



# A Study on Consumer Perception and Willingness towards Solar Energy Promotion Scheme of Government with reference to Nagpur

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**Abstract:** Nagpur is considered as winter capital of Maharashtra. The population, industrialization, use of electric equipments, electric vehicles etc. are fast increasing in Nagpur. All these factors are leading in increase the demand of electricity in Nagpur city. Currently the Nagpur city required 2,894 million units of electricity in year and this requirement will increase to 3,409 million units per year in coming couple of years. This demand cannot be fulfilled by Maharashtra State Electricity Generation Department. Hence to fulfill this need of electricity the Maharashtra State Government come forward with the alternative source of electricity that is solar energy. After installation of solar energy the dependency on Maharashtra State Electricity Generation Department will be reduce and customer can generate their own electricity.

To promote the solar energy in Maharashtra and particularly in Nagpur the Government is providing financial support in way of subsidy up to maximum amount of Rs.78,000 for installing the solar panel of 3 kw. The aim of Government is to reduce the burden of electricity generation and save the natural resources like coal and water. Apart from this government tries to reduce the environmental effect by promoting solar energy. Considering all this factors this is beneficial but it is not getting proper response from the customers as per the government target.

The main aim of this research paper is know in detail about solar promotion scheme of government, perception of consumers on solar energy by taking the demographic factors like age, income, occupation and education into consideration, the factors which affect the willingness of consumers to adopt the solar energy, the factors which attract consumers to adopt solar energy like financial assistance, subsidy and financial benefits, the barriers and challenges of promotion of solar energy scheme like knowledge, cost of installation, cost of maintenance and delay in installation and to check the effectively of government to promote this scheme.

The present study is based on the primary data which has collected through structured questioner, personal in-deep interviews and discussion with the respondents. The responses of 357 respondents have been considered for this study. The secondary data is also been collected from the books, newspapers, online news, websites of government agencies, publication of past research, relevant research papers etc. The conclusion of the study has been drawn by using frequency analysis, percentage, Chi-Square Method, Inova Method and Multiple Linear Regression. This research paper identified the reasons why consumers are attracting towards the establishment of solar panel, what factors create the willingness among the customers for installing solar panel and what challenges they face at the time of installation of solar energy.

**Keywords:** Consumer perception, willingness, financial assistance and subsidy, awareness, Nagpur, Government etc.

## 1. INTRODUCTION:

The energy generated by using the light and heat of the sun is called as solar energy. This solar energy can be used for so many purposes but now a day the solar energy is used to create the electricity by installing solar panels. Installation of solar panel is costly affairs and it varies as per the company but it required minimum Rs. 2,05,000 to Rs. 2,40,000 for installation of 3kw. These solar energy and solar panel become the need of hours because electricity production by Government has certain limitation and it requires huge amount of natural resources like coal and water. Generation of electricity is harmful to the environment and it is one of the major causes of pollution.

The optimum use of solar energy provides lots of advantages like it is source of clean energy, it reduces the pollution, its maintenance free up to certain extent, it help in saving natural resources and most importantly it helps in save of huge cost of electricity bill of domestic users. Apart from all these advantages most of the consumer are not coming forward



to install solar panel and using solar energy because of high cost of installation, cost of maintenance, delay in getting financial support from government, lack of proper knowledge, lack of documentation, delay in installing the solar panel etc.

To solve the problem of consumers and promote the use of solar energy the government bought the scheme of financial subsidy for installing solar panel. The government is providing Rs. 78,000 subsidy for every consumer to install the solar panel of 3kw. It means now the consumers need to pay only Rs. 125,000 to 1,35,000 for installing solar panel of 3 kw. The consumers who do not have capacity to pay this amount the government provides the facility of bank loan of balance about. It means now the consumers need not to pay any amount from their own.

Till August 2025 there are 40,152 solar system are installed in Nagpur city. In Nagpur there are total 15,00,000 electricity consumers. So the ratio of solar panel users with the electricity consumers it is found that only 2.68% of consumers installed of solar panel. This ratio is very less in a Nagpur city where education level is high and people earning good income. Apart from the financial benefits, facilities, awareness and social sensitization people from the Nagpur city are coming forwards to use solar energy and installing solar system at their place.

## 2. LITERATURE REVIEW:

The present research paper reviewed the following literatures

**Akshaysudarshan R. and Mohan Kumar N. (May, 2023)**, written a research paper on topic “**A study on consumer perception towards the usage of solar power products with reference to Coimbatore City**”: In their research papers they focused on awareness of consumers on various solar energy devices available in the market and the problems faced by the consumers while using it. They have collected data from the 160 respondents of Coimbatore City randomly through questioners. They have used weighted average score analysis and chi-square test as statistical tool to test the hypothesis. As per their study they found that the consumers are well aware about the solar energy product available in the market. Customer’s ideas, preferences, attitude towards solar energy are such problems face by the customers during the use of solar energy.

**Dr. Simmi Rani Prasad (August, 2025)**, written a research paper on topic “**Public perception and acceptance of solar energy in the suburban area of Mumbai**”: In her research paper she focused on awareness and perception of customers, adoption rate, key barriers of adoption, factors influencing the adoption and awareness of government incentives. She collected the qualitative data from the 61 respondents through structured questioners by online and offline mode and quantitative data by in-dept-interview and focused group discussion. She used SPSS to identify the trend, correlation and significant factors affecting solar energy perception. She found there is high level of awareness towards the solar energy among the stable financial income group and young age group. Economic viability, growing environmental awareness and power of social proof present clear opportunities.

