

Determinants to Prefer Solar Products by The Customers and Problems Faced by Them.

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Abstract

This study primary focuses on understanding problems and factors influencing the solar energy in Erode district. Solar energy one of the most promising forms of renewable energy can be harnessed in two principal ways. Majority of Indians still use traditional fuels such as dried cow dung, agricultural waste and fire wood as cooking fuel. These forms of fuels are inefficient sources of energy, as its burning releases high levels of smokes, particulate matter. It is obvious that solar products are the products which can carry out the energy demand accomplishment aim. It has also been understood that solar products need awareness among the consumers but how should it be promoted, how should it be made available for all the consumers or for consumers at mass level, how should solar products be advertised, how should it get attention in the market in comparison to others products? These are few questions which have significant impact on solar products. The answers to all of these questions can be met by one of the marketing management's core concept i.e. "Marketing Strategy". Marketing strategy is defined as, "A business' overall game plan for reaching people and turning them into customers of the product or service that the business provides".

Keywords: Solar products – Consumers – Marketing.

INTRODUCTION

India has been recorded as one of the fastest growing country among developing countries. Hence, the consumption of energy is also high. The demand of energy is highest in the industry sector followed by building sector, transport sector and agriculture sector. Fuel wood and biomass burning is the primary reason for permanent haze and smoke observed in rural and urban areas of India. Fuel wood and biomass cakes are used for cooking and general heating needs in most of the part of rural India. These cooking stoves are present in over 100 million Indians households and are used two or three times a day daily.

The overall demand of energy in India is escalating day by day and there are still large areas which need electrification. This demand can be fulfilled by solar energy as it has been noted that solar energy is most practicable energy for electrification among the natural sources of energy in the Indian context.

Solar products are technologies that capture energy from the sun and convert it into usable electricity. They typically include solar panels, inverters and batteries and they are a key part of renewable energy systems, reducing reliance on fossil fuels. Solar products are integrated into residential, commercial and even industrial setups. We can go into the technical specs- efficiency, durability and different materials used.

REVIEW OF LITERATURE

Olaniran Anthony Thompson and et.al (2020) analysed with primary data. Such collected data have been collected by using multi-stage random sampling technique. Descriptive statistics, 5-likert scale type and regression model were used to analyze the data collected. The respondents agreed that solar energy is the most appropriate source of energy compared to fossil fuel with mean score of 3.83. Price stability (0.83) attribute of solar energy is

one of the reasons that make it preferred by the respondent. A unit increase in household income will lead to 0.0879592 preferences for solar energy in the study area. The study recommends that government at all levels should sensitize the households on the usage of solar energy in Nigeria to achieve the goal seven of SDGs.

Anitha and vatsala (2026) made a study on customers preference towards solar products in Nammakal District. They collected data from 100 respondents bu using random sampling technique. Such collected data have been analysed by using Chi-square test and Rank Analysis. They suggested that improvement of quality of promotion, price should be reduced and research and development.

OBJECTIVE OF THE STUDY

- Determinants to prefer the customers by the solar products.
- Problems faced by the customers by using solar products.

NATURE AND SOURCE OF DATA

Primary data were used for this study. Primary data have been collected by using through well- structured Interview Schedule. An Interview Schedule was used to obtain relevant information on numbers of variables such as: socio-economic profile of the selected solar energy users and non-users such as age of consumers, household size, education, gender and occupation, willingness to pay criteria, their knowledge on solar energy and estimated annual income.

SAMPLING DESIGN AND METHODOLOGY

The present study is confined only to solar products aand it is purely based on primary data. The required primary data have been collected by using Random sampling method. Such collected data have been analysed with tools like Garrett Ranking Technique and Kendall's Co-efficient of Concordance.

Challenges faced by them have been analysed with Henry Garrett's Ranking Technique and Kendall's Co-efficient of Concordance ('W') test.

Ranks assigned by the members have been converted into score by using the following formula and on the basis of Garrett's Ranking Table.

$$\text{Percent Position} = \frac{100(R_{ij} - 0.5)}{N_j}$$

Where,

R_{ij} = Rank given for the i^{th} determinant by the j^{th} members.

N_j = Number of determinant ranked by j^{th} members.

The percentage score for all the ten ranks have been converted into scale value by using scale conversion Table given by Henry Garrett's. The scale value for the first rank to ten ranks is 81, 79, 63, 58, 52, 48, 42, 37, 29 and 18. (Vide Appendix-ii). The score value (fx) is calculated for each determinant by multiplying the number of members (f) with respective scale values (x). The total scores are found by adding the score values (fx) of each rank for every determinant.

