AN OVERVIEW OF PUBLIC PERCEPTION ABOUT THE SUITABILITY OF SOLAR POWER PANELS AS AN ALTERNATIVE ENERGY SOURCE IN ANDHRA PRADESH

DR. D.PRASANNA KUMAR
Associate Professor, K L U Business School, Guntur, Andhra Pradesh, India
K. VENKATESWARA RAJU
Research Scholar, K L U Business School, Guntur, Andhra Pradesh, India

Abstract

One of the biggest problem that our nation facing in today's world is supply of electricity to the public. The government is failed to supply a minimum power requirements even for the agriculture. The main cause for this problem is increase in the usage o f electrical equipments, decrease in the availability of natural resources like coal, water and gas. Coal and water are the major recourse for the generation of electricity in India. So generation of electricity is mainly depends on coal and water availability. The people should take care of these recourses for the future generations otherwise the future generation will face more problems regarding the electricity. In order to solve this problem the present generations have to maintain an imbalance between the recourses by the usage of solar energy as an alternative. The study is conducted to know the usage levels of solar panels in the present scenario, along with the people's opinion about the solar panels, the prospects of solar panels, and the ways to approach the various types of customers. This paper mainly focuses on the people residing in Vijayawada, Guntur &Hyderabad and considers the factors related to availability, inhibitions, branding of solar panels.

Key Words: Photovoltaic, Solar Energy, Solar Panel, Rooftop Solar, Kw, Power Cut, Emi.

Introduction

"Power crunch" or "Power Crisis"-This is the word which we are hearing and watching frequently in the television and news papers. The world is in lack of power because of decrease in the availability of natural recourses like coal, water. The unavailability of these resources raised because these two are the major sources of producing electricity in the country as well as in the world. Though some of the countries are using the nuclear energy for the production of electricity there is a need of water in the large amounts for the cooling of the Nuclear reactors. This lack of recourses led to the importance for the renewable energy resources. There are different types of renewable energy resources like wind, solar, tidal energy. Solar energy is one of the renewable energy resources available abundantly in the world. This solar energy will be gaining much importance than other renewable energy resources. The only form of using the solar energy is through the solar panels.

Solar energy in the form of a radiant light and heat from the sun, has been harnessed by humans since ancient times using a range of ever-evolving technologies. Solar energy technologies include solar heating, solar photovoltaic's, solar thermal electricity and solar architecture, which can make considerable contributions to solving some of the most urgent problems the world now faces. The Earth receives 174 petawatts (PW) of incoming solar radiation at the upper atmosphere. Approximately 30% is reflected back to space while the rest is absorbed by clouds, oceans and land masses.

The first solar cell was constructed by Charles Fritts in the 1880s - it had a conversion efficiency of just 1%.Half the world's installed solar cell capacity is in Germany, thanks to a generous tariff program. Global annual photovoltaic installations rose from just 21 megawatts in 1985, to 32,000 megawatts in 2012. The amount of energy that goes into creating solar panels will be paid back through clean electricity production within 1 - 2 years, depending on where they are used.

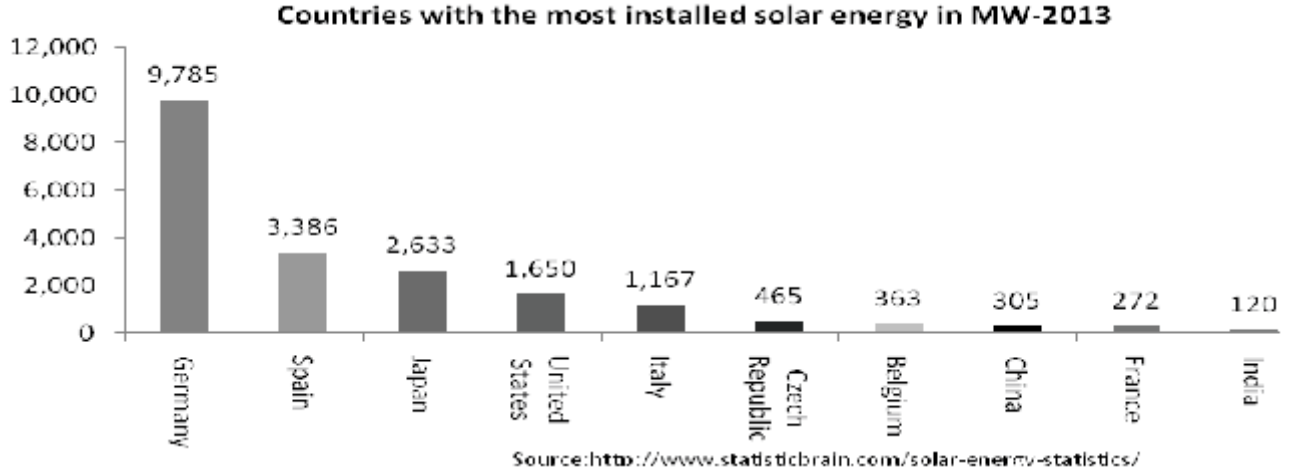
Solar power is one of the versatile means to generate electricity used for purposes such as heating water, for heating and air conditioning homes and commercial buildings, and to power streetlights. Because sunlight is readily available almost everywhere and doesn't require fuel or a connection to a power grid (an interconnected network used to deliver electricity from

