

The Impact of Incentives and Regulatory Regimes on Changing Customer Behavior

A Study based on the Power Utility Customer Segments in Sri Lanka

This study aims to develop a scientific model to ascertain the impact of incentives, regulatory regimes, and new technology products on the behavior of different customer segments of the electricity market, in order to conserve energy and address the current problem of peak power deficit in Sri Lankan electricity sector.

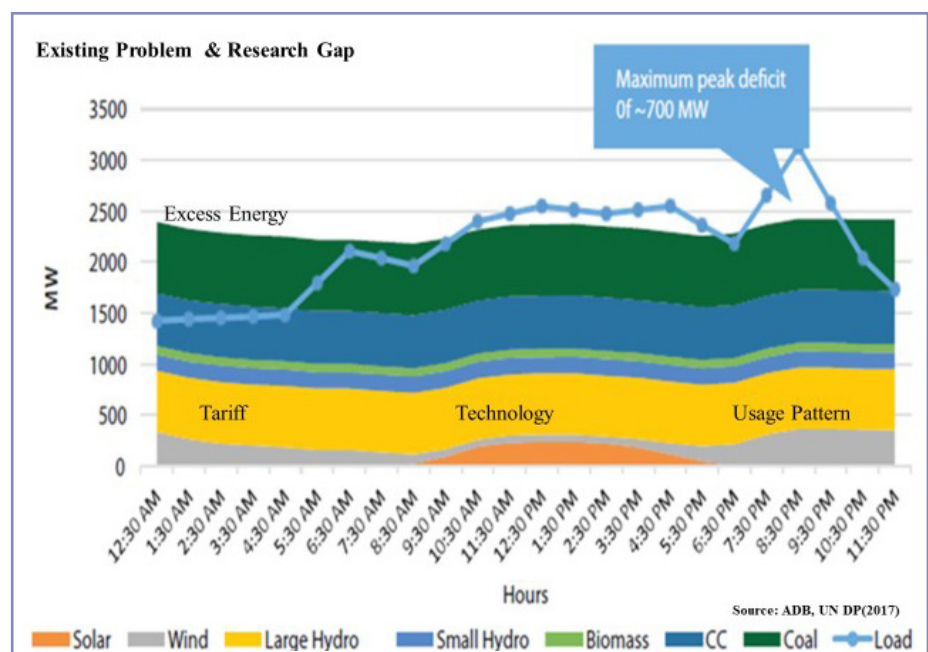


Figure 1:
The current problem of peak power deficit in the Sri Lankan electricity sector

