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A Study On Consumer Awareness And Willingness To Use Solar Energy In Coinbatore City

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ABSTRACT

This study investigates consumer awareness and willingness to use solar energy with a particular focus on Coimbatore City. The transition to renewable energy sources is essential to address global energy concerns, environmental degradation, and the depletion of non-renewable resources. Among the alternatives, solar energy stands out due to its sustainability, eco-friendliness, and abundant availability, particularly in sun-rich regions like Coimbatore. This study explores the level of consumer awareness and willingness to adopt solar energy solutions in Coimbatore City, aiming to identify key drivers and barriers influencing adoption. Using both primary and secondary data, the research surveyed 110 respondents across various demographics through structured questionnaires. The study employs percentage analysis and Likert scale methods to evaluate consumer familiarity, perceptions, and motivations regarding solar energy systems. Findings reveal that while awareness of solar energy is moderate, misconceptions, high installation costs, and limited understanding of government incentives significantly deter adoption. Conversely, benefits such as cost savings, environmental impact, and positive social influence were major motivators. The study concludes that enhancing public knowledge through targeted awareness programs, improving financing options, and simplifying policy access can substantially boost solar energy adoption. The insights gained are valuable for policymakers, businesses, and environmental advocates to design effective strategies that support sustainable energy transitions in urban Indian settings like Coimbatore.

Keywords: Solar Energy, Consumer Awareness, Willingness, Adoption Barriers.

INTRODUCTION

The increasing concerns about climate change, global warming, and the depletion of non-renewable resources have led to a growing interest in alternative energy sources. Among these, solar energy has emerged as one of the most promising renewable energy solutions. Solar power harnesses the energy of the sun, which is abundant, sustainable, and eco-friendly, offering significant potential to reduce dependency on conventional fossil fuels. In India, particularly in urban centers like Coimbatore, the shift towards renewable

energy solutions is gaining momentum. However, the adoption of solar energy is often influenced by various factors such as awareness, economic feasibility, government support, and perceived benefits.

Coimbatore, a leading industrial city in Tamil Nadu, is known for its manufacturing industries, educational institutions, and a growing urban population. The city's climate, with abundant sunlight throughout the year, makes it an ideal location for solar energy generation. Despite these advantages, the adoption of solar energy in Coimbatore is still in its nascent stages, with a large portion of the population unaware of the benefits and feasibility of solar power. Furthermore, many consumers remain hesitant to make the switch to solar energy due to factors such as high initialinstallation costs, lack of awareness about available incentives, and misconceptions about the efficiency and maintenance of solar systems.

This study aims to explore and compare consumer awareness and willingness to adopt solar energy in Coimbatore district. The research focuses on understanding the knowledge levels of consumers about solar power and identifies the key factors that influence their willingness to invest in solar energy. By examining various demographics, including income levels, educational backgrounds, and geographical locations, this study seeks to uncover the challenges and opportunities that exist for solar energy adoption in Coimbatore. One of the primary objectives of this research is to assess the level of awareness among the residents of Coimbatore about solar energy. Awareness encompasses not only the basic understanding of solar power but also the perceived benefits, technical aspects, and the role of government incentives. The study will investigate whether consumers are aware of the potential savings on electricity bills, the environmental advantages, and the long-term economic benefits of adopting solar energy systems.

Furthermore, the research will evaluate the willingness of consumers to adopt solar energy, considering factors such as financial constraints, availability of government incentives, perceived reliability, and the ease of installation and maintenance. While some consumers may be motivated by environmental concerns or the desire to reduce electricity bills, others may be deterred by the initial costs or lack of trust in the technology. A critical aspect of the study will be to explore the role of government policies and incentives in encouraging solar energy adoption. India's government has introduced several initiatives, including subsidies, tax benefits, and low-interest loans, to make solar power more accessible. This study will assess the awareness and impact of these incentives on the consumer decision-making process in Coimbatore.

REVIEW OF LITERATURE

Mrs. S.R. Ramya and Mr. R. Sri Vaishakh Gaurav (2023), study explores consumer perceptions and satisfaction levels regarding solar energy products in Coimbatore. Conducted with a sample size of 192 respondents, it identifies factors influencing solar energy adoption, such as cost, awareness, and benefits. The findings reveal that younger consumers (aged 26-35) demonstrate higher awareness and interest in solar products. However, barriers like affordability and lack of awareness hinder broader adoption. Despite these challenges, 92% of respondents expressed interest in solar energy systems, highlighting significant market potential. The study concludes that increasing consumer awareness through influencer-driven campaigns and targeted policy support is essential to bolster solar energy adoption. It emphasizes the need for sustained governmental and industrial efforts to advance solar energy utilization in India.

