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A Study on level of Awareness and Satisfaction of Domestic Solar Energy users among Coimbatore

Dr. D. Moorthy
Associate Professor and Head,
Dept. of Commerce – BPS, Sri Ramakrishna College of Arts & Science, Coimbatore.
Mrs.V.Ramya
Assistant Professor,
Dept.of Commerce (B&I),kongunadu Arts and Science College,Coimbatore.

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Abstract: *The transition toward renewable energy has become increasingly important due to rising electricity demand, escalating tariff rates, and environmental sustainability concerns. Solar energy, in particular, offers significant potential for domestic use in urban regions such as Coimbatore, which receives abundant sunlight throughout the year. This study examines the level of awareness of domestic solar energy and the level of satisfaction among household in Coimbatore. The research focuses on identifying awareness levels related to benefits, installation procedures, subsidies, maintenance aspects, and economic feasibility, as well as assessing user satisfaction regarding system performance, cost savings, service quality, and reliability. A structured questionnaire survey was administered among selected households, including both users and non-users of domestic solar systems. The data were analyzed using appropriate statistical tools to evaluate awareness patterns, satisfaction levels, and the relationship between socio-economic factors and solar adoption. The findings indicate that while awareness of solar energy benefits is increasing, gaps still exist in technical understanding and policy-related information. Existing users generally express a positive level of satisfaction, particularly in terms of reduced electricity expenditure and environmental advantages, although issues such as maintenance support and initial investment remain concerns. The study concludes that enhanced awareness initiatives, better service mechanisms and financial options are essential to promote wider adoption of domestic solar energy in Coimbatore. The outcomes provide valuable insights for policymakers, solar service providers, and urban planners in strengthening the renewable energy ecosystem and supporting sustainable household energy practices.*

Keywords: *Solar energy, clean energy, awareness and satisfaction of solar energy*

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Introduction

In recent years, the global energy landscape has been undergoing a significant transformation driven by environmental concerns, rising energy costs, and the growing need for sustainable alternatives to conventional power sources. Among the various renewable energy options, solar energy has emerged as one of the most promising, eco-friendly and economically viable solutions for meeting household electricity needs. India, being a tropical country with abundant sunlight throughout the year, offers immense potential for solar energy generation, particularly in urban and semi-urban regions.

Coimbatore, known as the "Manchester of South India," is one of Tamil Nadu's rapidly developing industrial and residential hubs. The city has witnessed increasing electricity consumption due to urbanization, industrial expansion, and lifestyle changes. At the same time, frequent power fluctuations, rising tariff rates, and awareness of environmental protection have encouraged many households to explore domestic solar energy systems as an alternative energy source. Government initiatives such as subsidies, grid-connected rooftop solar schemes, and awareness campaigns have further motivated residents to adopt solar technologies.

The success of solar energy adoption is largely influenced by the level of awareness, perception, affordability, perceived benefits, technical understanding and satisfaction of users. While some households recognize solar energy as a long-term investment that reduces electricity bills and carbon footprint, others may still have misconceptions about installation costs, efficiency, maintenance, and reliability. Therefore, evaluating both awareness and satisfaction levels among residents becomes essential to understand the extent of acceptance and utilization of domestic solar systems.

This present study conducted in Coimbatore aiming to assess how well residents are informed about domestic solar energy, the factors influencing their decision to adopt or not adopt solar systems, and the degree of satisfaction among existing users regarding performance, cost savings, service quality, and overall benefits. The findings of this research will provide valuable insights for policymakers, solar companies, and local authorities in designing effective awareness programs, improving service standards, and strengthening the adoption of renewable energy solutions at the household level.

Statement of the Problem

Despite the growing emphasis on renewable energy, the adoption of domestic solar energy systems in Coimbatore is still relatively limited compared to its potential. Many households may not have adequate knowledge about system benefits, subsidies, installation procedures, or long-term economic advantages. At the same time, existing users may experience varying levels of satisfaction depending on performance, maintenance, service support, and cost effectiveness. The gap between government initiatives and household awareness, along with mixed user experiences, creates uncertainty regarding the effectiveness and acceptance of solar energy at the domestic level. Therefore, there is a need to systematically examine the level of awareness, influencing factors, and satisfaction levels of Coimbatore people toward domestic solar energy systems.

Objectives of the study

1. To identify the factors influencing awareness and adoption of domestic solar energy systems.
2. To assess the level of awareness regarding domestic solar energy among residents of Coimbatore.

