Kyiv National University of Trade and Economics
Department of Economics and Business Finance

FINAL QUALIFYING PAPER

on the topic:

Risks of innovative projects and ways of their minimization

based on the data of SE "State Land Cadastre Center», Kyiv

Student of the 2nd year, group 3am,
specialty 051 Economics
specialization Financial Management _____ Maxim Kostinskyi

Scientific adviser
PhD, Associate Professor _____ Olena Matusova

Manager of the educational program
Doctor of Economics, Professor _____ Hanna Sytnik

Kyiv 2021

CONTENT

INTRODUCTION 3
CHAPTER 1 THEORETICAL ASPECTS OF RISK MANAGEMENT
OF INNOVATIVE PROJECTS……..... 6
CHAPTER 2. INVESTIGATION RISKS OF INNOVATIVE PROJECTS
AT SE "STATE LAND CADASTRE CENTER" 16
2.1. Analysis of an enterprise financial state as a precondition
of effective innovative activity 16
2.2. Risks identification of enterprise innovative activity 24
2.3. Risks analysis of enterprise innovative activity 29
CHAPTER 3. PROPOSALS FOR IMPROVING RISK MANAGEMENT OF
SE "STATE LAND CADASTRE CENTER" INNOVATIVE PROJECTS 36
CONCLUSION AND PROPOSALS 44
REFERENCES 47
APPENDICES 51

INTRODUCTION

Relevance of the research. The experience of economic recession in recent years has shown that investment can become one of the most important sources of economic growth. Examining the investment process from an objective point of view it is necessary to use scientifically sound management mechanisms ensuring maximum consideration of existing and potential risks, analyze effectiveness of the activities carried out and make optimal decisions when implementing investment projects. Presently it should also be noted that the world economic crisis has a significant impact on Ukraine, which causes considerable destruction of the socio-economic structure of the whole country. The national economy is experiencing the influence of deep destructive phenomena, and in this case an economic development strategy of the state is not created, the national economy will be on the verge of default and internal crisis, which in the future can destroy the integrity of the structure of the national economy of Ukraine.

Therefore, first of all, on the part of the state there should be an interest in implementation of innovation processes and creation of favorable conditions for the functioning of enterprises. Under modern conditions of management there occurs an increase in the number and complexity of risks in the investment process, which requires using nontrivial schemes and mechanisms for implementing effective protective measures, and, therefore, there is a need to develop theoretical and methodological foundations for strategic risk management at all stages of the investment process, which, in turn, increases the likelihood of successful implementation of innovation projects at the current stage of economic development. That is why the chosen topic of the research is relevant for consideration under modern conditions. Theoretical and methodical foundations of the theory of risks were considered in studies of such academic economists as A. Marshall, A. Smith, J. Keynes, J. Neumann, D. Ricardo, J. Schumpeter, I. Ansoff, S. A. Williams, R.

Fathutdinov. Investigations of the problems of risk management are reflected in works of many Ukrainian economists: A. A. Peresada, V. G. Fedorenko, I. A. Blank, A. V. Savchuk, S. I. Shkaraban, Z. V. Gutsayluk and others. However, the problem of formation of theoretical and methodological foundations for strategic risk management of an innovation project requires further research taking into account current trends in economic development.

The main purpose of the final qualifying paper is to assess risks of enterprise innovative projects and to find out the ways of their minimization. Based on the purpose of the article, the following **tasks** are set:

– to form theoretical bases of innovative project risk management;

– to analyze an enterprise financial state as a precondition of effective innovative activity;

– to identify risks of an enterprise innovative activity;

– to analyze risks of an enterprise innovative activity;

– to give proposals for efficient risk management of innovative projects.

Object of the research is a process of risk management of enterprise innovative projects.

Subject of the research is theoretical, methodical and practical aspects of risk management of enterprise innovative projects.

Analytical and technical part of the research is made based on materials of SE "State Land Cadastre Center". The SE "State Land Cadastre Center" is a state-owned enterprise that belongs to the sphere of management of the State Geocadastre. The main activities of the enterprise are: ensuring the administration of the State Land Cadastre system; execution of land management activities, land valuation activities, topographic and geodetic activities (using modern electronic devices) and organization and conduct of land auctions.

Methods of the research. The study uses general scientific methods of analysis and synthesis, induction, deduction, comparison, a systematic approach to identify

features of innovative project's risk management, as well as analytical and statistical methods to justify the innovative activity of an enterprise. There are also used such methods as follows: quantitative method, method of financial and economic analysis, method of net present value determination, determining the internal rate of return of the project, forecasting and risk assessment.

Informational base is legislative acts, information from State statistics service of Ukraine and National bank of Ukraine, periodic economical literature, publications of rating agencies, financial statements of the SE "State Land Cadastre Center".

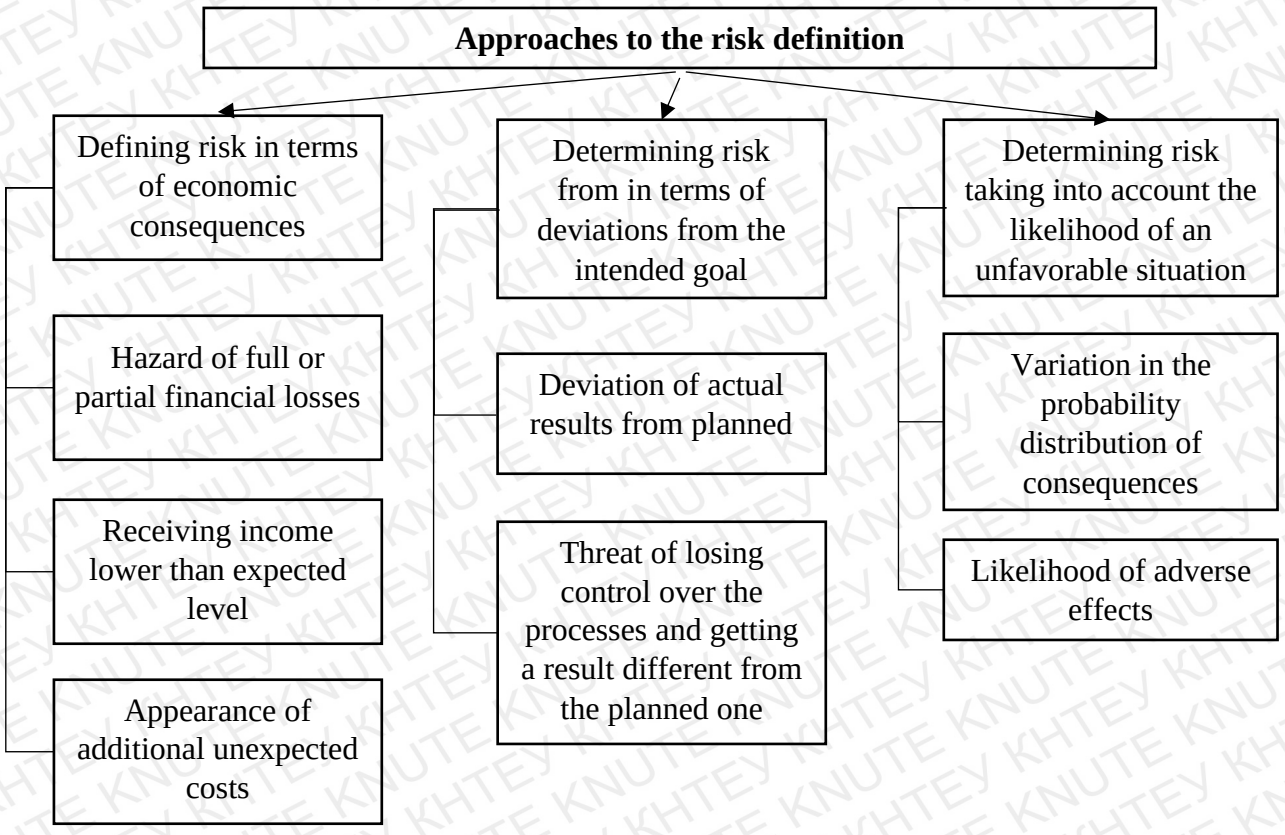
Practical meaning. The results of the conducted research and the suggested ways of optimization can be taken into account and used by the enterprise in the further decision-making concerning innovative management of an enterprise. Practical meaning of the final qualifying paper is concluded in further innovative projects and practical implementation of innovative decision.

Approbation. The results of the study were presented at SE "State Land Cadastre Center" for their further application and published in the collection of master's articles "Economics and Finance of Enterprise" in an article on the topic: "Risk assessment at different stages of innovative projects".

The structure of the final qualifying paper is determined by its purpose and tasks and includes introduction, three chapters, conclusions and suggestions, references and appendices. Total amount of pages in the paper is 46 pages.

CHAPTER 1
THEORETICAL ASPECTS OF RISK MANAGEMENT OF INNOVATIVE PROJECTS

Every innovative project is related to different types of risks. Measurement and assessment of risk is one of significant parts in decision making and project management as well. In the economic literature, the concept of "risk" has many different definitions, but it means a negative process in almost all sources that is associated with the probability, uncertainty and randomness of the occurrence of a future event or its outcome. Xu J. summarized various foreign and domestic theoretical approaches to risk definition into three main approaches [36]. The classification of approaches to determining risk is shown in the Figure 1.1.



Source: developed by the author on the basis of [36]

Fig. 1.1 Classification approaches to risk definitions

According to another point of view, many different approaches to the definition of the essence of risk can be reduced to two main ones. According to M. Gregory, in the first approach, the risk manifests itself in the form of possible failure, danger, material or other losses, in the second, the risk is recognized as luck, a favorable outcome [17].

Risk can also be defined as the probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions [19-21].

A number of authors define the essence of risk using the above two approaches simultaneously.

Foster N. argue that risk is a possible threat in the activities of the enterprise, which arose as a result of the manager's decisions in term of uncertainty, resulting in a deterioration in production or a possible favorable outcome, which in the future will successfully affect the activities of the enterprise [14].

Crouhy M. characterizes risk as a multidimensional category from an economic or financial position, as a probabilistic event, characterized by a combination of the possibility of achieving both undesirable and favorable deviations from the planned results, due to the influence of uncertain factors of the internal and external environment [9].

Risk situation is a certain degree of gradation uncertainty of finding the environment in one of the states of a given set [12, p. 31].