**Ruby Mahato and Lizette D’Costa (August, 2025)**, written a research paper on topic “**Understanding the consumer awareness and attitude towards harnessing solar energy: A study on the state of Goa**”: In their research paper they focused on attitude of people towards consumption of solar products, evaluate the level of satisfaction and challenges as well as opportunities in solar energy implementation. Their study was based on primary as well as secondary data. They have collected data from the 121 respondents from the structured questioners. They have used tools like pie charts and chi-square to interpret the result. As per their finding there is need of awareness of solar energy for long-term environmental and economic advantage.

**Mr. Ashish R. Ingle and Dr. Rajkumargiri N. Gosavi (December, 2023)**, written a research paper on topic “**Consumer perception and acceptance of solar renewal energy as alternative sources of power in Nagpur**”: In their research paper they focused on consumer perception, consumer buying behavior and acceptance ratio of solar rooftop in Nagpur city. They have collected the data from 200 respondents through questioners and in dept-interview. They have tabulated the responses and presented in form of graphs to reach at conclusion. As per their finding age, income and education are all significant factors in changing consumer behavior. They discovered that consumer’s adoption of solar energy solutions are primary driven by sustainability issue, social factors, environmental knowledge and environmental attitude.

**Shivganga C. Maindargi and Shabnam S. Mane (March, 2019)**, written a research paper on topic “**Factors affecting consumer commendations for solar equipment; an intensive study of Solapur city**”: In their research paper they



focused on consequences of overbalance on selection of solar power equipment and factors affecting the commendation of solar power. They collected the data by using primary as well as secondary data. They have collected the responses from 50 respondents through questioners. They have used tabulation, graphical presentation and chi-square method for drawing conclusion. As per their finding consumers are not attracting towards the solar equipment because of cost elements but if they go for purchasing they prefer the branded equipments.

**Dr. Jaspreet Dahiya and Himanshi (January, 2025)**, written a research paper on topic “**Exploring awareness level of consumers towards, solar products**”: In their research paper they focused on awareness level of consumers towards solar products and to know the factors which influence the consumer awareness. They have collected data from 120 respondents by using structured questioner by using 5 –point Likert Scale. They have used chi-square method to prove hypothesis and drawing the conclusion. They have found that there is significant relationship between the age, income and educational level of the consumers.

**Easwaran P. and Dr. V. Krishnaveni (February, 2022)**, written a research paper on topic “**A study on consumer attitude towards the solar energy product at Madurai District**”: In their research paper they focused on to know the factors which play main role in determining the attitude towards the purchase of solar products and to know the socio-economic factors that affect the consumer behavior. They have collected the responses from 146 respondents. They used simple percentage analysis, Garrett’s Ranking Techniques and weighted average ranking to prove the hypothesis and draw the conclusion. As per their findings there is need to increase the awareness about the benefit of solar energy. The environmental factors play an important role in purchase of solar energy.

### **3. RESEARCH GAP:**

The above selected research papers are reviewed for this study based on the basis of their title, key words, hypothesis and objectives. After careful studied of above research paper it is found that most of research papers mainly focused on awareness of consumer about solar energy and solar products, demographic factors like income, education, age and occupation on adoption of solar energy, behavior and attitude factors to adopt the solar energy and level of satisfaction after adopting the solar energy. But the current research paper focused on the role of government subsidy and financial assistance scheme on promotion of solar energy. This paper considered the willingness factors it means on what basis consumers are adopting the solar energy. What are the factors which are attracting the consumer to adopt the solar energy and what are the factors which are responsible for not adopting the solar energy at their place. After thorough study of reviewed papers it is found that none of research papers throw light on effectiveness of promotional strategy of the government but present study considered the level of effectiveness of government efforts to promote solar energy at Nagpur city.

### **4. SIGNIFICANCE OF THE STUDY:**

The present study is important due to following reasons:

1. This study is significant to know the impact of age, educational qualification and income level on acceptance level towards solar energy.
2. This study focuses on sufficiency of facilities and benefits provided by government to promote solar energy.
3. This study considers the impact of limiting factors like cost of installation, cost of maintenance and delay in installation of solar energy.
4. This study also important to know how government is promoting this scheme effectively to extend the benefit of it at large.

### **5. RESEARCH METHODOLOGY:**

The present study is explorative and descriptive in nature. This study is based on the primary data to collect opinions of household consumers on their awareness, willingness and challenges to install solar energy through structured questioners on Google form, personal interview and face to face discussion. For understanding and explaining the concepts secondary data has been used.

#### **a. Sample Design and Size:**

- i. The targeted population of the study is households residing in Nagpur city.



- ii. A total number of 357 households of various areas of Nagpur city who resides in limit of Nagpur Municipal Corporation selected randomly.

**b. Methods of Data Collection:**

- i. Primary data has collected through structured questioners on Google form, personal interview and face to face discussion
- ii. Secondary data has collected from the books, newspapers, online news, websites of government agencies, publication of past research, relevant research papers etc.

**c. Tools Used:**

The hypotheses have been tested and conclusion of the study has been drawn by using frequency analysis, percentage, Chi-Square Method, ANOVA Method and Multiple Linear Regression method.