suppliers to consumers), solar power is particularly useful for supplying power to remote areas and to some portable devices.

Solar panel, as the name suggest is a device that can convert Sunlight into electricity. They are named "solar" panels as at most often; Sun is the most powerful source of light. They are called photo-voltaic meaning 'light-electricity'. Solar panel is the collection of solar cells. Large number of smaller solar cells that are spread over large areas when working together can provide enough power to be useful. More is the light that hits a cell; more is the electricity it produces. The solar panel, a component of the larger photovoltaic system is used to generate and supply electricity for commercial and residential usage. Solar panels are typically exposed to the sun's photons for about 5.7 hours (solar hours) each day. This is called a "solar day". Every module can be rated on the basis of its DC output power in standard test conditions which typically ranges from 100 to 320 watts. Area of a module is determined by the efficiency of a module. For example for a given output - a 10 percent efficient 460 watt module will be having twice the area of a 20 percent efficient 460 watt module. Photovoltaic system will include a panel or an array of solar modules, an inverter, and sometimes a battery, a solar tracker and interconnection wiring.

Photovoltaic's which were mostly in exclusive usage in space, to power electrical systems of satellites' dating back to 1958 are being put to use for daily common purposes of common people and pops up in various new devices being launched ranging from sunglasses to electric vehicle charging stations. For decades the idea of "solar revolution" has been moving around with a dream that one day we'll all use only free electric energy from the sun. An achievable promise, because on a bright, sunny day, the sun's rays can give approximately 1,000 watts of energy per square meter of the planet's surface. If we are able to collect all of that energy, we can easily power our homes and offices for free. The solar cell also called a photovoltaic (PV) cell, which as the name implies can convert sunlight directly into electricity. Solar module is a group of cells that is connected electrically and packaged as a frame, commonly called a solar panel, which are then grouped as larger solar arrays. Photovoltaic cells will be made of special materials like silica which are known for their semiconductor activity. Whenever sunlight strikes the solar cell, portion of it will be absorbed within the semiconductor material meaning that energy of the 'absorbed light' is being transferred to the semiconductor.

The relatively steep cost of solar power when compared to traditional sources of electricity generation is a result of the high cost involved in manufacturing and installing solar panels. The cost of solar power has been going down due to improved technology and production efficiency. As solar power generation becomes widespread, costs involved in installing it will fall and as the prices of fossil fuel increases, solar power becomes cost effective in relation to traditional sources of energy.



SOLAR POWER SECTOR IN INDIA

A solar park in Charanka (Patan district) in Gujarat is currently Asia's biggest solar plant, producing 214MWThe Jawaharlal Nehru National Solar Mission Phase-1 (JNNSM) made India a global leader in the development of solar power as it increased the installed capacity of solar power from around 17.8 MW in 2010 to more than 2,000 MW. It reduced the cost of solar energy to $0.15 per kWh, and made India t the lowest cost destination for grid-connected solar Photovoltaic (PV) in the world. India will emerge as a global leader in solar power, if it achieves its target of adding 20,000 MW of solar capacity by 2022. Solar parks are far faster and easier to construct than nuclear plants. Charanka, for instance, took just 16 months to build.

What is significant is that JNNSM has been instrumental in bringing down the cost of solar power to a level that is competitive across the world, says the report. It has reduced the costs of solar energy to $0.15 per kWh, making India amongst the lowest cost destinations for grid-connected solar Photovoltaic (PV) in the world. India's prospects for Solar Energy are high as it is geographically ideal location to harness the sun's power because of its abundant sunshine.

