

Report on Doctoral Thesis

Doctoral Student:

Nosheen Qadeer

Title of Doctoral Thesis:

How Green Knowledge Sharing Enhances Green Product Innovation in SMEs: The Roles of Customer Involvement, Absorptive Capacity, and Innovation Climate

Reviewer:

doc. Ing. Michael Adu Kwarteng, Ph. D

Place of Doctoral Examination:

Faculty of Management and Economics, Tomas Bata University in Zlín, Czech Republic

(1) Evaluation of Goals and Objectives of the Thesis

The goals and objectives of the thesis are clearly introduced in Chapter 3, particularly in sections 3.1 to 3.4 on pages 67 to 72. The author successfully identifies the need to investigate how green knowledge sharing contributes to green product innovation through absorptive capacity and innovation climate, while also considering the moderating role of customer involvement.

The primary research goal is logically derived from the identified research gap and is consistent with the broader sustainability challenges discussed in the introduction on pages 1 to 3. The objectives are coherent and interconnected, reflecting a well-structured conceptual progression from theory development to empirical testing.

A major strength of the thesis is that the objectives are not merely descriptive but explanatory in nature. The thesis attempts to uncover causal relationships among organizational capabilities and innovation outcomes, which demonstrates doctoral-level analytical ambition.

The research question is sufficiently justified through the literature review and research gap discussion, especially in sections 2.8 and 3.2 on pages 33 to 70. The hypotheses are also aligned with the conceptual framework presented on page 72.

Nevertheless, the study could further strengthen the clarity of its objectives by explicitly distinguishing between:

- direct effects
- mediating effects
- moderating effects

- theoretical contribution
- managerial contribution

in a more concise and tabular manner. Additionally, some objectives could have been operationalized more precisely by clarifying whether the thesis primarily seeks explanation, prediction, or theory extension. In short, the objectives could be further refined through more concise operational definitions and a clearer separation between explanatory, mediating, and moderating dimensions of the study.

(2) Evaluation of the Research Issue and Topic Relevance

The topic of green knowledge sharing, and green product innovation is highly relevant and academically significant. The dissertation responds to increasing global concerns regarding climate change, environmental sustainability, circular economy practices, and sustainable competitiveness. The actuality of the topic is strongly justified in the introduction and theoretical framework, particularly on pages 1 to 24. The thesis correctly identifies that manufacturing SMEs face increasing pressure to adopt sustainable practices while maintaining competitiveness. The focus on Pakistan as a developing economy enhances the originality and contextual relevance of the research. The author convincingly explains that SMEs in developing economies experience: limited technological resources, institutional constraints, environmental regulatory pressure, sustainability implementation challenges. The study therefore contributes to a growing body of research examining sustainability transitions outside developed economies. Another important strength is the integration of green knowledge sharing with absorptive capacity and innovation climate. This multidimensional perspective reflects current scholarly discussions in sustainability and innovation management literature.

The thesis also demonstrates awareness of contemporary research streams including green innovation. Knowledge-based capabilities, Industry 4.0, sustainable competitiveness. environmental management. However, some sections of the theoretical framework from pages 3 to 24 become excessively broad and occasionally drift away from the core research problem. Several discussions on developed versus developing economies could be more tightly connected to the main constructs of the thesis. In addition, certain sections contain repetitive phrasing and generalized statements that reduce analytical sharpness. Stronger synthesis of literature rather than descriptive reporting would improve the scholarly depth. Moreover, portions of the theoretical discussion would benefit from tighter conceptual focus and more analytical synthesis to avoid excessive descriptiveness.

(3) Research Procedures and Methodology

The methodological design is presented in Chapter 4 on pages 73 to 80 and demonstrates satisfactory alignment with the research objectives. The study employs a quantitative research design using survey data collected from 642 SMEs, which represents a strong empirical sample for structural equation modelling. The use of SmartPLS SEM is appropriate because the study investigates multiple latent constructs, mediating relationships, and moderating effects.

