A Study on the Influence of Efficient Marketing Strategies towards Residential Solar Power Adoption in Bengaluru City

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Abstract

Bengaluru Urban is a critical region for renewable energy adoption, currently ranking second among Indian metropolises for rooftop solar installations. Despite this standing and the availability of the central PM-Surya Ghar: Muft Bijli Yojana, the region lags behind the state target of 1.02 lakh consumers by March 2027. Adoption is often hindered by low awareness, technical uncertainty, and perceived financial barriers among urban residents. This study aims to examine the influence of marketing strategies on residential solar power adoption in Bengaluru Urban. Our intention is to identify the gap between high consumer satisfaction and current adoption rates to propose an efficient marketing framework for the sector. The research utilized a primary data collection method through two structured questionnaires distributed to Users and Non-Users in Bengaluru. Secondary data were obtained from MNRE reports, BESCOM installation records, and existing academic literature focused on Bengaluru's solar potential. Data were analyzed using comparative analysis to evaluate awareness channels, financial motivators, and service-related barriers. Based on facts, there is a heavy reliance on organic word-of-mouth marketing, with 78.9% of users learning about solar through referrals. 57.9% of potential adopters identify "lowering costs" as the primary driver, while 42.4% are deterred by high upfront investment and maintenance concerns. 52.6% of successful conversions resulted from a mix of technical demonstrations and financial ROI education. The study concludes that while satisfaction among existing users is high (94.7% recommendation rate), accelerated adoption requires a shift toward installer-led administrative support and digital social proof. Integrating technical demonstrations with transparent ROI data and digital service platforms can effectively overcome consumer skepticism and bridge the target gap in Bengaluru Urban.

***Keywords**: Residential solar power, Marketing strategies, Word-of-mouth, Consumer perception, Environmental sustainability & Energy independence, Bengaluru Urban*

Introduction

Bengaluru Urban stands as a primary candidate for a residential solar energy revolution, driven by rapid urbanization, a tech-savvy population, and an ever-increasing demand for electricity. Despite the city's favourable renewable energy laws and high solar potential, current adoption remains significantly lower than its full capability.

A critical barrier to this transition is a prevailing information gap; while **94.7%** of existing users are satisfied enough to recommend solar to others, a large segment of non-users remain hesitant due to perceived high upfront costs, technical uncertainty, and a lack of awareness regarding working of the power plant and Government subsidies. Our research indicates that the primary factors for a shift to solar are two-fold: the pursuit of long-term environmental sustainability and a tangible reduction in monthly utility bills.

Despite high initial interest in green energy within Bangalore urban areas, a significant gap remains between intent and actual installation. According to market data from Mercom India (Prasad, 2025), the Bangalore Electricity Supply Company (BESCOM) region recorded the highest intent in Karnataka with over 171,000 registrations for residential rooftop solar under the *PM Surya Ghar* initiative. However, actual installations hovered below 3,000 due to a critical lack of consumer awareness and a perceived lack of financial incentive among residents already benefiting from state-level power subsidies. This highlight's the immediate need for data-driven consumer education frameworks to pivot public perception from viewing solar as an expensive luxury to recognizing it as an essential, long-term economic necessity.

To bridge this trust and knowledge deficit, it is essential to pivot toward modernized, highimpact marketing tools and strategies. Digital-first approaches—such as ROI-focused content, educational social media reels, and transparent technical demonstrations will play a vital role in the sector effectively demystifying solar technology for the urban resident. This paper investigates how an integrated marketing framework, which combines financial ROI education with visible social proof, can instigate a widespread behavioural shift.

Ultimately, by implementing these targeted strategies, we aim to transform solar energy from a niche interest into a mainstream necessity, fostering energy independence and a sustainable future for Bengaluru.

