



A study on consumer awareness and perception towards green energy products in Nashik

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Abstract

The growing emphasis on sustainable development has led to a growing interest in among consumers in green energy products. Green energy products, such as solar panels, energy-efficient appliances and electric energy solutions, play a vital role in reducing environmental impact and promoting long-term sustainability. The aim of the study is to assess the level of consumer awareness and perception of green energy products. The research is also analysing the relationship between consumer awareness and consumer perception in order to understand how awareness affect the uptake of green energy solutions.

The study adopts a descriptive and analytical research design. Primary data were collected through a structured questionnaire administered to consumers using convenience sampling. A sample of respondents was selected to represent diverse demographic backgrounds. Data were analysed using percentage analysis, correlation and regression techniques.

The findings show that consumers have a moderate to high level of awareness of green energy products and their environmental benefits. The results further reveal a positive and significant correlation between consumer awareness and consumer perception towards green energy products. A higher level of awareness contributes to positive perceptions related to cost effectiveness, reliability and environmental responsibility. The study concluded that rising consumer awareness through education, digital marketing, and policy initiatives can significantly increase positive perceptions and encourage the adoption of green energy products. The findings provide valuable insights for marketers, policymakers, and businesses aiming to promote sustainable energy solutions.

Keywords: Consumer awareness, consumer perception, green energy products, renewable energy, sustainable consumption, environmental sustainability

Introduction

The growing concern about the environmental degradation, climate change and the depletion of non-renewable energy resources have increased the global focus on sustainable and environmental friendly energy solutions. Green energy products, including solar panels, energy-efficient appliances, electric vehicles and renewable energy systems, are seen as essential for achieving environmental sustainability and reduce carbon emissions. Governments, businesses and consumers are increasingly being encouraged to adopt green energy solutions as part of long-term sustainable development strategies.

In recent years, consumer behaviour has been a key factor in the successful adoption of green energy products. While technological progress has improved the availability and efficiency of green energy solutions, their widespread adoption depends to a large extent on consumer awareness and perception. Awareness refers to degree of consumer information on green energy products, their benefits, and their environmental impact. Perception reflects consumers' beliefs, attitudes, and assessment about the price, reliability, and usefulness of these products. A lack of awareness or negative perceptions can act as significant barriers to adoption, despite the long-term benefits of green energy solutions.

Understanding consumer perception and attitudes is therefore vital for marketers, policymakers and energy companies seeking to promote green energy products effectively. Increased awareness can create positive perceptions, leading to greater acceptance and use of sustainable energy solutions. This aim of this study is to

assess consumer awareness and perception towards green energy products and to analyse the relationship between these two factors. The results of this research are expected to provide valuable insights for the design of efficient marketing strategies and policy initiatives that encourage sustainable energy consumption.

Literature Review

Previous studies have highlighted the increasing importance of green energy products for achieving environmental sustainability and reducing dependency on conventional energy sources. According to Rai and Beck (2015) [12], consumer awareness plays a key role in the uptake of renewable energy technologies, as informed consumers are more likely to adopt and invest in sustainable energy solutions. Awareness of environmental benefits, government incentives and long-term cost savings are positively influencing consumer attitudes toward green energy products.

Several researchers have studied consumer perception of green energy products and found that perception is influenced by factors such as cost, reliability, performance, and environmental concern. Kumar and Sharma (2017) [7] highlights that consumers generally have a positive perception of green energy products, but high initial costs and lack of technical knowledge often act as barriers to adoption. Similarly, Joshi and Rahman (2019) [6] found that positive environmental attitudes significantly enhance consumer perception and intention to use green energy solutions.

The relationship between consumer awareness and perception has also been extensively investigated. Yadav

and Pathak (2016) [15] conclude that increased levels of awareness levels lead to a more positive perceptions and stronger purchase intentions for green products. In the Indian context, Singh and Pandey (2020) have identified a strong positive relationship between awareness of renewable energy and consumer acceptance. Despite the growing research in this field studies are scarce, focusing on the combined impact of awareness and perception towards green energy products from a management and marketing point of view. Therefore, the present study attempts to fill this gap by examining how consumer awareness influences perception towards green energy products.

Research Objectives

1. To study the level of consumer awareness regarding green energy products.
2. To examine consumer perception towards green energy products.
3. To analyse the relationship between consumer awareness and consumer perception towards green energy products.
4. To assess the impact of consumer awareness on the adoption and acceptance of green energy products.

Hypothesis

1. H₁-Consumer awareness has a significant positive relationship with consumer perception towards green energy products.
2. H₂-Consumer awareness has a significant impact on the adoption and acceptance of green energy products.

Research Methodology

The study adopts a descriptive and analytical research design to examine consumer awareness and perception towards green energy products. A sample size of 260 were collected through a structured questionnaire administered to consumers. The questionnaire consisted of closed-ended questions measured using a five-point Likert scale. Convenience sampling was used to select respondents.

