Warszawa, 26 maja 2025

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REVIEW OF THE DOCTORAL DISSERTATION BY MGR ANUPHAT THIRAKULWANICH entitled **"DRIVERS OF GREEN INNOVATION MANAGEMENT ADOPTION IN SMES: EVIDENCE FROM POLAND AND THAILAND**, written under the supervision of **ASSOC. PROF., SEBASTIAN KOT, PHD, PROFESSOR AT PCZ.**

1. Formal and legal basis for the review

The formal basis for this review is the letter from the Dean, Dr. habil. Katarzyna Szczepańska-Woszczyna, Professor at AWSB, dated April 9, 2025, appointing me as a reviewer in the doctoral proceedings.

The legal basis for the ongoing procedure is Article 187 of the Act of July 20, 2018 – Law on Higher Education and Science (Journal of Laws 2018, item 1668, as amended), which states that:

"A doctoral dissertation demonstrates the candidate's general theoretical knowledge in the discipline or disciplines concerned, as well as the ability to conduct independent scientific or artistic work," and "the subject of the doctoral dissertation is an original solution to a scientific problem, an original solution in the application of the results of the candidate's own research in the economic or social sphere, or an original artistic achievement."

Taking into account the statutory requirements for doctoral dissertations, the following criteria were applied in the evaluation of the dissertation submitted by the Candidate:

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- **To assess the Candidate's general theoretical knowledge**: the significance of the research topic addressed in the dissertation; the quality of the literature review (its scope, depth, relevance, systematization, and critical discussion); conclusions drawn from the review; the relevance of identified research gaps and problems; and the overall structure and organization of the dissertation;
- **To assess the Candidate's ability to conduct independent scientific research**: the clarity and appropriateness of the research objectives and research problem; the research design and methodology; the clarity of the presentation of research findings; and the quality of the research tools and techniques employed;
- **To assess the originality of the scientific problem solution and the application of the Candidate's own research results**: the uniqueness of the author's approach to solving the research problem; and the relevance, specificity, and applicability of the conclusions and recommendations for both academics and practitioners

2. The Candidate's general theoretical knowledge

The doctoral candidate has addressed a highly relevant topic in the dissertation: **"Drivers of Green Innovation Management Adoption in SMEs,"** with specific reference to the economies of Poland and Thailand. As the candidate notes, *"Green innovation is currently seen as a business strategy to gain a competitive advantage because it helps access new markets or develop new goods, services, and applications ethically through practices that observe increasing environmental and health issues and concerns. However, SMEs are often overlooked in the discussion about green innovation."*

Despite the fact that SMEs represent approximately 80% of all businesses in both Poland and Thailand, and make a substantial contribution to their respective economies and employment levels, many SMEs remain largely unaware of the potential benefits and opportunities associated with green innovation.

The chosen topic - Drivers of Green Innovation Management Adoption in SMEs—must be recognized as highly appropriate, important, and very timely. Its selection demonstrates the candidate's solid understanding and awareness of current issues within the field of management and quality sciences.

However, the dissertation would have benefited from a deeper theoretical justification for the comparative focus on Poland and Thailand. A broader context should have been provided,

including a comparative analysis of the two countries' economies and more detailed insights into the specific characteristics of SMEs in Poland and Thailand, to more clearly support the rationale behind selecting these two nations for comparison.

The study draws upon 296 carefully selected and relevant sources and contains 227 pages.

As the Author points out, *"The literature has not adequately addressed the adoption of green innovation by SMEs and its incorporation and implementation within their business practices. Most of the research has been conducted in the domain of big corporations, large enterprises, and public or government institutions."* In this respect, the dissertation effectively addresses a significant gap in the existing research.

The structure of the thesis is logical and clearly aligned with the achievement of the main research objective.

The thesis is organized into five chapters:

Chapter One provides an in-depth examination of the challenges and intricacies associated with managing green innovation, with a particular emphasis on its implementation in Poland and Thailand.

Chapter Two offers a comprehensive overview of the key theoretical frameworks and policies guiding the study. Particular attention is given to the Natural Resource-Based View (NRBV) and the Triple Bottom Line (TBL) framework. In developing the theoretical foundation of the thesis, the concepts of the Resource-Based View (RBV) and the Triple Bottom Line are explored as essential tools to help small and medium-sized enterprises (SMEs) in Poland and Thailand integrate sustainable practices into their innovation strategies.

Chapter Three, titled *"Research Methodology for Investigating Green Innovation Drivers in SMEs"*, outlines the core components and techniques applied in conducting the research. This part of the work adopted the survey research design to investigate the drivers of green innovation management in SME's under a case study of Thailnad and Poland. The quantitative research methodology has been adopted.The Candidate used the Cochran Formula for sample size estimation, which resulted in 400 respondents numer from Poland and 400 respondents from Thailand. What matters the targeted group were: SME/s owners, SME management Staff, SME employees. The primary data were collected from the study respondents, that had to answer the questions from the survey electronically.. The data was collected via online Google

Forms, and constructed using the 5-points Likert scale. To test the reliability two techniques were adopted: Cronbach's Alpha and the Composite Reliability. This chapter also discusses the analytical techniques utilized, including Confirmatory Factor Analysis (CFA), Structural Equation Modelling (SEM), and multi-group SEM analysis.