3. To measure the level of satisfaction of existing users with respect to performance, cost savings, maintenance, and service quality.
4. To analyze the relationship between awareness and user satisfaction toward domestic solar systems.
5. To offer suggestions to the policy makers and users for improving awareness, adoption, and user experience.

Scope of the study

The study is confined to households in the Coimbatore, that are either users or potential users of domestic rooftop solar energy systems. It focuses on aspects such as awareness, adoption factors, satisfaction and challenges. The study does not cover large-scale industrial or commercial solar usage. The analysis will primarily be based on survey respondents and user experiences within the geographical boundary of Coimbatore.

Significance of the study

This study will provide useful insights for policy makers, solar energy firms, electrical service providers and urban planners in understanding how residents perceive and experience domestic solar systems. The findings will help strengthen awareness campaigns, improve service delivery mechanisms, support better implementation of subsidy schemes and encourage wider adoption of clean and sustainable household energy solutions in Coimbatore.

Need of the study

The growing demand for electricity, rising tariff rates, and increasing environmental concerns have made renewable energy a crucial area of focus in urban regions like Coimbatore. Although domestic solar energy has emerged as a viable and sustainable alternative to conventional power sources, its adoption primarily depends on the awareness and satisfactionof household users. In many cases, households may not possess adequate knowledge about installation procedures, government subsidies, financial benefits or technical aspects of solar systems. At the same time, existing users may experience varied levels of satisfaction due to factors such as system performance, maintenance support, and service reliability. Understanding these aspects is important because lack of awareness and dissatisfaction may hinder wider adoption, despite the presence of favourable policies and high solar potential in the region. Policymakers and implementing agencies require empirical evidence to identify the gaps between awareness initiatives and actual household responses. Similarly, solar energy providers need insights into user satisfaction in order to improve product quality, after-sales service and cost effectiveness.

This study is necessary to evaluate the present level of awareness and assess the satisfaction of existing users of domestic solar energy systems in Coimbatore. The findings will support informed decision-making, enhance policy implementation, promote public acceptance of renewable energy and contribute toward achieving sustainable and energy-efficient urban development.

FACTORS INFLUENCING AWARENESS OF DOMESTIC SOLAR ENERGY

1. Education and Knowledge Level

Households with higher education and technical awareness are more likely to understand solar technology, environmental benefits, and long-term savings.

2. Access to Information and Media Exposure

Awareness increases through sources such as social media, government campaigns, neighbours, installers, exhibitions, and awareness programs.

3. Government Policies and Public Awareness Initiatives

Subsidy announcements, promotional schemes, and awareness drives by government and NGOs enhance public understanding.

4. Prior Experience with Renewable Technologies

Households familiar with UPS, inverters, or energy-saving technologies tend to be more aware and receptive to solar systems.

5. Social Influence and Peer Communication

Word-of-mouth from friends, relatives, and neighboring households who have installed solar systems strongly shapes awareness.

6. Environmental Awareness and Sustainability Orientation

Households conscious about climate change, pollution, and carbon footprint are more aware of renewable energy benefits.

FACTORS INFLUENCING ADOPTION OF DOMESTIC SOLAR ENERGY

1. Initial Installation Cost and Financial Affordability

High upfront investment remains one of the major barriers to adoption, especially for middle-income households.

2. Availability of Subsidies and Financial Incentives

Government subsidies, tax benefits, easy loans, and EMI schemes significantly influence adoption decisions.

3. Expected Economic Benefits and Payback Period

Households adopt solar systems when they perceive long term savings on electricity bills and reasonable payback duration.

4. Roof Space, Housing Type, and Ownership Status

Independent houses with adequate roof space adopt solar more easily than apartments or rented houses.

5. Technical Reliability and System Performance

Efficiency of panels, inverter performance, and compatibility with grid/net-metering affect adoption willingness.

6. Service Quality and Maintenance Support

Availability of trained technicians, warranty support, and after-sales service builds user confidence.

7. Awareness of Installation Procedures and Regulations

Lack of clarity about approvals, grid connection, and documentation discourages adoption.

8. Perceived Risk and Uncertainty

Concerns about technology failure, maintenance burden, or lack of technical knowledge reduce adoption.

9. Climatic Suitability and Geographic Advantage

High sunlight and favorable weather conditions encourage adoption in regions like Coimbatore.

10. Trust in Vendors and Market Reputation

Credibility of suppliers, product quality, and transparency in pricing influence decision- making.