There are very few fundamental studies that reveal the essence and content of the «innovative risk» concept. According to several scientists this term has not been considered as an object of research for a long time, however was widely used in practice [21].

It is interesting to consider the relationship between risk and innovation.

According to the research of Lumby S. the relationship between risk and

innovation can be different [25]. In the first case, the innovations themselves are the result of exposure to certain risk factors, in other words, innovation is the function of dependence on risks. In the second case implementation of innovations can be accompanied by the emergence of risks, in this case, the risk is considered as a function of innovation. Accordingly, the risks are created by the innovative project itself.

There are many approaches to defining the concept of «innovative risk» in modern economic literature (table 1.1).

Table 1.1

Approaches to the definition of «innovative risk»

Author	Definition
Greuning H. [18]	An economic event, the manifestation of which is not achieved: the result of innovation, the development of an enterprise based on the achievements of applied and fundamental science and the introduction of new technologies and products.
Damodaran A.[12]	The likelihood of adverse consequences in the process of creation, development and distribution of innovative activity objects; loss of planned result value from the implementation of the innovative project.
Faff R. [13]	An economic category that reflects the regularity and randomness of innovation; the occurrence of an unfavorable (favorable) situation or its unsuccessful (successful) outcome in conditions of overcoming uncertainty associated with an inevitable choice, which manifests itself in the possible failure to achieve (exceed) the set goals.
Cristensen S. [7]	Probability of losses due to an incorrectly set and (or) unattained strategic goal the implementation of which is based on innovation.
Brennan M. [4]	Probability of losing the projected income or failure to achieve the planned economic results from innovative projects implemented within the industry, cluster or enterprise due to ineffective use of the existing innovation potential of the industry, cluster or enterprise, as well as insufficient consideration of risk factors in the managerial impact of innovative entities.
Xu J. [36]	Possible loss of funds invested by the enterprise for the production of new products (goods, services) that may not find the required demand in the market.
Long Yu. [24]	Possibility (probability) of existing or the emergence new innovative relations (connections) violation between the subjects, subject and object of these relations in space and time.
Solberg B.[33]	Probability of non-achieving the results from creation of an innovative product, due to not only the lack of demand but also the weak technological progress of society.
Oriani L. [28]	Probability of obtaining a negative result or uncertain results of the selected innovative action in which the set goal is not achieved by the economic entity.

Based on the above definitions, «innovative risk» can be interpreted as the probability (possibility) of an unfavourable event in the process of innovative activity, which can occur as a result of an incorrectly chosen innovative action, insufficient consideration of risk factors and in future may lead to failure to achieve the results of innovative activity, loss of invested funds or additional investments.

Methods for assessing innovative risk at an enterprise are of great importance for reducing losses and increasing the efficiency of innovation. It is important to choose exactly those methods that will help to determine accurately the impact of innovative risks on the predicted result of an enterprise. Risk assessment is a process to determine the probability of losses by analysing potential hazards and evaluating existing conditions of vulnerability that could pose a threat or harm to property, people, livelihoods and the environment on which they depend [31].

ISO 31000 defines risk assessment as a process made up of three processes: risk identification, risk analysis, and risk evaluation. Risk identification is the process that is used to find, recognize, and describe the risks that could affect the achievement of objectives. Risk analysis is the process that is used to understand the nature, sources, and causes of the risks that have been identified and to estimate the level of risk. It is also used to study impacts and consequences and to examine the controls that currently exist. Risk evaluation is the process that is used to compare risk analysis results with risk criteria in order to determine whether or not a specified level of risk is acceptable or tolerable.

During the identification phase techniques such as brainstorming, structured interviews, the Delphi method, checklists, preliminary hazard analysis, hazard analysis and critical control points are applicable. At the stage of the analysis of consequences, the most preferable are Markov analysis, Bayesian analysis and Bayesian networks, cause-effect analysis, decision tree analysis. In the analysis of probabilistic characteristics and the level of risk, the bow tie analysis method is effective, and at the stage of comparative risk assessment – Monte Carlo simulation. Methods such as

impact and probability matrix, cost benefit analysis, multicriteria decision analysis, risk indices, SWIFT analysis, cause and effect analysis, business impact analysis can be applied at almost all stages of the risk assessment process.

All of the above methods are divided into qualitative and quantitative assessment methods. The main task of the qualitative approach is to identify possible risks of the project under consideration, as well as a description of the sources and factors affecting this type of risks. Qualitative analysis identifies potential damage, estimates costs and measures to reduce or prevent risk. This approach is the basis for the subsequent risk assessment using quantitative methods, which are based on the mathematical methods of the probability theory and mathematical statistics. The use of quantitative methods makes it possible to obtain a numerical assessment of innovative risks and determine the degree of their influence effectiveness of an innovative project implementation.

A detailed analysis of the methods for quantitative assessment of innovative projects' risks is carried out in the table 1.2, the advantages and limitations of a number of methods are shown.

Table 1.2

Methods for quantitative analysis of project risks

Method	The essence of the method
1	2
Probability analysis	It is assumed that the construction and calculations by the model are carried out in accordance with the principles of the probability theory. The probability of losses occurrence is determined based on the statistical data of the previous period with the establishment of the risks area (zone), the adequacy of investments, the risk ratio (the ratio of the expected profit to the volume of all investments in the project).
Expert methods	The method is used in the absence or insufficient amount of initial information and consists in attracting experts to assess the risks. A selected group of experts assesses the project and its individual processes according to the degree of risk.
Analysis of the limit level indicators	Determination of the project stability degree in relation to possible changes in the conditions of its implementation.
Sensitivity analysis of the project	The method makes it possible to assess how the resulting indicators of the project implementation change for different values of the specified variables necessary for calculating.

Continuation of Table 1.2

1	2
Scenario analysis of the project	The method involves the development of several options (scenarios) for the project and their comparative assessment. A pessimistic variant (scenario) of a possible change in variables, an optimistic and most probable variant are calculated.
Game modelling	The method is used if there are many variants of development scenarios, but their probabilities cannot be reliably estimated.
Decision tree method	Assumes a step-by-step branching of the project implementation process with an assessment of risks, costs, damage and benefits.
Simulation methods	They are based on the step-by-step finding of the resulting indicator value by conducting multiple experiments with the model. Their main advantages are the transparency of all calculations, ease of perception and evaluation of the project analysis results by all participants in the planning process. As one of the serious disadvantages of this method, it is necessary to indicate the significant costs of calculations associated with a large amount of output information.
Fuzzy multiple analysis	Formalization of initial parameters and target performance indicators of projects in the form of a interval values vector (fuzzy interval), falling into each interval which is characterized by a certain degree of uncertainty.
Real options method	Innovative projects are assessed in terms of additional opportunities that open up over time.

Source: developed by the author on the basis of [30]

A common disadvantage of traditional methods for assessing innovative risks (game theory, probability theory, sensitivity analysis, scenario analysis, expert assessment method, statistical method, analogy method, critical value method, risk-adjusted interest rate method, Monte Carlo method, method of situational management, the method of generalized internal return) is the requirement of certainty of the initial data, which is achieved by using the weighted average values of the input parameters and can lead to significantly biased point risk assessments. Also such disadvantages are the inability to use these methods to determine the degree of innovative risk, possible negative and positive consequences of its implementation.

Method of expert assessment is an integral part of the assessment of innovative risk factors and the integral level of an innovative project risk as a whole. An algorithm

for expert assessments of innovation risk includes the following stages:

- formation of aт experts group;
- assessment of the each expert competence degree;
- assessment of the innovative risk factors priority;
- assessment likelihood by each expert, danger and importance of each innovative risk factor;
- assessment of the integral level of innovative risk, taking into account the priority of its factors;
- interpretation of innovative risk taking into account the priority of its factors.

The value of expert assessments of innovative risk factors is not in determining the exact size of the probability and danger of innovative risk, but in assessing the location of risk relative to the acceptability boundary [25]. If the identified risk is acceptable, then it can be taken into consideration. Unacceptable risks are primary for treatment and require the development of a treatment strategy aimed at reducing to an acceptable level. The risk should be constantly monitored and its level should be periodically assessed. Justified risks are secondary to processing. By analogy with unacceptable risks, you must have a treatment strategy to reduce to an acceptable level. The results of innovative risk expert assessments serve as the basis for the implementation of the regulation stage (response to innovative risk) based on the choice of methods for optimizing innovative risk.

The advantageous characteristics of the fuzzy-multiple analysis include:

- the ability to present in a unified form and use all the information available in the access (linguistic, statistical, interval, deterministic), which increases the reliability and quality of decisions;
- formation a complete list of possible scenarios for the development of an innovative project, as in the Monte Carlo method;
- the ability to assess the degree of a particular risk, which is determined on the basis of point values or in the form of a set of interval values with its own

distribution of possibilities;

– admissibility of imprecise assignment of membership functions.

Long Yu. in his work [24] considers the possibility of using the Monte Carlo method for quantitative assessment of an innovative project risk. The main objective of this method is a comprehensive assessment of project risk based on multiple imitation of scenarios for the implementation of innovative projects with different sets of random values of the initial factor indicators.

First of all, the key (changeable) parameters of the innovative project are determined. They can be various factors, the most significant factors include: the risk of not selling new products and technologies, commercial risk, the risk of incorrectly predicting the situation and receiving incorrect initial ones; the risk of not returning borrowed funds on time; production risks; risks of increased competition and other risks [18].

At the next stage, the minimum and maximum boundaries of change of possible variables are selected for the entire period of implementation of the innovative project or for one billing period.

The next step is the calculation of possible scenarios of events development, taking into account the fact that the factors affecting performance indicators are given as random numbers. Net present value (NPV) is mainly chosen as one of the performance indicators.

After completing the above steps, data is generated with random NPV values for each simulation. After processing the results obtained, the mathematical expectation characterizing the profitability of the project, the standard deviation NPV, showing the overall stability of the project, and the coefficient of variation are calculated, which makes it possible to rank the risk and assign the appropriate risk class.

The standard deviation coefficient is the basis for the development of measures to reduce innovative risks.

The main advantages of the Monte Carlo method are: the ability to establish the

probabilities of changes in the estimated characteristics of the project in the event of the possible onset of unexpected crisis situations; the values of all factor indicators change simultaneously in each scenario, which makes it possible to investigate the influence of all factors on assessing the effectiveness of the project in a comprehensive manner; the ability to implement the calculations in the MS Exsel software environment.

