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Review of Mr. Kirils Farbarzevics' doctoral dissertation "Acquiring a company: the role of the target company's innovations in the process of shaping transaction value" written under the scientific supervision of dr hab. Leszek Czerwonka, prof. UG

The basis for the review was a letter from dr hab. Przemysław Borkowski, prof. UG, the chairman of the Scientific Council of the Economics and Finance Discipline at the University of Gdańsk 18th May, 2023 with the attached documentation concerning the preparation of the review of the doctoral dissertation of Mr. Kirils Farbarzevics (document number: E001.6110.41.2023)

Bearing in mind the content of Article 187 paragraphs 1-3 of the Law of July 20, 2018 on Higher Education and Science (Journal of Laws of 2022, item 574 as amended.), the evaluation of the doctoral dissertation of Mr. Farbarzevics M.Sc. was carried out from the perspective of his meeting the substantive and formal requirements for doctoral dissertations in the field of social sciences in the discipline of economics and finance, such as: the relevance of the problem undertaken, including the formulation of the title and originality of the research problem, the ability to conduct a scientific argument (including the ability to set objectives and formulate research hypotheses), the adopted methodology and the execution of research, the layout and structure of the work as well as the formal and editorial aspects.

1. Justification for the choice of topic, formulation of the title and originality of the research problem.

Undoubtedly, the concept of the dissertation refers to an issue, which is an important issue for both the theory and practice of the discipline in question, relating the creation of transaction value of an innovative enterprise in the process of its acquisition. In this regard, it should be borne in mind that in the literature on the subject, the essence of corporate acquisitions (which

has been studied since the 19th century), is analyzed in the context of growth and development of companies. Growth, understood in quantitative terms, means, among other things, expanding the scale of operations, gaining or maintaining market share and diversifying the structure of operations. On the other hand, development, understood as a qualitative phenomenon, involves the introduction of innovations concerning the product, processes or structure. Thus, acquisitions are processes of taking control over companies. Basically, they are intended to improve the market and competitive position of companies and involve equally the transfer of tangible and intangible resources. In the last 15 years, particular importance in creating the value of corporate acquisitions has been gained by the innovations of acquired companies. This is undoubtedly due to the positive correlation between the acquisition of an innovative entity and the subsequent performance of the host company, which in the case of innovation is measured, for example, by the number of patents granted, the degree of originality of the patented product or service, or by the increased innovation potential. Additionally, the acquiring companies are highly innovative at the time of the official announcement of the M&A transaction, which determines the benefits that can be reflected in growth from investments and, for listed companies, in an increase in their share value. It is worth adding that as a consequence of the integration process of the merged entities, high added value is simultaneously generated for both organizations in short and long term after the transaction has been completed. The above dependence determines the formation of the initial expected purchase price of an innovative enterprise, as well as the following price changes in subsequent phases of negotiations, already at the stage of negotiating the acquisition of a given company.

In view of the above, I consider the premise, correctly identified by the Doctoral Student, as inspiring to address the dissertation topic because, according to what he writes: *Common valuation methods such as the DFC method do not explicitly address innovation. Therefore, there are no internationally recognized standards on how to conduct innovation due diligence in M&A, which phases and measures it should include.... the systematic understanding between innovation, other factors and purchase process expectation is necessary.... the transformation from innovation to purchase expectation is still undescribed.*" it seems essential to explore new ways of assessing the transaction value of innovative companies in the process of their acquisition. In addition, an argument in favor of the topic choice of is also the fact that the increasing number of mergers and acquisitions of innovative companies as well as the general exclusion of the innovation component in the existing valuation methods (e.g., DFC or multiples) necessitates the integration of this component as an important factor that shapes transaction values.

In summary, I must admit that the choice of the research problem fully meets the requirements for doctoral dissertations, and the dissertation is an original solution to a scientific problem. The Doctoral Student has demonstrated great scientific maturity in setting the research objectives and hypotheses. It is also worth mentioning that the dissertation presented for review addresses an issue that is important and timely for the development of the discipline of economics and finance. It can also make an important contribution to the development of scientific research in the area in question and also be an impetus for the creation of new recommendations in the field of valuation and price formation in acquisitions of innovative companies.