CHALLENGES OF ADOPTING SOLAR ENERGY

1. **High Initial Installation Cost**

The upfront cost of panels, inverters, mounting structures, and wiring is perceived as expensive, even though long-term savings exist.

2. Limited Technical Knowledge

Many households lack clarity on panel capacity, maintenance needs, inverter options, and system lifespan.

3. Maintenance and Service Issues

Concerns over panel cleaning, replacement of batteries/inverters, and availability of skilled technicians discourage adoption.

4. Space and Structural Constraints

Lack of adequate roof space, shaded roofs, apartment living, or weak roof structures make installation difficult.

5. Procedural and Regulatory Complexities

Approval processes, net-metering formalities, and subsidy documentation are often viewed as lengthy and confusing.

6. Performance Uncertainty

Households worry about output during cloudy seasons, technology reliability, and long-term efficiency decline.

BARRIERS TO ADOPTION OF SOLAR ENERGY

1. Financial Barriers

- Limited access to financing or EMI options
- Long payback period perception
- Uncertainty about subsidy disbursement

2. Market and Vendor-Related Barriers

- Lack of trust in vendors
- Fear of hidden costs or poor-quality equipment
- Inadequate warranty and service assurance

3. Social and Behavioral Barriers

- Low risk-taking tendency
- Preference for conventional grid electricity
- Dependence on community/peer experience before deciding

4. Policy and Institutional Barriers

- Inconsistent policy communication
- Delays in grid approvals
- Lack of coordinated support from agencies and utilities

5. Technological Barriers

- Battery storage costs
- Compatibility concerns with existing electrical systems
- Fear of technology becoming outdated

HOUSEHOLD PERCEPTIONS INFLUENCING ADOPTION

1. Perception of Cost vs. Benefit

Some households believe solar is expensive and not immediately beneficial, while adopters see it as a long-term investment.

2. Perception of Convenience

Concerns exist that solar systems require frequent maintenance of technical handling.

3. Perception of Reliability

Users who experience good performance view solar as dependable, whereas non-users fear power inconsistency.

4. Environmental Attitude

Environmentally conscious households perceive solar as a socially responsible and eco-friendly choice.

5. Influence of Peer Experiences

Positive feedback from neighbors increases confidence, while negative experiences discourage potential adopters.

IMPLICATION FOR POLICY AND PRACTICE

- Simplify subsidy and approval processes
- Improve vendor credibility and service standards
- Introduce low-interest loans and EMI schemes
- Strengthen awareness and technical guidance programs
- Promote apartment or community-based solar models

SAMPLING AND TOOLS

The study conducted in Coimbatore, the researcher adopted convenient sampling method to collect data, the respondents identified through the users reference. Structured questionnaire prepared for data collection. Two hundred printed questionnaires were printed and distributed, out of that 184 were collected back and the following tables presented the socio economic factors. Correction coefficient used to find the relationship between the awareness and satisfaction level.

Table 1 : Socio Economic Profile

Variable		Number of respondents (%)	Variable		Number of respondents (%)
Gender	Male	116 (63%)	**Marital status**	Married	147 (80%)
	Female	68 (37%)		Unmarried	37 (20%)
Age group	Less than 30 years	35 (19%)	**Family type**	Joint family	83 (45%)
	31 years to 45 years	55 (30%)		Nuclear	101 (55%)
	Above 45 years	94 (51%)	**Occupation**	Government employee	35 (19%)
Monthly Income	Less than 50,000	27 (15%)		Private employee	68 (37%)
	Rs. 50,001 to Rs. 1,00,000	69 (38%)		Entrepreneur	81 (44%)
	Above Rs. 1,00,000	88 (48%)	**Power consumption**	Less than 500 units	42 (23%)
				501 to 1000	69 (38%)
	Total sample	184		More than 1000 units	73 (40%)

Source : Primary data

Out of 184 samples, one hundred and sixteen (63%) respondents are male and remaining sixty eight (37%) respondents are female. Majority (63%) of the respondents are male.

Thirty five (19%) respondents are less than 30 years old. Fifty five (30%) respondents are 31 years to 45 years old and remaining ninety four (51%) respondents are above 45 years old. Majority (51%) of the respondents are above 45 years old.