**Objectives:**

The present research paper is based on the following objectives:

1. To know in details about the solar energy promotion scheme of Government.
2. To study the consumer perception towards the solar energy promotion scheme.
3. To know various factors which affect on willingness of consumers to adopt the solar energy.
4. To study the factors which attract consumers to get benefits of solar energy promotion scheme.
5. To identify the challenges which are creating barriers towards promotion of solar energy promotion scheme.
6. To give suggestions to government to increase the effectiveness and popularity of solar energy promotion scheme.

**Hypothesis:**

The present study is based on following hypothesis:

**1. To Know the Awareness of Consumer:**

Ho: There is no significant relationship between the awareness of consumer and solar energy promotion scheme of Government.

H1: There is significant relationship between the awareness of consumer and solar energy promotion scheme of Government.

**2. To Know the Willingness of Consumers:**

Ho: There is no significant relationship between the wiliness of consumer and solar energy promotion scheme of Government.

H1: There is significant relationship between the wiliness of consumer and solar energy promotion scheme of Government.

**3. To know the factors which influence the willingness of consumer:**

Ho: The age, education, income and occupation make no significant impact on willingness of consumer to adopt the solar energy promotion scheme of Government.

H1: The age, education, income and occupation make significant impact on willingness of consumer to adopt the solar energy promotion scheme of Government.

**4. To know the factors which attract to consumer:**

Ho: Factors like subsidy, financial benefits and incentives for solar energy promotion scheme does not attract consumers to adopt the scheme

H1: Factors like subsidy, financial benefits and incentives for solar energy promotion scheme attract consumers to adopt the scheme.

**5. To Know the Challenges for solar energy promotions scheme:**

Ho: Factors like lack of knowledge, cost of maintenance, high cost of installation and delay in installation does not affect on solar energy promotion scheme.

H1: Factors like lack of knowledge, cost of maintenance, high cost of installation and delay in installation affect on solar energy promotion scheme.

**6. To know the effectiveness of Government promotional efforts for Scheme:**

Ho: The Government promotional policy and efforts does not affect on solar energy promotion scheme.

H1: The Government promotional policy and efforts affect on solar energy promotion scheme



**Limitations:**

The present research paper has faced following limitations:

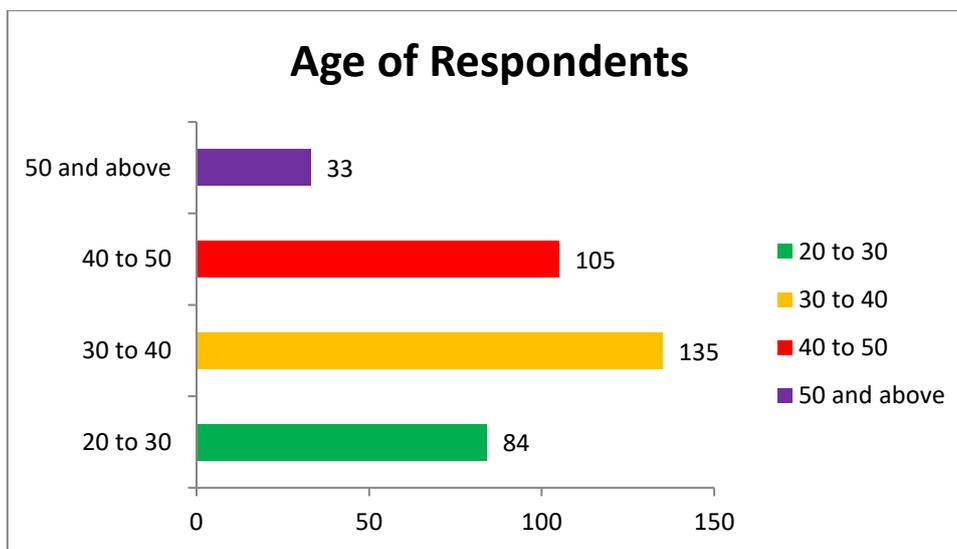
1. Limited number of studies has been done on such topics.
2. This study is based on the limited number of responses.
3. This study is based on only household consumers of electricity.
4. This study is based on the human behavior which is ever changing.
5. The scope of this study is limited to Nagpur city only.

**6. DATA ANALYSIS AND INTERPRETATION:**

The data collected from the 357 customers who are aware or using about the solar energy promotion scheme of government. The details of respondents regarding their, age, qualification, income and occupation are mentioned below:

• **Age of Respondents:**

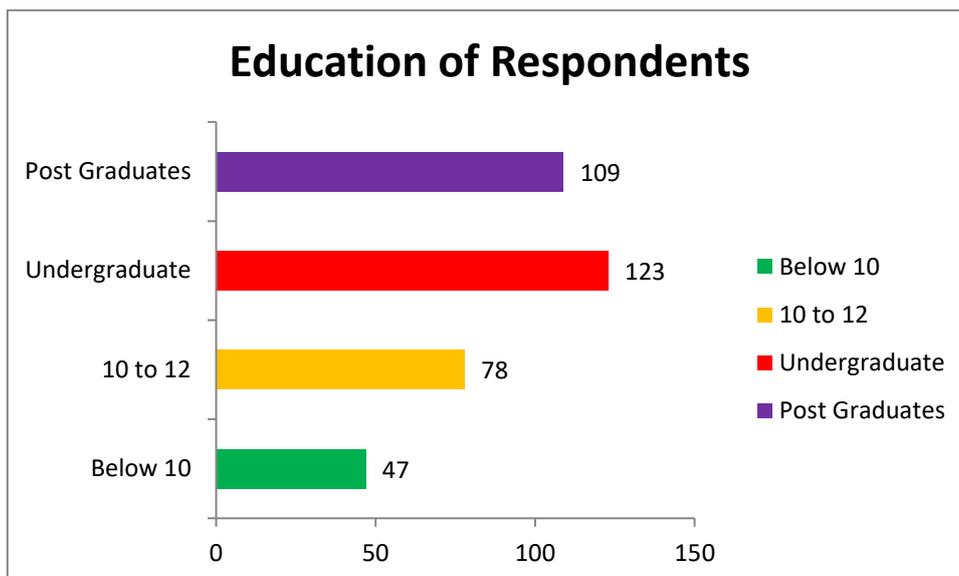
Age	No. of Respondents	Percentage
20 to 30	84	23.53%
30 to 40	135	37.82%
40 to 50	105	29.41%
50 and above	33	09.24%
Total	357	100%



