

## REVIEW

From: **Prof. Dr. Dimitar Hristov Tenchev** with a professional strand of Economics,  
Scientific field of study: 3.8 Economics and Management

**Regarding** Elaboration of a Review of a dissertation work and participation in a scientific jury for acquiring of an academic title “Doctor” in the sphere of higher education 3. Social, Economic and Law sciences, Professional strand 3.7. Administration and management; scientific field of study “Business Administration”.

Basis for submission of review: Order № 21 from 31.01.2022 of the Rector of “International Business School”, Botevgrad

Author of dissertation work: **Katerina Nikolova Pankova**

Theme of dissertation work: **Risk Management for long-Term Projects in the Business Environment with the help of real Options and Leasing**

### **I. I Reference of the candidate**

The PhD student, according to the presented CV, has the necessary qualifications and has completed appropriate education in the context of the theme of the presented dissertation work – Bachelor – Business Administration – International Relationship, South West University “Neofit Rilski”, Master's Business Administration, UNWE. Since 2019 she learn as a PhD student in Professional strand 3.7 Administration and Management, Scientific field Administration and Management at IBSEDU, Botevgrad.

She also has extensive administrative experience in supporting the management work of various organizations.

She has participated in various courses and events of international organizations

This knowledge and experience quite consequentially became an opportunity for scientific expression and development in the field of the thesis chosen as a topic.

### **II. General characteristics of the dissertation work**

The dissertation submitted for review was developed and structured in three chapters, Introduction, Conclusion, an one Application in a total volume of 186 pages. It is shaped, according Bulgarian to standards, with logical traceability of the development of reasoning and supported by appropriate comments, examples and arguments. There are 142 literary and electronic sources, of which 78 in Cyrillic and 64 in Latin. Thesis work includes 37 tables, 5 figures.

There is a relevant proportionality between the volumes of the three parts: chapter one is in the volume of 54 p., second – 49 p. and chapter three – 53 p.

The introduction adequately formulated the purpose, tasks, subject matter, object, research thesis and hypotheses of the development.

They clearly define its relevance and support the consistent exposure of the studies and studies carried out, the analysis of results, the summaries and form the basis for the development of relevant guidelines and recommendations.

The **Subject** of the study - The methodology of modern trends in risk management in long-term projects, taking into account the specificities of their development on the basis of the specificities of capital flows in the conditions of the use of options and leasing and the resulting risks and threats to investment activity, is accurately formulated and gives fair clarity to the overall development process.

The **Object** of the study is the risks of investment projects in the real economy in an active company - BioPharmG Int. , whose activity is aimed at unleashing the potential of biological science for patients suffering from serious diseases is relevant, given the high topicality of health care issues worldwide and regionally.

**Research thesis** formulated in the dissertation work, namely that risk management in investment projects in the context of its minimization is possible through the use of real options and leasing gives an extensive field for the study of various activities of this nature, some of which are presented in the formulated three working **hypotheses**.

Hypothesis 1.

Need to terminate the project when its implementation becomes unprofitable for the investor;

Hypothesis 2.

Activity where the implementation of the project is currently unfavourable, but in the future an improvement of the market situation can be expected;

Hypothesis 3.

Options of solutions: first solution - leasing contract until the end of the term or second solution - leasing contract and combined real option for return of the subject of the lease in the first year in case of adverse development of events and real option for its purchase in the first year in favorable development of events.

In my opinion, Hypothesis 3 could be decomposed to Hypothesis 3 and Hypothesis 4, in which the two types of decisions described could be formulated on their own.

The purpose of the dissertation work is to carry out an analysis and evaluation of the theoretical and applied aspects, manifested as trends in the development of risk in investment activity in new economic and financial realities. Considering them, to identify new problems related to its management in long-term projects using real options and leasing

The tasks to be carried out to achieve the objective thus formulated are:

1. Research and analysis of approaches developed and applied in theory and practice to manage and minimize risk.

2. Establishing the causal links between weaknesses and threats arising from possible inadequate risk management.

3. Discovering the potential opportunities for optimizing risk management, dictated by modern realities, following the example of "*BioPharmG Int.*“.

4. Analysis and evaluation of possible tools for optimizing the management of investment risk, taking into account the limited financial capabilities of smaller companies.

These objectives are adequately formulated and help to systematically monitor the progress of the work towards achieving it.

**II.1** The topicality of the issue under question is adequately justified. It is investment activity that generates new opportunities for companies through product and technological innovation and at the same time is subject to numerous risks of all kinds. Making management decisions in the context of uncertainty of the business environment, and more recently in a political and health context, increases the responsibility of managers at new and even more complex levels.