Objectives of the Study

- To identify the primary factors for solar adoption among non-users in Bangalore urban areas.
- Evaluate the dominance of word-of-mouth as a marketing channel for solar energy.
- Examine the correlation between actual bill reduction and high customer recommendation rates.
- Design a multi-channel marketing framework that integrates technical demonstrations with data-driven financial ROI education.
- To bring a change in mindset that solar energy isn't just a high-end upgrade—it's a basic necessity for our future.

Research Methodology

This study used a primary data collection method to gather information from respondents in Bengaluru Urban regarding solar power plant adoption and perception. A descriptive and comparative research design was followed to understand both user experiences and non-user perceptions.

Data was collected through two distinct, structured questionnaires: one specifically designed for existing solar power plant **users** and another for **non-users.**

Each questionnaire was designed to address the specific experiences and opinions of the respective groups. The users' survey focused on satisfaction levels, cost savings, maintenance, efficiency, and overall experience with Solar Power Plants. The non-users' survey examined awareness, perceived barriers, financial concerns, and willingness to adopt solar energy in the future.

A total of 100 respondents were selected using convenient sampling, comprising:

- 50 Solar Power Plant users
- 50 Non-users

The collected data was organized and analyzed using percentage and comparative analysis techniques to identify trends, satisfaction levels, and barriers to adoption.

The dual-survey approach helped compare actual user experiences with the perceptions and concerns of non-users, providing a balanced understanding of solar energy adoption in Bengaluru Urban and derive efficient marketing strategies for adoption level increase.

Review of Literature

Strategies to harness Bengaluru's solar potential. *(2017)*

The study by Ashok Thanikonda and Deepak Krishnan focuses on Bengaluru and its potential for solar energy. According to the study, Bengaluru has a lot of potential for residential rooftop solar adoption due to the city's growing urbanization, rising electricity demand, and favourable renewable energy laws. The authors talk about how public participation in rooftop solar schemes can be increased through awareness campaigns and city-level promotional initiatives. They stress that adoption rates are slowed because urban consumers frequently lack clear information regarding installation processes, the availability of subsidies, and financial advantages.

The study aims to assess the potential for solar energy generation through residential rooftop installations in Bengaluru. It also seeks to identify and analyze the major obstacles that hinder the adoption of rooftop solar systems among urban households. Furthermore, the study intends to recommend strategic marketing initiatives and policy interventions that can encourage and enhance the adoption of residential solar energy systems.

The study stresses that successful marketing strategies must include collaboration among government agencies, electricity boards, private solar firms, and local communities. Public workshops, educational exhibits, solar fairs, and demonstration projects were recognized as effective means of raising awareness.

The Influence of Marketing and Awareness Campaigns on Solar Energy Adoption: A Review of Strategies and Effectiveness. ***(2024)***

This study emphasizes the role of marketing communication in boosting public support for solar energy systems. The researchers say that awareness is a major factor in encouraging solar adoption, particularly in urban areas where consumers depend significantly on digital information. The study highlights social media marketing, online ads, influencer campaigns, webinars, and customer testimonials as effective promotional tools that enhance consumer perceptions.

The study aims to assess how marketing and awareness campaigns contribute to increasing the adoption of solar energy among residential consumers. It also seeks to determine the communication strategies that most effectively influence consumer attitudes and decisionmaking regarding rooftop solar systems. Furthermore, the study intends to evaluate the impact of digital marketing initiatives and financial awareness on consumer choices related to the adoption of solar energy solutions.

In Bengaluru Urban, where internet access and smartphone adoption are widespread, digital marketing efforts can greatly boost awareness of solar energy. The study also highlights localized initiatives, such as neighborhood events and customer referral programs, aimed at building social trust and increasing awareness of solar installations.

Consumer Purchasing Behaviour towards Eco-Environment Residential Photovoltaic Solar Lighting Systems. ***(2018)***

This study explores psychological and behavioural factors that affect consumers' decisions about residential photovoltaic systems. The researchers pinpoint environmental concern, social pressure, economic savings, product awareness, and technological trust as key factors influencing solar adoption behaviour.