**Explanation:** The above table and graphical presentation shows the age of respondents. As per the tabulation data 23.53% of respondents are very younger age i.e. age ranging from 20 to 30 years. 37.82% respondents are belonging to the age group of 30 to 40 years and they are majority respondents. Very few respondents i.e. 9.24% are belong to age group of 50 and above years where as 29.31% of respondents are belonging to the age group of 40 to 50 years.

• **Educational Qualification of Respondents:**

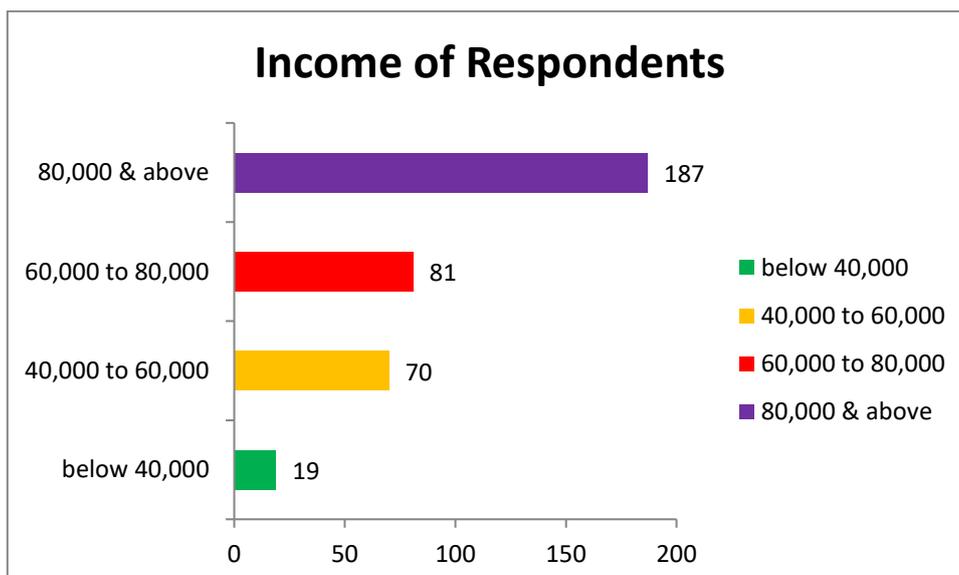
Education	No. of Respondents	Percentage
Below 10	47	13.17%
10 to 12	78	21.85%
Undergraduate	123	34.45%
Post Graduates	109	30.53%
Total	357	100%



**Explanation:** The above table and diagram represents the educational qualification of the respondents. Very few respondents i.e. 13.17% are having educational background below 10<sup>th</sup> Standards. 78 respondents i.e. 21.85% are having educational background above 10<sup>th</sup> Standards but below 12<sup>th</sup> standards. Majority of respondents i.e. 123 representing 34.45% are graduate and remaining 30.53% respondents are post graduated.

- Monthly Income of Respondents:**

Income	No. of Respondents	Percentage
below Rs. 40,000	19	5.32%
Rs. 40,000 to Rs. 60,000	70	19.61%
Rs. 60,000 to Rs. 80,000	81	22.69%
Rs. 80,000 & above	187	52.38%
Total	357	100%



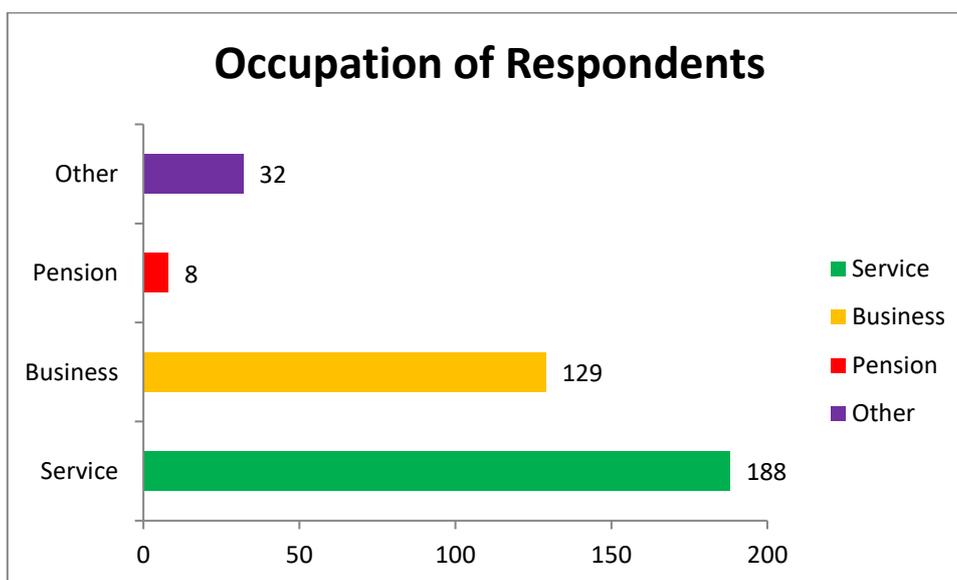
**Explanation:** The above table shows the data of monthly income level of the respondents. As per this tabulation majority of the respondents represents 52.38% are from the group of having monthly income more than Rs. 80,000 and only few respondents i.e. 5.32% are from the group of having monthly income below than Rs. 40,000. 19.61% of the respondents