Twenty seven (15%) respondent's monthly income is less than Rs. 50,000. Sixty nine (38%) respondent's monthly income is between Rs. 50,001 and Rs. 1,00,000 and remaining eighty eight (48%) respondent's monthly income is above Rs. 1,00,000. Majority (48%) of the respondent's monthly income is above Rs. 1,00,000. One hundred and forty seven (80%) respondents are married and remaining thirty seven (20%) of the respondents are unmarried. Majority (80%) of the respondents are married. Eighty three (45%) respondents are joint families and one hundred and one (55%), respondents are nuclear families. Majority (55%) of the respondents are nuclear families. Thirty five (19%) respondents are Government employees. sixty eight (37%) respondents are private employees and remaining eight one (44%) respondents are entrepreneurs. Majority (37%) of the respondents are entrepreneurs.

Forty two (23%) respondents are consuming less than 500 units of power. Sixty nine (38%) respondents are consuming the electricity between 500 units and 1000

units and remaining seventy three (40%) respondents are consuming more than 1000 units of power.

Table 2 : Awareness Level – Mean score

Sl. No.	Variables	Mean score
1	Aware of the financial and environmental benefits of domestic solar energy	2.996
2	Sufficient knowledge about solar panel installation and Functioning	3.027
3	Aware of the government subsidies and incentives available for rooftop solar systems	2.961
4	The long-term savings associated with solar energy	3.299
5	Aware of the maintenance and service requirements of solar Systems	2.894

Source : Calculated data

The above five variables are taken to find the level of awareness of solar power energy. Five point likert scale taken to find the level of awareness, the mean score taken. The respondents given high score for *"**The long-term savings associated with solar energy"*** (3.299), followed by "Sufficient knowledge about solar panel installation and functioning" (3.027), "Aware of the financial and environmental benefits of domestic solar energy" (2.996), "Aware of the government subsidies and incentives available for rooftop solar systems" (2.961) and Aware of the maintenance and service requirements of solar systems (2.894).

Table 3 : Level of Awareness

Sl. No.	Level of Awareness	Number of respondents	Percentage
1	Low	42	22.83
2	Medium	87	47.28
3	High	55	29.89
	Total	184	100

Source : Computed data

The above table shows the level of awareness of the sample respondents, out of 184 samples, forty two (22.83%) respondents are had low level of awareness. Eighty seven (47.28%) respondents are had medium level of awareness and remaining fifty five (29.89%) respondents are had high level of awareness. Majority (47.28%) of the respondents are had medium level of awareness, it concluded that the people need more awareness about the solar energy, installation, subsidy and etc. The solar energy is more needed for the country development. So the government and non-government agencies should encourage the individuals to install solar power energy in their house.

Table 4 : Satisfaction level – Mean score

Sl. No.	Variables	Mean score
1	Satisfied with the performance of my solar system	3.318
2	Satisfied with the cost savings obtained from the system	3.775
3	Satisfied with the technical support and service provided	2.093
4	Satisfied with my decision to adopt domestic solar energy	3.004

Source : Calculated

The researcher taken four variables to find the level of satisfaction of solar energy, the respondents are satisfied about *"**Satisfied with the cost savings obtained from the system"*** (3.775), followed by "Satisfied with the performance of my solar system" (3.318), decision to adopt domestic solar energy" (3.004) and "Satisfied with the technical support and service provided" (2.093). It concluded that respondents are installed solar for cost saving purpose only, they need to encourage for aware of clean energy.

Table 5 : Level of Satisfaction

Sl. No.	Level of Satisfaction	Number of respondents	Percentage
1	Low	28	15.22
2	Medium	96	52.17
3	High	60	32.61
	Total	184	100

Source : Computed

The above table shows the level of satisfaction, out of 184 sample respondents, twenty eight (15.22%) respondents are had low level of satisfaction of solar energy. Ninety six (52.17%) respondents are had medium level of satisfaction of solar energy and remaining sixty (32.61%) respondents are had high level of satisfaction of solar energy. Majority (52.17%) of the respondents are had medium level satisfaction of solar energy.

Correlation – Relationship between awareness level and satisfaction level

Table 6 : Relationship between awareness level and satisfaction level

		Awareness	Satisfaction
Awareness	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	184	
Satisfaction	Pearson Correlation	.804	1
	Sig. (2-tailed)	.000	
	N	184	184

. Correlation is significant at the 0.01 level (2-tailed)

There is positive and significant relationship between awareness and satisfaction at 1% significant level. Hence, awareness creates demand to install solar power at domestics, the result shows is satisfaction. If the consumers are satisfy they will recommend their friends and family circle to install solar power.