Scenario method involves developing scenarios for project implementation under the most probable and the most unfavourable conditions for some participants. In the context of each scenario, it is investigated how the mechanism for making a decision will operate under appropriate conditions and what the amount of income and losses will be as well as the project performance indicators. The decision is considered sustainable if in all the situations considered, possible adverse effects are eliminated by the created reserves and reserves or they are recovered by insurance payments.

The risk of a project under the deviation of planned economic characteristics can be analyzed by calculating the sensitivity of key financial criteria of the project assessment to deviations of these characteristics. If there is a particular sensitivity to a certain parameter, more thorough analysis of trends in the change of such a parameter during the project is required.

The method of the formalized description of uncertainty is the most preferred but also the most difficult one in the context of its implementation.

This method includes the following stages:

- describing the entire set of probable conditions for making the decision (as the system of restrictions on the values of the main resources of a project) and the costs, results, and performance indicators corresponding to these conditions;
- transforming the initial information about the factors of uncertainty into information about the individual probabilities of implementation and the corresponding performance indicators or about the intervals of their change;
- determining performance indicators of the decision as a whole taking into

account the uncertainty of conditions for its implementation - the indicators of expected efficiency [12].

In managing innovations, an enterprise should adhere to the following principles [13]:

– innovations should provide for development of the enterprise, i.e., to contribute to the expansion of sales markets or increase of its market share;

– innovations should not only facilitate return of investment funds but also significantly improve the profitability of activities;

– innovations should ensure economic growth of the enterprise and improvement of its image.

The main tasks to be addressed in the development of an innovation risk management strategy are as follows [4]:

– Development of general principles and methods aimed at identifying the object of management as well as the goals of managing the risks of innovation activity.

– Developing an approach to forecasting risks of innovation activity.

– Developing methods for analyzing risks of innovation activity.

– Increasing the effectiveness of managing risks of innovation activity through making rational decisions in this area.

Thus, there are a lot of approaches to identify risks of innovative projects and to evaluate them. The task of an enterprise is to build its own classification based on the its own strategic goal and to choose appropriate methods of risk assessment and management.

CHAPTER 2
INVESTIGATION RISKS OF INNOVATIVE PROJECTS AT SE "STATE LAND CADASTRE CENTER"

2.1 Analysis of an enterprise financial state as a precondition of effective innovative activity

The State Enterprise "State Land Cadastre Center" is aimed at supporting programming applications of the State Land Cadastre including introduction it in the activity of the enterprise, improvement and monitoring such applications. The activity of SE "State Land Cadastre Center" is based on using innovative technologies and scientific-technological processes. In order to understand the preconditions of innovative risk management improvement there is a necessity to evaluate innovative activity of the enterprise from the point of view of assessing its financial state. In this case, the most useful approach is to use express diagnostic of financial position of the enterprise. The indicators of evaluating the financial position consist of four main groups: indexes of liquidity, financial stability, profitability and turnover indexes. To start express diagnostic the main precondition is to understand the situation with enterprise assets and its liabilities.

In order to understand enterprise ability to manage risks it is necessary to evaluate its assets, starting from non-current one (table 2.1). The total volume of assets has stable trend to decrease from 185 360 thousand UAH in 2018 to 142741 thousand UAH in 2020 but we can consider that speed of decreasing is slowing down twice (from 28645 thousand UAH in 2019/2018 period to 13974 thousand UAH in 2020/2019 period in absolute deviation and from 15% to 9% in growth rate for the same period approximately). It is mainly caused by low level of profit of the enterprise and negative retained earnings. It does not give an ability to increase assets. Non-current assets has the same trend and the same speed of decreasing: from 151 119 thousand UAH in 2018

to 104 594 thousand UAH in 2020 and from 31879 thousand UAH in 2019/2018 period to 14646 thousand UAH in 2020/2019 period in absolute deviation and from 21% to 12% in growth rate for the same period approximately. The decreasing of speed of total and non-current assets can be explained by the restructuring of the company, new investments in innovative projects and positive net financial result of the company recent years.

Table 2.1

Non-current assets dynamics of SE "State Land Cadastre Center", th. UAH, 2018–2020 years

Assets	2018 y.	2019 y.	2020 y.	Absolute deviation, th. UAH		Growth rate. %	
				2019/ 2018	2020/ 2019	2019/ 2018	2020/ 2019
Intangible assets	17 440	20 460	22 502	3020	2042	17,3	9,98
Fixed assets	122 589	87 885	71 598	-34704	-16287	-28,3	-18,5
Unfinished capital investments	6 101	6 100	6 097	-1	-3	-0,01	-0,09
Deferred tax assets	4 989	4 795	4 397	-194	-398	-4,05	-8,3
Non-current assets	151 119	119 240	104 594	-31879	-14646	-21,1	-12,3
Total assets	185 360	156 715	142 741	-28645	-13974	-15,5	-8,9

As for intangible assets they have the opposite trend to increase their volume from 17 440 thousand UAH in 2018 to 22 502 thousand UAH in 2020. It is caused by applying new innovative project of new programming applications and web-applications for the cadastral system. But the speed of increasing repeats the overall tendency, it is slowing down in absolute deviation decreased from 3020 thousand UAH in 2019/2018 period to 2042 thousand UAH in 2020/2019 period and growth rate went down from 21% to 12% for the same period approximately.

To evaluate enterprise ability to manage risks it is used the assessment of current assets dynamics either (table 2.2).

Table 2.2

Current assets dynamics of SE "State Land Cadastre Center", th. UAH, 2018–2020 years

Assets	2018 y.	2019 y.	2020 y.	Absolute deviation, th. UAH		Growth rate. %	
				2019/ 2018	2020/ 2019	2019/ 2018	2020/ 2019
Inventories	5 004	4 562	4 174	-442	-388	-8,8	-8,5
Accounts receivable for products, goods, works, services	1 264	1 530	2 480	266	950	21	62
Receivables for payments for advances paid	851	910	861	59	-49	6,9	-5,3
Receivables estimated budget	199	326	305	127	-21	63,8	-6,4
Accounts receivable for estimated income tax	18	212	241	194	29	107	13,7
Other current receivables	1 322	1 576	1 693	254	117	19,2	7,4
Money and Cash Equivalents	11 606	15 191	16 833	3585	1642	30,9	10,8
Deferred expenses	276	337	312	61	-25	22	-7,4
Other current assets	13 719	13 043	11 489	-676	-1554	-4,9	-11,9
Current assets	34 241	37 475	38 147	3234	672	9,4	1,8
Total assets	185 360	156 715	142 741	-28645	-13974	-15,5	-8,9

The total volume of current assets significantly increased on 3232 thousand UAH in 2019 compared to 2018 but the speed of increasing dropped down to 672 thousand UAH in 2020 compared to 2019. It is explained by the huge amount of additional

money on the bank account of the enterprise in the correspondent years: in 2019 money and cash equivalents was 3585 thousand UAH more than in 2018 and 1642 thousand UAH in 2020 than in 2019. It shows the negative trend of keeping the most liquid assets on the account while enterprise should find the ways how to use them properly in order to boost innovative activity.

At the same time, the SE "State Land Cadastre Center" has the stable position to reduce the total volume of inventories: in 2019 inventories dropped down on 442 thousand UAH in comparison with 2018 and on 338 thousand UAH in 2020 in comparison with 2019. It shows the positive dynamics for the enterprise's ability to manage business activity. Declining amount of inventories lead to release of working capital and speeding up its turnover as a result. In addition, there is positive influence on liquidity since declining warehousing costs positively affects the final results.

The increasing receivables for goods, works and services on 266 thousand UAH in 2018-2019 period and on 950 thousand UAH in 2019-2020 period is not considered as negative trend. The formation of receivables for goods, works, services is necessary to attract additional customers, but as it grows slower than net sales, it indicates less diversion of own funds to debtors with increasing sales. In addition, their volume in the structure of total assets is not insignificant and shows weak policy of working with customers.

Receivables for payments for advances paid have increased on 59 thousand UAH in 2018-2019 period and decreased on 49 thousand UAH in 2019-2020 period. Since their share in current assets structure is low, it is not critical for the company and not diverts significant amounts of the company's funds.

However, the other current receivables volume dynamics is negative. Their volume increased on 254 thousand UAH in 2018-2019 period and decreased on 117 thousand UAH in 2019-2020 period. The current receivables growth at such pace indicates the diversion of own resources, that can be used for enterprise's operating activities, to partners and customers, and indicates the inefficient formation of working

capital. It is necessary to limit the amount of receivables for partners and to provide certain benefits for early repayment, to reduce receivables quickly and release enterprise's resources.

Total assets reduced their value in 2018-2020 due to reduction in non-current assets. Insignificant fluctuations in the volume of total assets occurred due to the fluctuations in the volume of current assets. The current assets growth indicates the formation of more mobile assets at the enterprise and the efficiency of their use.

The enterprise business activity is sustantiated in the speed of turnover of its funds. The importance of turnover indicators is explained by the fact that the characteristics of turnover largely determine the level of enterprise profitability. Dynamics of assets turnover ratios is represented in the table 2.3.

Table 2.3

Business activity ratios dynamics of SE "State Land Cadastre Center", 2018-2020

Index	2018 y.	2019 y.	2020 y.	Absolute deviation	
				2019/2018	2020/2019
Total assets turnover ratio	0,91	1,4	1,28	0,49	-0,12
Conversion period of total assets, days	395	257	281	-138	24
Current assets turnover ratio	4,94	5,86	4,79	0,92	-1,07
Conversion period of current assets, days	72,87	61,43	75,15	-11,44	13,72
Inventory turnover ratio	34,47	45,54	38,16	11,07	-7,38
Conversion period of inventories, days	10,44	7,9	9,43	-2,54	1,53
Accounts receivable turnover ratio	46,32	48,23	32,71	1,91	-15,52
Accounts receivable collection period, days	7,7	7,46	11,19	-0,24	3,73
Accounts payable turnover ratio	5,07	5,44	4,05	0,37	-1,39
Accounts payable collection period, days	71	66,2	88,9	-4,8	22,7
Operational cycle, days	18,14	15,36	20,62	-2,78	5,26
Cash conversion cycle, days	-52,86	-50,84	-68,28	2,02	-17,44

Total asset turnover ratio shows the turnover rate of enterprise total capital. It also shows how many times during the analyzed period there is a full cycle of production and turnover, which brings the corresponding effect in the form of income,

or how many monetary units of each product gave each unit of assets. Turnover period of assets indicates how many days the asset are used. For the enterprise it is obvious to increase the turnover ratio and reduce the turnover period of assets. In 2018-2020 there was no stable trend to increase the turnover ratio of assets and current assets and a decrease in their turnover period (in 2018-2019 the turnover ratio increased significantly from 0.91 to 1.4 but dropped to 1.28 in 2019-2020, the current assets turnover ratio increased from 4.94 to 5.86 but dropped to 4.79 for the same period), which indicates an increase in the rate of income but unbalanced enterprise business activity. The decline in turnover in 2020 was due to revenue declining at a faster rate than the amount of assets.

