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CONSUMER COGNITIVE BUYING DECISION TOWARDS USAGE OF SOLARENERGY EQUIPMENTS IN TAMILNADU

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ABSTRACT

Conventional energy sources like coal, oil, Natural gas, etc are limited in quantity and these will be exhausted due to depletion in the coming decades. Recent energy demands and climatic changes has lead go for Bio gas and renewable energy sources. However, disruptive technologies or products improve over time, and eventually encroach into the space occupied by mainstream competitors. Between continuous and discontinuous lies a spectrum of demands for change. Discontinuous products require more learning and it represents a new level of demand on the consumer to absorb a change in behaviour. Tamil Nadu has a high solar isolation with around 300 clear sunny days in a year. Tamil Nadu is considered to be one of the most suitable regions in the country for the development of the solar power projects. The study was conducted in the urban and semi urban areas of Coimbatore district in Tamil Nadu, a geographic area having conduced climatic conditions for Solar Renewable Energy technology products. This paper attempts to reveal the awareness for the utilization of solar products and the perceptions for buying solar products with reference to various households and entities in Tamil Nadu state.

KEYWORDS: *mainstream competitors , conduced climatic conditions , Discontinuous products.*

1.1 INTRODUCTION

Energy is basic requirement for economic development of the country. Every sector like agriculture, industry, transport, commercial, and domestic – needs energy in various forms. With fast developments taking place, consumption of energy in all forms has been steadily rising all over the country. This growing consumption of energy has also resulted in the country becoming increasingly dependent on fossil fuels such as coal, oil and gas. Renewable energy (RE) derived from natural sources such as wind, solar, hydro and biomass has potential to meet diverse and growing energy requirements. Traditionally, RE sources have been used for heating, cooking, steam production, moving ships and also for powering mills to grind grains. The same sources are now being exploited commercially and have the potential to provide modern energy end-use services with no negative environmental consequences. There are several benefits arising out of the use of RE apart from being environmentally sustainable. RE contributes to socio-economic development by meeting and supplementing rural energy needs. It can provide decentralized energy supply to agriculture, local industry, commerce and household sectors. Harnessing RE in rural areas through productive uses can also create employment opportunities, raise income levels and improve quality of life. RE sources enhance diversity in energy supply markets and secure long-term sustainable energy supplies besides creating local manufacturing capabilities. To increase this level of consumption India is planning to improve the basic existential standard of living of Indians to fulfill the target of 9-10%. It is noteworthy to mention here that India has already touched the level of 8% presently. The idea right now is that electricity availability is smoothened for Indians in order to achieve the target in a time of 10-15 years. By 2031 -32, the primary

energy use will increase by 4 to 5 times and power generation capacity would increase six-fold. Shortages of electricity (both peak and energy), significant increase in demand-supply gap, the rise in import dependency and impact on the economy in terms of energy security and foreign exchange requirements are the challenges that the Indian energy sector is facing. Reducing energy requirement, increasing energy use efficiency and generation of power from renewable sources are emerging as the most important measures to increase energy security.

1.2 SCOPE OF THE STUDY

Disruptive innovations generally underperform established products in the mainstream markets, and may act as a weak substitute for the existing product in the eye of its mainstream customers. This is the case with the current incumbent technology of power sourceequipments. Consumers prefer the traditional power technology which provides the same outcome of utilization and consumption which is cheaper in comparison to a Solar renewable energy power technologyequipment.Conventional energy sources like coal, oil, Natural gas, etc are limited in quantity and these will be exhausted due to depletion in the coming decades. Recent energy demands and climatic changes has lead go for Bio gas and renewable energy sources. However, disruptive technologies or products improve over time, and eventually encroach into the space occupied by mainstream competitors. Between continuous and discontinuous lies a spectrum of demands for change. Discontinuous products require more learning and it represents a new level of demand on the consumer to absorb a change in behaviour. TamilNadu has a high solar isolation with around 300 clear sunny days in a year. TamilNadu is considered to be one of the most suitable regions in the country for the development of the solar power projects. The study was conducted in the urban and semi urban areas of Coimbatore district in Tamil Nadu, a geographic area having conduced climatic conditions for Solar Renewable Energy technology products.

1.3 STATEMENT OF THE PROBLEM

The current economic and social system is still based on traditional source of energy and their distribution system; it takes time for current economic and social system to admit renewable energy sources. People nowadays have the ability to choose their electricity providers, thus, having the choice to decide whether to use conventional or solar energy. However, switching from “grey” to “green” is not as straightforward as one might think. Households have to consider a large number of issues possibly influencing their decision. Secondly, renewable energy requires huge initial investment. The development of markets for renewable energy in India for large-scale use of renewable energy products and technologies have been hampered by their high up-front capital costs; the renewable energy industry’s inadequate access to credit; subsidies for fossil fuels; and low purchasing capacity among potential consumers. While conventional funding and financial instruments such as capital subsidies, donor grants, and tax rebates and similar fiscal incentives have been able to achieve a certain level of penetration.This paper attempts to reveal the awareness for the utilization of solar products and the perceptions for buying solar products with reference to various households and entities in Tamil Nadu state.

1.4 OBJECTIVES OF THE STUDY:

The study has following objectives-

1. To study the cognitive buying behavior of solar energy equipment among consumers.
2. To study the perceived usage of solar energy equipment among consumers.
3. To study the perceived ease of use of solar energy equipment among consumers.
4. To study the marketing efforts of the organizations to attract the consumers.

