

## **INFORMATION ON NEW CONCLUSIONS OF DOCTORAL DISSERTATION**

(Information will be posted on the Website)

Name of dissertation: Research on factors affecting energy saving and Efficient Energy use behavior in small and medium-sized enterprises in the industrial sector: A case study in Thai Nguyen province.

Major: Energy Management

Code No: 9510602

Name of PhD. Student: Tang Cam Nhung

Advisors:

1. Assoc. Prof. Dr. Do Anh Tuan

2. Dr. Ngô Tuấn Kiệt

Training Institution: Electric Power University

### **Summary of new contributions of the Dissertation**

1. The dissertation systematically integrates three theoretical foundations—Theory of Planned Behavior (TPB), Institutional Theory, and Firm Theory—to develop a research model on energy-saving behavior in industrial enterprises, with a particular focus on small and medium-sized enterprises (SMEs). This novel approach enables simultaneous analysis of psychological factors, internal organizational elements, and external institutional environments that influence energy-saving behavior. The proposed model comprises 12 factors, including 5 that directly affect energy-saving behavior, and is empirically tested using the SEM-PLS structural equation modeling approach on survey data collected from 686 enterprises in Thai Nguyen Province.
2. The dissertation reveals that factors such as energy-saving technology, social culture, and cooperation do not have a statistically significant direct impact on energy-saving behavior, indicating their dependence on the level of organizational readiness and specific implementation conditions. This finding represents an important contribution by providing a basis for reorienting the design of technology transfer programs and cooperation mechanisms to better align with the cultural context and enterprise scale in Vietnam.
3. The dissertation clarifies the foundational role of "organizational initiatives" in shaping energy-saving behavior through their influence on three intermediary psychological factors. This finding strengthens the linkage between behavioral theory and organizational theory, while also providing a theoretical foundation for integrating energy objectives into organizational development strategies within enterprises.
4. The ANOVA analysis results presented in the dissertation indicate a statistically significant difference in energy-saving behavior based on enterprise size, with large enterprises exhibiting higher levels of energy-saving behavior compared to small and medium-sized enterprises (SMEs). In contrast, demographic factors such as gender, age, and education level do not produce significant differences. Based on these findings, the dissertation proposes stratified solutions tailored to enterprise size rather than individual-level characteristics.

5. The dissertation proposes a comprehensive set of solutions to promote energy-saving behavior in small and medium-sized enterprises, including the development of organizational initiatives, the strengthening of leadership roles, the utilization of supportive policies, and the improvement of financial mechanisms. These recommendations demonstrate high practical applicability in the implementation of energy management systems in accordance with ISO 50001 in Vietnamese industrial enterprises.

**Advisors**  
(Signature)

*Ha Noi, August 2025*  
**PhD. Student**  
(Signature)

**Assoc. Prof. Dr. Do Anh Tuan    Dr. Ngo Tuan Kiet**

**Tang Cam Nhung**