Research Feature

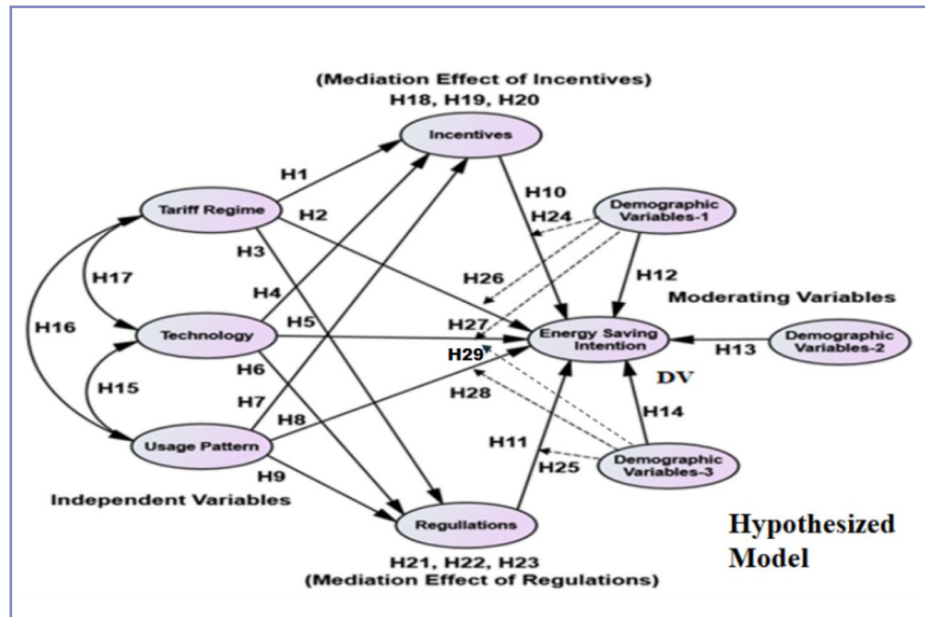


Figure 2: Hypothesized Model

Integrating tariff regimes and technological improvements with human behavior make three independent constructs on which the entire research builds. Customer perception on different interventions to conserve electricity based on these constructs measures using cross-sectional questionnaire survey as the research philosophy which preserves positivistic deductive approach. It assures the answer to existing organizational issues and hence becomes action research with blended mixed-method. The integrated model was evaluated, reduced, and re-specified using the Structural Equation Modeling (SEM) technique. The data analysis technique further uses AMOS and SMART PLS - 3 software during testing of mediation and moderation effects of different interventions as a matter of triangulation of results. The study examined three customer categories, mainly industrial, commercial, and domestic sectors, with 1500 samples to form the empirical