2. Evaluation of the correctness of the formulation of research objectives and hypotheses

A doctoral dissertation should be a coherent logical and thematic structure, the framework of which is determined by such elements as the research objectives, hypotheses and model as well as the research questions. In the reviewed work, this principle of logical consistency and fluidity of the argument has been fulfilled.

The research problem adopted by the Doctoral Student has determined the main objective, specific objectives and hypotheses set in the study (p.6). In this regard, it should be noted that the Doctoral Student distinguished between the main objective, the auxiliary objective, as well as the main hypothesis and two auxiliary hypotheses.

The main objective of the dissertation is to study the impact of a company's innovativeness on the value of its acquisition transaction. The secondary objective is to define the factors that affect the process of pricing, negotiation and decision-making regarding the acquisition of an innovative company. It is worth noting that the Doctoral Student has rightly excluded from his study the partial acquisition of shares and the acquisition of stocks on the stock market, as this has allowed him to obtain more reliable results. I believe that a certain enrichment of the dissertation would have been to decompose the main objective into three goals, i.e., the theoretical-cognitive, empirical-cognitive and pragmatic. In this regard, the theoretic-cognitive objective would be to systematize the theoretical basis of the determinants of price formation in the process of acquisition of an innovative enterprise, the empiric-cognitive objective would be focused on the evaluation of the impact of individual factors on the process of forming the value of the transactions of the enterprises under study and also on proposing the author's unique method of valuating acquisitions of innovative enterprises based on the qualitative-quantitative

approach. And the pragmatic goal could be focused on the recommendation to incorporate innovation in good practices when applying the DFC and multiples methods.

When evaluating the formulation of the various objectives, I believe that all the objectives have been adequately and correctly phrased. After reading the dissertation, I am also convinced that these goals were fully accomplished by the Doctoral Student, although I have not noticed the Author's conclusion in this regard.

The main research hypothesis and two auxiliary hypotheses were subordinated to the realization of the adopted main objective and side objective. The adopted hypotheses are interesting and ambitious, as they address the problem of determining the impact of innovation on the price formation process in the process of acquisition of an innovative company. It is worth mentioning that the Doctoral Student used directional hypotheses in the construction of the hypotheses, in which he simultaneously determined the direction of the relationship, which undoubtedly shows the methodological maturity of the Author of the dissertation. It should be borne in mind at this point that estimating or determining the impact of a given element (in this case, innovation) on the value of corporate acquisitions is one of the most complicated tasks of modern science. By virtue of my duty as a reviewer, I regret that on the basis of the presented model (p.70), the Doctoral Student did not propose other hypotheses concerning, for example, the impact of innovation on the process of negotiation or decision-making on the acquisition of an innovative company. Nevertheless, I believe that the above hypotheses make it possible to address their content within the framework of the research conducted in the dissertation.

In summary, I believe that the adopted objectives and hypotheses of the dissertation are closely related to its title and fully define the scope of the issues analyzed in the individual chapters. At the same time, they can inspire other researchers interested in the subject matter to conduct their own research.

3. Evaluation of the scope of the study, sources of information and research methods

When evaluating the scope of Mr. Farbarzevic's dissertation, it is important to note that the research refers to the topic of the valuation of innovative companies in the process of their acquisition. The study covers 28 analysts and managers experienced in M&A, 3 experts from the company acquiring the innovative company, and one seller. The time frame of the empirical study covers the period from 2018 to 2020. In geographical terms the research focused solely on the German market.

My analysis of the information sources has revealed that in the theoretical part of the dissertation the Doctoral Student used 450 bibliographic sources (compact studies, publications

in scientific journals, research reports, newspaper articles and netography). Among the literature items used, the vast majority, i.e. 72.3% of the total, are publications in English, while 27.7% are German literature. As regards the quantitative indicators, Mr. Farbarzevic, M.A., demonstrated a very good knowledge of the literature in question. It should also be noted that the vast majority of the literature (400 items i.e. 88.8% of the total sources) was published after 2005, with the latest publications published in the last 6 years (2018 - 2022) accounting for 32.3% (145 items) of the total bibliography. With the current very strong dynamics of knowledge development in science and a large number of scientific publications, the indicators should be considered very satisfactory.