The study aims to determine the factors that influence consumers' purchasing decisions regarding residential solar systems. It also seeks to examine the relationship between environmental concern and the adoption of solar energy among households. In addition, the study intends to assess the extent to which social influence affects the adoption of renewable energy solutions.

The paper emphasises out that consumers are more inclined to embrace solar systems when marketing messages focus on environmental sustainability, lower carbon emissions, and energy independence. Social influence is also significant, since consumers frequently model the behaviour of neighbours or community members who have successfully adopted solar technology.

In Bengaluru Urban, rising environmental awareness driven by pollution and climate issues can make green marketing strategies highly effective in shaping residential purchasing behaviour.

Intention to Adopt Sustainable Energy: Applying the Theory of Planned Behaviour Framework. ***(2018)***

This study indicates that consumers' intention to adopt solar energy is influenced by their attitude, subjective norms, and perceived behavioural control. A more favourable view of renewable energy boosts the likelihood of installing rooftop solar systems. Consumers are also affected by family, neighbours, and community groups.

The study aims to apply the Theory of Planned Behaviour (TPB) to understand the adoption of sustainable energy practices. It also seeks to identify the psychological factors that influence the adoption of residential solar energy systems. Furthermore, the study intends to examine how social norms and perceived behavioural control affect consumers' intention to adopt solar energy solutions.

The paper emphasis out that visible rooftop installations foster social acceptance and prompt urban residents to follow suit. Marketing campaigns featuring customer testimonials, referral programs, and community outreach efforts can thus boost adoption rates. The study further notes that consumers feel more confident when companies offer clear financial guidance, EMI options, subsidy support, and straightforward installation processes.

A Review of Consumer Adoption of Rooftop Solar PV in India and Effective Frameworks. ***(2021)***

This review offers a comprehensive examination of the obstacles faced in adopting rooftop solar energy in India. The authors point to financial barriers, insufficient awareness, trust issues, and technical uncertainty as the main hurdles to adoption. The study argues that marketing strategies must prioritize customer education, clear pricing, financial assistance, and initiatives that foster trust.

The study aims to examine the key factors influencing the adoption of rooftop solar photovoltaic (PV) systems in India. It also seeks to determine the major obstacles hindering the adoption of residential solar energy systems among consumers. Furthermore, the study intends to propose practical frameworks and strategies that can enhance consumer adoption of rooftop solar energy solutions.

The paper also highlights how after-sales service and the credibility of installers affect consumer choices. City-based consumers favour businesses that provide warranties, maintenance services, and transparent details about system performance.

Research Analysis

The research analysis phase integrates primary findings from field surveys with secondary data to evaluate the solar landscape in Bengaluru Urban. Primary data was gathered through a structured Google Form questionnaire method, targeting two distinct groups: existing solar power plant Users and Non-Users.

This primary evidence is supplemented by secondary data sourced from MNRE reports, BESCOM installation records, and academic literature focused on regional solar potential. By comparing the experiences of satisfied users with the perceived hurdles of potential adopters, this analysis identifies the critical marketing gaps hindering widespread adoption.

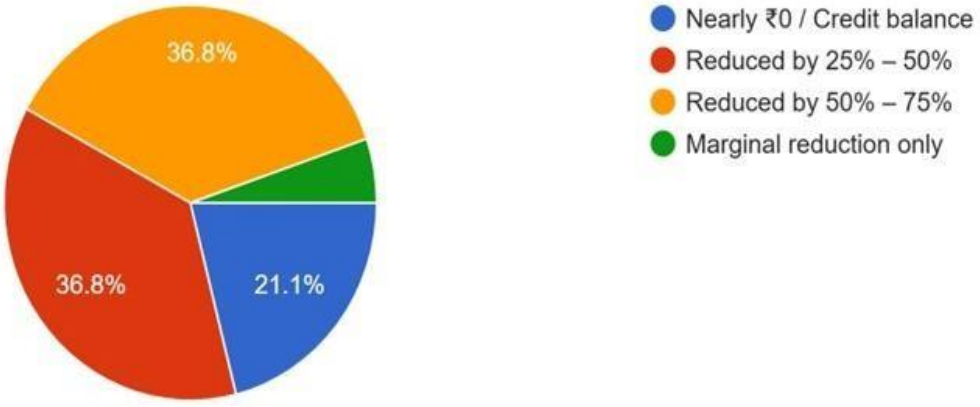
The following sections utilize percentages and comparative trends to assess information channels, financial motivations, and technical barriers, ultimately providing a data-driven foundation for the proposed marketing strategies.