C. Anupama And M. R. Thilakam (2023), study examines the acceptance and use of energy-efficient solar devices by 400 households in Coimbatore, India, during 2019– 2020. Key findings reveal that while residents showed interest in solar devices due to environmental and economic benefits, adoption was hindered by high costs, lack of awareness, and insufficient government subsidies. Solar lights were most commonly used (71%), while other devices saw limited adoption due to functional and spatial limitations. Gender and locality influenced acceptance, with urban respondents and men showing higher mean acceptance scores. The study recommends raising public awareness about solar technology's benefits and enhancing government support to boost adoption.

Dr. D. Sivasakthi and Ms M. Kiruthika (2021), study explores consumer awareness of solar water heaters in Coimbatore. Based on a survey of 72 respondents, 55.56% were moderately aware of solar water heaters, with most influenced by factors like quality (33.33%) and environmental benefits (40.28%). The primary reasons for adoption were eco friendliness and electricity savings. However, challenges included high costs and maintenance. Recommendations include enhancing awareness through advertisements, reducing costs for wider adoption, and improving functionality during rainy seasons. The study highlights the growing consumer inclination toward solar energy as an alternative power source, emphasizing the need for improved accessibility and education to boost usage.

P. Pavithra and D. Kiruthika (2022), study on consumer satisfaction toward solar energy products highlights the growing preference for renewable energy due to rising energy costs and environmental concerns. Conducted among 100 respondents, 70% expressed satisfaction with solar products, especially solar water heaters, which were the most commonly used (35%). Female participants (66%) formed the majority of respondents, and most were educated up to higher secondary school (36%). Despite the positive feedback, recommendations included lowering costs, improving product quality, and addressing maintenance needs to enhance adoption. Overall, the study underscores the importance of promoting solar energy as a sustainable and cost-effective alternative.

Dr. D.Moorthy,Dr. P.Gurusamy and Dr. J.ChristinJeyadevi (2024): The study evaluates the cost-benefit analysis of domestic solar power in Coimbatore, India, focusing on its role in sustainable development. It highlights financial savings, environmental benefits, and challenges such as high initial costs, regulatory barriers, and limited awareness. Conducted on 183 households, the research reveals significant long-term returns on investment, with government incentives playing a crucial role. The findings emphasize the need for awareness campaigns, streamlined regulations, and better community engagement to enhance solar adoption. By promoting renewable energy, Coimbatore can reduce carbon emissions, enhance energy security, and achieve its sustainable development goals. Policy recommendations are provided for stakeholders.

STATEMENT OF THE PROBLEM

Despite the global shift toward renewable energy, solar adoption in Coimbatore remains limited due to socio-economic and awareness-related factors. While government and private initiatives have improved accessibility, consumer awareness and willingness to adopt remain uncertain. A key challenge is the lack of knowledge about benefits, cost savings, and government subsidies. Misinformation, financial constraints, and concerns about efficiency further hinder adoption. Social and psychological factors like convenience, peer influence, and environmental consciousness also impact decisions. Understanding these factors is crucial for policymakers and businesses to develop effective awareness campaigns and incentives.

SCOPE OF THE STUDY

This study focuses on assessing consumer awareness and willingness to adopt solar energy in Coimbatore city. It examines the level of knowledge among residents and businesses regarding the benefits, cost-effectiveness, and government incentives for solar energy. The study also explores factors influencing adoption, such as financial constraints, technological concerns, social influences, and environmental consciousness.The research will cover a diverse range of consumers, including homeowners, business owners, and institutions, to provide a comprehensive understanding of adoption trends. Data will be collected through surveys and interviews, analyzing consumer perceptions, barriers, and motivators. The findings will help policymakers, businesses, and energy providers design targeted awareness programs and incentives to promote solar energy adoption in Coimbatore.

OBJECTIVES

- To assess consumer awareness of solar energy in Coimbatore.
- To evaluate the factors influencing consumer willingness to adopt solar power.
- To understand the role of government incentives in promoting solar energy.
- To identify barriers that hinder the adoption of solar energy in the region.

RESEARCH METHODOLOGY

The research methodology is defined as the systematic method to solve a research problem through data gathering using various techniques, providing an interpretation of data gathered and drawing conclusion about the research data. The methodology is designed to collect data on consumer awareness and willingness to use solar energy in Coimbatore.