The implemented project approach in the investment activity in modern conditions unconditionally manages to fully cover all aspects of project management and implementation, but the turbulent environment presents constant challenges for flexible handling of the emergence of expected and unexpected events that threaten the planned results.

The successful forecasting of risks and the implementation of appropriate actions to minimise their adverse impact underline the high relevance of the submitted paper work.

The defined limitations of the study justify both the approaches to its conduct and the nature of the results obtained.

## **II.2. Level of knowledge of the problem**

The author demonstrates a thorough knowledge of the subject and related problems.

Chapter One is dedicated to examining key concepts related to the specific aspects of risk and its management in general. The study itself is not self-targeted, but it is conducted integrated with the parameters of investment activity in the context of long-term projects. The factors of certainty and uncertainty of the occurrence of risks and, in this context, their association with the making of adequate management decisions have been taken into account.

A relevant correlation between risk factors and risk decisions has been made by systematised risk measures and its assessment criteria.

The conceptual tandem risk and uncertainty has been thoroughly examined. The characteristics of the removable and non-removable uncertainty and their impact on the

decision and behavior of managers depending on the economic sectors in the context of future expected business results are identified.

In the same direction, the prerequisites for risk decision-making based on an approximate view of the development of the business environment are also commented, secondly on the basis of models for taking into account the unpredictable and predictable uncertainty and thirdly that both are extremely subjective in nature and in practice cannot be verified and proven at the present time.

The PhD student fulfills one of the main expectations in the development of a dissertation, namely to apply and demonstrate critical thinking by interpreting the familiar knowledge through the prism and in the context of the goals of her work.

Furthermore, I dare argue that the development has captured and distinguished the difference between financial markets and real business in terms of risk factors and their objective or subjective assessment in making specific decisions. (pp. 20-21)

The systematic examination of the theory of risk and the prerequisites for its occurrence, as well as the approaches in decision-making to minimize its impact on future useful results, logically leads to the aggregation of concepts and the emergence of the new concept historically - Risk Management

Special attention the PhD student pays to the risks in the real sector of the economy.

I would find a wonderful interpretation (p. 26) of the expected results of an adverse event identified as a risk that could lead to loss or bankruptcy and the successful opposition to this perception as a positive chance of survival or reaching the desired results. I allow myself to note that there could also be a "bolder" claim, namely that risk also means the possibility of significantly better results.

Either way, it is quite adequately argued that, in the context of the real economy, risk management should be carried out by modelling the distribution of future results in the context of uncertainty.

Question: How do the factors and rules under consideration apply to medium and small businesses, where managers do not know the risk management, business environment, lack of capital and security and, above all, courage for long-term investment projects? What would you advise them?

With regard to unknown risk factors. They are systematized those that actually operate on the market – prices, competitors, prices of raw materials, new technologies and products. As a fourth, stock exchanges with share prices are somehow illogical, which is not adequately integrated with the real sector factors in the economy (p. 31). Perhaps business projects in the real sector should take into account the attractiveness of the project to potential investors, but overall the price risk seems unclear.

The successful attempt to systematize risk factors – countries, production, subjective, selective, credit and so on (pp. 29-38) is noticeable.

I allow myself to ask a provocation question. Existing carbon allowances, a form of public retribution for pollution in the real economy, are increasingly being used as a

stock market tool. "Cunning" investors buy such allowances and then trade them. To which of the listed and systematic risk factors would it be appropriate to refer them?

The development also discusses possible strategies for making risky management decisions. The nature of the risks is thoroughly considered and, on this basis, the two key strategies – offensive and protective – are identified. The relationships between the nature of the risk and the appropriate strategy for its reporting and management have been adequately interpreted. A successful analogy has been made between risk management in the real economy and the management of a portfolio of financial assets – shares and bonds. In the context of the exhibition, the specificities of risk management in the real economy have been identified and a number of methods for managing them have also been presented.

Special attention is paid to the methods and criteria for making risky decisions by management. The statistical lines were commented as the basis for extrapolation to predict the behavior of a observed parameter and the decision-making relationship. I would allow myself to propose to Katerina Pankova to get acquainted with the book "Black Swan" by Nasim Taleb, where it is this relationship that is wonderfully interpreted and criticized.

The author has concluded that, regardless of the existing methods, techniques and tools, psychological attitudes and, to some extent, the emotional component have the greatest influence on the final decision regarding the reporting and management of a risk.

As a certain weakness, I allow myself to point out the absence of systematic conclusions after the end of chapter one, in which the main accents and results of the literary review are usually drawn very briefly, although throughout the text one's own opinion is clearly underlined.

Chapter Two deals with analytical methods and approaches for reporting and justifying risks in long-term investment projects.