In terms of quality, the literature was used correctly. For the most part, the Doctoral Student cites the major authors in the field of M&A (e.g. : S. Moeller, Y.Cai, D. Walker, Z. Wang, D. DePamphilis, V.Sliskovic, R.Meckl, F.C.Evans, T. Wiloson, R. Hofmann, R. Willenegger). I find missing the most recent publications by such authors as I. Gupta, G. Birollo, or C. You, but this does not affect the overall assessment of the quality of the literature referred to. It should be stressed that the bibliographic and netographic sources cover the discipline of economics and finance and complementarily the management and quality studies. In addition, the literature is very aptly interpreted by the Doctoral Student both in the text and the footnotes.

As regards the methods used by the Doctoral Student, it deserves to be noted that besides the classical method of critical literature review, the author of the dissertation applied a thought operation and the method of deduction. In the empirical part, he used a survey method appropriate for quantitative research, an expert interview, as well as a case study based on a review of documents of companies involved in the process of company acquisitions, which is appropriate for qualitative research. A very valuable part of the dissertation is the author's empirical research. In order to achieve the research objectives, the Doctoral Student conducted expert interviews (unfortunately, the interview scenario was not included in the dissertation), and on the basis of the results of the qualitative research created his unique survey questionnaires, which formed the basis for the subsequent quantitative research. The questionnaire designed for the experts in the M&A process consisted of 8 questions and a metric. The collected material confirms that the Doctoral Student applied a theory building approach in his dissertation, through which he was able to assess the impact of corporate innovation on the value of a transaction in the process of a company acquisition. In this regard, it should be borne in mind that the discipline of economics and finance is empirical in nature and the verification of hypotheses is one of the key aspects of any research process. Thus, applying the orthodox approach in the methodology of sciences, it can be said that the

employment of the laws of quantitative and qualitative sciences enables the verification of hypotheses. This concept is identical to the approach that the Doctoral Student used in his work.

Making an overall assessment of methodology, with the stated objectives and research hypotheses in mind, I confidently confirm that the work fully meets the requirements for doctoral dissertations.

4. Structure of the dissertation

The reviewed dissertation, including bibliography, the list of tables, diagrams, charts, and a summary in Polish counts 212 pages, of which the actual text covers 68.3% of the total work.

The dissertation is theoretical-empirical in nature, and the proper proportions between the theoretical and empirical parts are maintained. The preservation of the above proportion confirms a very good theoretical exploration of the subject matter under analysis, which formed the basis for the Doctoral Student to conduct his own empirical research. At this point, it should be noted that if the dissertation were to be published in a scientific publication it would be worthwhile to create a methodological chapter, which is essential for the realization of research objectives and verification of hypotheses in any scientific work.

Recapitulating, I believe that the overall layout of the dissertation is correct, as the dissertation covers all the structural elements that are required for doctoral dissertations, i.e.: the parts of the dissertation constitute a logical and substantively compact whole that is subordinated to the implementation of the objectives and hypotheses. Moreover, the titles of the chapters and subchapters are formulated correctly, and the individual chapters and subchapters present the problems contained in the title in a factual manner.

5. The content of the dissertation

The introduction to the reviewed dissertation contains the key motivations for the choice of the dissertation topic, including the rationale for selecting the research subject, its objectives, hypotheses, scope and methods, as well as the description of the study structure. In general, the introduction has been prepared correctly and provides a good introduction to the analyzed subject matter, although I feel that it lacks proper justification of the geographical scope of the study, which is an important element of any academic work.