Chapter Four, *"Empirical Analysis and Key Insights"*, presents the results of the data analysis. It begins with descriptive statistics to identify key patterns and trends observed among the study's participants, including an analysis of demographic characteristics. The chapter includes a series of tests to assess the reliability and validity of the measurement instruments, ensuring the consistency and trustworthiness of the results. Hypotheses concerning relationships between the study's variables are tested using SEM. A comparative analysis between the two case studies—Poland and Thailand—is conducted through multi-group analysis. The findings in this chapter form the basis for the subsequent discussion, conclusions, and implications.

Chapter Five, the final chapter, discusses the main findings in relation to the study's hypotheses and research objectives. It also outlines the managerial and theoretical implications of the results. The chapter concludes with practical recommendations, a discussion of the study's limitations, and suggestions for future research.

Conclusion:

I highly evaluate the Candidate's overall academic knowledge, particularly in the area of research methodologyThe dissertation tackles a relevant and significant research problem, successfully addressing a notable gap in the existing literature. The quality and selection of sources are appropriate and meet academic standards. It is also worth emphasizing the clear, well-structured, and logically organized layout of the dissertation.

3. The Candidate's ability to conduct independent scientific research

This doctoral thesis was driven by the main research objective: to identify the key factors influencing green innovation management in small and medium-sized enterprises (SMEs), using the cases of Poland and Thailand.

To support this objective, four research questions were formulated:

- RQ1: What is the comparative status of green innovation management practices among SMEs in the business environments of Poland and Thailand?
- RQ2: What are the key drivers behind SMEs' adoption of green innovation management in Poland and Thailand?
- RQ3: How does compliance with green standards affect the drivers of green innovation adoption among SMEs?
- RQ4: What actionable policy recommendations can be made to enhance the adoption of green innovation management in SMEs' business strategies and operations?

In alignment with these questions, four research objectives were also formulated, closely mirroring the content of the research questions.

The study further proposed and tested seven hypotheses, which are presented and as follows:

- H1: Green regulations have a significant influence on SMEs' adoption of green innovation management.
- H2: Green technical capabilities significantly influence SMEs' adoption of green innovation management.
- H3: Green economic resources significantly influence SMEs' adoption of green innovation management.
- H4: Green economic resources mediate the relationship between green regulations and the adoption of green innovation management in SMEs.
- H5: Green human resource management significantly influences SMEs' adoption of green innovation management.
- H6: Compliance with green standards significantly influences SMEs' adoption of green innovation management.
- H7: Compliance with green standards moderates the influence of green regulations, green technical capabilities, green economic resources, and green human resource management on SMEs' adoption of green innovation management.

The research questions and hypotheses have been formulated appropriately.

Chapters three, four, and five are dedicated to the presentation of the research methods applied, the analysis of the results obtained, and the discussion of findings along with recommendations

for SMEs in Poland and Thailand. This section is very clear, with a logically structured content layout. The research methods employed (described in more detail in section 2 of this review). are considered appropriate.

Conclusion:

It can be concluded that the dissertation fully meets the second criterion outlined in the Higher Education Act concerning doctoral theses.The Candidate demonstrates a methodical and mature approach to reasoning, indicative of the level of analytical thinking expected at the doctoral level, along with a strong ability to draw accurate and meaningful conclusions.

4. **The originality of the scientific problem solution and the application of the Candidate's own research results**

One of the key indicators of the originality of the Author's approach is the decision to focus on SMEs rather than large enterprises or multinational corporations in the context of examining the drivers of green innovation management. Another distinctive feature of the study is the comparative analysis of Poland and Thailand—two countries that differ significantly in many respects—and the empirical research conducted in both. This cross-country comparison has led to valuable insights into how cultural, regulatory, and economic factors influence green innovation management in SMEs.

The study also offers practical implications and translates the findings into actionable recommendations for the adoption of green innovations in both Poland and Thailand. These recommendations include, among others: enhancing the technical capabilities of SMEs; considering financial support mechanisms such as government grants, subsidies, and targeted loans for green innovations; establishing collaborative networks at the regional, national, and international levels; incorporating industry-specific green standards; and adapting green innovation management practices to local conditions—be they regulatory, cultural, or related to existing green initiatives.

Moreover, the research highlights country-specific recommendations, such as strengthening green human resource management to advance the green innovation agenda in Thailand, and leveraging compliance with standards like ISO 14001 to support green practices in Poland.

Conclusion:

It can be concluded that the originality of the Author's approach to addressing the research problem, as well as the relevance, specificity, and practical applicability of the study's conclusions and recommendations for both scholars and practitioners, fully meet the standards set by the Law on Higher Education and Science for doctoral dissertations.

Final conclusion:

I hereby state that this doctoral dissertation meets the requirements of the Act of July 20, 2018 – Law on Higher Education and Science, with particular reference to Article 190, paragraph 3. Therefore, I recommend its acceptance and submission for public defense.

Laskowska - Rutkowska

Dr hab. Aleksandra Laskowska – Rutkowska

Prof. Uczelni Łazarskiego