Abstract

[Background]

Energy conservation is prominently featured among the United Nations' 17 Sustainable Development Goals. The interplay between social and behavioral science and energy usage has begun to play a crucial role in addressing the energy challenge. Employee behavior significantly affects an organization's energy consumption. Numerous intervention strategies have been explored to encourage energy-saving behaviors among employees in the workplace. Nonetheless, only a limited number of studies have examined energy conservation from both social and behavioral viewpoints.

[Objective]

The goal of this research is to develop a theoretical model of energy-saving behaviors, grounded in empirical results, with implications for promoting such behaviors in the workplace. To understand the drivers behind energy behaviors in office buildings, the primary research question (PRQ) is: What are the determinants of energy-saving behavior in the workplace? This investigation aims to identify the influential factors of behavior and assess their impact on energy conservation. We examined key behaviors, such as turning off lights when not needed, to encourage energy-saving actions through the lens of social and behavioral sciences. Our approach involved integrating the ability-motivation-opportunity (AMO) model, the norm activation model (NAM), and the theory of planned behavior (TPB) into a cohesive framework. Additionally, external factors like individual comfort and intention were included in the proposed model.

We conducted an online survey targeting employees at the NECTEC building of the National Science and Technology Development Agency, as well as those working in private companies in Thailand. The collected data were analyzed using partial least square structural equation modeling (PLS-SEM) to evaluate the proposed model. By combining these three perspectives, we developed a more comprehensive model of energy-saving behavior, offering practical insights for energy control and management.

[Results]

The proposed variables have been shown to predict energy-saving behavior and enhance the AMO model. We employed the NAM to emphasize the implications of energy-saving behavior and the TPB to illustrate the cognitive deliberation process behind effective behaviors.

The empirical results from the PLS-SEM analysis reveal that, in government workplaces, all constructs except behavior motivation are significantly and positively correlated with energy-saving behavior. In contrast, in private company workplaces, ability, motivation, opportunity, intention, and individual comfort all show significant positive correlations with energy-saving behavior.

This integrated framework offers researchers a systematic method for studying the factors that influence energy-saving behavior in the workplace.

Keywords: Energy-saving behavior; Norm activation model; Ability-motivation-opportunity model; Theory of planned behavior; Thailand