The first two chapters are of theoretical and cognitive importance and systematize issues related to business acquisitions. In the first chapter, the Doctoral Student, basing an in-depth review of the literature on the subject, provides the definition of business acquisitions. There is no doubt that the Author of the dissertation has reliably presented the strategies and motives

underlying the process of business acquisitions (p.11), describing the types of acquisitions (p.14), the process of acquisitions (p.16), the financing of acquisitions (p.18), and distinguished the factors of the acquisition success (p.20). Although I rate the content of the first chapter highly, I would like to comment on two important issues. In subsection 1.1, which is only a page and a half, the Doctoral Student could have critically analyzed more definitions of corporate acquisitions, presented, for example, in tabular form. Also, what is missing is a clear declaration and justification of which definition of business takeovers the Author adopted for further consideration. In addition, it would be advisable, when describing the types of business takeovers in the future, to use a much larger analytical diversity distinguished by criteria proposed by, for example, S. Evangelos, or J.C. Hooke. Despite the fact that, in my opinion, this chapter is the weakest compared to the other chapters of the dissertation, it should be emphasized that the proper presentation of the process of organizing business acquisitions as well as the identification of the measures of success of business acquisitions deserve praise. Also, the Author's proper presentation and description of the forms of financing corporate acquisitions merit recognition.

The second chapter focuses on the process of creating innovation in an enterprise and enhancing its value through innovation, as well as it describes the negotiation and pricing process in business acquisitions. Already in the beginning, the doctoral student very rightly distinguished between the regional, national and global systems of innovation that determine the value of acquisitions of innovative entities. What is also noteworthy are the considerations on determining the impact of created innovations in the organization on the creation of liquidity and financial standing of companies. The subsection devoted to the essence of due diligence is also interesting. In this context, as the Doctoral Student rightly observes, due diligence allows the acquiring company to make rational and optimal decisions (p.44). Thus, as the Doctoral Student concludes, the results of due diligence are an important instrument of negotiation as they influence the valuation of the subject of the transaction (p.52). Interesting conclusions are also provided in subsection 2.4, which describes the negotiation process taking into account the expectations of stakeholders in the business acquisition process or the negotiation tactics employed. In addition, keeping in mind the pragmatism of the detailed methodology in economic and financial theory, I believe that, in particular, Figures 9, 10, 11 and 12 (pp.68-70) could be presented not in the summary of the second chapter, but in its individual parts.

Summarizing the evaluation of the theoretical chapters, I would like to point to the Doctoral Student's erudition and appropriate research skills demonstrated when characterizing the most relevant issues concerning the acquisition transactions of innovative companies. In addition,

the shape and nature of these chapters given by the Doctoral Student attests to Mr. Farbarzevics' superior level of cognitive knowledge and confirms the good choice of the literature on the subject and its adequate use.

The third chapter contains a description of a case study. At the start, the Doctoral Candidate aptly notes that the role of innovation in the creation of the transaction value of acquisitions of innovative enterprises is still undefined, thus a clear research gap is created, which is the core of the dissertation author's identified targeted research questions (pp.72-73). In further considerations, the Doctoral Student presents a research plan that is clear and comprehensible. I regret that Mr. Farbarzevics has not separated a methodological chapter that would include a description of the qualitative and quantitative methods that were used in the empirical considerations. In my evaluation of the third chapter, I find valuable the subsection 3.2 where the Doctoral Student presents the essence of transaction value formation in the process of company acquisitions using a real-life example. Moreover, it is important that the questions posed in the introduction of this chapter are answered in Table 15 (pp.86-90).

The fourth chapter is important for achieving the objectives of the dissertation and for verifying the hypothesis. In this chapter, the Doctoral Student seeks to examine the impact of the acquired company's innovativeness on the process of transaction value formation. In my opinion, this part of the dissertation lacks the justification for the selection of the research sample while the parts concerning, for example, the construction of the SE model (p.96) the operationalization of the hypotheses (p.101), or the description of data collection (p.110) should be included in the methodological chapter for which I have already called for. As regards the further part of the fourth chapter, I conclude that the Doctoral Student, in an appropriate manner and with methodological rigor for doctoral theses, provides a characterization of the studied companies and also analyzes the study results for the groups under investigation. It is worth mentioning that in subsection 4.7 the Doctoral Student has correctly analyzed the data, using descriptive methods and confirmative analysis. I believe that the high statistical skills held by the Doctoral Student are evidenced by the use of SEM. In this regard, I would like to add that few young researchers are skilled in the use of SEM and, in particular, in determining the dependent and independent variables, which, on the basis of the literature review, were correctly extracted by the Doctoral Student. I consider the identification of factors relating to the value formation of innovative companies' acquisition transactions to be very valuable from the point of view of the dissertation topic. At the same time, I consider this part of the dissertation to be the most valuable. I strongly believe that the empirical material in this chapter provided the basis for formulating conclusions that prove the application value of the

