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Shaping A Green Future : A role of PM Surya Ghar Yojana

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Abstract: *The growing awareness of environmental issues, such as global warming, pollution, and the over-reliance on non-renewable energy sources has led to the need for sustainable energy solutions. Although solar energy is readily accessible and governments are taking steps towards promoting rooftop solar systems through schemes such as PM Surya Ghar Yojana, individual uptake is still low because of the lack of awareness, affordability, and technological issues.*

This research aims to assess the impact of PM Surya Ghar Yojana on promoting rooftop solar and to understand the impact of awareness and financial factors on consumer behavior. This study employs a quantitative research design with a questionnaire to gather primary data from the research population, which comprises students, business persons and consumers. Online survey was preferred for its ease, broad coverage and efficiency in collecting data in a short time frame.

Google Forms was used to gather data with Likert scale questions to assess the perception, awareness and adoption among respondents. The data was statistically analyzed using correlation and regression to study the relationship. The results show that awareness is positively correlated with the adoption of rooftop solar panels, while financial considerations such as cost and awareness of subsidies play a crucial role in the consumers' decision-making process.

Conclusion: The research finds raising awareness and making financial aspects more accessible play a crucial role in the success of PM Surya Ghar Yojana and a sustainable energy future..

Keywords: *PM Surya Ghar Yojana*

I. INTRODUCTION

Global warming, pollution, and climate change are some of the environmental problems that have been of great concern in the whole world. The degradation of the environment has been caused by rapid industrialization and overuse of fossil fuels which results in an increase in the level of green house gas emissions. These limitations are also being manifested through increased temperatures, floods and air pollution in India.

In order to overcome these challenges, there has been an increasing movement towards renewable energy sources such as solar, wind and hydro energy. Of all these, solar power is regarded one of the most sustainable and available sources, because it is highly abundant, and environmentally friendly. The Government of India has made various efforts to encourage the use of solar energy, such as PM Surya Ghar Yojana.

The PM Surya Ghar Yojana will support households to install rooftop solar panels by giving them funds and subsidies. This project is not only useful in alleviating the electricity bills but also in ensuring that the environment is sustainable since it lowers the reliance on non-renewable energy sources.

Need of the Study

Lack of awareness, financial constraints and technical challenges are reasons why solar energy is yet to be adopted. The study is relevant in comprehending how well PM Surya Ghar Yojana works and what factors contribute to its adoption.

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Objectives of the Study

In order to examine awareness of PM Surya Ghar Yojana.

- To determine factors that affect adoption of rooftop solar system.
- To research financial and technical viability.
- To investigate issues and obstacles to users.
- To assess the scheme on sustainability.

Scope of the Study

The research targets students, business people and the general consumers. It looks at their level of awareness, perception, and readiness to embrace solar energy as part of PM Surya Ghar Yojana. The study discusses important considerations that include financial viability, technical, access and challenges. It also examines how government subsidies affect the adoption decisions. Further, the research assesses the effectiveness of the scheme in lowering the electricity prices and enhancing environmental sustainability.

Limitations of the Study

• Limited sample size
• Time constraints
• Relyance on primary data responses.
• Potential bias in answers.
• Limited sample size
• Time constraints
• Dependence on primary data responses
• Possible bias in responses

II. LITERATURE REVIEW

The literature review offers insights into past research on renewable energy and solar uptake.

A number of studies have stressed the need for renewable energy to mitigate environmental problems. Research confirms solar energy is one of the most effective and clean substitutes for fossil fuels because it is renewable and clean.

Studies suggest that policy settings and subsidies are crucial for the uptake of solar energy. Subsidies alleviate upfront costs, enabling homeowners to afford solar systems. But a lack of technical knowledge and awareness is a significant challenge.

Research also indicates that consumer behaviour and perception play an important role. Environmentally conscious people are more likely to adopt solar energy. But potential users are deterred by factors such as high installation and maintenance costs, and low efficiency.

Another key factor mentioned in the literature is accessibility. The easy availability of solar equipment, infrastructure, and government support measures improve uptake.

In addition, studies indicate that public education and awareness can enhance knowledge and stimulate renewable energy programs.

Research Gap

While a number of studies have been conducted on renewable energy adoption and benefits of using solar energy, there is a lack of research specific to PM Surya Ghar Yojana. Most of the studies are focused on solar adoption in general, but they do not consider the solar impact on various categories of users like students and small consumers. There is also minimal research on awareness, barriers and user perceptions of this program. This research, therefore, seeks to add to the discourse by focusing on the impact of PM Surya Ghar Yojana.

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III. RESEARCH METHODOLOGY

3.1 Research Design

The research uses a descriptive design to examine the impact of PM Surya Ghar Yojana on rooftop solar uptake. It aims to explore the awareness, attitude and behaviour of the respondents towards solar energy.

3.2 Data Collection Method

- Primary Data: Collected from the questionnaire using Google Forms with five-point Likert scale.
- Secondary Data: Gathered from research articles, government reports, articles and websites.

3.3 Sampling Method

Sampling Method: Convenience Sampling
Sample Size: 100
Respondents: Students, businessmen and consumers

3.4 Research Variables

- Awareness Factors
- Adoption Factors
- Financial Factors
- Technical Factors
- Barriers/Challenges
- Accessibility
- Attitude & Perception
- Impact/Outcome

3.5 Hypothesis

Hypothesis 1 (Awareness → Adoption)
H_0 (Null Hypothesis): Awareness of PM Surya Ghar Yojana is not significantly related to the adoption of rooftop solar panels.
H_1 (Alternative Hypothesis): Awareness of PM Surya Ghar Yojana has a significant positive impact on the adoption of rooftop solar panels.
Hypothesis 2 (Finance → Adoption)
H_0 (Null Hypothesis): There is no significant relationship between financial factors (high initial cost and awareness of subsidy) and the adoption of rooftop solar panels.
H_1 (Alternative Hypothesis): Financial aspects (such as initial cost and awareness of subsidies) play a key role in the adoption of rooftop solar panels.

3.6 Data Analysis Tools

We will use the following statistical techniques to analyse the data:
Correlation Analysis - to determine association between awareness and adoption
Regression Analysis - to determine the effects of financial factors on adoption
Pie Charts - to show percentage of responses
Bar Charts/Line Charts using Excel - to represent data results

3.7 Ethical Considerations

Data of respondents will be confidential
It will only be used for research
No misinformation will be presented

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IV. FINDING & CONCLUSION

Findings of the Study

The research shows that awareness of the PM Surya Ghar Yojana does not have a significant impact on the adoption of rooftop solar panels ($r = 0.0045$), suggesting that awareness has no impact on adoption. But there is a significant negative relationship between finances and adoption ($p < 0.05$), as costs and financial constraints have a negative effect on adoption. The low R^2 (0.036) indicates that other factors are at play. In conclusion, there is a gap between awareness and practice.

Conclusion

The research shows that knowledge is not the only factor that affects adoption, and finance is important. Expensive installation and financial barriers influence households not to adopt solar panels. Hence, financial assistance and affordability need to be improved to promote adoption and the success of the program.

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