The same situation enterprise has with its inventories and receivables turnover ratios (in 2018-2019 the inventories turnover ratio increased from 34.47 to 45.54 but dropped to 38.16 in 2019-2020, the receivables turnover ratio increased from 46.32 to 48.23 but dropped to 32.71 for the same period, respectively), which indicates a slight decrease in their efficiency using. The value of inventories conversion period is not high in this industry. Expenses for maintenance of inventories due to their small volume are high.

The value of the receivables turnover ratio shows the speed of receivables turnovers, how many times debtors have paid their obligations to the enterprise. On the one hand, debtors divert the company's financial resources. This may lead to an increase in financial costs due to the need for additional borrowing. However, on the other hand, the increase in product lending to customers can attract new one, because in governmental sphere of activity the ability to receive the product and pay for it later is important.

The decreasing in the receivables turnover ratio is negative because income from sales due to the provision of deferred payment is smaller than the cost of raising additional borrowed funds for the provision of trade credits.

The turnover ratio of accounts payable shows the expansion or decrease of

commercial credit granted to the enterprise. It also shows how many times the company has paid its obligations to suppliers, contractors, etc. during the investigated period. The payables turnover ratio and collection period have the same trend as other previously discussed ratios. It shows that the enterprise does not have efficient financial management, its decisions are instable and not take into account the enterprise strategy.

A drop in the current accounts payable ratio and an increasing of the collection period indicate greater use of the purchases on credit and prolonging time of its use. It is an opportunity, as the enterprise can use its own funds for other purposes during the extra time until the use of credit funds free of charge.

The increase in the operational cycle at the enterprise from 15 days in 2019 to 20 days in 2020 indicates a decrease in the efficiency of inventories and receivables use, and a slowdown in getting income from them.

The cash conversion cycle of the enterprise has stable negative value, its indicates the efficiency of using payables for the purpose of internal financing. The index increased significantly in 2020 to -68.28 due to increasing accounts payable collection period. This is an indicator of an effective policy of accounts payable management.

To understand the financial condition of the enterprise it is necessary to evaluate also indicators of profitability. This is an important indicator of the efficiency of any enterprise. The main indexes of enterprise's profitability are included in the table 2.4.

Return on assets (economic profitability) characterizes the level of profit getting from the total assets of the enterprise. Return on assets of the enterprise is very low. The lowest level was in 2019 – 0.08%. But the enterprise could return the level to previous one (0.9%) in 2020. The low level of the index shows the low efficiency of the assets management process, because return on assets is formed under the influence of all activities of the enterprise.

Return on invested capital shows the level of return on capital invested in the enterprise. It is increased significantly in 2020 from 0.18% to 1.4%, which indicates an increasing of efficient using and distribution of invested capital in the enterprise. The

falling of the indicator is due to a significant increase in the cost of spending.

Table 2.4

Profitability ratios dynamics of SE "State Land Cadastre Center", 2018-2020, %

Index	2018 y.	2019 y.	2020 y.	Absolute deviation	
				2019/2018	2020/2019
Return on assets	0,9	0,08	0,9	-0,82	0,82
Return on investment	1,19	0,18	1,4	-1,01	1,22
Return on equity	5,76	4,56	6,3	-1,2	1,74
Return on sales	0,98	0,09	0,71	-0,89	0,62
Return on current costs	7,8	0,8	4,06	-7	3,26

Return on equity (financial profitability) characterizes the level of return on equity kept by the enterprise. It has the trend of decreasing in 2019 to 4.56% from 5.76% in 2018 due to huge dropping down of enterprise profit, increasing costs of sales and decreasing of equity amount. The decrease in net profit was due to a significant increase in production costs, as well as possibly insufficient use of other sources of investment. In 2020 the enterprise significantly increased return on equity to 6.3% due to increasing profit and decreasing amount of equity. It shows the shortage of enterprise ability to finance itself by own fund and huge dependency of liabilities.

Return on sale is calculated as the comparison of net profit of the enterprise to net revenue from sales of products (works, services). The indicator of the enterprise is very low (0.98% in 2018, 0.09% in 2019 and 0.71% in 2020). It indicates a inefficient economic activity of the enterprise. It is due to the high level of production costs, because, with the growth of net sales revenue, the costs increases faster. The enterprise has a huge drop of the return on sales and still could not return to the previous level despite on the significant increasing.

Return on current expenses shows the profitability level of operational costs invested in activity. The index has the same trend as the return on sales due to the same

reasons. The enterprise has to pay great attention the managing its business activity and to inefficient cost management.

2.2. Risks identification of enterprise innovative activity

Innovative project is a part of the legal entity innovative activity and greatly influence on it according to the sphere of the enterprise's activity. Taking into account the structure of equity and liabilities represented by different sources of financial funds, innovative project is subject to liquidity risks and risks of financial dependence, strengths and ongoing concerns.

In order to identify risks of innovative activity of the company which are the main influencers on the enterprise's innovative projects it is necessary to analyze of liquidity of the enterprise (table 2.5).

Table 2.5

Dynamics of liquidity ratios SE "State Land Cadastre Center", 2018-2020 years

Index	2018 y.	2019 y.	2020 y.	Absolute deviation 2019/2018 y.	Absolute deviation 2020/2019 y.	Deviation from normative (risk)
Cash ratio	0,09	0,11	0,14	0,02	0,03	<(0,2-1)
Current ratio	0,26	0,29	0,32	0,03	0,03	<(1-3)
Quick Ratio	0,22	0,26	0,29	0,04	0,03	<(>0,7)
Current accounts receivable to payable ratio	0,1	0,12	0,14	0,02	0,02	<(<1)

The cash ratio is calculated in order to evaluate the opportunity of the enterprise to pay off current (short-term) liabilities by using money and cash equivalents and short financial investments. The normative value of the coefficient is in the range of 0.2-1. The situation of this indicator is risky, it is out of boarders and lower than normative minimum value. Despite of the fact that at the enterprise the value of the indicator increased from 0.09 in 2018 to 0.14 in 2020, it is still not enough for the enterprise

efficiency.

The quick ratio is calculated in order to evaluate the ability of the enterprise to pay off current (short-term) liabilities at the expense of the most liquid working capital through only cash and accounts receivables (current assets without inventory). The value of the coefficient is considered sufficient if it is higher than 0.7. At the enterprise the ratio increased and showed the stability in such process from 0.22 in 2018 to 0.29 in 2020. The company can not repay the entire amount of current liabilities at the expense of the cash and receivables only.

The current ratio is calculated in order to evaluate the ability of the enterprise to pay off current (short-term) liabilities through current assets. It characterizes the ability to secure its short-term liabilities from working capital. The normative value of this indicator is 1-3. The enterprise can not repay the entire amount of current liabilities at the expense of the most liquid working capital – accounts receivable for products, goods, works, services only. The company has very low indicator and it is out of boarders. It is has increasing trend but in 2020 it is still 0.32. It shows the inability of the enterprise to repay its short-term debts by working capital.

The ratio of current accounts receivable and payable shows how the enterprise can provide current accounts payable through receivables. The normative of the indicator is less than 1. The dynamics of the indicator at the enterprise is increasing from 0.1 in 2018 to 0.14 in 2020. It is the only indicator, which shows the enterprise efficiency in liquidity management. As receivables become smaller than accounts payable, this indicates significant savings compared to the diversion of enterprise's own funds.

To properly identify risks of innovative activity it is useful also to analyze financial stability ratios (table 2.6). The financial stability of the enterprise shows its solvency in general business conditions and uncertain changes on the market. If the indicators describe the financial stability of the enterprise, it is out of risk of potential bankruptcy and can speed up its business activity through effective use of available

capital. It is the background of efficient innovative activity and ability to acquire new innovative projects.

Table 2.6

Dynamic of financial stability ratios of SE "State Land Cadastre Center", 2018-2020 years

Ratios	2018 y.	2019 y.	2020 y.	Absolute deviation 2019-2018 y.	Absolute deviation 2020-2019 y.	Deviation from normative (risk)
Equity Ratio	0,16	0,03	0,02	-0,13	-0,01	<<(0,5)
Debt Ratio	0,84	0,97	0,98	0,13	0,01	(0,5-0,7)>>
Capitalization Ratio	0,46	0,84	0,91	0,38	0,07	(0,5-0,7)>>

The equity ratio characterizes the share of funds invested by business owners in the total value of property. The normal minimum value of this coefficient estimated at the level of 0.5, which implies the provision of borrowed funds with their own, i.e., selling the property formed from its own sources, the company can repay liabilities. At the SE "State Land Cadastre Center" the value of the coefficient is very low and tends to decrease, and it much more lower than the normative value that characterize risk of innovative activity. The ratio decreased in 3 years from 0.16 to 0.02 due to the growth of the debt capital faster than the growth of equity and due to the low profitability of the enterprise and negative retained earnings. It indicates the flexibility of financial resources to external and internal factors, and decrease the return on equity.

The debt ratio, in contrast to the previous figure, characterizes the share of borrowed funds of the enterprise in the total value of a property. Accordingly, it has to have a value of less than 0.5. At the enterprise, the debt ratio increased dramatically from 0.84 to 0.98, which again indicates an increase in borrowed capital in the enterprise.