are having monthly income of Rs. ranging from Rs.40,000 to 60,000 and 22.69% of the respondents are having monthly income ranging from Rs. 60,000 to 80,000.

• **Occupation of Respondents:**

Occupation	No. of Respondents	Percentage
Service	188	52.66%
Business	129	36.13%
Pension	8	2.24%
Other	32	8.96%
Total	357	100%



**Explanation:** Above table shows the responses collected about the occupation of the respondents. As per the graphical representation only 8 respondents representing 2.24% are pensioners. The majority respondents fall in salaried class and their ratio is 52.66%. After the salaried class 129 i.e. 36.13% respondents are from business class and only 8.96% respondents are having other source of income.

**Hypothesis Testing:**

The above hypothesis has been tested by using appropriate statistical test to the data collected through the questioner as per follows:

**1. To prove the hypothesis No. 1 i.e. To Know the Awareness of Consumer:**

Ho: There is no significant relationship between the awareness of consumer and solar energy promotion scheme of Government.

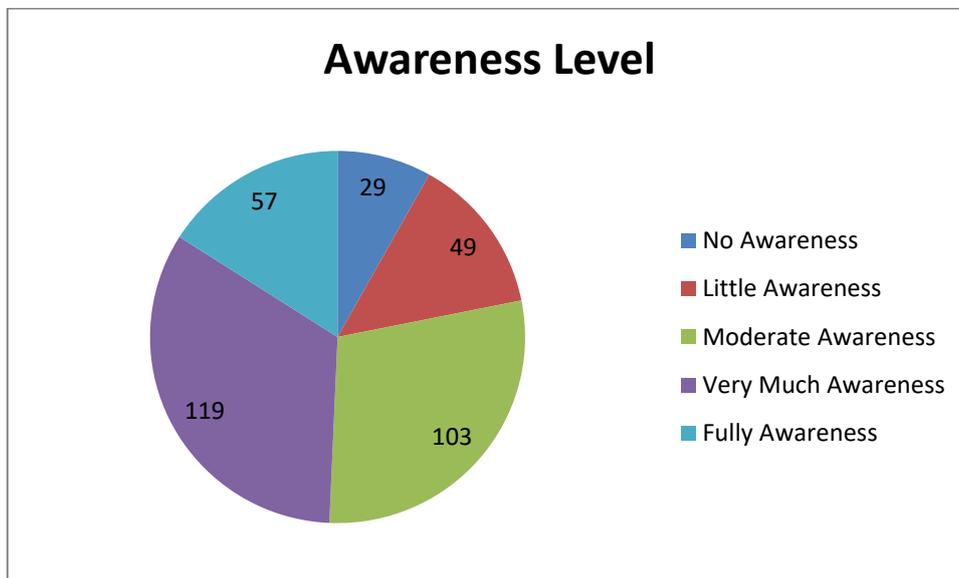
H1: There is significant relationship between the awareness of consumer and solar energy promotion scheme of Government.

Are you aware about the financial support, subsidy and financial assistance provided by Government to promote solar energy? This question was asked to the respondents for collecting the data on awareness of consumers. The responses received from them are tabulated as per follows:

Awareness Level	No. of Respondents	Percentage
No Awareness	29	8.12%
Little Awareness	49	13.73%
Moderate Awareness	103	28.85%



Very Much Awareness	119	33.33%
Fully Awareness	57	15.97%
Total	357	100%



**Explanation:** This table and graph is representing the responses collected over the awareness level of the respondents towards the government promotional scheme for promoting solar energy. Majority of respondents i.e. 33.33% are responded that they are very much aware about the scheme. 8.12% respondents are from the category that they are not having any awareness of the scheme. About 15.97% respondents are respondent that they are fully aware about the scheme. 28.85% respondents responded that they are moderately aware about the scheme and 13.73% respondents are the opinion that they are little aware about this scheme of government. .

To prove this hypothesis Chi-Square Goodness of Fit Test is used. As per this test calculations are done as per follows:

1. Expected Frequency = Total No. of Respondents/No. of Categories

$$= 357/5$$

$$= 71.40$$

2. 
$$X^2 = \sum \frac{(O - E)^2}{E}$$

$$= 80.80$$

Awareness Level	Observed Frequency (O)	Expected Frequency (E)	(O - E)	(O - E) <sup>2</sup> / E	Values
No Awareness	29	71.4	- 42.4	1797.76 / 71.4	25.17
Little Awareness	49	71.4	- 22.4	501.73 / 71.4	7.03
Moderate Awareness	103	71.4	31.6	998.56 / 71.4	13.98
Very Much Awareness	119	71.4	47.6	2265.76 / 71.4	31.72
Fully Awareness	57	71.4	- 14.4	207.36 / 71.4	2.90
Total	357				80.80



3. Degree of Freedom = No. of Categories (-) 1  
 = 5 (-) 1  
 = 4

4. As per table at 5% level of significance critical value of  $X^2$  is for Degree of Freedom 4 is 9.488

5. As per rules:

Calculated  $X^2 >$  Table Value of  $X^2$  then Null Hypothesis ( $H_0$ ) is rejected and

Calculated  $X^2 <$  Table Value of  $X^2$  then Null Hypothesis ( $H_0$ ) is Accepted

In this Case:

Calculated  $X^2 = 80.80$  and Table Value of  $X^2 = 9.488$  i.e.