Two methods are systematized – direct and indirect, with a tree of events and scenarios for general development of the business environment, and the second mainly focuses on Risk Sensitivity Analysis.

An adequate own opinion has been demonstrated that it is more important to take into account the areas of change in internal factors that management can manage than to assess only the relative sensitivity of the project by many factors.

In relation to the quantitative assessment of sustainability, analytical and information approaches are presented. Their advantages and disadvantages for real practice, difficulties in their implementation and the degree of reliability of the results obtained in their implementation are relevant.

In this regard, I allow myself to ask the following question. Does the author have information about how many managers, especially small and medium-sized enterprises in Bulgaria, use these methods in the management of their organizations.

In the context of modern times, greater attention has been paid to imitation approaches, in particular discreet analysis and the Monte Carlo method. With regard to the latter, the seven stages of its implementation have been distinguished.

Quite appropriately, the PhD student interprets the theoretical productions in an example related to the object of the study – BioPharmG Int.

The comments on the results obtained and the aspects regarding the implementation of both approaches are fully correct and adequate.

In terms of risk measurement in projects (p. 89), 4 main indicators for this are presented – Average or expected distribution of the Net Present Value of a Project; Dispersion; Standard deviation of distribution and Co-Variation factor.

For the determination of risks in long-term investment projects, as appropriate, the author considers and justifies their adequacy, two methods – Tree of Events and Method of scenarios for future economic development. In both aspects, a correct description of their meaning and implementation process has been made.

Again, perfectly adequately integrated parameters of the activity of the survey subject in the exemplary presentation of the application of the methods in the context of the real economic activity.

The author fully justifies the fact that the reporting, identification and measurement of risk in projects is based on the expert opinion of managers or specialists. In the same context is the fact that taking different risk management strategies is also based on expertise and, to a lesser extent, a psychological and emotional charge. In this regard, I think it is appropriate to pay attention, or at least mentioned two key methods – BrainStorming and Delphi Method. It is obvious that they achieve a higher credibility of assessments and decisions, at least because it reduces subjectivism and psychological and emotional influence.

I would like to point out that the interim conclusions drawn (e.g. p. 100) and others should be derived as the main results at the end of this chapter in order to highlight both the main conclusions and results and demonstrate some of the contributing points in the development.

Chapter Three deals with possible practical approaches to risk management in long-term investment projects. From the outset, the author quite correctly justifies that in practice it is impossible to predict changes in the surrounding business environment and in this sense it is usually necessary to update the parameters of the projects in the course of their implementation, i.e. operational management in the context of the risks that threaten them.

Three discussion guidelines of management decisions are shared – continuation or suspension of the project; making adjustments to increase the

value of NPV and reduce project risks by diversifying activities or additional investments.

Three types of risk management strategies are presented – protective, attacking and combined and accurately identified the parameters of each of them with the respective advantages and disadvantages.

The successful attempt to integrate the theory with the case at issue of BioPharmG Int makes a good impression. On the basis of the values presented, adequate assumptions, calculations, analyses and conclusions have been made as regards possible responses to a favourable or adverse development of the situation. I dare note that the case with the company is very successfully woven into the whole development, and this beautifully illustrates the working thesis and hypotheses defined in the Introduction.

In terms of applying real options are considered – Contract real options and internal (built-in) real options. Their characteristics have been identified and their possible conversions have been systematised in an appropriate manner, both in principle and specifically with regard to the case being investigated. Aspects such as internal and external flexibility of the project have been commented on in order to further justify appropriate risk management solutions.

The author offers various options for real options (p. 131–132) – exiting the project; extension of the project; adaptation of project obligations; operating and flexible options; combined options, in the context of previously commented possible situations.

I allow myself to ask the following question. In the current economic environment in the country specifically in the construction sector, which option would recommend that the PhD student be applied?

In the comments made regarding the application of different options for a key criterion, the Net Present Value of the Project was adopted, which in my view is correct, since the same indicator is used to assess the different options and the results obtained are relevant and comparable. Additional plus in this regard and the application of the productions in relation to the same case – bioPharmG Int. I dare say that the application mathematical apparatus is adequately used and the conclusions based on the results obtained are relevant.

I would like to stress that the whole development clearly highlights the subjectivism and individual judgment of both managers and investors (lenders, lessors, etc.) with regard in particular to the future development of the economic environment, which is the basis of which the possible options and leasing relationships apply. The existence of a discrepancy in these assessments – favorable and unfavorable development– is generally the basis for a conflict of intent and the actual implementation of the project. Built-in options are beyond these issues, which is well justified in the text.

What appropriate action would a PhD student recommend to increase trust between the parties in this context?