India will build the Sambhar solar plant on the shores of a saltwater lake in the northwestern desert state of Rajasthan over the next seven years, to generate 4,000MW plant which should drive solar power costs even lower. It is believed that the economies of scale that accrue from the Rs 280-billion ($4.4 billion) plant will reduce prices to Rs 5.0-5.5 a kilowatt-hour.

ROOFTOP SOLAR POLICY AND SOLAR PLANT INITIATIVES OF ANDHRA PRADESH GOVERNMENT

The Government of Andhra Pradesh came out with an incentive scheme in order to encourage flat owners to install solar rooftop system to meet part of their household power requirement. The scheme involves a 30 per cent subsidy from the Government of India and 20 per cent from the State Government. Flat owners need to invest just Rs 50,000 to set up a solar rooftop system with a capacity to generate power of one KW.

People interested in Solar Power need to invest just Rs 50,000 to set up a solar rooftop system with a capacity to generate power of one KW in Andhra Pradesh. After the State Government finalized the net metering policy two months ago, several domestic consumers, commercial establishments and industries have been showing interest.

Every KW of Solar power installed on the roof will generate 1,000 to 1,200 units a year, with the cost of a system ranging from Rs one to Rs 1.10 lakh per KW. In other words, domestic consumers will have to pay half of this cost to set up the unit, which will have a payback time of less than seven years. Excess power generated by the system can be sold to the grid for about Rs 3 a unit.

As a part of development of green power, particularly the solar, the Andhra Pradesh Government represented by AP Transco has given opportunity to all the solar developers, including those who have not participated in the competitive bidding for 1000 MW, to submit their applications for executing the solar projects. They can do so with the tariff offer of Rs 6.49 per unit as decided by Group of Ministers (GoM).

In all 109 sub-stations were offered under this open offer for grid connectivity. However, the solar developers will also be allowed to connect to any other substation in the State subject to technical feasibility. Also the draft Power Purchase Agreement (PPA), list of substations and the detailed guidelines are being published in AP Transco website www.aptransco.gov.in.This decision to harness the solar power has given an opportunity to those solar power developers who have not participated in the bidding process to submit their bids subject to conforming to the tender specification issued earlier. The State Government had come out with a solar power policy and issued orders for encouraging Solar power projects under captive and for 3rd party sale.

AP Transco and Distribution companies are in the process of issuing technical feasibility clearances commissioned under this policy. Approximately, 1200 MW have been given sanctions for Grid connectivity. Further, the State has issued directed AP Transco to ensure setting up of 1000 MW solar power plants through the process of competitive bidding route.

II. Literature Review

Sun which is 333000 times the Size of Earth is 93 million miles away from it with a diameter of 865000 miles, surface temperature of 5,6000C and core temperature of 15,000,0000C and is a huge mass of constant nuclear activity and directly or indirectly provides all the energy needed to support all forms of life on Earth. It drives the weather and climate and without that the Earth would have been a frozen wasteland and rocks being covered with ice. Solar Electricity is a great idea that suggests taking power from the Sun for powering electric devices with no ongoing current bills and also clean energy that preserves the green environment.

Solar Electricity can be produced by Photovoltaic Cells subjected to Sunlight and is different from Solar Hot Water and Solar Heating Systems that involve the concept of Using the Power from Sun to heat water and Air. The intense nuclear activity in the Sun generates huge amount of Radiation which in turn liberates Photons which are literally bundles of Energy with no physical mass of their own even while carrying huge amount and momentum with them. Different Photons have varying wavelengths and some carry non-visible light (infra-red and Ultraviolet) while the rest carry visible (white) light.

The phenomenon of Photo-Voltaic effect in which certain materials produced an electric current when exposed to light was first observed in the 19th Century. To create the effect a combination of two layers of semi-conducting materials is needed. One layer should have depleted number of electrons and when exposed to the Sun, some photons are absorbed by it which in turn excites the electrons and cause some of them to jump from one layer to the other. While moving across the layers, the electrons generate a small electric current.

Silicon is the most commonly used Semiconductor used to construct a solar cell. Silicon is cut and polished into thin wafers and then doped to contaminate in order to create an electron imbalance between them and then aligned to make a solar cell. Greater is the number of photons that are absorbed by the solar cell, higher is the amount of electric current generated.