Research Design

- **Sampling Size:**110respondents
- **Sampling Technique:** Convenience Sampling Technique
- **Statistical Tools used:** Percentage Analysis, Likert scale analysis,
- **Primary Data:** Collected 110 respondents through the questionnaire
- **Secondary Data:** Journals, books and websites

LIMITATIONS

- The study is limited to Coimbatore district, and therefore the study cannot be extended to other areas.
- The sample size is limited to 110 respondents.
- The study is purely based on the responses of selected residents of Coimbatore city, including household consumers and individuals who are aware or interested in solar energy.

FINDINGS

Percentage Analysis

- Majority (66%) of respondents belong to the age group of 21-30 years.
- Majority (85%) of the respondents are Male.
- Majority (63%) of respondents belongs to Under Graduate.
- Majority (57%) of respondents earn a monthly income between ₹20,001 - 50,000.
- Majority (48%) of the respondents are Employed.
- Majority (28%) of the respondents are first hear of solar energy at education institutions.
- Majority (62%) of the respondents says cost saving are the most important benefits to the respondents.
- Majority (37%) of the respondents says aware of solar panel for electricity.
- Majority (46%) of the respondents says reduced electricity bill.
- Majority (36%) of the respondents says high initial cost to install solar power.
- Majority (37%) of the respondents says Positive reviews from friends & family.
- Majority (47%) of the respondents says Lack of awareness about benefits.
- Majority (40%) of the respondents says Financial incentives.
- Majority (34%) of the respondents says Social media platform.
- Majority (62%)of the respondents says Yes, but only if the benefits are significant required to make changes to lifestyle.
- Majority (44%) of the respondents says Direct financial subsidies.
  Majority (72%) of the respondents says somewhat aware about tax benefits.
- Majority (57%) of the respondents says Yes, somewhat adequate about government policies are adequate to encourage solar power adoption.
- Majority 60% (66) of the respondents are somewhat, but improvement are needed that feels current infrastructure support the widespread adoption of solar energy.

Likert scale

- The Likert value in 3, which is slightly above the midpoint value of 3. This suggests that customers are generally Satisfied with familiar of solar energy about alternative source of power.
- The Likert value in 3, which is slightly above the midpoint value of 3. This suggests that customers are generally satisfied with often do you encounter information about solar energy.
- The Likert value in 3, which is slightly above the midpoint value of 3. This suggests that customers are generally Satisfied with awareness about solar energy.
- The Likert value in 3, which is slightly above the midpoint value of 3.This suggests that customers are generally Satisfied with level of knowledge about solar energy.
- The Likert value in 3, which is slightly above the midpoint value of 3.This suggests that customers are generally Satisfied with cost saving when adoption of solar energy.
- The Likert value in 3, which is slightly above the midpoint value of 3. This suggests that customers are generally Satisfied with invest in solar energy.
- The Likert value in 3, which is slightly above the midpoint value of 3. This suggests that customers are generally Satisfied with government incentives to adopt solar energy.
- The Likert value in 3, which is slightly above the midpoint value of 3. This suggests that customers are generally Satisfied with how satisfied with current government initiative promoting solar energy.

SUGGESTION

- Run large-scale information campaigns to increase awareness of solar panel applications and benefits.
- Encourage satisfied users to share positive experiences through testimonials and social media.
- Conduct workshops, awareness drives, and interactive webinars explaining the benefits of solar energy.
- Clearly communicate available financial incentives, rebates, and tax benefits through official websites and social media.
- Use social media influencers, ads, and awareness campaigns to engage potential adopters.
- Provide evidence-backed reports and success stories to showcase how solar energy improves quality of life.

CONCLUSION

The study highlights the critical need to enhance awareness and adoption of solar energy through targeted strategies. Large-scale information campaigns, interactive workshops, and social media engagement can bridge the knowledge gap and address misconceptions. Encouraging satisfied users to share positive experiences will build trust and influence potential adopters. Clear communication of financial incentives, tax benefits, and government subsidies is essential to overcoming financial barriers. Leveraging social media influencers, ads, and digital platforms can expand outreach and engagement. Providing evidence-backed reports and success stories will reinforce the long-term benefits of solar energy adoption. Furthermore, advocating for increased direct subsidies, simplifying tax-related information, and recommending policy enhancementssuch as better subsidy structures and streamlined application processes will help create a more supportive environment for solar energy adoption. Implementing these strategies collectively will drive greater awareness, affordability, and adoption, ultimately contributing to a more sustainable future.

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