept was revised.
- - A new budget, schedule, and financial model were created.
- - The general contractor was changed, and experts in technical operation were engaged.
- - All permits were updated and financial accounting was organised.

The project is complex due to the restoration of the building, which is an architectural monument, and regulatory restrictions on construction in the city centre.

### Zaporizka 3 project



**The following problems in risk management in the activities of AKRON Management LLC can be identified:**

**Immaturity of the risk management system:** The company's risk management subsystem is at an early stage of development, and risk management itself is intuitive and unstructured. This increases vulnerability to unforeseen situations.

**Dependence on the personal abilities of project managers:** The lack of formalised risk management procedures and standards forces project managers to make decisions based on their own experience. This reduces the predictability and stability of project results.

**High level of external risks in a complex regulatory environment:** The business centre project in Kyiv faces numerous regulatory restrictions, including restoration of architectural monuments and restrictions on the construction of office buildings. Delays in permitting lead to delays and additional risks for the project.

**Problems with documentation preparation and management:** There are difficulties in adapting project documentation in accordance with local and international standards, which also complicates risk control and management processes.

**Lack of resources for risk management:** Project managers lack time and resources for comprehensive risk management, which limits their ability to proactively address and mitigate risks.

The Zaporizka 3 project includes a set of recommendations for risk management at the planning and implementation stages. The key recommendations for risk management include conducting due diligence, appointing a risk officer, continuous monitoring of legislation, regulating the risk management process, and regularly analysing and improving risk management methods. At the pre-investment stage, the goals, objectives and structure of work are defined through decomposition, and a team with a clear division of responsibilities is formed.

The proposed risk management methodology includes the identification and assessment of the likelihood of risks, such as delays in documentation, compliance with the terms of the investment agreement, and adherence to the project's time and financial framework.

Qualitative and quantitative analysis methods, such as the risk rose and sensitivity analysis, are used to assess the priority and likelihood of risks. To ensure the quality of the project, we monitor compliance with applicable standards and requirements, as well as organise effective communication between project participants using an information technology model.

**The following recommendations have been developed to mitigate risks in the Zaporizka 3 project:**

Investment agreement: Formalise arrangements with the authorities to minimise the risk associated with the state share in the project.

sales volume: Conduct market research, use floating-rate leases to minimise vacancy rates.

Create additional time and financial reserves to avoid delays in permitting.

Timeline: Hold weekly meetings, use software tools to monitor deadlines.

Establish a contingency fund and fix prices in contracts with contractors, and closely monitor the budget.

Funding: Combine funding sources to ensure stability.

contractors: Select contractors through tenders, evaluating their experience, and consider contract insurance

design and coordination: Consider additional costs in case of delays and ensure budgetary reserves

Assign a person responsible for monitoring legislative changes to ensure rapid adaptation.

interest rate fluctuations: Insure interest rate risks and combine loans with investments.

## **Project proposals for the implementation of risk management for the Zaporizka 3 project**

1. Initial project analysis: Conduct due diligence with the involvement of external experts to verify financial, technical and legal aspects.
2. Select a responsible person from the project team to manage risks at all stages of the life cycle.
3. Monitoring legislation: Continuously monitor changes in the construction and development industry to ensure that potential risks are addressed promptly.
4. Systematic risk management process:
  - Develop a risk management plan for each project, including risk identification, qualitative and quantitative risk analysis.
  - Develop a risk response plan identifying risks that the organisation avoids, mitigates, transfers or accepts.
  - Evaluate the costs and potential benefits of applying management techniques.
5. Monitoring and Corrective Action: Regularly review risks and take corrective action, taking into account risk tolerance that is consistent with project objectives.
6. Weekly Review: Discuss risk management issues at each meeting to ensure oversight.
7. Risk thresholds: Set limits on the risks that the organisation is willing to accept or self-insure.
8. continuous improvement: Update and improve risk management practices to enhance project reliability.

These measures will contribute to the sustainability and protection of the project's main processes from possible

## Assessment of the effectiveness of risk management in the Zaporizka 3 project

The effectiveness of risk management can be assessed by two criteria:

-Critical parameters: Reducing the level of risks to acceptable limits to ensure project sustainability.

- Economic benefit: The impact on financial indicators such as net present value (NPV) and discount rate.

The use of various risk management techniques, such as insurance, can reduce the discount rate, increasing the NPV, but at the same time require additional insurance premium costs. This affects the final financial result, which investors can evaluate based on a comparison of costs and the level of risk covered.

### **Estimates for individual risks**

1. Loan interest rate increase: A 5% increase in interest rates increases the discount rate to 21%, which extends the payback period of the project by 4 years - unacceptable for investors. Early risk identification and insurance can prevent such losses.

2. Reduction in the volume of leased space: At 80% occupancy, the project loses part of its income, which extends the payback period by 2 years. Preventive marketing activities and promotions will help to avoid a decrease in lease space.

3. Risk of non-fulfilment of the investment agreement: In case of non-fulfilment of the contract, the company will suffer significant losses, for example, at the time of valuation, it could amount to \$52.7 million. Such losses can be avoided by formalising agreements with the parties involved.

Thus, the application of the proposed risk management methods increases sustainability and profitability

The risk management system for the Zaporozhskaya 3 project increases the company's stability and reduces the likelihood of losses. Its effectiveness depends on the risk management culture, which is still being developed at AKRON Management LLC. The proposed measures form the basis for its development, ensuring controlled decision-making and reducing risks. An effective system requires a methodological framework with key concepts, tasks and analysis requirements. This will become a solid foundation for stable risk management in the company's projects.

**Thank you for your attention!**