Serious attention is paid to leasing as a way to manage risk in projects. The types of leasing are considered and their key aspects are commented on. In the course of the comments, two options for the realization of the project are compared by leasing or by bank loan, looking at their advantages and disadvantages.

I would like to mention that in terms of leasing contributions, the aspects of the NPV are mainly commented on. I'd ask the following question. When acquiring assets through leasing, how should the costs associated with their insurance, accident warranty repairs, service maintenance, and so on be integrated?

I allow myself to emphasize my positive attitude regarding the skillful integration of real options with leasing characteristics through the Tree of Events method in the analysis and assessment of risks in the survey site.

Again in leasing contracts, regardless of the form – financial or operating lease, the situation with the subjective assessment of the future and the related wishes and expectations of the lessor (maximizing profit) and the lessee (minimizing costs) is manifested. Naturally, both sides have a common desire – the risks of the project concerned to be minimized, but there is a clash in the understanding and approaches to achieving the latter anyway. In the case, variants of combining real options and conditions in the leasing contract are played out. Based on the results obtained, can a principled one-size-fits-all approach be chosen applicable to other projects of practice?

In the last part of the dissertation work, conclusions were drawn and conclusions drawn that greatly summarised what was achieved in the course of the study and analysis in each chapter. They are specific, compactly presented and create the idea of a macrointegrative framework for analyzing, evaluating and managing risks in projects.

The proposed practical actions to address the risks involved in project work on the presentation of BioPharmG Int. focus primarily on people involved in the processes of information collection, analysis, decision-making and implementation in this context. The main conclusions of the played computational variants are not explicitly stated.

It would be nice to state in a definite way whether the work thesis and the related hypotheses are confirmed or rejected, whether the objective of the development has been achieved and whether all the tasks set out at the beginning have been resolved.



### **III. Assessment of the achieved scientific and scientifically-applied results**

In general, the results obtained are adequate, objective and really show the systemicity and logicity of the survey conducted. The conclusions and guidelines drawn for the actions concerned are in line and confirm their relevance.

### **IV. Assessment of the achieved scientific and scientifically-applied contributions**

4 scientific and applied contributions are presented. They are not distinguished according to their character in two groups. In my opinion, they are all mostly scientifically applied (in the context of the analysis and synthesis of existing scientific knowledge in the field, on the criterion Enrichment of existing scientific knowledge)

I would allow myself to add another (fifth), which in my opinion is essential and gives a fuller completion of the study and results.

- ◦ Propose a macro-integrative framework including approaches, ways, techniques, criteria, etc. for analysing, evaluating and managing risks in projects.

### **V. Assessment of the publications on the dissertation work**

A list of 3 publications on the topic of the dissertation work is presented. I could state that they correspond to the content of the dissertation work and present key highlights of it to the scientific guild.

### **VI. Assessment of the author's summary**

The author's summary is presented in the required layout and size, and it considers the essential elements of the study paper.

### **VII. Critical notes, recommendations and questions**

As recommendations, I allow myself to suggest to the author in his subsequent creative appearances after the end of each main part (chapter) to bring out the main accents, conclusions, achievements. This achieves a fuller understanding and differentiation of results in the course of work, and also highlights the performance of tasks in the relevant context.

I want to firmly confirm that the development is highly valued and with many benefits for the management of both investors and managers and/or owners of organizations working through long-term projects and for which risk is important as an inevitable factor in their realization. The critical comments made shall in no case diminish the value of the studies and studies carried out and shall not diminish the results achieved.

My recommendation to add another significant scientifically applied contribution stems from the wide-ranging nature of development. I am sure that with not much effort,

through consistent step structuring, the whole process of risk identification could be arranged consistently and logically, through the assessment of their significance, the supply and rejection of options with combinations of real market options and/or leasing contracts, and the macro-integration framework could become a structured methodology for relevant risk management in long-term projects.

I allow myself to propose that the dissertation work after adequate structuring be issued as a textbook or even an applied risk management guide for long-term projects

The questions I would ask are formulated in the text and I do not think it is appropriate to bring them out again.

### **VIII. Summarized conclusion**

In conclusion, I would like to declare my **positive evaluation** of the dissertation work presented by **Katerina Nikolova Pankova**. It meets all the requirements of the Development of Academic Staff in the Republic of Bulgaria Act and the Rules of Procedure of IBSEDU Botevgrad, covers the scientometric criteria for acquiring the academic title of “doctor”.

I therefore take the liberty of recommending to the Honorable scientific jury to vote **POSITIVELY** and to award **Katerina Nikolova Pankova** with an academic title of “doctor” in professional strand 3.7. Administration and Management; scientific field of study “Administration and Management” (Business Administration).

Date: April, 2022

Signature: .....