The capitalization ratio characterizes the long-term borrowing funds in the total long-term capital of the enterprise. The normal minimum value of this coefficient estimated at the level of 0.5. At the enterprise, the value of the indicator ranges from

0.46 in 2018 to 0.91 in 2020 and indicates the use of 91% of long-term liabilities in financing enterprise's assets, i.e. indicates the huge dependence of the enterprise from long-term liabilities.

To identify risks of the innovative activity it also could be used the method of comparison asset and liabilities. In order to ensure that company has an ability to cover all its liabilities in times, it is performed analysis of assets and liabilities from the perspective of their liquidity degree, which is represented in table 2.7.

Table 2.7

Balance sheet liquidity analysis of SE "State Land Cadastre Center" in 2018-2020, thousands UAH

Assets	2018 y.	2019 y.	2020 y.	Liability	2018 y.	2019 y.	2020 y.	Surplus (+), shortage (-) in 2018	Surplus (+), shortage (-) in 2019	Surplus (+), shortage (-) in 2020
A 1. The most liquid assets	11606	15191	16833	L 1. The most urgent obligations	34009	38124	39300	22403	22933	22467
A 2. Quick-selling assets	3654	4554	5580	L 2. Short-term liabilities	2831	2992	3310	-823	-1562	-2270
A 3. Slow-selling assets	5004	4562	4174	L 3. Long-term liabilities	23056	23794	21482	18052	19232	17308
A 4. Hard-to-sell assets	146130	114445	100197	L 4. Permanent liabilities	29006	4296	2062	-117124	-110149	-98135
Total	166394	138752	126784	Total	88902	69206	66154	-77492	-69546	-60630

The analysis of these indexes indicates problems with the liquidity of the enterprise. The most urgent liabilities (accounts payable) are not fully covered by the most liquid assets (cash and current financial investments). At the same time, short-term liabilities due to their relatively small value are covered by quick selling assets.

Long-term liabilities (-term bank loans) have no possibility to be covered by slowly sold assets (receivables and inventories), which in a case with the need to repay them would cause financial instability and significant financial losses. Coverage of fixed liabilities (equity) by hard-to-realize (non-current) assets is huge and shows the situation of low liquidity and possible instability. In general, we can say about the relatively low liquidity of the enterprise and the critical zone of risk.

To identify risks it could be used also a scorecard method by Changly, which gives the opportunity to understand the different aspects of the enterprise financial activity (table 2.8).

Table 2.8

Risk identification of SE "State Land Cadastre Center" by scorecard method, 2018-2020

Indexes	**1 class**	**2 class**	**3 class**	**2018 y.**	**2019 y.**	**2020 y.**
1. Profitability						
1.1. Net profit increment, %	>25	20-25	<20	1	1	1
1.2. Return on assets, %	>25	15-25	<15	1	1	1
1.3. Current assets turnover	>8	4-8	<4	2	2	2
2. Economic potential						
2.1. Plowback ratio, %	>75	60-75	<60	2	2	2
2.2 Accumulated Depreciation Ratio, %	<25	25-30	>30	1	1	1
2.3. Output Profitability, %	>25	10-25	<10	1	1	1
2.4. Sales increment, in correlated prices, %	>10	5-10	<5	3	3	1
2.5. Turnover of invested capital	3	1-3	<1	2	2	2
2.6. Fixed-to-Circulating Assets Ratio	<0,5	0,5-1	>1	2	2	2
3. Financial stability and solvency						
3.1. Cash Ratio, %	30-50	20-25	<20	1	1	1
3.2. Equity Ratio, %	>50	30-50	<30	1	1	1
3.3. Current ratio (working capital ratio)	2,1-2,5	2	<2	1	1	1
Total score				18	18	16

SE "State Land Cadastre Center" has the third rank of risk in grading system in 2018-2019 (18 total score). There were signs of tension in the financial condition of the

company. The risk was high, creditworthiness was limited. In 2018-2019 the level of risk was stable but reduced to 16 total score in 2020. It obtained the fourth (the lowest) rank of risk in grading system. The company has increased risk of innovative activities, is insolvent and is on the verge of bankruptcy. However, the use of rehabilitation is possible.

2.3. Risks analysis of enterprise innovative activity

The enterprise financial risk analysis of innovative activity consists of different Z-Score models. Altman's model was calculated in two ways. According to the results of two-factor Altman model calculations, table 2.9 was obtained.

Z-Score Ratio of the two-factor model for 2018-2020 is less than zero, which indicates a low risk of innovative activity at the enterprise, and the dynamics of this ratio to decrease indicates a tendency to decrease such risks. Risks decrease mainly due to increase in the ratio of current liquidity.

Table 2.9

Z-Score Ratio dynamics of two-factor Altman's model of SE "State Land Cadastre Center", 2018-2020

Indicator	2018 y.	2019 y.	2020 y.	Absolute deviation		A basic absolute deviation
				2019/2018	2020/2019	
Current liquidity ratio	0,26	0,29	0,32	0,03	0,03	0,06
Borrowed capital / total liabilities ratio	0,15	0,16	0,15	0,01	-0,01	0
Z	**-0,58**	**-0,61**	**-0,64**	**-0,03**	**-0,03**	**-0,05**

This version of the Altman model is characterized by a bankruptcy high probability bankruptcy (more than 50%) at a value of Z> 0. Accordingly, with a negative value of Z and the tendency of its decline, we can speak of a stable financial state and its constant improvement. The disadvantage of this model is that it can

essentially be considered only for large companies that have placed their shares in the stock market.

According to the calculations of the five-factors Altman model, Table 2.10 was obtained.

Table 2.10

Z-Score Ratio dynamics of five-factor Altman's model of SE "State Land Cadastre Center", 2018-2020

Indicator	2018 y.	2019 y.	2020 y.	Absolute deviation		A basic absolute deviation
				2019/2018	2020/2019	
Working capital/ total assets	-0,534	-0,582	-0,568	-0,047	0,014	-0,033
Retained earnings/ total assets	-0,065	-0,072	-0,079	-0,007	-0,007	-0,014
Earnings before interest and taxes/ total assets	0,015	0,003	0,012	-0,012	0,009	-0,003
Value of equity/ book value of total liabilities	0,186	0,028	0,015	-0,157	-0,014	-0,171
Sales/total assets	0,913	1,402	1,279	0,489	-0,123	0,366
Z	**0,594**	**0,937**	**0,842**	**0,343**	**-0,095**	**0,248**

Thus, Z-Score Ratio can take values within [-14; +22]. The enterprises for which Z>2.9 falls into the number of financially sound, enterprises for which Z<1.23 are at risk of bankruptcy in the next 2-3 years, and the interval [1.23; 2.9] constitutes a zone of uncertainty.

Investors use the Altman's Z-Score Ratio to decide on whether to buy or sell a company's stock, depending on the assessed financial strength. If a company shows a Z-Score Ratio closer to 2.9, investors may consider purchasing the company's stock since there is minimal risk of the business going bankrupt in the next two years.

However, if a company shows a Z-Score Ratio closer to 1.23, the investors may consider selling the company's stock to avoid losing their investments since the score implies a high probability of going bankrupt.

As for the five-factor model for enterprises that have no stocks quotation, the enterprise is at a risk of bankruptcy, and the decline in the indicator again indicates an

increase in financial risks. The decrease is mainly due to negative value of working capital as well as to the negative value of retained earnings as the company was in crisis situation during previous to the analysed period years.

Therefore, the Altman index is a system of some indicators that characterize the economic potential of the enterprise and its performance over the past period. This model has a major drawback – it was created based on a survey of US and Western European enterprises, which makes it impossible to apply it to domestic enterprises without proper adjustment in the coefficient calculation. Altman's two-factor model, which is adapted for domestic enterprises, and five-factor, give different results in the calculations. This is because the estimation used a limited number of factors, but at the same time this we will consider the most accurate result of the analysis by the two-factor model because it is adapted to the domestic economy.

The Z-Score Ratio of the Liss model is provided in table 2.11.

In this model, the probability of bankruptcy is considered low at Z>0.037 and, conversely, at a value of Z<0.037, the probability of bankruptcy is high. As we can see, this estimate is relative, so it is most expedient to make it in dynamics over several periods.

Table 2.11

Z-Score Ratio dynamics of Liss's model of SE "State Land Cadastre Center", 2018-2020

Indicator	2018 y.	2019 y.	2020 y.	Absolute deviation		A basic absolute deviation
				2019/2018	2020/2019	
Working capital/total assets	-0,534	-0,582	-0,568	-0,047	0,014	-0,033
Earnings before interest and taxes/total assets	0,015	0,003	0,012	-0,012	0,009	-0,003
Retained earnings (adjusted for scrip issues) / Total assets	-0,065	-0,072	-0,079	-0,007	-0,007	-0,014
Net worth / Total debt	0,186	0,028	0,015	-0,157	-0,014	-0,171
Z	**-0,036**	**-0,040**	**-0,039**	**-0,005**	**0,001**	**-0,003**

The figure is lower than 0.037 and exactly negative for the hole analyzed period, which indicates a high probability of bankruptcy, high risk of company's innovative activity and its dynamics is approximately stable.

The main advantage of the Liss model is the relative simplicity of the calculation, however, this model is not adapted to Ukrainian enterprises, as it is designed for the UK. The Liss model for determining the probability of bankruptcy in the analysis of Ukrainian enterprises shows somewhat exaggerated estimates, as the profit from sales has a significant impact on the final indicator, excluding financial activities and the tax regime.

Besides, external factors (the degree of stock market development, tax legislation, accounting regulations), unfortunately, also do not allow this method to fully reflect the situation for Ukrainian enterprises and be applied as a universal model for the prediction of financial risk of innovative activity.

The dynamics of the Z-Score Ratio by Taffler's model is presented in Table 2.12.

The model results are interpreted positively in the long run at a value of Z>0.3, and if Z<0.2 the probability of bankruptcy is high. According to Taffler's model, bankruptcy risks are rising in dynamics, but the value of the indicator is still fairly stable with low bankruptcy risk.