The methodological process is generally logical and systematic. The thesis adequately explains:

- data collection procedures
- sampling approach
- construct measurement
- reliability testing
- validity assessment
- hypothesis testing
- mediation analysis
- moderation analysis

The inclusion of discriminant validity, construct reliability, and common method bias testing strengthens the methodological rigor of the study. The research onion and research process figures on pages 74 and 78 further support the transparency of the methodological framework. The methods align well with the objectives because the thesis seeks to empirically test relationships among organizational constructs. The use of SEM is therefore justified. The results section on pages 81 to 94 systematically follows the hypotheses and provides statistical support for the proposed relationships. Nevertheless, the methodology chapter could further benefit from deeper justification of the sampling strategy, stronger discussion of methodological limitations, and more concise presentation of certain procedural explanations.

Despite these strengths, and the event that you would want to publish the findings of your thesis, several methodological improvements could be considered:

- *The sampling strategy could be explained in greater detail, particularly regarding industry distribution and representativeness.*
- *More discussion regarding non-response bias and potential limitations of cross-sectional design would strengthen methodological transparency.*
- *The justification for selecting SmartPLS instead of covariance-based SEM could be elaborated more explicitly.*

- *The operationalization of customer involvement as a moderator could be theoretically deepened.*
- *Some methodological explanations would benefit from more concise academic writing.*

(4) Significance for Practice and Scientific Development

The findings presented in Chapters 5 and 6 on pages 81 to 115 provide meaningful theoretical and empirical insights. The study successfully demonstrates that green knowledge sharing positively influences green product innovation directly and indirectly through absorptive capacity and innovation climate. The moderating role of customer involvement also contributes additional explanatory depth to the model. The results are well supported by the statistical analyses undertaken. The path coefficients, mediation tests, moderation tests, and model estimations consistently align with the proposed hypotheses.

(5) Overall Evaluation

The dissertation addresses a highly relevant and contemporary issue within sustainability, green innovation, and SME competitiveness, particularly in the context of developing economies. The thesis demonstrates strong theoretical ambition by integrating the Resource-Based View, Knowledge-Based View, and Social Exchange Theory into a unified framework that explains how green knowledge sharing contributes to green product innovation. The work is particularly valuable because it focuses on SMEs operating in Pakistan, a context that remains underrepresented in sustainability and innovation research.

The study offers practical implications for policymakers, managers, and manufacturing firms seeking environmentally sustainable competitiveness. The use of structural equation modelling with a large sample of 642 SMEs strengthens the empirical contribution of the thesis. The dissertation also demonstrates good alignment between research objectives, hypotheses, methodology, and empirical testing.

At the same time, certain sections would benefit from stronger academic precision, tighter language control, and improved conceptual focus. Some theoretical discussions are overly descriptive and repetitive, especially within the early theoretical framework chapters. There are also several linguistic inconsistencies and instances where broader developmental discussions could be more directly linked to the core constructs of green knowledge sharing and green product innovation.

Questions for Further Clarification

1. What specifically motivated you to investigate green knowledge sharing within SMEs rather than large enterprises?
2. In your opinion, what theoretical contribution does your integrated framework make to sustainability and innovation literature?
3. How can SMEs with limited financial resources practically implement green knowledge-sharing systems?
4. Would your findings likely differ in developed economies? Why or why not?
5. How has this research changed your own understanding of sustainability and innovation management?
6. If one of your theoretical assumptions were challenged by any of the committee members, which would be the most vulnerable and why?

Statement on Fulfilment of Doctoral Thesis Requirements

The candidate has successfully fulfilled the research requirements of the doctoral thesis and achieved the stated objectives. The quality of the methodology, scholarly contributions, and demonstrated research capability indicate that the dissertation satisfies the standards expected of doctoral-level work.

I therefore recommend the thesis for defence and support the conferment of the PhD degree

In Zlín, June 12, 2026

doc. Ing. Michael Adu Kwarteng, Ph.D.



