

REVIEWER'S REPORT

Manuscript No.: IJAR-58435

Title: Extending the Theory of Planned Behaviour to Explain Household Rooftop Solar Adoption Intentions: The Roles of Environmental Concern, Government Subsidy Awareness, and Cost-Benefit Perception

Recommendation:

Accept as it is

Accept after minor revision.....

Accept after major revision

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality	✓			
Techn. Quality		✓		
Clarity		✓		
Significance	✓			

Reviewer's ID: JPR- 002

Detailed Reviewer's Report

The manuscript investigates the determinants of household rooftop solar adoption intentions in North Kerala by extending the Theory of Planned Behaviour (TPB) with three additional constructs: environmental concern, government subsidy awareness, and cost-benefit perception. The study addresses an important and contemporary issue in renewable energy adoption, particularly in the Indian context where the government has set ambitious renewable energy targets. The topic is highly relevant to researchers, policymakers, and practitioners working in sustainable energy, consumer behaviour, and environmental management. The study makes a meaningful contribution by examining behavioural determinants of rooftop solar adoption using Structural Equation Modelling (SEM) and extending the traditional TPB framework with context-specific variables.

The introduction is well organized and effectively establishes the importance of renewable energy adoption by linking climate change, India's renewable energy initiatives, and Kerala's carbon neutrality goals. The research objectives are clearly stated and logically aligned with the theoretical framework. The rationale for extending the TPB model is convincing and supported by relevant literature. However, the introduction could be strengthened by including more recent global statistics on rooftop solar adoption and by providing a clearer explanation of the research gap that distinguishes this study from previous TPB-based research conducted in India and other emerging economies.

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The literature review is comprehensive and demonstrates a good understanding of the Theory of Planned Behaviour and renewable energy adoption literature. The authors successfully explain the theoretical basis of each construct and develop six hypotheses supported by previous empirical studies. The inclusion of environmental concern, subsidy awareness, and cost-benefit perception enhances the explanatory capability of the TPB model. Nevertheless, the review could be further improved by incorporating additional studies published during 2024–2026 to strengthen the novelty and contemporary relevance of the research. A comparative discussion of findings from different countries would also enrich the theoretical contribution.

The research methodology is appropriate and adequately described. The quantitative research design, structured questionnaire, and application of Structural Equation Modelling using SPSS and AMOS are suitable for testing the proposed conceptual model. The sample of 256 household heads provides an acceptable basis for SEM analysis. Reliability, convergent validity, discriminant validity, multicollinearity, and model fit assessments have all been conducted according to established statistical standards, demonstrating methodological rigor. However, the manuscript should provide greater justification for the use of convenience and judgmental sampling, discuss possible sampling bias, and explain the questionnaire development and pilot testing process in greater detail.

The statistical analysis is thorough and professionally executed. Cronbach's alpha, Composite Reliability, Average Variance Extracted, Fornell–Larcker criterion, variance inflation factors, and model fit indices all indicate that the measurement model is statistically sound. The structural model confirms that all six proposed hypotheses are supported. Among the antecedents, cost-benefit perception exerts the strongest influence on attitude, while attitude is identified as the strongest predictor of rooftop solar adoption intention. These findings are logically interpreted and consistent with the theoretical expectations of the TPB framework. The model fit indices also demonstrate satisfactory overall model fitness.

The discussion appropriately relates the empirical findings to previous literature and explains the practical significance of environmental concern, government subsidies, and perceived economic benefits in promoting rooftop solar adoption. However, the discussion could be strengthened by comparing the magnitude of the standardized coefficients with similar studies conducted in other countries. Furthermore, although the model explains 30.3% of the variance in attitude and 26.8% of the variance in intention, the authors should discuss the remaining unexplained variance and suggest additional behavioural, technological, or socio-economic variables that may improve future predictive models.

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The conclusion effectively summarizes the principal findings and emphasizes the importance of awareness programmes, financial incentives, and favourable consumer attitudes in increasing rooftop solar adoption. The practical implications for policymakers, renewable energy agencies, and government authorities are meaningful. Nevertheless, the manuscript would benefit from a dedicated section outlining the study's limitations, such as its cross-sectional design, regional focus, non-probability sampling method, and reliance on behavioural intention rather than actual adoption behaviour. Future research directions should also recommend longitudinal studies, comparative analyses across different Indian states, and integration of additional behavioural constructs such as environmental knowledge, trust in government, technological readiness, and perceived risk.

From a presentation perspective, the manuscript is generally well written and logically structured. The tables are clear and informative, and the statistical results are presented systematically. However, several grammatical errors, punctuation inconsistencies, spacing issues, and typographical mistakes require careful proofreading. Some references appear duplicated (for example, repeated Ajzen (2001), Claudy et al. (2013), and Vu et al. (2023) citations), while formatting of government reports and online references should be standardized according to the journal's reference style. Eliminating these minor editorial issues will improve the overall quality and readability of the manuscript.

Overall, this manuscript presents a valuable empirical contribution to renewable energy adoption literature by successfully extending the Theory of Planned Behaviour within the Indian household context. The study is theoretically grounded, methodologically sound, and statistically robust. After addressing the suggested improvements regarding literature updating, methodological clarification, discussion depth, language editing, and reference formatting, the manuscript will make a significant contribution to sustainable energy and consumer behaviour research.