Table 2.12

Z-Score Ratio dynamics of Taffler's model of SE "State Land Cadastre Center", 2018-2020

Indicator	2018 y.	2019 y.	2020 y.	Absolute deviation		A basic absolute deviation
				2019/2018	2020/2019	
Revenues / Current liabilities	1,270	1,708	1,531	0,438	-0,176	0,262
Current Assets / Total liabilities	0,219	0,246	0,271	0,027	0,025	0,052
Long-term liabilities/ Total Assets	0,719	0,821	0,835	0,102	0,014	0,116
Sales / Total Assets	0,913	1,402	1,279	0,489	-0,123	0,366
Z	**0,977**	**1,309**	**1,202**	**0,332**	**-0,107**	**0,225**

The Taffler's model remains widespread in Ukraine because it can only be applied to those companies that are issuers of shares and freely sell them in the stock markets. However, its application can be effective when making investment decisions and choosing foreign partners. It is based mainly on solvency indicators.

According to the financial risk assessment, the enterprise is quite unstable with a low probability of financial instability by models are based on solvency indicators and indicate a positive financial condition of the enterprise, but according to the models which take into account profitability ratios the situation of the enterprise innovative activity is quite unstable and risky. In dynamics, indicators are not close to critical levels, mainly due to a decrease in the ratio of current liquidity and the return on assets. As we can see from the financial statement of income, the enterprise started to move to more productive activity and it could be mentioned as a forecast that the current risky situation will be overcame by it.

Altman, Taffler and Liss models are widely used in international practice due to the following advantages:

1. Analytical information for the calculation of indicators is available because it is reflected in the financial reporting forms.
2. There is a possibility of forecasting bankruptcy, determining the risk zone in which the enterprise is located.
3. These models have a small number of indicators that ensure high accuracy of results, with little cost.

But the models show real results in the conditions for which they were designed. To use such models in our country, it is necessary that the accounting, financial statements and indicators of international practice and with the stable activity of domestic enterprises are consistent. Ukrainian scientists believe that Altman, Liss and Tuffler models have common shortcomings and causes. For example, the values

obtained from the use of these models tend to vary widely, and sometimes lead to strongly opposed conclusions. This happens for the following reasons:

1. disparity in times that implies the use of models at the time when they are directly developed or with a slight delay.

2. the mismatch of a subject that assumes the use of these models to estimate the bankruptcy probabilities of businesses that don't meet the sampling parameters used to create the models.

3. inconsistency of the methodology for determining the parameters of the models, which requires accurate compliance with the methodological methods of estimating the indicators that were used by foreign scientists (Altman, Liss, Tuffler).

But among the domestic models, few could be used, since they do not take into account the sectoral features of enterprise development and the inherent forms of business organization and in general the features of the domestic economy.

However, the Z-Score Ratio model adopted by the Ministry of Finance of Ukraine can be one of the successful attempt to build such kind of a model based on the real data of Ukrainian economy taking into consideration the current structure of the real sector (table 2.13).

Table 2.13

Z-Score Ratio dynamics of Ministry of Finance of Ukraine model of SE "State Land Cadastre Center", 2018-2020

Indicator	2018 y.	2019 y.	2020 y.	Absolute deviation		A basic absolute deviation
				2019/2018	2020/2019	
Current ratio	0,219	0,246	0,271	0,027	0,025	0,052
Equity ratio	0,156	0,027	0,014	-0,129	-0,013	-0,142
Equity-to-fixed assets ratio	0,237	0,049	0,029	-0,188	-0,020	-0,208
ROE	0,058	0,046	0,633	-0,012	0,587	0,575
ROS	-0,015	-0,002	0,004	0,012	0,006	0,019
Sales margin	0,099	0,103	0,171	0,004	0,068	0,072
ROA	-0,017	0,076	0,163	0,093	0,087	0,180
Z	**0,197**	**0,354**	**0,631**	**0,157**	**0,277**	**0,434**

The explanation of the results is given by the Ministry of Finance of Ukraine separately for every industry and the relevant one is in the table 2.14.

Table 2.14

Interpretation of the values of an integral index for the risk analysis of the enterprises in information industry

Group of economic activity	Levels of financial risk				
	level 1 - **a stable financial state**	level 2 - **area of uncertainty with positive dynamics**	level 3 - **area of uncertainty with negative dynamics**	level 4 - **poor financial state**	level 5 - **unsatisfied financial state**
Information and telecommunications: section J (parts 58–60, 62, 63); other services: sections L–U (parts 68–99)	+ 0,7	from + 0,69 to + 0,09	from + 0,08 to – 0,55	from – 0,56 to – 3,2	less than – 3,3

According to the estimation, the enterprise innovative activity is in the area of uncertainty with positive dynamics and it is proved by the trends in the financial statement of income and indicators of liquidity.

In the context of the domestic economy, it would be advisable to use a universal discriminant model and Z-Score Ratio in Ukrainian enterprises to identify trends in an unsatisfactory balance structure promptly. From a broader point of view, it is possible to use the analysis of the enterprise financial conditions.

CHAPTER 3
PROPOSALS FOR IMPROVING RISK MANAGEMENT OF SE "STATE LAND CADASTRE CENTER" INNOVATIVE PROJECTS

SE "State Land Cadastre Center" is an enterprise, which works in the sphere of information technologies and supports the whole information process of land mapping, evaluation and certification. Enterprise is going to realize the innovative project of introduction an innovative tool and supporting application to make a complex system of geo cadaster services. It will include possibilities of urban planning, cadaster land evaluation, access to legislation, to database of communal infrastructure. The application will consist of information module, evaluation module and cartography module.

This innovative product belongs to technologically new products, which is also confirmed by the results of patent research. Certification of compliance with the quality of the new equipment compulsory requirements of state standards is made, this is confirmed by the fact that the prototype is ready for serial production.

There are several factors generating innovation risk associated with patenting the product: unqualified registration of an application for a patent; insufficient theoretical and technical knowledge of key employees about a new product; increase patenting time. Neglecting the risk associated with securing ownership of an innovative product can result in the loss of the market advantage of the innovation.

As for potential competitors and the risk of loosing the competitive advantages there are several products on the global market which can successfully replace the innovation of the entreprise.

Considering potential suppliers for the innovative project SE "State Land Cadastre Center" has identified a wide range of reliable and proven suppliers located in Ukraine, who are able to provide all the necessary materials and components. Insofar as production is not material-intensive, the choice of a supplier is not critical. This allows to judge about the low probability of the risk of non-provision of the project and the risk

of entering into contractual relations with incompetent suppliers, as well as the absence of foreign exchange risk. However, there is an uncertainty about the risk of suppliers failing to fulfill their contractual obligations on time and at projected prices. As for the suppliers it could be also outsourcing risk in the part of application construction.

Considering potential consumers of innovative product, there is a great dependence of the project implementation on the demand of certain governmental enterprises and institutions. The process of implementing innovative product has a number of features. SE "State Land Cadastre Center" needs to win a tender for the implementation of work on the modernization of existing information systems for the above companies. SE "State Land Cadastre Center" has a risk of underestimating the consumer properties of the product, a high risk of not fulfilling production plans, the risk of increasing the payback period of the project, or in general the risk of obtaining negative results for the project.

The project provides for obtaining additional financing for the purchase the necessary equipment and replenishment of working capital. But SE "State Land Cadastre Center" do not need very big amount of financing in case there are a lot of previously bought equipment and intangibles from the previous projects. Therefore, the probability of the risk of non-financing the innovative equipment is very low. However, the company may face financial difficulties in receiving money from the state budget and may get financing in terms of credit.

R&D of the project under consideration was carried out at the expense of the enterprise's own resources, received from the implementation of the main activity. Initially, the R&D schedule was calculated for 4 months, in fact this stage was completed only after 12 months. The main factors that influenced the deviation from the planned R&D schedule were: insufficient experience of the key employee in conducting R&D, as well as in preparing technical documentation; untimely performance of work by third-party organizations for the manufacture of individual components.

With regard to staffing, the enterprise plans to attract personnel on outsourcing

who will carry out application work. Accordingly, there is a security risk of losing commercial secret, which can lead to technical risks. The difficulty in attracting key personnel is that personnel with good work experience does not prefer to work in state enterprises and is already employed in other organizations. The labor market is dominated by young and inexperienced professionals who can allow themselves to work in state enterprises.

Considering above mentioned risks an expert group was formed and the results of expert assessments generalization of the likelihood, the magnitude of possible losses, the degree of risk are presented in the table 3.1.

Table 3.1

Results of expert estimates generalization of probability, the amount of possible losses, the degree of risk of SE "State Land Cadastre Center" innovative project

Types of risks	Probability, score	Possible losses, score	Risk degree, score
1. Suppliers risks			
Risk of non-fulfillment by suppliers of contractual commitments on time and at projected prices	2	3	6
Risk of untimely performance of work by third parties organizations for the manufacture of individual components and application parts	3	2	6
Risk of entering into contractual relationships with crisis suppliers	2	3	6
The risk of not providing the project with the necessary materials and accessories	2	4	8
2. Sales risks			
Risks of non-ability to interact with a product by employees	4	5	20
Risk of competitors products introduction and promotion	3	4	12
3. Tech risks			
Risk of non-reaching the planned characteristics while launching a new product	4	4	16
Risk of accidents	2	3	6
Risk of non-compliance of application parts	2	2	4
4. Risks of patenting			
Risk of non-compliance with patent requirements	2	3	6

Continuation of table 3.1

Risk of increased patenting time	5	4	20
5. Personnel risks			
Risk of staff absence	3	4	12
Risk of non-fulfillment of obligations by copyright agreement	3	4	12
Risks arising from low qualifications of personnel	4	4	16
Risk of stealing the commercial secret	4	4	16
6. Financial risks			
Risk of lack of project financing	3	3	6
Risk of absence financing the product for consumers from the budget	1	4	4

Based on the expert estimations, the following innovative risks belong to the group of unacceptable risks: risks of non-ability to interact with a product by employees, risk of competitors products introduction and promotion, risk of non-reaching the planned characteristics while launching a new product, risk of increased patenting time, risk of staff absence, risk of non-fulfillment of obligations by copyright agreement, risks arising from low qualifications of personnel, risk of stealing the commercial secret. The group with justified risk includes suppliers risks, risk of accidents, risk of lack of project financing and risk of non-compliance with patent requirements. Risk of absence financing the product for consumers from the budget and risk of non-compliance of application parts belong to the group with an acceptable risk degree.

The developed innovative project of SE "State Land Cadastre Center" is effective from an economic point of view, since the project's planned net present value (NPV) is 4,509.4 thousand UAH, the internal rate of return (IRR) is 26.35%, the discounted payback period (DPP) is 3 years and 2 months , which confirms the feasibility of further analysis innovative project risks. The financial model of an innovative project is shown in the tale 3.2.

