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Zagreb, 24th April 2025

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Review report on a PhD thesis of Mehran Najmaei entitled „ Sustainable product attributes and export performance of German manufacturing SMEs from the international entrepreneurship perspective”, prepared under academic supervision of the supervisor prof. dr. hab. Krzysztof Wach Krakow University of Economics, Krakow, 2025

1. Legal basis for the review

The basis for reviewing Mehran Najmaei's doctoral dissertation entitled in English **“Sustainable product attributes and export performance of German manufacturing SMEs from the international entrepreneurship perspective”**, prepared under the academic supervision of the supervisor prof. dr. hab. Krzysztof Wach, is the letter marked with the reference number RDC.600.50P.2.2025 (of 19th March 2025 signed by prof. dr. hab. Stanislaw Popek) by witch I was informed on my appointment as a reviewer of the doctoral dissertation of Mehran Najmaei, Ph.D. by the Council of the Discipline of Economics and Finance - Krakow University of Economic (on 17th March 2025).

The review report was prepared based on the Act of 20th July, 2018 on academic degrees and titles and on degrees and titles in the field of art (Journal of Laws of 2023, item 742) and the Law on Higher Education and Science (Journal of Laws of 2018, item 742). pos. 1669) in Poland.

2. Evaluation of the relevance of the thesis

The subject of this doctoral dissertation is internationalization of German manufacturing SMEs, and the direct or indirect impact of sustainable product attributes, entrepreneurial orientation and export market orientation on the financial and strategic performance of SMEs. This doctoral dissertation aims (1) to close the research gap of unclear understanding relations between Entrepreneurship Orientations (EO), Sustainable Product Attributes (SPA), and Export marketing Orientation (EMO) and (2) to analyze contribution to the export performance in a sample of manufacturing SMEs.

As SMEs are the essence of entrepreneurship and the backbone of all European economies, including Germany. This indicates the importance of SMEs internationalization in advance economies for keeping the economic growth momentum. SMEs nowadays are taking risks to proactively innovate green products to comply with the ongoing trend of developing sustainable business initiatives. However, the innovative products might fail to be adopted by the targeted consumer markets, especially if the company is export oriented. Based on the literature review, PhD candidate claims that there are a few studies are considered to investigate the triadic impact of sustainable product attributed, entrepreneurial orientation and export marketing orientation on SMEs' export performance. Moreover, he states that this is an existing research gap that should be addressed to understand to what extend SMEs should allocate their limited resources to export market orientation and consider entrepreneurial orientation to invent products with sustainable product attributes. In addition, PhD candidate expresses that the novelty of this research in considering the interaction of these important determinants would provide better understanding for German exporting SMEs.

Based on the explanations given in chapters outlying the theoretical critical overview and establishing theoretical background of the thesis (chapters 1, 2 and 3), we consider that the choice of this topic is justified as it aims to address consumer-oriented perspective and export-oriented perspective within the field of sustainable SME entrepreneurship. Furthermore, I assess the choice of the dissertation research topic relevant in relation to contemporary literature in the field of interest. The scientific research gap is well explained and filled in with the research done by the doctoral candidate.

3. Evaluation of the research assumptions - aim of the work, research hypotheses, research method

The aim of the PhD thesis is presented in the introduction together with subject and research gaps and established hypotheses. Theoretical foundations are detailed in chapters 1 and 2 while relationships of research methodology and data sources are elaborated in chapter 3. Mehran Najmaei explains the theoretical framework based on secondary literature in the fields of firm internationalization, SMEs export performance, sustainability and export market orientation. Majority of literature sources used to critically overview theoretical background and to isolate research gaps are published in English language since 2015 till nowadays.

PhD. Candidate specifies 5 research gaps as follows (cited from page 14): *"(1) Lack of insights on the internal relations of export performance namely, financial performance strategic performance and satisfaction with export activities., (2) Although that many studies investigated the relationship between sustainable strategies and export performance, yet only few addresses the social aspects of sustainable product or services. (3) Lack of comprehensive models to investigate, operationalise both environmental and social aspects of sustainability. (4) Although researchers investigated the impact of EO on export performance, but less attention paid on the impact of EO on the financial and strategic performance, and (5) Sustainability is a new trend and there are not enough studies on the link between sustainability and export market orientation."*

The main objective the doctoral dissertation is to identify key internal determinants within Entrepreneurship Orientations (EO), Sustainable Product Attributes (SPA), and Export marketing Orientation (EMO) that contribute to the successful export performance of German SMEs in manufacturing through the application of empirical methods. To fill in the specified 5 research gaps, candidate developed 5 Research Objectives (O) and set 4 main Research Questions (RQ). Relation between Research Gaps, Research Objectives and Research Questions is outlined in Table 1 which outlines main methodological assumptions of the research.

Proposed research questions were:

RQ1. How does German manufacturing SMEs' financial and strategic performance influence managers' satisfaction?

