A STUDY ON CONSUMER ACCEPTANCE TOWARDS SOLAR ENERGY IN TAMILNADU

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Abstract
To meet the ever increasing demand, fossil fuels such as coal, oil and natural gas have been overexploited in an unsustainable manner. In this critical situation, new and renewable sources of energy are most viable options for the future, which is free from pollution and locally available in abundance. The present research is held in Tamil Nadu, India. The entire state is selected due to the remarkable usage of solar energy at large level. The present study concludes that the solar energy companies have to conduct customer meet regularly to educate the customers on usage of solar energy and attend the customer grievances properly.

Introduction
The entire world is grappling with the problem of acute shortage of energy which is so vital for all developmental activities. To meet the ever increasing demand, fossil fuels such as coal, oil and natural gas have been overexploited in an unsustainable manner. In this critical situation, new and renewable sources of energy are most viable options for the future, which is free from pollution and locally available in abundance. A number of regional, national and international level studies were carried out in the field of non conventional energy.

The solar energy is the key input for socio-economic development of any nation. The fast industrialization and rapid urbanization besides mechanized farming have generated a high demand of energy in all forms i.e., Thermal, Mechanical and Electrical. To meet this over increasing demand, fossil fuel such as coal, oil and natural gas have been over exploited in an unsustainable manner. The over exploitation of fossil fuel have been posing serious environmental problems such as global warming and climate change. But we have shortage of energy and more dependent on imports in the case of petroleum, we are fortunate enough to be blessed with plenty of natural resources of energy (non conventional energy sources) such as solar, wind, bio mass and hydro electric power. These sources are environmentally good and plenty available from nature in most part of the country throughout the year.

Review of Literature
Shina. D (2009) highlighted that the sole source of energy for the earth is the sun. 3 per cent of solar energy received is converted into wind energy, which if trappable would be more than sufficient to meet the worldwide energy demand. It is no wonder that wind power has emerged as a major non conventional option for power.

R.V.G. Menon (2009) in his article on Energy won't be easy pointed out that electricity generation is, of course, the major energy sector. Here the importance of Renewable Energy Sources has been well recognized and given ample lip sympathy. We are still hiding behind the excuse of high costs thereby allowing the market to dictate policy.

Kavya Michael (2010)78 in his article on Rural Energy Security and Climate Injustice in India Stated that economic growth doesn't become a reality when it happens at the expense of the marginalized sections of the society. In this context the need for rural energy security to prevent the hazards of climate injustice becomes important. Economic growth in the country has to be de carbonized and at the same time the energy policy of the country should be redrafted.

Research Methodology
The present research is held in Tamil Nadu, India. The entire state is selected due to the remarkable usage of solar energy at large level. Population of the study consists of all consumers using the solar energy. From the large population, 600 consumers are selected at random. The samples are selected from towns and villages.

Variables of the Study
The present study uses two categories of variables such as (1) Attractive Variables and (2) Discouraging Factors.

Analytical Tools
Apart from the arithmetic mean and standard deviation, Friedman's test is used to analyze the ranks given by the customers. Chi square test is applied to test the hypotheses concerned with the attraction and discouragement of the customers in respect of the internet banking. Software Package for Social Science (SPSS) version 16 was used to make statistical calculations.

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Limitations of the Study
1. No comparative efforts were made between solar and other forms of energies.
2. The perception of the customers is based on their own experience, knowledge and awareness. As these may change in passage of time, the findings of the study may not be applicable to future period.

Ranking of Attractive Factors towards Solar Energy
Four attractive factors are identified at the time of pilot study of the present research. They are economy, eco-friendliness, easiness and easy availability. The customers allot ranks to these factors such as 1 for first rank, 2 for second rank etc. and the following table shows the results.

Table.1,Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Economy	600	1.94	1.143	1	4
Eco friendliness	600	2.39	.902	1	4
Easiness in usage	600	2.59	.895	1	4
Easy availability	600	2.92	1.277	1	4

Source: Output generated through SPSS.

Among the four attractive factors, easy availability is the factor that has the highest mean (2.92) so that it is clear that the customers are enjoying it very much. At the same time, the least ranks (1.94) are available to economy. However, in the case of ranks allotted by the customers, it is shown another angle of attraction of the customers.