Despite the positive results of the standard analysis, it is still impossible to be completely confident in the obtained forecasts. Competition from common projects

from abroad can drive the price lower than predicted. Also due to the influence of competition and uncertain customer ability to implement the solution, it is difficult to accurately predict the sales. In addition to the price and volume of sales, the variable costs cannot be accurately predicted, they often exceed the planned ones and can change from year to year.

Table 3.2

Financial model of an innovative project of SE "State Land Cadastre Center", th.UAH

Indicator	2021 year	2022 y.	2023 y.	2024 y.	2025 y.
Price of the product		287	299,9	313,7	327,2
Revenue		17220	19493,5	25096	31084
Variable costs		7260	8219,25	10584	13119,5
Fixed costs		5835	5835	5835	5835
Net profit		2608,8	3660,2	6250,4	9012,4
Net cash flow		1744,8	2796,2	5386,4	8148,4
Discounted net cash flow		1586	2311	4046	5565
Investments	9000				
NPV	4509				
IRR	26,35%				
DPP	3,2 years				

So, at the first stage, should analyze the sensitivity of the project to changes in the above key financial and economic risk factors. The change in risk factors was taken in the range from -20% to + 20%. The results of the performed sensitivity analysis are presented in table 3.3.

Table 3.3

Results of the sensitivity analysis of the innovative project of SE "State Land Cadastre Center", th.UAH

Risk factor	-20%	-10%	-5%	0	+5%	+10%	+20%
Price	-6986	-1238	1635	4509	7383	10257	16005
Sales	-2137	1185	2847	4509	6171	7833	11156
Variable costs	9358	6933	5721	4509	3297	2085	-339

The results of the analysis show that when the price decreases by 5%, the NPV of the project falls by almost 64%, when the volume of sales decreases by 10%, the NPV of the project falls by 74%, with an increase in variable costs by 10%, the NPV of the project falls by 54%. The obtained results is used to build the worst and best scenario for the development of the project.

To carry out simulation, it is necessary to determine the ranges of change of key parameters, for this it is composed the probabilistic, worst and best scenarios. For the probabilistic scenario, the arithmetic averages for 4 years of the project's implementation of the price and variable costs of the project were used. Worst scenario is based on the assumption that the average price for the project can simultaneously decrease by 10% and the average variable costs will increase by 10% Best – with an increase in the average price by 5%, and average variable costs by 5%. The probabilities of these scenarios were determined by experts. So the best and worst-case scenarios can come true with a probability of 0.25, the most occurrence scenario – with a probability of 0.50. The ranges of possible changes in the key parameters of the project are shown in the table 3.4.

Table 3.4

Key features of the innovative project
of SE "State Land Cadastre Center", th.UAH

Risk factor	Worst	Best	Probabilistic	Average	Deviation
Price	276	322	307	303	16
Variable costs	148,8	123	129	132	9,8
Probability, %	0,25	0,25	0,5		

According to table 3.4, the average price has a normal distribution with an average valueof 303 and a standard deviation of 16.65. Finally, the average variable costs have a normal distribution with the expectation of 132 and standard deviation of 9.8.

Under the accepted assumptions about the variation of the average price (-10% -

+ 5%) and average variable costs (-10% - + 5%), the value of the expected net present value is on average 6887.19 thousand UAH with a standard deviation of 5721.02 thousand UAH. The results of the probabilistic analysis show that the chance of getting a negative NPV does not exceed 12%. Thus, with a probability of about 88%, it can be argued that the project's net present value will be greater than 0.

Neglecting the risk of securing property rights and obtaining a patent for a utility model can result in the loss of the market advantage of an innovation. The risk of loss can be significant. Competitors may produce a similar product and obtain a patent for it before starting sales, it may lose all funds spent on R&D, as well as on advertising an innovative product.

As a recommendation to prevent this risk, in view of the fact that the company does not have employees with experience in processing patent documentation, it is proposed to involve a third-party organization that will help to fill out the application with high quality and all the required documents for submission of the application.

Insufficient staffing and inadequate professional skills of key employees can have a significant impact on the success of a project. Therefore it follows to pay due attention to the selection of highly qualified personnel, possessing the appropriate knowledge, a propensity to engage in scientific research, as well as the ability not only to produce, but also to commercialize ideas. Reducing the risk of staffing must be carried out through continuous professional education, new forms of training, retraining and advanced training of specialists in the field of innovation management. It is also necessary to attract staff by increasing material motivation and additional bonuses.

The risk associated with the loss / low level of demand for new products in the production process cannot be completely prevented. A drop in demand below a certain permissible level can lead to a decrease in production volumes and, accordingly, to obtaining negative results for an innovative project. It is necessary to monitor consumer demands, conclude long-term contracts for the supply of innovative products to consumers and analyse the internal factors of the enterprise.

To reduce the risk of underestimating the consumer properties of the product by potential buyers, the enterprise needs to establish work to deliver proper trainings which in addition can give certain benefits.

The risks associated with the stealing of confidential information (individual technical solutions) and its use by competitors for purposes that could damage the project are difficult to manage. In order to minimize information risks, it is possible to propose activities, related to the classification of data by the degree of confidentiality and the differentiation of access rights to them.

The risk of high competition with close analogs is constantly present, it will not be possible to get rid of it. The enterprise will be in the most favorable conditions if it will propose more low price and increased efficiency and improved consumer properties of products.

Despite the fact that the risk of entering into contracts with crisis suppliers is in the group with a low degree of risk, it is still worth paying attention to. So that this risk, at best, does not go beyond the scope of eligibility needs to be checked by the supplier prior to entering into a transaction. It is necessary to have information about the financial and production status of the partner, which can be obtained from the financial reporting forms or an auditor's report. Refusal to provide such information may raise doubts about the legal capacity of the counterparty and the expediency of concluding a deal.

To minimize the risk of not providing the project with the necessary materials and components, it is recommended to diversify orders, that is, the practice of working with several suppliers, which helps to avoid depending on one counterparty. It is also worth concluding long-term contracts, with the establishment of rates of penalties in case the supplier fails to fulfill its obligations on time.

CONCLUSIONS AND PROPOSALS

Every innovative project is related to different types of risks. Measurement and assessment of risk is one of significant parts in decision making and project management as well. Innovative risk can be considered as the probability (possibility) of an unfavourable event in the process of innovative activity, which can occur as a result of an incorrectly chosen innovative action, insufficient consideration of risk factors and in future may lead to failure to achieve the results of innovative activity, loss of invested funds or additional investments.

Risk assessment is a process to determine the probability of losses by analysing potential hazards and evaluating existing conditions of vulnerability that could pose a threat or harm to property, people, livelihoods and the environment on which they depend. During the identification phase techniques such as brainstorming, structured interviews, the Delphi method, checklists, preliminary hazard analysis, hazard analysis and critical control points are applicable. At the stage of the analysis of consequences, the most preferable are Markov analysis, Bayesian analysis and Bayesian networks, cause-effect analysis, decision tree analysis. In the analysis of probabilistic characteristics and the level of risk, the bow tie analysis method is effective, and at the stage of comparative risk assessment – Monte Carlo simulation. Methods such as impact and probability matrix, cost benefit analysis, multicriteria decision analysis, risk indices, SWIFT analysis, cause and effect analysis, business impact analysis can be applied at almost all stages of the risk assessment process.

Total assets reduced their value in 2018-2020 due to reduction in non-current assets. Insignificant fluctuations in the volume of total assets occurred due to the fluctuations in the volume of current assets. The current assets growth indicates the formation of more mobile assets at the enterprise and the efficiency of their use.

There are significant problems with the liquidity at the enterprise. The most urgent liabilities (accounts payable) are not fully covered by the most liquid assets (cash

and current financial investments). At the same time, short-term liabilities due to their relatively small value are covered by quick selling assets. Long-term liabilities (-term bank loans) have no possibility to be covered by slowly sold assets (receivables and inventories), which in a case with the need to repay them would cause financial instability and significant financial losses. Coverage of fixed liabilities (equity) by hard-to-realize (non-current) assets is huge and shows the situation of low liquidity and possible instability. In general, we can say about the relatively low liquidity of the enterprise and the critical zone of risk.

The enterprise has to pay great attention the managing its business activity and to inefficient cost management. SE "State Land Cadastre Center" has the third rank of risk in grading system in 2018-2019 (18 total score). There were signs of tension in the financial condition of the company. The risk was high, creditworthiness was limited. In 2018-2019 the level of risk was stable but reduced to 16 total score in 2020. It obtained the fourth (the lowest) rank of risk in grading system. The company has increased risk of innovative activities, is insolvent and is on the verge of bankruptcy. However, the use of rehabilitation is possible.

According to the financial risk assessment, the enterprise is quite unstable with a low probability of financial instability by models are based on solvency indicators and indicate a positive financial condition of the enterprise, but according to the models which take into account profitability ratios the situation of the enterprise innovative activity is quite unstable and risky. In dynamics, indicators are not close to critical levels, mainly due to a decrease in the ratio of current liquidity and the return on assets. As we can see from the financial statement of income, the enterprise started to move to more productive activity and it could be mentioned as a forecast that the current risky situation will be overcame by it.

According to the estimation, the enterprise innovative activity is in the area of uncertainty with positive dynamics and it is proved by the trends in the financial statement of income and indicators of liquidity.

SE "State Land Cadastre Center" is going to realize the innovative project of introduction an innovative tool and supporting application to make a complex system of geo cadaster services. It will include possibilities of urban planning, cadaster land evaluation, access to legislation, to database of communal infrastructure.

Based on the expert estimations, the innovative risks belong to the group of unacceptable risks are risks of non-ability to interact with a product by employees, risk of competitors products introduction and promotion, risk of non-reaching the planned characteristics while launching a new product, risk of increased patenting time, risk of staff absence, risk of non-fulfillment of obligations by copyright agreement, risks arising from low qualifications of personnel, risk of stealing the commercial secret. Other risks are justified or acceptable.

Under the accepted assumptions about the variation of the average price (-10% - + 5%) and average variable costs (-10% - + 5%), the value of the expected net present value is on average 6887.19 thousand UAH with a standard deviation of 5721.02 thousand UAH. The results of the probabilistic analysis show that the chance of getting a negative NPV does not exceed 12%. Thus, with a probability of about 88%, it can be argued that the project's net present value will be greater than 0.