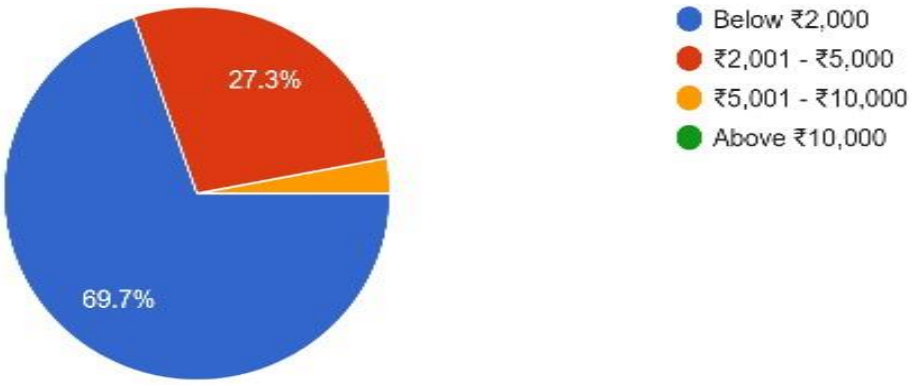
1. Awareness and Information Channels

i. **The Referral Engine:** 78.9% of existing users first learned about solar options through referrals from friends and family. ii. **Non-User Awareness:** Similarly, 69.7% of non-users became aware of solar energy solutions via word-of-mouth.

Analysis and Interpretation: Both groups show a heavy reliance on social trust over traditional media or direct sales. This indicates that the most effective marketing "tool" currently is the existing satisfied customer base.

