

EXPLORING FINANCIAL BENEFITS AND TRUST IN NEW TECHNOLOGY AS MOTIVATORS FOR ADOPTION OF LOCAL GENERATION IN AN URBAN ENVIRONMENT

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Overview

The energy system is facing disruption at the same time when cities are increasingly focusing on sustainability. With developments in technology, more and more modular energy generation systems are available and are being adopted in urban environments (Droege, 2011). Policy focused on financial benefits have long been the primary driver of local clean energy generation. In Ontario, financial support of clean energy has dwindled over the past year with the cancellation of micro feed-in-tariff schemes, the slowing down of net-metering legislation development, and the cancellation of the green energy act.¹ Nevertheless, to further promote local generation adoption, factors beyond financial benefits need to be explored. As more and more technologies reach grid parity, this will require a deeper understanding of the individual decision-making processes of people adopting local energy generation systems. Individual motivations to invest and install local energy generation can also be explained from the innovation adoption perspective (Bergek et al., 2013). According to Rogers' (1995) study on innovation, different population sections can be distinguished based on their attitude to the diffusion of innovations and stage at which they adopt said innovation: 'innovators' are the first group to purchase a new product in its 'introduction' phase. This group is followed by early adopters who adopt new technologies after a clear benefit is seen (Rogers, 1995; Huijts *et al.*, 2012). Hence, it is essential to understand other motivating factors related to consumers decision-making around the investment in the local generation of energy.

Methods

A quantitative approach has been taken for the current research. In this study the researchers collected answers to a questionnaire with a sample size of n=267 representing residents of Toronto. After an initial check for normality of data, principal factor analysis, multivariate regression analysis and a mediation analysis was conducted.

Results

The present study findings indicate that the financial factors alone are not important when it comes to decision-making around clean energy adoption for residents of Toronto. Concerns around uncertainty and trust in new technology is significant as well, as the mediation analysis shows that there is a mediation effect between the independent variables: trust in technology, and financial benefits. It showed zero-order relations between these variables and the dependent variable, adoption of local electrical generation. The findings confirmed the importance of financial benefits to the adoption of local electrical generation, particularly when the level of trust in the technology remains low, but the results also suggest that trust in technology further adds to the financial benefits motivation for adoption of local energy generation.

¹ <https://www.ontario.ca/laws/statute/09g12>

Conclusions

Clean energy is increasingly becoming cost competitive and as such more and more people are installing some form of a local energy generation system (Arkesteijn & Oerlemans, 2005; Droege, 2011). Financial factors are often considered a key factor for motivating people to adopt local generation (Balcombe *et al.*, 2013). The ability to create energy and sell it back to the grid as a profit has enticed many to adopt such technologies. However, urban adoption has been low -- understanding how trust in technology and financial benefits interplay in decision-making related to investing in local energy generation is vital furthering the promotion of local energy generation in urban areas . The current study shows that the mediation effects between trust in technology and financial benefits and their respective influence on motivating the adoption of local generation exists. Developing trust in technology through demonstrations is an important step toward attracting further adoption in urban areas. The findings from this study are specific to Toronto and can be generalised for Ontario, given the same jurisdictional construct present for other urban centres. However, challenges arise as each place has its unique characteristics and specific geographical research is required to generalise the findings of this research further.

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