REFERENCES

1. Agarwal V., Taffler R. Comparing the performance of market-based and accounting-based bankruptcy prediction models. Journal of Banking & Finance, vol. 32, 2008. p. 1541–1551
2. Altman, E. I., Iwanicz-Drozdowska, M., Laitinen, E. K., & Suvas, A. Financial distress prediction in an international context: A review and empirical analysis of Altman's Z-score model. Journal of International Financial Management & Accounting., vol. 28(2), 2017. pp. 131–171.
3. Borodina, S., Shvyrkov, O., & Bouis, Jean-Claude. Investing in BRIC countries: evaluating risk and governance in Brazil, Russia, India, & China. New York: McGraw-Hill-2012, [in English].
4. Brennan, M.J.; Schwartz, E.S. Evaluating natural resource investments. J. Bus. Ethics, 2016, 135–157. [in English].
5. Brustbauer, J. Enterprise risk management in SMEs: Towards a structural model. International Small Business Journal, 2016, vol. 34(1), pp. 70-85.
6. Carroll, R. Identifying risks in the realm of enterprise risk management. Journal of healthcare risk management, 2016, vol. 35(3), pp. 24-30.
7. Christensen, C.M. Exploring the limits of the technology S curve Part I: Component technologies, production and operations management. Prod. Oper. Manag. 2012,1, 334–357. [in English].
8. Cox, E. Fuzzy Modeling and Genetic Algorithms for Data Mining and Exploration (The Morgan Kaufmann Series in Data Management Systems). Morgan Kaufmann,2015 [in English].
9. Crouhy, M., Galai, D., & Mark, R. Risk Management. 2nd ed. New York: McGraw-Hill, 2012[in English].
10. Cui, H.; Mak, Y.T. The relationship between managerial ownership and firm performance in high R&D firms. J. Corp. Financ. 2012, 313–336. [in English].

11. Daggupta, A. K. and D. W. Pearce, Cost-Benefit Analysis: Theory and Practice, The Macmillan Press Ltd. London 2013.p.163. [in English]
12. Damodaran, A. Strategic Risk Taking: A Framework for Risk Management. Pennsylvania: Pearson Prentice Hall [in English], 2017.
13. Faff, R.; Ho, Y.-K.; Lin, W.; Yap, C.-M. Diminishing marginal returns from R&D investment: Evidence from manufacturing firms. Appl. Econ. 2013,45, 611–622. [in English].
14. Foster, R.N. Assessing technological threats. Res. Manag. 2015,29, 17–20. [in English].
15. Frey, T. L., Time Value of Money and Investment Analysis; Explanation with Application to Agriculture. Dept. of Agri. Econ. University of Illinois, AET. 15-76.p.l, 2017 [in English].
16. Gittinger, P. Economic Analysis of Agricultural Project, the Johns Hopkins University Press, Baltimore and London, 2014 [in English].
17. Gregory, M. Enterprise Risk Management: A Methodology for Achieving Strategic Objectives (Wiley and SAS Business Series). Wiley, 2018 [in English].
18. Greuning H. van, & Brajovic Bratanovic S. Analyzing Banking Risk. A Framework for Assessing Corporate Governance and Financial Risk Management. 3rd ed. Washington: The World Bank, 2018 [in English].
19. Griffin, A. New Strategies for Reputation Management: Gaining Control of Issues, Crises & Corporate Social Responsibility. London: Kogan Page Publishers, 2016 [in English].
20. Gruebele, J. W., and T. L. Frey. Evaluating Investment Decisions of Agribusiness Firms, University of Illinois, College of Agri.Circular 1127, Urbana Illinois, p.4., 2017 [in English].
21. Honore, F.; Munari, F.; de La Potterie, B.V.P. Corporate governance practices and companies' R&D intensity: Evidence from European countries. Res. Policy 2015,44, 533–543. [in English].

22. Kraft, H.; Schwartz, E.; Weiss, F. Growth options and firm valuation. Eur. Financ. Manag. 2018, 24, 209–238. [in English].
23. Little, M. D., J. A. Mirrles. Project Appraisal and Planning For Developing Countries, Heinemann Educational Books, London, 2017, p.7. [in English].
24. Long Yu, YE Slepuhina Methodological approaches to the assessment of financial stability: tradition and innovation, Insurance business, 2015, vol. 11 (272), pp. 18-27.
25. Lumby, S. Investment Appraisal and Financing Decisions, A First Course in Financial Management, Forth Edition, Chapman & Hall, 2016, 517 p. [in English].
26. Moore, G.A. Inside a Tornado; HarperCollins: New York, NY, USA, 2015. [in English].
27. Neebe, N. J. and J. D. Hyslop. Compound Interest and Discount Factor Tables for Use in Capital Project Analysis, US.Dept.of Agri.Co-operating with Us.Agency for International Development, 2015, 71pp. [in English].
28. Oriani, L.; Sobrero, M. Uncertainty and the market valuation of R&D within a real options logic. Strateg. Manag. J. 2018,29, 343–361 [in English].
29. Peteraf, M.A. The cornerstones of competitive advantage: A resource-based view. Strateg. Manag. J. 2014, 14, 179–191. [in English].
30. Rehber, E. Financal Analysis of the Investment Projects, UEA (In: Guidelines for the Emerging Economies: Univesity for Economic Activities, Warsaw, Poland), 2016. pp. 137-150 [in English].
31. Rehber, E. Project Preparation and Appraisal (Proje Hazirlama Teknigi), IV. Edition, Publications of Ankara University: Textbook: 451, Ankara, 2012, 93 p. [in English].
32. Shemetev A.. Complex Financial Analysis and Bankruptcy Prognosis and also Financial Management-Marketing Manual for Self-Tuition Book. Saint-Petersburg, 2012. 750 p.
33. Solberg, B. Decision Criteria Regarding Choice of Technology in Development

Projects. Eight World Forestry Congress Jakarta, 2018.p.2-3 [in English].

34. Squire, L., H. G. Van Der Tak. Economic Analysis of Projects, World Bank, the J. Hopkins University Press, 2015, 153 p. [in English].
35. Tong, T.W.; Reuer, J.J. Corporate investment decisions and the value of growth options. In Proceedings of the Annual International Conference Real Options, Montréal, QC, Canada, 17–19 June 2014. [in English].
36. Xu, J.; Sim, J.-W. Characteristics of Corporate R&D Investment in Emerging Markets: Evidence from Manufacturing Industry in China and South Korea. Sustainability 2018,10, 3002. [in English].

APPENDICES

Appendix A

Consolidated balance statement of SE "State Land Cadastre Center", th.UAH

Assets	Code	2018	2019	2020
I. Non-current assets				
Intangible assets	1000	17 440	20 460	22 502
The initial value of intangible assets	1001	27 974	34 151	39 980
Accumulated depreciation of intangible assets	1002	10 534	13 691	17 478
Unfinished capital investments	1005	6 101	6 100	6 097
Fixed Assets	1010	122 589	87 885	71 598
The initial value of fixed assets	1011	359 460	205 963	202 879
Depreciation	1012	236 871	118 078	131 281
Deferred tax assets	1045	4 989	4 795	4 397
Total non-curent assets	1095	151 119	119 240	104 594
II. Current assets				
Inventories	1100	5 004	4 562	4 174
Raw materials	1101	4 874	4 493	4 100
Incomplete production	1102	121	69	74
Finished Products	1103	9	-	-
Accounts receivable for products, goods, works, services	1,125	1 264	1 530	2 480
Receivables for payments for advances paid	1130	851	910	861
Receivables estimated budget	1135	199	326	305
Accounts receivable for estimated income tax	1136	18	212	241
Other current receivables	1155	1 322	1 576	1 693
Money and Cash Equivalents	1165	11 606	15 191	16 833
a bank account	1167	11 606	15 191	-
Deferred expenses	1170	276	337	312
Other current assets	1190	13 719	13 043	11 489
Total current assets	1195	34 241	37 475	38 147
Balance	1300	185 360	156 715	142 741

Liabilities	Code	2018	2019	2020
I.Equity				
Registered (share) capital	1400	3 042	3 042	3 042
Additional Capital	1410	37 146	11 711	9 492
Reserved capital	1415	865	865	865
Retained earnings (uncovered loss)	1,42	-12 047	-11 322	-11 337
Equity	1495	29 006	4 296	2 062
II. Long-term liabilities				
Long term maintenance	1520	23 056	23 794	21 482
Long term liabilities and provision	1595	23 056	23 794	21 482
III. Current liabilities				
Current Accounts payable for merchandise, works, services	1615	5 446	3 987	4 181
Current Accounts payable, payments to the budget	1620	5 812	9 362	8 505
Current Accounts payable, estimated insurance	1625	1 348	241	1 499
Current Accounts payable for: calculation of wages	1630	3 795	2 973	8 368
Current Accounts payable for advances obtained	1635	16 455	21 471	15 830
Current Accounts payable for payments to participants	1640	1 153	90	917
Current obligations	1660	11	-	-
Deferred income	1665	96 447	87 509	76 587
Other current liabilities	1690	2 831	2 992	3 310
Current liabilities and ensuring	1695	133 298	128 625	119 197
Balance	1900	185 360	156 715	142 741

Appendix B

Consolidated income statement of SE "State Land Cadastre Center", th.UAH

Article	Code	2018	2019	2020
Net revenue from sales of products (goods and services)	2000	169 267	219 676	182 538
Cost of sales (goods, works, services)	2050	172 495	207 774	159 296
Gross profit	2090	-	11 902	23 242
Gross loss	2095	3 228	-	-
Other Operating income	2120	22 178	12 003	9 645
Administrative costs	2130	17 223	21 446	29 056
Other operating expenses	2180	4 217	2 973	3 054
Financial result from operating activities: Profit	2190	-	-	777
Financial result from operating activities: loss	2195	2 490	514	-
Other income	2240	5 261	947	2 872
Financial expenses	2250	-	-	-
Other expenses	2270	48	12	1 922
Financial result before taxation income	2290	2 723	421	1 727
Financial result before taxation loss	2295	-	-	-
Expenses (income) income tax	2300	-1 050	-225	-422
Net financial result: profit	2350	1 673	196	1 305