LEVERAGING CUSTOMER PERCEIVED VALUE WITHIN TRANSFORMATION OF ELECTRIC UTILITIES: THE CASE OF NEW BRUNSWICK

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Overview

Since the start of the electric industry in late 18th century, electric utilities have typically followed the traditional business model of generating, transmitting and distributing electricity as vertically integrated natural monopolies. Due to aging infrastructure, liberalization of energy markets, gradual loss of natural monopoly power, new non-traditional suppliers of electricity, new regulations, advanced technological innovations, use of renewable energy resources and the shift from high carbon to low carbon fuels, electric utilities are required to transform their business model. In particular, increasing competition from traditional and non-traditional suppliers of electricity calls for new products with higher customer value. While there is a growing academic discussion on how to successfully transform electric utilities, there is also discussion on the concept of customer perceived value (CPV) of electricity. Customer perceived value is a consumers' willingness to pay for a specific product, such as green energy for example, as seen by a provider of that product. The objective of this research is to develop and validate a theoretical and empirical models for CPV that may serve as a basis for the development of new energy products with high CPV within a transforming electricity market.

This research contributes to the theory by combining knowledge across the disciplines of electric engineering, economics and marketing necessary to define and expand the concept of CPV as well as to make it operational for the design of new energy products. A statistical model of the relationship between CPV of electricity and electricity attributes is presented and discussed as the basis for the development of new business models. The model is applied to the New Brunswick electricity market in Atlantic Canada.

Methods

Hedonic price approach combined with pannel data regression analysis.

Results

First, specific attributes/determinants of CPV of electricity within four groups - technical, economic, social and environmental - are identified and justified.

Second, the hedonic price approach is used to define our mathematical model.

Third, statistical model to quantify the relationship between CPV of electricty as a function of the technical, economic, social and environmental attributes of electricity is estimated for the province of New Brunswick in Canada.

At large, the research results include:

- a new methodology that links CPV of electricity to its attributes within four groups
- a new theoretical and statistical models of the relationship between CPV and its attributes
- application of the methodology and the model to the design of new energy products in the province of New Brunswick

Finally, this study establishes fundamental principles and methodology that may be generalized and applied to other energy products as well as to new products outside of the energy sector.

Conclusions

Initial findings of this study point at a very important role played by demand side determinants of electricity as well as its environmental attributes. The results suggest that community leaders, policy makers, utility experts and other concerned stakeholders in the province of New Brunswick need to be surveyed in order to be able to develop new business models for new and traditional energy products. The methodology presented in this study is intended to be applicable to other electric utilities and to other industrial sectors of economy. This research contributes to the following areas:

- role of demand side determinants, environmental and socioeconomic attributes in defining CPV of electricity
- deeper understanding of the CPV concept
- specific impacts from techical, economic, social and environmental attributes of electricity on its CPV
- identification of optimal strategies for energy products development to improve their efficiency and effectiveness

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