Numerous studies have examined that solar panels are the most prevalent alternative source of electrical power, with various types of these panels being used for residential and commercial applications around the world. The general problem with solar panels is that their payback period varies greatly, easily ranging from 10 to 20 years. Thus, economic incentives have been provided to spur installation of solar panel systems and stimulate the market for solar panel products. Solar photovoltaic (PV) panels generate electricity from the Sun's energy. The solar electricity is then either used to run your household electrical appliances or it is fed back into the national grid. A generation meter is installed to monitor the volume of electricity generated by your solar photovoltaic system. Solar PV panels are installed on your roof; the panels generate DC electricity which is run to an inverter which converts this to usable AC current. The electricity is then passed through a total generation meter which records every unit of electricity produced by the solar PV panels. The electricity is then run to the fuse board and from here any electricity produced will power your household electrical appliances. As electricity is generated if you do not use the electricity it will be fed back into the national grid. The technology also plays an important role in the advancement of any product or any equipment. So, there should be research on particular equipment. The problem with the solar panels is that they can't use the total light delivered by sun through out the day. So,

there should be a technological advancement in a way that by the usage of sensors the panels should use the maximum light energy.

The present generations are using the maximum electricity beyond the limits by the usage of electrical equipments. If this goes on like that the future generations may not enjoy the minimum level of these services, so the people should maintain a balance between the sources of generation of electricity. Those can be achieved only by the usage of solar panels parallel to the traditional electricity. The advancement of technology in solar industry is achieved in the constructions of new buildings in a way that the civil engineers are designing the solar units in the walls itself. So that the heat generated will not get waste and it is used for different purposes of heating like water heaters, street lights etc…The people are attracting towards the Chinese manufactured solar panels because they are available at the cheapest prices. In order to maintain a consistent usage and growth the government should provide the subsidies in terms of loans, place sanctions for the manufacturers in domestic market and for the ordinary people.

III. Objectives of the Study:

1. To determine the perceptions of people about the solar panels and their installation.
2. To find the scope of the solar panels as an Energy Generating Source.
3. To find the reasons for the late adoption from the people.
4. To study the ways to approach the proper customer for increased Solar Panel Installations.
5. To suggest initiatives for improving the Solar Power Capacities.

IV. Scope of Study:

The Inferences from the study are based on the responses given by the consumers in a specific area. This study will be helpful in getting an insight into the perception of Power Consumers on Solar Panel and Solar Power.

V. Research Methodology

5.1 Research design

The study is based on both primary data and secondary data. The primary data was collected through structured questionnaire for which samples of 110 respondents were selected for this study. The collected samples using convenient sampling method was validated and took it for further analysis. Secondary data is also been collected from database sites and articles. The collected data were analyzed with the suitable tools like Chi – Square tools with the following assumptions were made on the onset of the project.

5.2 Area of the study

The respondents are randomly selected for this study.

5.3 Research approach

Survey and questionnaires method

Survey method is used for collecting data from Common Power Consumers at their Home and Work Locations. We requested all respondents to fill in the questionnaire, by self after explaining the various aspects mentioned in it. It contained both open and closed ended questions in a structured format very easy to understand on the first look.

5.4 Sampling Technique

A convenient sample (non – probability sampling method) of 110 Power Consumers was collected for the current study in which respondent of the study was request to complete the questionnaire on voluntary basis.

5.5 Sample Size

The Size of the sample taken in this study is 110.

5.6 Data Usage:

For analysis and interpretation, only primary data is used. However for conclusion and recommendations both primary and the secondary data along with the verbal knowledge and information although obtained from respondents, though they are outside the parameters of questionnaire were also included. The data collected from these sources were analyzed using various tools like percentage analysis, chi-square test, cross table analysis method.

5.7 Tools:

Frequencies and cross tabulation have been calculated for the responses of the respondents. Chi – Square test analysis was conducted on the data of part II in questionnaire.