Data Analysis and Interpretation

This chapter presents the analysis and interpretation of data collected through the structured questionnaire. Percentage analysis, correlation and regression approaches were used to analyse the data and evaluate the study's hypotheses.

Demographic Profile of Respondents

Variables	Categories	Number of Respondents	%age of Total Respondents (n=260)
Gender	Male	156	60
	Female	104	40
Age	Below 20	22	8
	21-30	59	23
	31-40	97	37
	41-50	68	26
	Above 50	14	6
Educational Qualification	Undergraduate	64	24
	Postgraduate	66	26
	Professional	71	27
	Others	59	23
Occupation	Salaried	87	33
	Business	58	22
	Self employed	79	31
	Others	36	14
Monthly Income	Below ₹25,000	29	11
	₹25,000–₹50,000	79	31
	₹50,001–₹75,000	65	25
	Above ₹75,000	87	33

The correlation analysis $r = 0.62$ reveals a strong positive relationship between consumer awareness and consumer perception towards green energy products. This indicates that as consumer awareness regarding green energy products increases, their perception becomes significantly more positive. The result suggests that awareness plays a crucial role in shaping favourable consumer attitudes towards green energy solutions.

The regression analysis was conducted to examine the impact of consumer awareness on consumer perception towards green energy products. The model explains 39% of the variance in consumer perception, as indicated by an R^2 value of 0.39, which suggests a good explanatory power in the context of behavioural research.

The standardized beta coefficient $\beta = 0.62$ indicates a strong and positive impact of consumer awareness on consumer perception. This implies that an increase in consumer awareness significantly improves consumers' perceptions of green energy products in terms of cost effectiveness, reliability, and environmental benefits. Since the p-value is

less than 0.05, the null hypothesis is rejected, and the alternative hypothesis is accepted.

Further, consumer perception shows a strong positive correlation with adoption of green energy products $r = 0.68$, implying that positive perception substantially influences consumers' willingness to adopt green energy products. The regression analysis was conducted to examine the impact of consumer awareness on the adoption and acceptance of green energy products. The model explains 31% of the variation in adoption and acceptance, as indicated by an R^2 value of 0.31, which is considered satisfactory in consumer behaviour research.

The standardized beta coefficient $\beta = 0.56$ indicates a positive and statistically significant impact of consumer awareness on the adoption and acceptance of green energy products. This suggests that consumers with higher awareness levels are more likely to adopt and recommend green energy products. Since the p-value is less than 0.05, the null hypothesis is rejected, and the alternative hypothesis is accepted.

Findings

1. The study found that the majority respondents possess a moderate to high level of awareness of green energy products. Consumers are particularly aware of the environmental benefits, energy conservation, and long-term sustainability that come from green energy usage.
2. The findings show that consumers generally have positive perception of green energy products. Respondents consider green energy as eco-friendly, socially responsible, and beneficial for future generations.
3. A Correlation analysis reveals a strong positive relationship between consumer awareness and the adoption of green energy products. This suggests that as awareness increases, the likelihood of adoption also increases.

Suggestions

1. Government agencies and energy companies should carry out information programs through digital media, workshops, seminar and community campaigns to educate consumers on the benefits and long-term cost savings of green energy products.
2. Marketing firms should actively use social media platforms, influencer marketing and online advertising to communicate simple and engaging messages about the environmental and economic advantages of green energy products in a simple and engaging manner.
3. Companies should aim to build a strong green brand image by highlighting sustainability, reliability and environmental responsibility to order to increase consumer perception and trust.
4. Clear information regarding product quality, warranties, after-sales service and performance should be communicated to consumers to reduce uncertainty and increase confidence in green energy products.

Conclusion

The present study examined consumer awareness and perception of green energy products and their impact on adoption and acceptance. The findings show that consumers generally have a moderate to high level of awareness regarding green energy products, particularly about their environmental benefits and long-term cost efficiency. Positive consumer perceptions play a significant role in shaping positive attitudes towards the adoption of green energy solutions.

The statistical analysis confirms a strong positive relationship between consumer awareness and the adoption of green energy products. Correlation and regression results suggest that awareness and perception combined explain a significant part of the variation in adoption behaviour, leading to the rejection of the null hypothesis. This highlights the importance of educating consumers about green energy technologies to encourage wider acceptance.

The study also highlights that although consumers are environmentally conscious, practical problems such as initial cost, lack of technical knowledge and limited availability remain barriers to adoption. Therefore, improving consumer awareness through targeted information campaigns, financial incentives and supportive government policies can significantly improve adoption rates.

Overall, the study concluded that rising consumer awareness and creating positive perceptions are crucial for promoting green energy products. Policymakers, marketers and energy suppliers need to focus on awareness-rising strategies to

accelerate the transition to sustainable and environmentally sound energy consumption.

Limitations

1. The study was conducted on a limited sample.
2. Responses were collected through questionnaires, which may be subject to respondent bias.
3. The study focuses mainly on consumer awareness, perception, and adoption of green energy products. Other factors such as income level, technological readiness, infrastructure availability, and government policies were not examined in detail.

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