Suggestions

1. Strengthen Awareness and Outreach Programs

Public awareness campaigns should be intensified through community workshops, resident welfare associations, educational institutions, and local media. Demonstration projects and rooftop solar model installations can help households understand benefits, functioning, and long-term savings.

2. Improve Access to Information on Subsidies and Government Schemes

Many households lack clarity regarding subsidy procedures, net-metering policies, and installation guidelines. Simplified brochures, online portals, and helplines in regional languages should be introduced to improve transparency and accessibility.

3. Encourage Financial Support and Affordable Financing Options

Banks and financial institutions should offer low interest loans, EMI schemes and tax benefits linked financing to encourage middle-income households to adopt rooftop solar systems.

4. Enhance Service Quality and After-Sales Support

Solar vendors should improve maintenance services, warranty support and technical guidance. Periodic system inspections and customer support mechanisms can significantly increase user satisfaction and trust.

5. Promote Training and Skill Development for Technicians

Technical personnel should be trained in installation standards, safety measures and troubleshooting to ensure system reliability and performance over the long term.

6. Introduce Community-Based Solar Adoption Models

Group purchase schemes, apartment-level shared solar projects, and neighborhood solar clusters can reduce installation costs and encourage collective participation.

7. Strengthen Policy Implementation and Monitoring

Government agencies should regularly monitor project execution, track consumer feedback, and ensure that subsidy benefits reach genuine users without procedural delays.

8. Foster Collaboration between Stakeholders

Effective coordination among government bodies, solar companies, civil authorities and academic institutions can support structured awareness initiatives and technology innovation.

9. Promote Environmental Education and Sustainability Awareness

Educational institutions and NGOs should integrate renewable energy literacy programs, which helping citizens understand the environmental significance of solar adoption.

10. Conduct Periodic Research and Impact Assessments

Continuous assessment of awareness levels, user satisfaction and technology performance will help refine policies and improve solar energy adoption strategies in Coimbatore.

CONCLUSION

The study on the level of awareness of domestic solar energy and satisfaction among Coimbatorians highlights the growing relevance of renewable energy in urban households, particularly in the context of rising electricity demand and environmental concerns. The findings indicate that while many residents are increasingly aware of the economic and environmental benefits of rooftop solar systems, awareness is not yet uniform across all socio- economic groups. Gaps still exist in understanding installation procedures, subsidy mechanisms, maintenance requirements, and long-term financial returns, which in turn influence the pace of adoption. Among existing users, the study reveals a generally positive level of satisfaction with respect to reduction in electricity bills, reliability of energy supply,and environmental benefits. However, satisfaction

levels are also shaped by factors such as service quality, technical support, system efficiency, and affordability. Challenges such as high initial investment, limited technical awareness, and procedural complexities remain key barriers to wider acceptance. Overall, the study underscores the need for stronger awareness initiatives, user friendly policy frameworks, improved service delivery and accessible financing options to enhance both awareness and satisfaction among households in Coimbatore. Strengthening these areas will not only promote greater adoption of domestic solar energy but also contribute to sustainable urban development and the broader transition toward clean and renewable energy systems.

References

Bhavna Bhavna Prajapati - Factors Affecting Customer satisfaction towards Solar Panel : International Journal of Marketing &Human Resource Research , Vol 3, Issue 2 , April 2022, ITM University, India

C. Anupama , M. R. Thilakam - Assessment of the Satisfaction level of Consumers Towards Energy Efficient solar products in Coimbatore city: Vol 3 , May 2022. By Department of Resources management , Coimbatore, India.

C. N . Rajendra Prasad , Dr. K. Rajesh kumar - An Empirical Study on Customer Satisfaction Towards Solar Energy in Chennai : Indian Journal of Applied Research , Vol 7, Issue 6 , June 2017.

Kumari, S., & Moorthy, D. (2019). A Study on the Factors Influencing the Brand Switching Attitude among the Consumers of Consumer Electronics with special reference to Coimbatore City. *International Journal for Research in Engineering Application & Management (IJREAM)*, *4*(11).

Moorthi, D., & Pradeepa, V. (2014). "Customer satisfaction towards SBI green channel counter, an empirical study". *International Journal of Informative and Futuristic research*, *2*(2), 319-325.

Moorthy, D., & Gurusamy, P. (2024). Cost-Benefit Analysis of Domestic Solar Power for Sustainable Development in Coimbatore District-An analytical study. Humanities and Social Science Studies, 13(2), 114-125.