RQ2. How does German manufacturing SMEs' sustainable product attributes influence its export's performance?

RQ3. How does German manufacturing SMEs' entrepreneurial orientation influence its export's performance?

RQ4. How does German manufacturing SMEs' export market orientation influence its sustainable product attributes?

Specified scientific research objectives were:

O1: to present and discuss the firm-level internationalization and sustainability empirical research.

O2: to prepare a review of prior knowledge on internal determinants export performance of SMEs and its academic discussion.

O3: to develop the research framework for empirical studies linking SPA, EO & EMO to SME's export performance including the selection of the variables and data analysis approach arising from the results of the preceding analysis of research fields.

O4: to present results of statistical analysis and to identify the main determinants among the researched variables that significantly enhance German SMEs' export performance in manufacturing industry.

O5: to explore and discuss relevant research limitations of the study as well as making suggestions for further studies.

Moreover, the candidate formulated and tested the following hypotheses:

H1: SMEs' financial performance impact on satisfaction with export operation in the German manufacturing industry.

H2: SMEs' strategic performance impact on satisfaction with export operation in the German manufacturing industry.

H3: Sustainable product attributes impact on financial performance in the German manufacturing industry.

H4: Sustainable product attributes impact on strategic performance in the German manufacturing industry.

H5: Sustainable product attributes impact on general satisfaction with export operation in the German manufacturing industry.

H6: Entrepreneurial orientation impacts on financial performance in the German manufacturing industry.

H7: Entrepreneurial orientation impacts on strategic performance in the German manufacturing industry.

H8: Export market orientation impacts on the SMEs' SPA in German manufacturing industry.

All stated objectives are reached by application of various research methods such as: desk research in form of in-depth literature review in given field of interest and designing the research model; empirical research including pilot research and extensive data collection by survey research (n=178) conducted on the sample of German SMEs manufacturers collected at more than 10 business events (dominantly trade fairs). An electronic questionnaire in German language was used to collect data by CAWI and CASI method. The questionnaire is available in the appendix of the doctoral thesis. Collected data was analyzed by the application of PLS-SEM method by conducting all standard steps necessary to make valid conclusions on the proposed research model.

In Table 65, candidate outlines the summary of research hypotheses and their verification while in Chapter 4.5 and Chapter 5 he elaborates and discusses steps of reasoning on which verification of each Hypotheses is based on, while in Conclusions in Table 65 there is a summarized view of hypotheses acceptance or rejection based on performed PLS-SEM analysis. According to results of a comprehensive analysis of the proposed structural model (as outlined in Table 63), H1 was accepted since the score indicates that financial performance (FP) has a positive relationship with export satisfaction (SAT). H2 is also accepted as the path analysis showed a statistically significant positive relationship between variables SP (strategic performance) and SAT (export satisfaction). H3 is accepted because the path analysis shows statistically significant positive relationship between SPA (sustainable product attributes) and FP (financial performance). On the other side, H4 and H5 are rejected as observed P-values indicated that there is no statistically significant relationship between tested variables. H6 is confirmed as path analysis suggests that there is a statistically significant positive relationship between entrepreneurial orientation (EO) and financial performance (FP). H7 is accepted as

calculated P-value suggested that there is a statistically significant positive relationship between EO (entrepreneurial orientation) and SP (strategic performance). Finally, H8 is accepted as observed indicators suggest that there is a positive relationship between EMO (export market orientation) and SPA (sustainable product attributes).

Referring to all the above-mentioned, we can conclude that the theoretical chapters and derived research objectives, hypotheses and methodology framework clearly indicate that in his doctoral dissertation, Mr. Mehran Najmaei demonstrates knowledge of theories and previous research related to international entrepreneurship, entrepreneurial orientation of SMEs and sustainability theories (with an emphasis on sustainable product attributes). At the same time, he is fully capable of converting his theoretical knowledge into the formulation of research questions and hypotheses and design of the overall research model. The way of formulating the research questions and the hypotheses is correct, and it reflects the high-level scientific capabilities of the PhD candidate. Moreover, performed statistical analysis shows that PhD candidate is able to carry out complex processing of data collected by field research (supported by CAWI and CASI methods), to interpret and present data in an appropriate manner, and draw logical and robust conclusions based on calculated indicators.

To sum up, the way Mr. Mehran Najmaei conducts his research is logical and supported by an appropriate course of analytical procedure. Therefore, I positively assess the methodological elements of the doctoral dissertation (research aims, research questions, hypotheses, and research methodology).

4. Evaluation of the structure of the PhD research

The PhD research of Mehran Najmaei is well presented and carefully developed logically, detailing the knowledge derived from the theories of firm's internationalization, SMEs entrepreneurship and sustainability (particularly sustainable product development). There is a careful presentation of claims, propositions, and considerations by supporting them with academic rigor and scientific practices to emphasize the fluidity of the concepts studied. A systematic and critical literature review provides good references and basis for the use of commonly accepted approaches that PhD incorporated into design of his primary quantitative research.