Calculated  $X^2$  is  $>$  Table Value of  $X^2$  hence, Null Hypothesis is Rejected

It means there is significant relationship between the awareness of consumer and solar energy promotion scheme of Government.

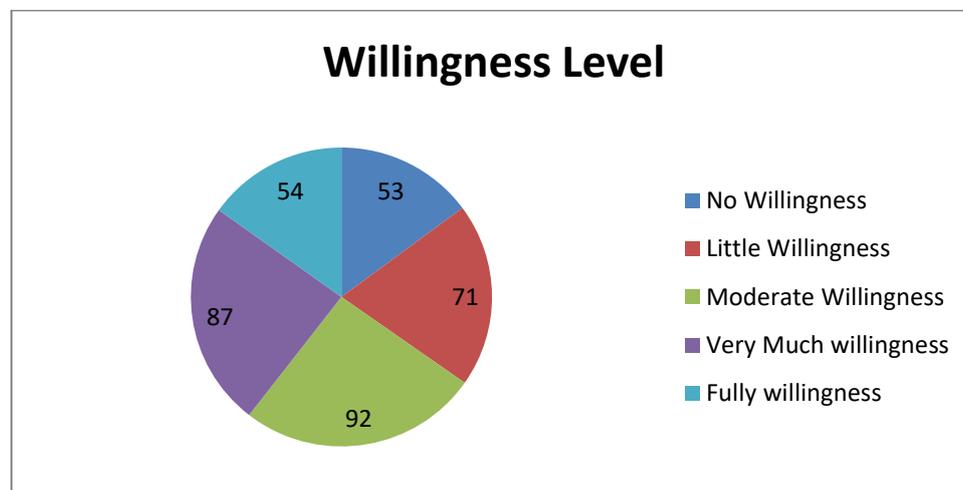
**2. To prove the hypothesis No. 2 i.e. To Know the Willingness of Consumers:**

$H_0$ : There is no significant relationship between the wiliness of consumer and solar energy promotion scheme of Government.

$H_1$ : There is significant relationship between the wiliness of consumer and solar energy promotion scheme of Government

Are you willing to install solar panel system at your home? This question was asked to the customers to collect the data on willingness of consumers. The responses received from the customers are tabulated as per follows:

Willingness Level	No. of Respondents	Percentage
No Willingness	53	14.85%
Little Willingness	71	19.89%
Moderate Willingness	92	25.77%
Very Much willingness	87	24.37%
Fully willingness	54	15.13%
Total	357	100%





**Explanation:** The above table and graphical representation of shows the level of willingness of the respondents towards the installation of solar system at their home. As per the tabulation it is observed that there is almost same respondents i.e. 25.77% and 24.37% are the opinion that they are moderately willing and fully willing respectively to install the solar energy. 14.85% of respondents are the opinion that they are not willing to install solar energy at their place whereas 15.13% of the respondents are fully willing to install solar energy at their home. Rest of 19.89% respondents thinks that they are moderately willing to install the solar system.

To prove this hypothesis Chi-Square Goodness of Fit Test is used. As per this test calculations are done as per follows:

1. Expected Frequency = Total No. of Respondents/No. of Categories

$$= 357/5$$

$$= 71.40$$

2. 
$$X^2 = \sum \frac{(O - E)^2}{E}$$
  

$$= 18.34$$

Willingness Level	Observed Frequency (O)	Expected Frequency (E)	(O - E)	(O - E) <sup>2</sup> / E	Values
No Willingness	53	71.4	- 18.4	338.56 / 71.4	4.74
Little Willingness	71	71.4	- 0.4	0.16 / 71.4	0.002
Moderate Willingness	92	71.4	20.6	424.36 / 71.4	5.94
Very Much Willingness	87	71.4	15.6	243.36 / 71.4	3.41
Fully Willingness	54	71.4	- 17.4	302.76 / 71.4	4.24
Total	357				18.34

3. Degree of Freedom = No. of Categories (-) 1  

$$= 5 (-) 1$$
  

$$= 4$$

4. As per table at 5% level of significance critical value of X<sup>2</sup> is for Degree of Freedom 4 is 9.488

5. As per rules:

Calculated X<sup>2</sup> > Table Value of X<sup>2</sup> then Null Hypothesis (H<sub>0</sub>) is rejected and

Calculated X<sup>2</sup> < Table Value of X<sup>2</sup> then Null Hypothesis (H<sub>0</sub>) is Accepted

In this Case:

Calculated X<sup>2</sup> = 18.34 and Table Value of X<sup>2</sup> = 9.488 i.e.

Calculated X<sup>2</sup> is > Table Value of X<sup>2</sup> hence, Null Hypothesis is Rejected

There is significant relationship between the wiliness of consumer and solar energy promotion scheme of Government.

