



Title: Consumer behaviour and decision-making process: A study of solar energy storage adoption among residential users in Western Australia.

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Abstract:

Australia's renewable energy target (RET) has significantly influenced the nation's adoption of renewable energy. Australia has the most significant residential solar penetration rate globally, with more than 43% of households in Western Australia being fitted with residential solar panels as of March 2024. The rapid growth of residential solar has resulted in the development of the next consumer-driven technology, solar energy storage (SES). The adoption of SES has drawn tremendous interest and the current study focuses on identifying the motivations of the end-users in adopting the SES. This study involves identifying the consumer behaviour and the decision-making process that influence the adoption of SES based on semi-structured interviews conducted among 50 participants comprising of end users who have adopted solar and storage technology, those who have adopted only solar, and non-adopters. The results highlight that the decision to adopt SES is motivated by various factors, including reducing electricity bills, environmental concerns, and the desire for energy independence. The results highlight a limited awareness of emerging technologies like battery storage and electric vehicles suggesting a need for more consumer education. Rising electricity prices prompt consideration of solar and SES despite limited knowledge about solar and batteries. Barriers to adoption include lack of information, the credibility of companies, lack of clarity on return on investment, and overall savings.

Factors influencing the decision to adopt storage solutions include cost considerations, confidence in technology, and understanding of benefits like energy independence, integration with solar, awareness and education, government incentives, trust in brands, perception of future energy needs, peer influence, and electricity pricing structures. The study further highlights that peer influence and perceptions of future energy needs significantly impact adoption decisions. Recommendations from friends and family who have had positive experiences with SES can sway potential adopters. The adoption of solar energy storage in Australia is driven by a mix of financial, environmental, and independence-related motivations. Positive prior experiences with solar technology, trust in brands, and government incentives also play pivotal roles. However, barriers such as lack of information, concerns about cost and return on investment, and the credibility of companies must be addressed to accelerate SES adoption. Enhanced consumer education and transparent communication from companies can help bridge these gaps, fostering a more informed and confident market for solar energy storage solutions.

Biography:

Nikhil Jayaraj serves as the Managing Director at Regen Power Pty Ltd, a leading company in renewable energy solutions in Australia. With 14 years of professional experience in the renewable energy and environmental sectors, he has developed expertise in areas like Energy, Sustainability, Renewable Energy, and Energy Storage. Currently, he is pursuing a Doctor of Business Administration at Curtin University, Western Australia, focusing on "Transition towards Solar Energy Storage: A Multilevel Perspective." Academically, he has contributed to prestigious journals and is an active participant in various international conferences. Notably, he received the Best Speaker award at the World Renewable Energy Conference 2023.