Table 2, Friedman Test: Ranks

Attractive Factors	Mean Rank
Economy	1.97
Eco friendliness	2.41
Easiness in usage	2.63
Easy availability	3.00

Source: Output generated through SPSS

The factor 'economy' has secured the first rank (the lowest mean = 1.97) and it is followed by 'eco friendliness' (2.41), 'easiness in usage' (2.63) and the easy availability (3.00) as the second, third and fourth ranks respectively. So, it is clear that the customers are attracted very much by the 'economy,

Null Hypothesis
There is no significant association between ranks for attractive factors towards the solar energy.

Table 3

Friedman Test Statistics	
N	600
Chi-Square	204.590
df	3
Asymp. Sig.	.000

The p value is < 0.05, the null hypothesis is rejected. So, it is proved that the there is significant association between ranks for attractive factors towards solar energy.

Discouraging Factor
In respect of the discouraging factors, four factors are identified viz., Not suitability in rural areas, Maintenance cost, Poor service and Difficulty in usage. The customers allot ranks to these factors such as 1 for first rank, 2 for second rank etc. and the following table shows the results.

Table. 4, Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Not suitability in rural areas	600	2.18	1.169	1	4
Maintenance cost	600	2.42	1.002	1	4
Poor service	600	2.77	1.033	1	4
Difficulty in usage	600	2.44	1.150	1	4

Source: Output generated through SPSS

In respect of the discoursing factors, highest mean (2.77) belongs to 'poor service' and it is clear that the customers do not well enjoy the services for the solar energy companies. At the same time, 'not suitability in rural areas' is the discouraging factor that has the least mean (2.18). The factor is confirmed by the customers during ranking of discouraging factors.

Table 5,Friedman Test: Ranks

Discouraging Factors	Mean Rank
Possibility of Fraud / Not suitability in rural areas	2.21
Network problem/ Maintenance cost	2.50
Changing technology/ Poor service	2.83
Lack of knowledge/ Difficulty in usage	2.47

Source: Output generated through SPSS

The factor 'not suitability in rural areas' has the first rank as the discouraging factor (mean rank 2.21). It is followed by 'difficulty in usage' (second rank – mean rank:2.47), 'not suitability in rural areas' (third rank: mean rank - 2.50) and 'poor service' (forth rank: mean rank-2.83 mean rank).

Null Hypothesis
There is no significant association between ranks for discouraging factors towards solar energy.

Table.6 ,Friedman Test Statistics

Chi-Square	69.390
df	3
Asymp. Sig.	.000

The p value is < 0.05, the null hypothesis is rejected. So, it is proved that the there is significant association between ranks for discouraging factors towards solar energy.

Findings of the Study
1. Among the four attractive factors, easy availability is the factor that has the highest mean (2.92) so that it is clear that the customers are enjoying it very much. At the same time, the least ranks (1.94) are available to economy.
2. The factor 'economy' has secured the first rank (the lowest mean = 1.97) and it is followed by 'eco friendliness' (2.41), 'easiness in usage' (2.63) and the easy availability (3.00) as the second, third and fourth ranks respectively.
3. It is proved that the there is significant association between ranks for attractive factors towards solar energy.
4. In respect of the discoursing factors, highest mean (2.77) belongs to 'poor service' and it is clear that the customers do not well enjoy the services for the solar energy companies. At the same time, 'not suitability in rural areas' is the discouraging factor that has the least mean (2.18).
5. The factor 'not suitability in rural areas' has the first rank as the discouraging factor (mean rank 2.21). It is followed by 'difficulty in usage' (second rank – mean rank:2.47), 'not suitability in rural areas' (third rank: mean rank - 2.50) and 'poor service' (forth rank: mean rank-2.83 mean rank).
6. It is proved that the there is significant association between ranks for discouraging factors towards solar energy.

Conclusion
The present study concludes that the solar energy companies have to conduct customer meet regularly to educate the customers on usage of solar energy and attend the customer grievances properly. The government should motivate the customers to use the solar energy by offering an exclusive programme or campaign to educate customers. They are expected to serve the customers without any delay for quarries and it is advisable to adhere to time bound commitment accordingly.

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