The doctoral thesis consists of an introduction, conclusions and a total of 5 chapters in which he presents results of his doctoral research.

Chapter 1 (Internationalization from theoretical perspective) presents and discusses theoretical concepts of firm-level internationalization, sustainability and behavior of SMEs in international markets based on the comprehensive literature review. Throughout this chapter, Objective 1 (O1) is reached.

Chapter 2 (Determinants of Small and medium-sized enterprises' export performance) presents and discusses the concepts of export performance, sustainable product attributes, entrepreneurial orientation and export market orientation in contemporary literature. The chapter analyses and elaborates internal determinants important for the research model: entrepreneurial orientation, sustainable product attributes, and export marketing orientation. This chapter is oriented on reaching the Objective 2 (O2).

Chapter 3 (Research methodology linking sustainability and export performance of SMEs) aims to reach Objective 3 (O3) and it discusses how the conceptual model of empirical research is developed by linking independent variables (sustainable product attributes, entrepreneurial orientation and export marketing orientation) to dependent variables (export performance including financial, strategic and managers' satisfaction). In addition, the basis relevant for empirical analysis is explained too.

Chapter 4 (Empirical findings linking sustainability and export performance of German SMEs) logically outlines the results of statistical analysis which are presented based on descriptive statistics, reliability tests, bivariate correlation analysis, and linear regression analysis. In this chapter Objective 4 (O4) is achieved.

Chapter 5 (Discussion of empirical results) elaborates implications of the results in relation to contemporary literature and emphasize discovered similarities and differences. The chapter is oriented on Objective 5 (O5).

Conclusions include a systematization and discussion of empirical findings, description of implications, limitations, and recommendations for future research.

We can conclude that the PhD dissertation prepared by Mr. Mehran Najmaei has a logical, well-formed structure, constituting a coherent whole, which consists of theoretical and empirical research. Based on the literature review, the PhD student designed and conducted

primary research which included both qualitative and quantitative approach. All parts of the dissertation form cohesive, logical and thematically interconnected work. The use of qualitative methods in the form of the desk research of contemporary literature and pilot research contributed to a deeper understanding of the theoretical concepts involved and establishing relations between key concepts in the research model such as Entrepreneurship Orientations (EO), Sustainable Product Attributes (SPA), and Export marketing Orientation (EMO). On the other hand, quantitative methods were used properly to test proposed research model and to draw conclusions on research hypotheses.

5. Formal comments and editing of the work

The doctoral dissertation by Mr. Mehran Najmaei has been prepared with great editorial care. The editing of the text itself is correct, the way of formulating the thoughts is correct, the course of the argument is logical, and the argumentation is convincing. Theoretical considerations are supported by properly prepared graphs, figures and tables. The way in which tables, figures and charts are edited is unobjectionable, they are correctly titled, numbered and sourced. And these claims are valid for all parts of this doctoral paper.

6. Final conclusion

Mr. Mehran Najmaei demonstrated good knowledge of theories in contemporary management and international entrepreneurship, particularly: internationalization theories, theories on measuring SMEs performance and entrepreneurial orientation, sustainability theories, especially in field of sustainable product attributes which were related to the subject of research in his PhD thesis. The PhD candidate demonstrated a high level of expertise in given field, properly selecting and critically interpreting the relevant and contemporary literature on the subject. Based on the critical literature analysis, Mr. Mehran Najmaei adequately addressed and described the research gap, proposed research questions and developed research hypotheses. Moreover, the PhD candidate showed academic skills in (a) designing the valid research model, (b) managing and organizing the process of appropriate primary data collection, (c) performing quality data analysis to test and validate hypotheses, and (d) interpreting research results in accordance with the proposed research plan. All above-

mentioned elements provide grounds for recognizing the PhD student's maturity and constitute a good forecast for his further scientific development.

Based on the above opinions, I conclude that the dissertation of Mr. Mehran Najmaei meets all requirements for doctoral theses and justifies awarding Mr. Mehran Najmaei with a doctoral degree in the field of social sciences in the discipline of economics and finance. Therefore, I suggest that the doctoral dissertation can be accepted, and that the PhD candidate can be allowed to proceed to the next stages of the doctoral thesis process.

The scientific argument and the quality of empirical research presented by the Doctoral Candidate are of high cognitive value. Given the significance of the topic, the originality of the approach, the contribution to international business development, and the formal quality of the dissertation, I recommend awarding it an appropriate distinction.

A handwritten signature in blue ink, reading "B. Knezevic". The signature is written in a cursive style with a large initial "B" and a flourish at the end.

Zagreb, 24th April 2025.

Blazenka Knezevic, PhD.