VI. Analysis and Interpretation

6.1 General Profile of the Respondents

SEX	Male	Female		
	76	34		
AGE	<30	30-40	41-60	>60
	21	25	41	23
EDUCATION	SCHOOL	DIPLOMA	GRADUATION	PG
	17	22	35	36
PROFESSION	STUDENT	BUSINESS	IT-EMP	MFCTG-EMP
	21	34	19	36
INCOME	<40,000	40,001-70,000	>70000	
	40	43	27	
WHAT IS THE SIZE OF YOUR FAMILY?	TWO	THREE	MORE THAN THREE	
	33	36	41	
HOW DO YOU KNOW ABOUT THE SOLAR PANEL?	ADVERTISEMENTS	INTERNET	FRIENDS	NEWS PAPER
	21	12	28	49
WHAT IS YOUR ALTERNATIVE MEASURE DURING THE TIME POWER CUTS?	NONE	INVERTER	GENERATOR	SOLAR PANELS
	52	34	18	6
WHAT ARE THE DISTURBANCES YOU ARE FACING DURING POWER CUTS?	LACK OF SLEEP	HEALTH PROBLEMS	WORK DISTURBANCE	
	53	21	36	
YOU ARE USING SOLAR PANELS AS AN	ALTERNATIVE	FULL FLEDGED		
	92	18		
WHERE DO YOU STAY?	CITY	URBAN	RURAL	
	34	47	29	
NUMBER OF POWER SOURCES KNOWN?	ONE	TWO	THREE	
	39	43	28	
DO YOU LIVE IN THE SHADOW AREA?	YES	NO		
	0	110		

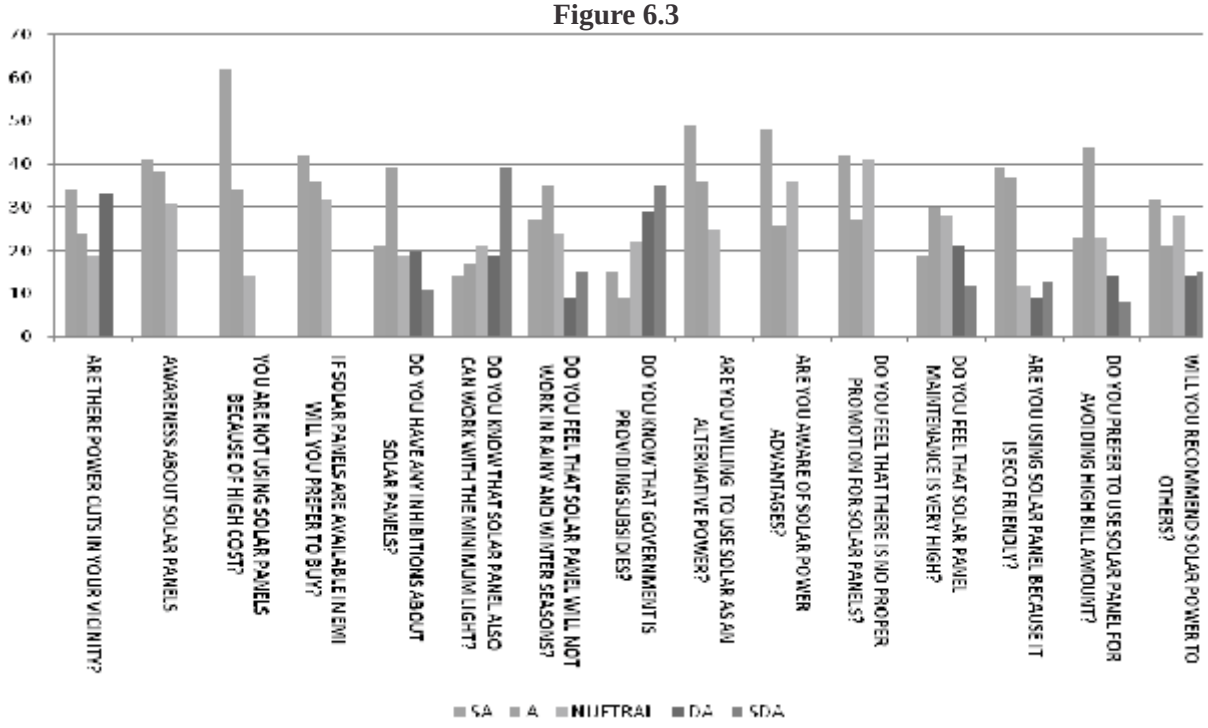
Interpretation:

From the above table, we infer that 76 of the total respondents are male and 34 are female. On further classification according to age group, we find that of all the respondents 21 are less than 30 Years old, 25 are of the age group 30-40, 41 of the age group 41-60, 23 are of the age group with more than55 years. From the responses collected 52 respondent don't have an alternative for power cut, 34 have inverter,18 have Generator and only six have Solar Panel as Alternative.53 Respondents cited lack of sleep,21 cited health problems and 36 Mentioned Work Disturbance when Power Failure is encountered by them.