DATA ANALYSIS AND INTERPREATATION

To identify the factors influencing to become a solar products, a pilot study was conducted with 12 factors. By using item analysis technique, 2 factors have been dropped. Finally, 10 factors have been used in the final study and the same has been examined with help of Garrett Ranking Technique ('W') test. Findings are shown in the Table 1.

TABLE No. 1FACTORS INFLUENCING TO PREFER THE SOLAR PRODUCTS

Garrett Ranking Technique

Table 1 show that the main factor to be is Lack of Technology advancement and Government Incentives as indicated by the sample respondents with highest mean score of 51.91. Followed by cost saving as indicated by the sample respondents with the mean score of 51.53.

FACTORS	82	70	63	58	52	48	42	36	29	18	TOTAL	TS	MS	RANK
Government Incentives	12	10	15	12	8	13	12	17	14	7	120	5989	49.9	II
	960	700	945	696	416	624	504	612	406	126				
Reducing electricity bills	8	12	10	8	11	15	17	19	10	10	120	5734	47.8	VIII
	640	840	630	464	572	720	714	684	290	180				
Low Maintenance	11	5	12	9	17	12	14	15	13	12	120	5689	47.4	X
	880	350	756	522	884	576	588	540	377	216				
Long term Investment	14	10	14	17	11	14	12	8	9	11	120	6183	51.53	VI
	1120	700	882	986	572	672	504	288	261	198				
Cost Saving	15	14	8	17	12	10	15	7	12	10	120	6076	50.63	III
	1200	980	504	986	624	480	630	144	348	180				
Environmental Concerns	14	15	10	8	10	12	12	13	14	12	120	5954	49.62	V
	1120	1050	630	464	520	576	504	468	406	216				
Technological Advancements	17	16	15	10	16	6	9	2	12	17	120	6229	51.91	I
	1360	1120	945	580	832	288	378	728	348	306				
Durability	8	12	7	11	16	15	11	15	14	11	120	5717	47.64	IV
	640	840	441	638	832	720	462	540	406	198				
Easy Financing Options	11	12	18	14	7	12	8	10	12	16	120	5938	49.48	IX
	880	840	1134	812	364	576	336	360	348	288				
Increase property Value	10	14	11	14	12	11	10	14	10	14	120	5923	49.36	VII
	820	980	693	812	624	528	420	504	290	252				

CHALLENGES FACED BY THE SOLAR PRODUCT

It is decided to identify the challenges faced by the solar products. For which, a pilot study was conducted with 12 problems. By using item analysis technique, 2 problems have been dropped. Finally, 10 problems have been used in the final study and the same has been examined with the help of Kendall's Co-efficient of Concordance ('W') test. Findings are shown in the Table 2.

TABLE 2: CHALLENGES FACED BY THE SOLAR PRODUCTS : Kendall's Co-efficient of Concordance ('W') test

FACTORS	Mean Score
High initial cost of Installation	7.24
Maintenance including cleaning and occasional repairs	5.45
Less Efficiency	8.25
Space requirements	6.22
Dependence on Weather conditions	4.20
Compatibility Issues	5.04
Recycling challenges	6.98
Technological Obsolescences	7.25
Delay in Government Approvals	8.02
Complex Warranties	4.99

Kendall's Co-efficient of Concordance ('W')

Kendall's ('W')	0.026
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Table 2 shows that the challenges faced by the solar products. The Kendall's Co-efficient of Concordance ('W') test is calculated for the above problem which is found to be 0.026. It shows that there is a less similarity among the solar products in assigning the ranks to the problems faced by the customers. Looking at the mean ranks, it is understood that the highest preference has been given to Dependence of weather conditions (lowest the rank and highest the priority) constituting the mean rank 4.20 and the lowest preference is given to 8.25.

SUGGESTION AND CONCLUSION

In this paper, while examines shows that the main factor to determine the solar products, it is found that is is Lack of Technology advancement and Government Incentives as indicated by the sample respondents with highest mean score of 51.91. Followed by cost saving as indicated by the sample respondents with the mean score of 51.53.

In this paper, while examines the challenges faced by the customers, it is found that lack of technology has been ranked as first by the customers. This can be identified by using Garrett Ranking Technique. Hence, it is suggested that Government of Tamil Nadu should provide the more subsidy and to advertise about their schemes them to attain their objectives.

By realizing the significance of the customers in Indian Economy, the present study has been undertaken with the objectives like determine to prefer the customers of solar products and challenges faced by them. Both objectives have analysed with the help of Kendall's Co-efficient of Concordance and Garrett Ranking Technique. On the basis of the findings, some viable suggestions have been offered. It is hope that all the suggestive measurements will be more useful to the customers of solar products.