1.5 RESEARCH METHODOLOGY:

This study is a descriptive and exploratory study; researcher had planned for a systematic study of the situations, problems and phenomenon and attempted to find out the relationship between various

aspects of the study. Descriptive study aims to describe the phenomena about the about the variables being studied. Exploratory study is used to find out the cause and effect relationship among the variables in the study. A Structured Questionnaire was used to conduct the study. The study is conducted in Coimbatore district. The sample respondents are the consumers of individual households who have already installed solar systems and using them and those who have the potential to install solar equipments. The sample size is 500 and the respondents were chosen by Stratified random sampling.

1.6 DATA ANALYSIS:

The dimensionality of consumer perception towards solar energy equipmentswas examined using factor analysis based on eighteen individual statements and the reliability of the subsequent factor structures was then tested for internal consistency of the grouping of the items. The eighteen factors of consumers' opinion on consumer's perception statements of perceived use and perceived ease of use are related to the following:

KMO and Bartlett's Test of consumer perception towards solar energyequipment

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		926
Bartlett's Test of Sphericity	Approx. Chi-Square	14739.737
	Degree of freedom	153
	Significant value	.000

High value of KMO (0.926 > .05) indicates that factor analysis is useful for the present data. The significant value for Bartlett's test of Sphericity is 0.000 and is less than 0.05 which indicates that there exists significant relationships among the variables. The resultant value of KMO test and Bartlett's test indicates that the present data is useful for factor analysis.

Table – 1.6.1

Total variance explained for consumer perception towards solar energy equipment

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.060	50.332	50.332	9.060	50.332	50.332	9.034	50.187	50.187
2	5.933	32.962	83.295	5.933	32.962	83.295	5.959	33.108	83.295
3	.750	4.166	87.461						
4	.510	2.834	90.294						
5	.398	2.213	92.507						
6	.271	1.507	94.014						
7	.196	1.089	95.103						
8	.148	.821	95.924						
9	.133	.741	96.665						
10	.111	.615	97.280						
11	.088	.489	97.769						
12	.084	.466	98.235						
13	.069	.383	98.618						
14	.067	.370	98.987						

15	.060	.332	99.319						
16	.054	.302	99.620						
17	.049	.272	99.893						
18	.019	.107	100.000						
Extraction Method: Principal Component Analysis.									

Source: Output generated from SPSS 20

1.7 RESULTS AND DISCUSSIONS

Apart from that, the dimension "Consumer perception towards solar energy equipment" comprises 18 statements. Out of eighteen statements, two statements contribute more towards consumer perception towards solar renewable energy. The statements are (1) Reduce environmental impact and (2) Durability. The result determines the fact that almost all the attributes under consumer perception towards solar renewable energy as alternative source of power are important and the most influencing factors are identified as 'Reduce environmental impact, Durability' of the respondents. This may be due to thefact that the consumers must have felt that the consumers should be projected as the solar renewable energy sources are environmental friendly technology and advantageous option for alternative power source. Hence among all other attributes under consumer perception towards solar renewable energy as alternative source of power, the above said factors are the most influencing variable.

The identified mean for all the attributes of consumers' opinion about cognitive buying decision of solar renewable energy as alternative source of power involved in rendering the consumer perception and acceptance of the solar renewable energy as alternative source of power in Tamil Nadu shows that out of the six factors, the three factors namely "Maintenance requirements and product design, Larger investment based on yield of power, Bad experiences hinders the purchase" falls on the scale as Neither agree nor Disagree. The attributes namely, 'Affordability, Longevity and efficiency, and Sales promotion methods', fall on the scale as 'Disagree'. The standard deviation of the respective attributes shows that all the factors of consumers opinion on cognitive buying decision of solar renewable energy as alternative source of power deviates more towards the scale 'Disagree' to 'Neither agree nor Disagree' and 'Neither agree nor Disagree' to 'Agree'. However, the standard deviation alone is not particularly useful without a context within which one can determine a meaningful result. The above result shows that all the factors are felt as agreeable by the consumers for measuring the cognitive buying decision of solar renewable energy as alternative source of power.

1.8 SUGGESTIONS

The social status of the consumer has impact on buying behavior of the consumers of solar equipments." The high income group has the dominance in the consumers of solar energy equipment's. To facilitate purchase of solar energy equipments by middle or low income group, the co-operative banks and private financial institutions may be authorized to provide loan at subsidized rate. The dealers or installers who offer installments to the consumer should be given some financial incentive in terms of more discounts in dealer price. This will encourage dealers or installers to sell more.Government should provide the subsidies for the purchase of solar energy equipment. This will reduce the initial investment for the consumers.Manufacturers must increase the channels of distributing solar products. Conventional type of distribution may not come up with increasing the level of penetration. So, the organization must introduce personal selling, online sales…etc.There should be special marketing executive for industrial marketing who has some knowledge in industrial energy utilization, energy saving techniques, various benefits that are extended to organizations using solar energy equipment.

1.9 CONCLUSION

Solar systems have been accounted as an economic, affordable and compatible with other technologies. It reduces pollution, technically reliable and capable of producing savings. Solar power source systems can raise awareness of householders' energy consumption by means of a monitoring system. This type of behavioral change is advantageous to the adoption of solar as it increase the compatibility of the systems with the households' current energy consumption trends. However, despite the positive characteristics, the solar power system remains unattractive to individual householders as a domestic power source technology and is found incompatible with personal priorities. There are further hindrances to widespread adoption in the form of issues with the long pay-back periods, high capital costs and a lack of confidence in the long-term performance. The relationship between consumer awareness, their perception and market pervasiveness about the product among the consumers are related with the cognitive buying behavior towards the purchase of the solar power equipment. The study has successfully attempted to explore the factors that strongly contribute to their perception.

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