Table 6.2 Respondents views about SOLAR ENERGY

PARAMETER	SA	A	NUETRAL	DA	SDA
ARE THERE POWER CUTS IN YOUR VICINITY?	34	24	19	33	0
AWARENESS ABOUT SOLAR PANELS	41	38	31	0	0
YOU ARE NOT USING SOLAR PANELS BECAUSE OF HIGH COST?	62	34	14	0	0
IF SOLAR PANELS ARE AVAILABLE IN EMI WILL YOU PREFER TO BUY?	42	36	32	0	0
DO YOU HAVE ANY INHIBITIONS ABOUT SOLAR PANELS?	21	39	19	20	11
DO YOU KNOW THAT SOLAR PANEL ALSO CAN WORK WITH THE MINIMUM LIGHT?	14	17	21	19	39
DO YOU FEEL THAT SOLAR PANEL WILL NOT WORK IN RAINY AND WINTER SEASONS?	27	35	24	9	15
DO YOU KNOW THAT GOVERNMENT IS PROVIDING SUBSIDIES?	15	9	22	29	35
ARE YOU WILLING TO USE SOLAR AS AN ALTERNATIVE POWER?	49	36	25	0	0
ARE YOU AWARE OF SOLAR POWER ADVANTAGES?	48	26	36	0	0
DO YOU FEEL THAT THERE IS NO PROPER PROMOTION FOR SOLAR PANELS?	42	27	41	0	0
DO YOU FEEL THAT SOLAR PANEL MAINTENANCE IS VERY HIGH?	19	30	28	21	12
ARE YOU USING SOLAR PANEL BECAUSE IT IS ECO FRIENDLY?	39	37	12	9	13
DO YOU PREFER TO USE SOLAR PANEL FOR AVOIDING HIGH BILL AMOUNT?	23	44	23	14	8
WILL YOU RECOMMEND SOLAR POWER TO OTHERS?	32	21	28	14	15

Figure 6.3



6.4 Chi-Square Test

6.4.1. Is There a Relation between EDUCATION OF THE RESPONDENT and HIS LEVEL OF AWARENESS ABOUT SOLAR ENERGY?

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
EDUCATION * SOLARENERGYAWARENESS	110	100.0%	0	.0%	110	100.0%

EDUCATION * SOLARENERGYAWARENESS Crosstabulation

Count

		SOLARENERGYAWARENESS			
		1	2	3	Total
EDUCATION	1	7	5	5	17
	2	8	6	8	22
	3	10	14	11	35
	4	16	13	7	36
Total		41	38	31	110

CHI-SQUARE:

EDUCATION

	Observed N	Expected N	Residual
1	17	27.5	-10.5
2	22	27.5	-5.5
3	35	27.5	7.5
4	36	27.5	8.5
Total	110		

SOLARENERGYAWARENESS

	Observed N	Expected N	Residual
1	41	36.7	4.3
2	38	36.7	1.3
3	31	36.7	-5.7
Total	110		

Test Statistics

	EDUCATION	SOLARENERGYAWARENESS
Chi-Square	9.782[a]	1.436[b]
df	3	2
Asymp. Sig.	.021	.488

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 27.5.

b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 36.7.

From the above SPSS calculation we infer that there is a significant relation between EDUCATION OF THE RESPONDENT and HIS LEVEL OF AWARENESS ABOUT SOLAR ENERGY.

6.4.2. Is There a Relation between INCOME OF THE RESPONDENT and THE NUMBER OF ELECTRICITY SOURCES HE IS POSSESSING?

MONTHLYINCOME * NOOFPOWERSOURCES Crosstabulation

Count

		NOOFPOWERSOURCES			
		1	2	3	Total
MONTHLYINCOME	1	22	13	5	40
	2	11	23	9	43
	3	6	7	14	27
Total		39	43	28	110

CHI-SQUARE:

MONTHLYINCOME

	Observed N	Expected N	Residual
1	40	36.7	3.3
2	43	36.7	6.3
3	27	36.7	-9.7
Total	110		

NOOFPOWERSOURCES

	Observed N	Expected N	Residual
1	39	36.7	2.3
2	43	36.7	6.3
3	28	36.7	-8.7
Total	110		

Test Statistics

	MONTHLYINCOME	NOOFPOWERSOURCES
Chi-Square	3.945[a]	3.291[a]
df	2	2
Asymp. Sig.	.139	.193

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 36.7.