dissertation. Therefore, despite the fact that, as the Author rightly notes: "due to the insufficient significance level, the research hypotheses cannot be unequivocally confirmed" (p.131), I believe that the obtained results (which confirm the positive relationship between the variables under study) should be used in further research into the acquisitions of innovative companies. It is also worth noting that this part of the dissertation is based on the author's extensive knowledge and experience.

The conclusion of the dissertation is a recapitulation overarching the theoretical considerations and empirical research conducted. The Doctoral Student recapitulated his inquiry, referred to the formulated hypotheses, i.e. the main hypothesis and the auxiliary hypothesis, defined the limitations of the study and specified the directions of further research on the topic, which undoubtedly testifies to his scientific maturity.

In summary, I conclude that in all parts of the dissertation, the Author has proven his erudition and proper research skills.

6. Evaluation of the formal side of the dissertation

Considering the linguistic and formal aspects of the reviewed dissertation, I have to affirm that the work is written in a communicative and comprehensible language. Graphic elements, footnotes and bibliography have been drawn up with due care, also the linguistic layer is a value of the dissertation. It is noteworthy that the doctoral student maintains a logical sequence of argumentation, thus demonstrating his competence in presenting phenomena and accuracy in interpreting the results.

In summary, I believe that the dissertation edition can be considered fine, and it should certainly be said that the Doctoral Student has taken due care to facilitate the reading of the dissertation and the reception of the content contained therein.

7. Problem questions

After a thorough review of the dissertation, I pose specific questions to the Doctoral Student, which I would like to ask him to answer during the public defense:

1. Bearing in mind that the survey was conducted among German M&A experts, what was the rationale for the selection of the study population? I would also like to know whether it would be reasonable to use a different research technique (if so, which one), in order to obtain a return of a larger number of questionnaires?

2. How will digital transformation, including the development of artificial intelligence, affect the transaction value of innovative companies' acquisitions? Does the Doctoral Candidate

agree with the statement that in the near future science will not use methods and algorithms created by scientists in the field in question, but will use those generated by AI?

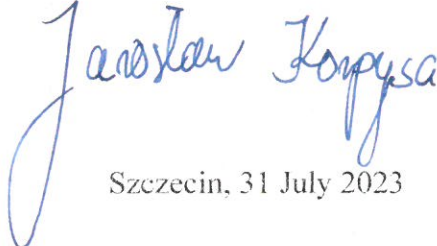
3 What methodologies are used by the modern science of economics and finance when investigating the impact of innovations of the target company in the process of shaping the transaction value? What methodology does the PhD student think is the most effective?

8. Conclusion

The dissertation by Kirils Farbarzevics, M.A., is an inspiring and interesting study of the impact of the innovations of an acquired company in the process of shaping the transaction value. I definitely evaluate this dissertation positively. In my opinion, the Doctoral Student demonstrated his expertise in the general and specific topics in the area addressed. The considerations undertaken deserve appreciation. In addition, reading the dissertation leads to the conclusion that the Doctoral Student has a great ability to observe phenomena and analyze them accurately. In the dissertation, the Author has presented the results of theoretical and analytical considerations that evidence that the Doctoral Student is well prepared to conduct research work. The critical remarks presented in the review are aimed at improving the reviewed dissertation and do not undermine its positive assessment.

I state with full conviction that this dissertation meets the requirements set for doctoral dissertations indicated by the article 187 p. 1-3 of the Act of 20 July 2018 "Law on Higher Education and Science", therefore **I request the Scientific Council of the Economics and Finance Discipline at the University of Gdańsk to admit the doctoral dissertation of Mr. Kirils Farbarzevics to public defense.**

I would also like to ask for **rewarding this dissertation with distinction**. The grounds for this request are the Author's extensive theoretical knowledge in the discipline of economics and finance, his proven high scientific autonomy, above-average research skills and high originality of the solution to the scientific problem.


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