Economic Impact and Decision Factors



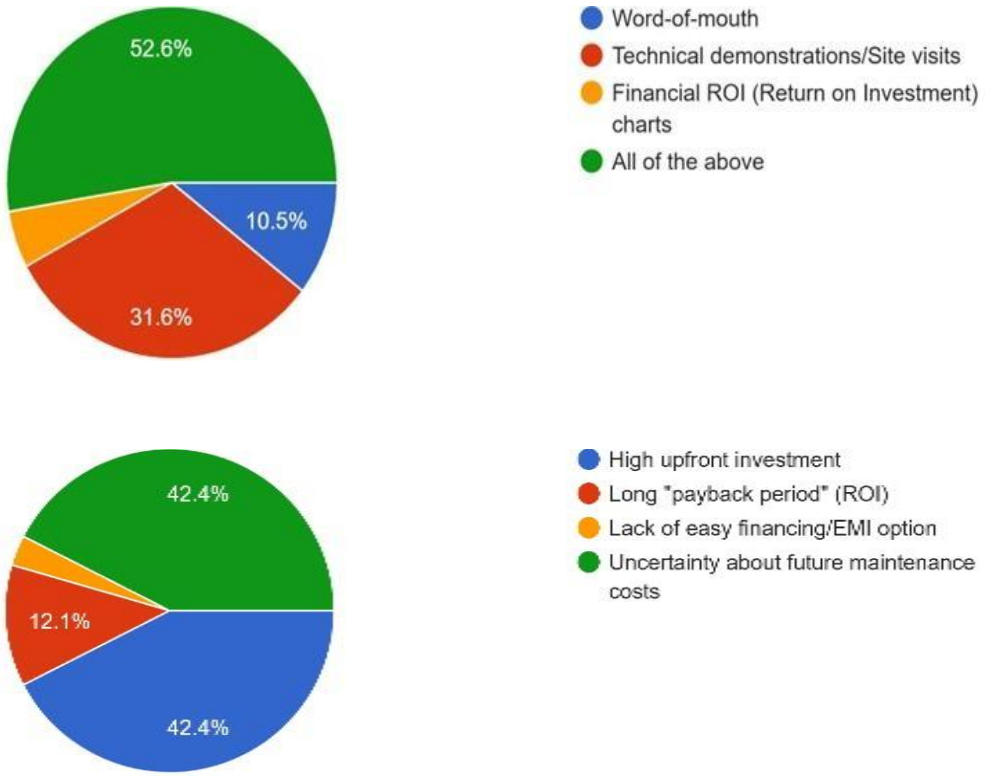


i. **Realized Savings:** 36.8% of users reported their bills were reduced by 50–75%, and 21.1% achieved a nearly zero bill or credit balance.

ii. **The Decision Hook:** 57.9% of non-users stated that "lowering costs" is the most important factor for them to opt-in. iii. **The "If-Then" Scenario:** 45.5% of non-users would switch to solar "immediately" if a 70% bill reduction was guaranteed.

Analysis and Interpretation : The analysis indicates that financial saving is the primary factor for solar adoption, as existing users reported major reductions in electricity bills while non-users showed strong willingness to switch if guaranteed significant cost savings.

Conversion Drivers and Trust Barriers



i. **Closing the Sale:** 52.6% of users identified that a combination of word-of-mouth, technical demonstrations, and ROI charts was most effective in convincing them to install a system.

ii. **Primary Hesitations:** For those who have not yet switched, the leading concerns are "High upfront investment" (42.4%) and "Uncertainty about future maintenance costs" (42.4%).

Analysis and Interpretation: The findings show that solar adoption is primarily driven by trust-building factors such as word-of-mouth, technical demonstrations, and ROI evidence, while high upfront investment and uncertainty about maintenance costs remain the key barriers preventing non-users from making the switch.

Comparative Financial Analysis of Residential Solar Systems (Bengaluru Urban)

System Type	Plant Capacity	Average Cost (INR)	PM-Surya Ghar Subsidy (INR)	Expected Bill Reduction	Average Return on Investment (ROI)	Grid Integration / Buy-Back Rates
Grid-Tied (On-Grid)	1 kW	₹1.25 Lakhs – ₹1.35 Lakhs	₹30,000	70% – 80%	4 – 5 Years	Net Metering via BESCOM; Excess energy bought back at **₹2.50 – ₹3.50 per unit**.
	2 kW	₹1.75 Lakhs – ₹2.00 Lakhs	₹60,000	70% – 80%	4 – 5 Years	
	3 kW & Above	₹2.60 Lakhs – ₹2.80 Lakhs	₹78,000 (Capped)	70% – 80%	4 – 5 Years	
Off-Grid (With Battery)	Per kW	₹1.50 Lakhs/per kW	No Subsidy Available	60% – 70%	4 – 5 Years	Standalone System; No grid sellback.

Results and Discussion

The research clearly indicates that solar energy adoption in Bengaluru Urban is influenced more by trust and financial practicality than by environmental awareness alone. Existing users largely discovered solar solutions through referrals from friends and family,

while non-users also relied heavily on word-of-mouth communication. This shows that people are more likely to trust real-life experiences from individuals rather than advertisements or promotional campaigns. In today's market, satisfied customers themselves act as the strongest influencers for solar adoption.

Another important finding is the strong economic impact of solar power systems. A significant number of users experienced major reductions in electricity bills, with some even achieving nearly zero monthly costs. This proves that solar energy is not only an environmentally sustainable solution but also a financially beneficial long-term investment. The response from non-users further supports this, as many expressed willingness to adopt solar power systems if there was guaranteed substantial savings. This highlights that cost reduction remains the primary motivation behind consumer decisions.