From the above SPSS calculation we infer that there is a significant relation between INCOME OF THE RESPONDENT and THE NUMBER OF ELECTRICITY SOURCES HE IS POSSESSING.

6.4.3. Is There a Relation between AVERAGE INCOME OF THE RESPONDENT and HIS INCLINATION FOR PURCHASING SOLAR PANELS ON EMI BASIS?

MONTHLYINCOME * EMIPANELPURCHASE Crosstabulation

Count

		EMIPANELPURCHASE			
		1	2	3	Total
MONTHLYINCOME	1	15	15	10	40
	2	19	14	10	43
	3	8	7	12	27
Total		42	36	32	110

CHI-SQUARE:

MONTHLYINCOME

	Observed N	Expected N	Residual
1	40	36.7	3.3
2	43	36.7	6.3
3	27	36.7	-9.7
Total	110		

EMIPANELPURCHASE

	Observed N	Expected N	Residual
1	42	36.7	5.3
2	36	36.7	-.7
3	32	36.7	-4.7
Total	110		

Test Statistics

	MONTHLYINCOME	EMIPANELPURCHASE
Chi-Square	3.945[a]	1.382[a]
df	2	2
Asymp. Sig.	.139	.501

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 36.7.

From the above SPSS calculation we infer that there is a significant relation between AVERAGE INCOME OF THE RESPONDENT and HIS INCLINATION FOR PURCHASING SOLAR PANELS ON EMI BASIS.

6.4.4. Is There a Relation between A POWERCUT FACING RESPONDENT and HIS INCLINATION TOWARDS SOLAR POWER AS AN ALTERNATIVE?

POWERCUTFEELER * SOLARPOWERALTERNATIVE Crosstabulation

Count

		SOLARPOWERALTERNATIVE			
		1	2	3	Total
POWERCUTFEELER	1	13	13	8	34
	2	10	8	6	24
	3	7	6	6	19
	4	19	9	5	33
Total		49	36	25	110

CHI-SQUARE:

POWERCUTFEELER

	Observed N	Expected N	Residual
1	34	27.5	6.5
2	24	27.5	-3.5
3	19	27.5	-8.5
4	33	27.5	5.5
Total	110		

SOLARPOWERALTERNATIVE

	Observed N	Expected N	Residual
1	49	36.7	12.3
2	36	36.7	-.7
3	25	36.7	-11.7
Total	110		

Test Statistics

	POWERCUTFEELER	SOLARPOWERALTERNATIVE
Chi-Square	5.709[a]	7.873[a]
df	3	2
Asymp. Sig	.127	.020

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 27.5.

From the above SPSS calculation we infer that there is NO relation between A POWERCUT FACING RESPONDENT and HIS INCLINATION TOWARDS SOLAR POWER AS AN ALTERNATIVE. This indicates that common people who are facing power cuts are not yet inclined towards Solar Power due to lack of awareness of its advantages and fear of high cost and maintenance.

6.4.5. Is There a Relation between RESPONDENT KNOWLEDGE ABOUT SOLAR POWER and HIS INCLINATION TOWARDS SOLAR POWER AS AN ALTERNATIVE?

KNOWADVANTAGESSOLARPOWER * SOLARENERGYASALTERNATIVE Crosstabulation

Count

		SOLARENERGYASALTERNATIVE			
		1	2	3	Total
KNOWADVANTAGESSOLARPOWER	1	23	18	7	48
	2	13	8	5	26
	3	13	10	13	36
Total		49	36	25	110

CHI-SQUARE:

KNOWADVANTAGESSOLARPOWER

	Observed N	Expected N	Residual
1	48	36.7	11.3
2	26	36.7	-10.7
3	36	36.7	-.7
Total	110		

SOLARENERGYASALTERNATIVE

	Observed N	Expected N	Residual
1	49	36.7	12.3
2	36	36.7	-.7
3	25	36.7	-11.7
Total	110		

Test Statistics

	KNOWADVANTAGESSOLARPOWER	SOLARENERGYASALTERNATIVE
Chi-Square	6.618[a]	7.873[a]
df	2	2
Asymp. Sig.	.037	.020

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 36.7.