**3. To prove the hypothesis No. 3 i.e. To know the factors which influence the willingness of consumer:**

Ho: The age, education, income and occupation make no significant impact on willingness of consumer to adopt the solar energy promotion scheme of Government.

H1: The age, education, income and occupation make significant impact on willingness of consumer to adopt the solar energy promotion scheme of Government.

The demographic data like age, education, income and willingness of consumers are taken into consideration.



To prove this hypothesis Multiple Linear Regression Test is used. As per this test calculations are done as per follows:

1. Conceptual Model:

$$\text{Willingness} = \beta_0 + \beta_1 (\text{Age}) + \beta_2 (\text{Education}) + \beta_3 (\text{Income}) + \beta_4 (\text{Occupation}) + \varepsilon$$

Where:

$\beta_0$  = Constant Variable (Willingness)

$\beta_1$  to  $\beta_4$  = Regression Co-efficient (Changing Variable i.e. age, education, income and occupation)

$\varepsilon$  = Error Term

2. Regression Output:

Predictor	B (Co-efficient)	t-value	Sig. (p-value)	Interpretation
Willingness	1.215	-	-	-
Age	0.243	2.91	0.004	Significant
Education	0.198	2.65	0.008	Significant
Income	0.284	3.44	0.001	Significant
Occupation	0.102	1.21	0.227	Not Significant

Summary:

$$R = 0.672$$

$$R^2 = 0.452$$

$$\text{Adjusted } R^2 = 0.439$$

$$F\text{-value} = 35.72$$

$$\text{Sig. (p} < 0.001)$$

3. Interpretation:

Overall Moderate Fit:

The F-test ( $F = 35.72, p < 0.001$ ) suggest that at least one demographic variable significantly affect on willingness.

Co-efficient Interpretation:

Age ( $p = 0.004$ ): Significant it means younger population ranging from 20 to 40 age group is highly willing to adopt solar energy.

Education ( $p = 0.008$ ) Significant it means higher educated population are more willing to install solar energy.

Income ( $p = 0.001$ ) Highly Significant it means higher income group population are more willing to install solar energy.

Occupation ( $p = 0.227$ ) not significant it means occupation does not affect on willingness of installing solar energy.

Co-efficient of Determination ( $R^2 = 0.452$ ):

It means about 45.2% population of the variation in willingness is explained by four demographic variable which indicate moderate to strong relationship.

4. Interpretation:

Overall is Significant ( $p < 0.05$ ) hence, Null hypothesis i.e. The age, education, income and occupation make no significant impact on willingness of consumer to adopt the solar energy promotion scheme of Government is rejected.



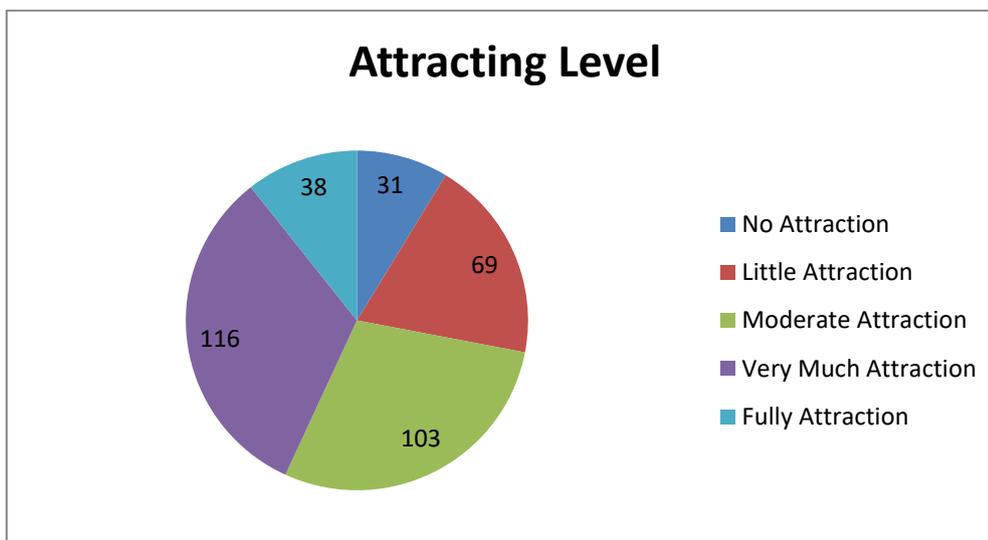
**4. To prove the hypothesis No. 4 i.e. To know the factors which attract to consumer:**

Ho: Factors like subsidy, financial benefits and incentives for solar energy promotion scheme does not attract consumers to adopt the scheme

H1: Factors like subsidy, financial benefits and incentives for solar energy promotion scheme attract consumers to adopt the scheme.

Do you think financial support, subsidy and financial assistance provided by government are attracting you to install solar panel at your home? This question was asked to the customers for collecting data to know which factors attract to customers. The responses received from the customers are tabulated as per follows:

Attracting Level	No. of Respondents	Percentage
No Attraction	31	8.68%
Little Attraction	69	19.33%
Moderate Attraction	103	28.85%
Very Much Attraction	116	32.49%
Fully Attraction	38	10.64%
Total	357	100%



**Explanation:** The above table represents the various attracting factors like subsidy, financial benefits and incentives are main factors which attract the general public to install the solar panel. It is found that majority of the respondents i.e. 32.49% are the opinion of that they are very much attracts towards these factors. Only 8.68% of the respondents are the opinion that they are not have any kind of attraction towards these factors. 28.85% of the respondents are the opinion of they have moderate attraction towards these factors. 19.33% of the respondents are responded that they are little attractive for these factors and 10.64% respondents felt that they these factors make them full attract to install solar energy at their home.