However, despite the financial advantages, adoption barriers continue to exist. High initial investment costs and uncertainty regarding maintenance were the biggest concerns among nonusers. In many cases, consumers may be interested in solar technology but hesitate due to lack of technical knowledge, fear of hidden expenses, or confusion about subsidy procedures or any financial aid. This suggests that the issue is not a lack of interest, but rather a lack of confidence and simplified guidance.

From a personal perspective, solar companies should focus less on aggressive sales methods and more on trust-building and customer education. Demonstrations, transparent ROI calculations, and real customer testimonials can significantly improve consumer confidence. Simplifying the process of documentation, taking up subsidy applications, and after-sales service would also encourage wider adoption. Additionally, integrating smart monitoring systems and maintenance alerts through mobile applications can make solar power systems more user-friendly and reliable for households.

The study also suggests that social visibility can influence adoption behaviour. When homes visibly showcase solar installations, neighbouring residents may become more curious and motivated to explore similar solutions. Therefore, awareness campaigns should be community oriented rather than purely commercial.

Overall, the findings reveal that Bengaluru Urban has strong potential for increased solar adoption if financial concerns, maintenance fears, and information gaps are addressed effectively. With proper support systems, transparent communication, and technology-driven service models, solar energy can become a mainstream and sustainable solution for urban households.

Proposed Marketing Strategies & Suggestions

Digital Awareness and Social Validation

Solar companies should focus on social media marketing through customer testimonial reels, live installation videos, and community-based promotional campaigns. Real-life user experiences can reduce technical uncertainty, build trust, and encourage neighborhood-level adoption through social influence and visibility.

Subsidy-Focused and Service-First Approach

Targeted advertisements should clearly highlight Government subsidy benefits under PM Surya Ghar Yojana, including the ₹78,000 subsidy fo 3kW and above to reduce concerns about high upfront investment. In addition, installers should provide a “hands-off” service by managing all documentation, subsidy applications, and approval procedures for customers.

Localized Technical Support and Smart Maintenance

To address maintenance concerns, solar power plants should include smart monitoring features such as low battery water-level indicators and inverter servicing alerts. Solar maintenance services should also be integrated into platforms like Urban Company to ensure easy access to technical support and repairs.

Integrated Monitoring and Sustainability Promotion

Companies should develop integrated mobile applications connected with Bangalore Electricity Supply Company to provide real-time monitoring of units supplied, units utilied, electricity savings, ROI etc. Additionally, Sustainability Signboards on solar-powered properties can create awareness and encourage social adoption within residential communities and can create a sense of pride among users of Solar Power Plants.

Conclusion

The study concludes that while satisfaction among existing users is high—evidenced by a 94.7% recommendation rate—accelerating the shift toward energy independence requires a strategic marketing and technological pivot.

The primary driver for this transition is the urgent need for environmental sustainability, as businesses and individuals are increasingly expected to adopt practices that reduce ecological impact while maintaining efficiency.

By integrating installer-led administrative support with "Smart" indicators and visible community signage, the sector can move beyond simple cost-savings toward a value-based model of energy autonomy. This shift to solar significantly enhances environmental performance, with findings in similar sectors showing that integrated green practices can lead to drastic reductions in carbon emissions and waste. (Altassan, 2023; Singh et al., 2021).

Ultimately, fostering a deep-seated commitment to sustainability ensures that solar adoption is not just a financial decision but a contribution to "Mother Earth," strengthening stakeholder trust and ensuring long-term competitiveness for the region's energy future.

Our world relies heavily on natural resources, and it is our responsibility not to overuse them so that future generations have what they need. While there are several sustainable energy options out there—like wind and water power—solar energy is by far the most practical choice for everyday homeowners.

Thanks to modern technology, solar panels are easier to install than ever, require very little space, and are becoming much more affordable. It is the perfect time for people to make the switch and start harnessing the power of the sun.

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