From the above SPSS calculation we infer that there is NO relation between RESPONDENT KNOWLEDGE ABOUT SOLAR POWER and HIS INCLINATION TOWARDS SOLAR POWER AS AN ALTERNATIVE. This indicates that even people with good knowledge about Solar Energy are not yet inclined to having it in their house due to reasons like lack of knowledge about the ROOFTOP Policy of the government and available subsidies. So Promotion of Solar Power should be done in order to increase the number of people adopting it.

6.4.6. Is There a Relation between PEOPLE B BEING AWARE OF SOLAR ENERGY AND THEM FEELING THAT MORE PROMOTION ISNEEDED TO INCREASE ITS AWARENESS?

SOLARENERGYAWARENESS * PROMOTIONNEEDEDFORSOLARPOWER Crosstabulation

Count

		PROMOTIONNEEDEDFORSOLARPOWER			
		1	2	3	Total
SOLARENERGYAWARENESS	1	18	14	16	48
	2	11	5	10	26
	3	13	8	15	36
Total		42	27	41	110

CHI-SQUARE:

SOLARENERGYAWARENESS

	Observed N	Expected N	Residual
1	48	36.7	11.3
2	26	36.7	-10.7
3	36	36.7	-.7
Total	110		

PROMOTIONNEEDEDFORSOLARPOWER

	Observed N	Expected N	Residual
1	42	36.7	5.3
2	27	36.7	-9.7
3	41	36.7	4.3
Total	110		

Test Statistics

	SOLARENERGYAWARENESS	PROMOTIONNEEDEDFORSOLARPOWER
Chi-Square	6.618[a]	3.836[a]
df	2	2
Asymp. Sig.	.037	.147

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 36.7.

From the above SPSS calculation we infer that there is a significant relation between PEOPLE B BEING AWARE OF SOLAR ENERGY AND THEM FEELING THAT MORE PROMOTION IS NEEDED TO INCREASE ITS AWARENESS.

VII. Findings

1. The people irrespective of their profession and income levels, all are facing power cuts in their vicinity.
2. The people in the rural areas are facing huge power cuts.
3. The people are using solar energy in smaller amounts like emergency lights in large amounts.
4. Nobody is using solar energy as full pledged power source.
5. The people are aware of solar panels advantages
6. The people in apartments and tenants do not prefer the solar panels.
7. The people are having number of inhibitions about the working of solar panels.
8. The people are showing interest to buy solar panels if they are available in EMI's.
9. People are not aware about the subsidies provided by government.
10. People feel that the solar panels maintenance is very high.
11. The people in the rural areas are showing more interest towards solar panels.
12. People with kids in the family also showing interest towards solar panels.
13. As there is increase in the number of people interested to use solar as an alternative source, there are more chances for the solar industry

VIII. Suggestions:

1. Efficiency of solar panels has to be increased from the current 20 percent to over 40 percent.
2. More wavelengths should be harnessed with cheaper semiconductors and more efficiency in manufacturing techniques should be achieved.
3. Large areas of deserts will have to be covered with PV solar panels.
4. Alternative energy storage devices will have to be developed since batteries will be inefficient and expensive on a large scale.
5. New direct current (DC) transmission lines have to be installed which are smaller than the current high-voltage AC lines.
6. Homeowners with Solar Power should get a credit on their power bills for feeding kilowatt hours of excess electricity back into the regional electrical grid.
7. The government should support the solar industries in order to make the solar panels availability.
8. The government and solar agencies have to make the public aware about the subsidies so that, they can show interest to buy.
9. The government should make a law that, all the new constructions should install the solar panels for their minimum requirements.
10. The government should make a law that all the town ships and clubs and government offices should equipped with solar panels.
11. The inhibitions in public can be eliminated by the usage of solar panels in the public areas like traffic signals, movie theaters, etc.
12. In order to increase the usage the government can give more subsidies for the industries.

IX. Conclusion

Because of the higher cost of the solar panels and the more inhibitions about the working of solar panels people are not showing that much of interest on solar panels. The success for the solar panels in the rural areas will be more. Because, now days the power cut timings are more than 12 hours a day, it may be increase in future.

In this situation inverters and generators could not be a substitute, because, in case of inverters even for the charging, the power is required which is not easy to be supplied by Government and also high cost of diesel. In this situation solar panels are only the substitute for urban areas also. As the requirement is high, there is a bright future for the solar panels in coming days if they are made available at more subsidies and EMI's.

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