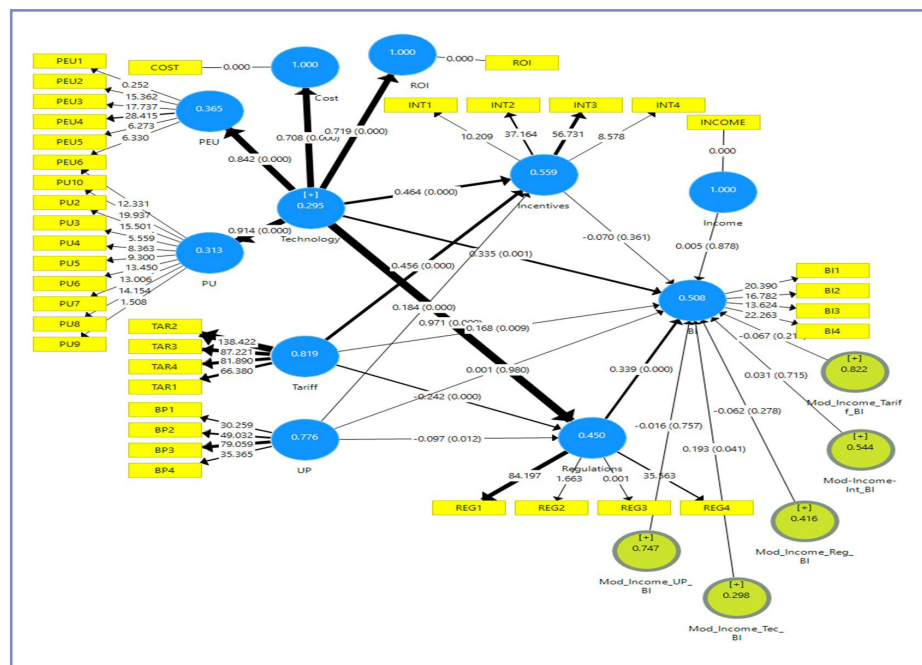


Figure 3: Domestic Consumer Model

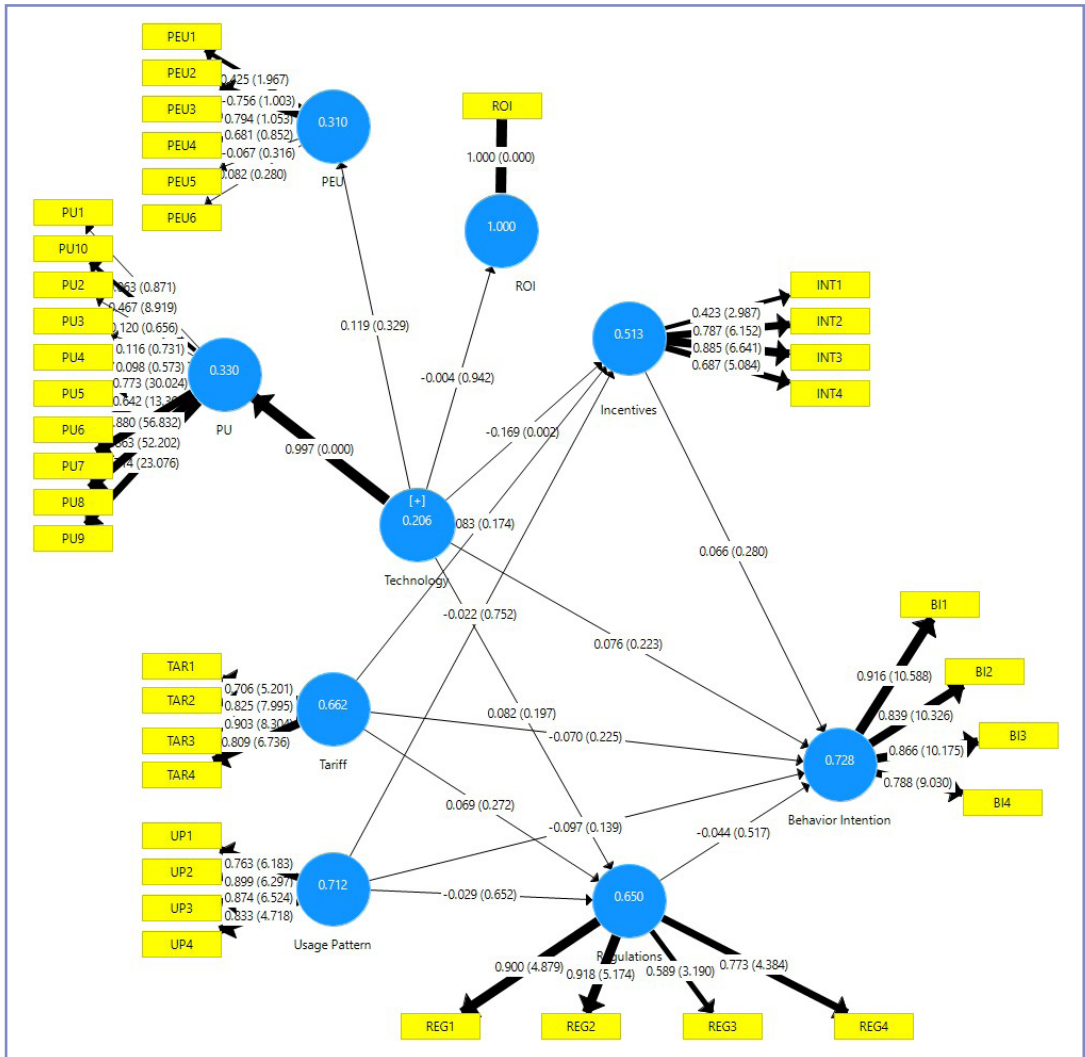


Figure 4: Commercial Customer Model

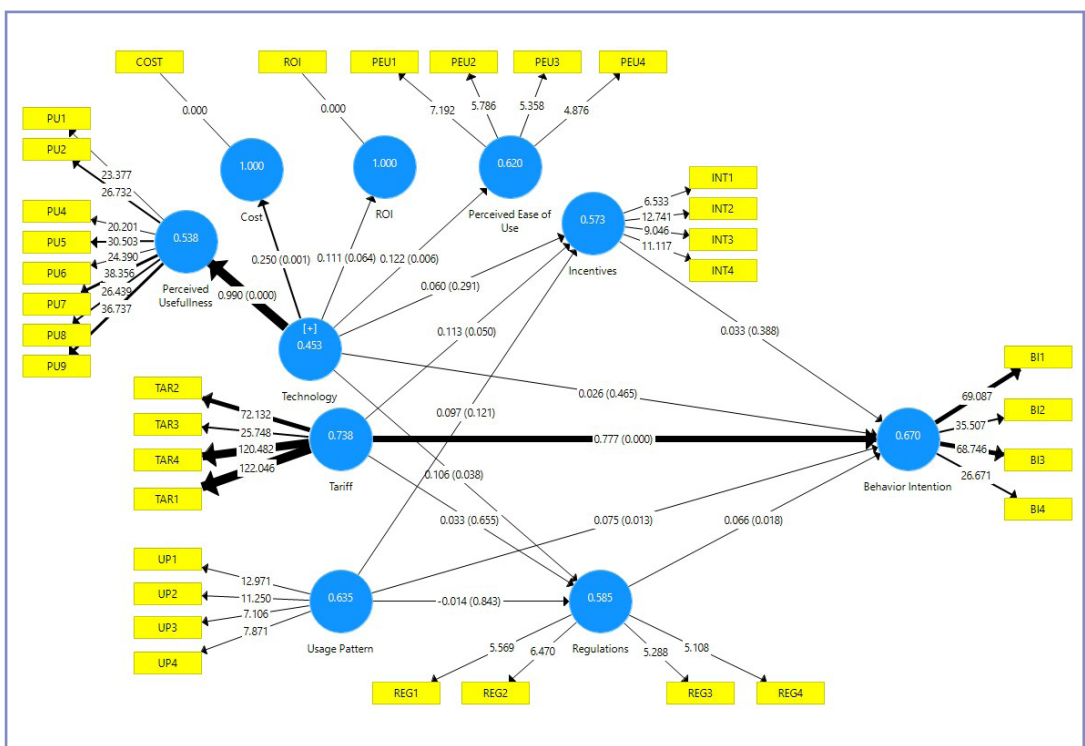


Figure 5: Industrial Customer Model

“This research study explored three tariff sectors in the Sri Lankan Electricity industry rigorously. It blends the determinants of energy conservation to form a new scientific model that can explain an individual component behavior separately and collectively”

data. The finalized model was then validated using face-to-face interviews with 100 randomly selected customers among all three groups.

Findings of the Study

This study identified significant relationships between research variables and formulated the required policy directives on possible intervention mechanisms for sustainable energy conservation in Sri Lanka. The findings show that existing incentive mechanisms focusing on lower-end domestic customers are ineffective. There exists no significant mediation for industrial customers whilst commercial customers can partially be mediated by incentives and regulations. Domestic customers can further be mediated by regulations on the proper use of tariffs and energy conservation technologies. It is further found that the income and the education level of domestic customers impact the relationship between the use of efficient tech-

nologies and changing behavioral patterns related to energy conservation. The use of the 6P concept on moderating the relationship between technology and changing usage patterns of commercial customers is also proven statistically. The model converged can be used as a scientific instrument to explain the future actions needed for sustainable energy conservation in the Sri Lankan Electricity sector.

Practical implications of the study

This research study explored three tariff sectors in the Sri Lankan Electricity industry rigorously. It blends the determinants of energy conservation to form a new scientific model that can explain an individual component behavior separately and collectively. Furthermore, integrating the existing three accepted models to form a single instrument is an outstanding achievement. In addition to that, formulating a scientific model which can explain human behavior in the light of different interventions provides a practical solution to an existing problem in this large organization, which is fully responsible for the whole country's electricity generation, transmission, and distribution aspects.

Article by

[Witharamage Jayaratne](#), [Sarath Dasanayaka](#), [Darshana Mudalige](#)

Department Management of Technology and Industrial

Management, Faculty of Business, University of Moratuwa, Sri Lanka