To prove this hypothesis One Way ANOVA Test is used. As per this test calculations are done as per follows:

1. To Apply ANOVA Test to convert ordinal scale to numeric score, accordingly following score is assigned to each option:

Attracting Level	Assigned Score
No Attraction	1
Little Attraction	2
Moderate Attraction	3
Very Much Attraction	4
Fully Attraction	5



2. Application of INOVA Framework:

Source of Variation	Sum of Square	df	Mean Square	F-Ratio	Significant (p-value)
Between Group	85.43	4	21.36	14.28	0.000
Within Group	526.12	352	1.49		
Total	611.55	356			

3. Interpretation of Test:

Calculated F-Value is 14.28

Table F-Value at 5% Significant Level and df (4, 352) is 2.37

Here,

Calculated F- Value i.e. 14.28 > Table F-Value i.e. 2.37 and 0.000 < 0.05

Hence, Null Hypothesis i.e. Factors like subsidy, financial benefits and incentives for solar energy promotion scheme does not attract consumers to adopt the scheme is rejected.

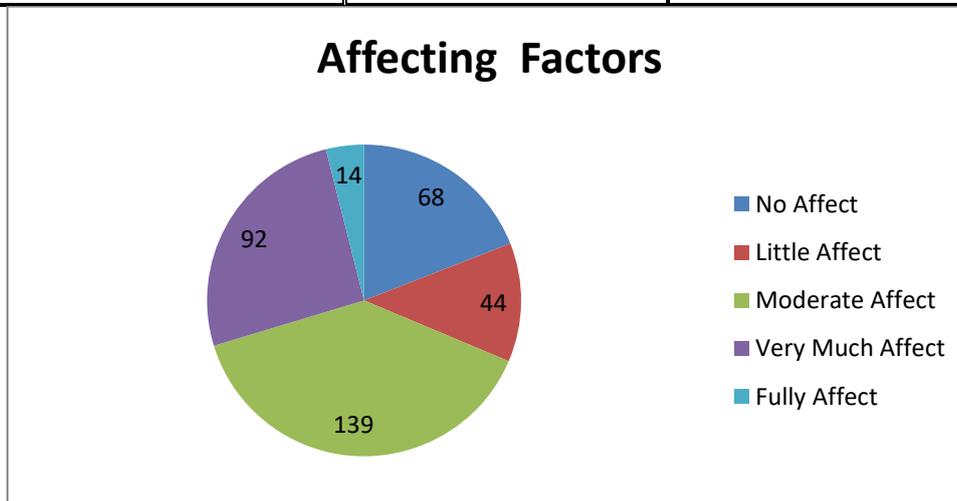
5. To prove the hypothesis No. 5 i.e. To Know the Challenges for solar energy promotions scheme:

Ho: Factors like lack of knowledge, cost of maintenance, high cost of installation and delay in installation does not affect on solar energy promotion scheme.

H1: Factors like lack of knowledge, cost of maintenance, high cost of installation and delay in installation affect on solar energy promotion scheme.

Do you think lack of knowledge, cost of installation, cost of maintenance and delay in installation are reframing you to install solar panel? This question was asked to the customers for collection of data to know the challenges face by customer. The responses received from the customers are tabulated as per follows:

Affecting Factors	No. of Respondents	Percentage
No Affect	68	19.05%
Little Affect	44	12.32%
Moderate Affect	139	38.94%
Very Much Affect	92	25.77%
Fully Affect	14	3.92%
Total	357	100%





**Explanation:** The above table shows the distribution of responses collected over the lack of knowledge, cost of maintenance, high cost of installation and delay in installation are factors stop the general public to install the solar system. As per tabulation it is observed that 38.94% respondents believe that they moderately feel that these factors stop them to use solar energy. 25.77% respondents fell that these factors makes very much effect on their decision of installing solar system at their home. 19.05% of the respondents are the opinion that these factors make no impact on the decision of installing solar energy at their home. Very few respondents i.e. 3.92% responded that these factors fully affect their decision while 12.32% of the respondents are the opinion that these factors make little effect on respondents to install solar energy.

To prove this hypothesis One Way ANOVA Test is used. As per this test calculations are done as per follows:

1. To Apply ANOVA Test to convert ordinal scale to numeric score, accordingly following score is assigned to each option:

Affecting Level	Assigned Score
No Affect	1
Little Affect	2
Moderate Affect	3
Very Much Affect	4
Fully Affect	5

2. Application of INOVA Framework:

Source of Variation	Sum of Square	Df	Mean Square	F-Ratio	Significant (p-value)
Between Group	72.86	4	18.22	10.87	0.000
Within Group	589.41	352	1.67		
Total	662.27	356			

3. Interpretation of Test:

Calculated F-Value is 10.87

Table F-Value at 5% Significant Level and df (4, 352) is 2.37

Here,

Calculated F- Value i.e.  $10.87 >$  Table F-Value i.e. 2.37 and  $0.000 < 0.05$

Hence, Null Hypothesis i.e. Factors like lack of knowledge, cost of maintenance, high cost of installation and delay in installation does not affect on solar energy promotion scheme is rejected.

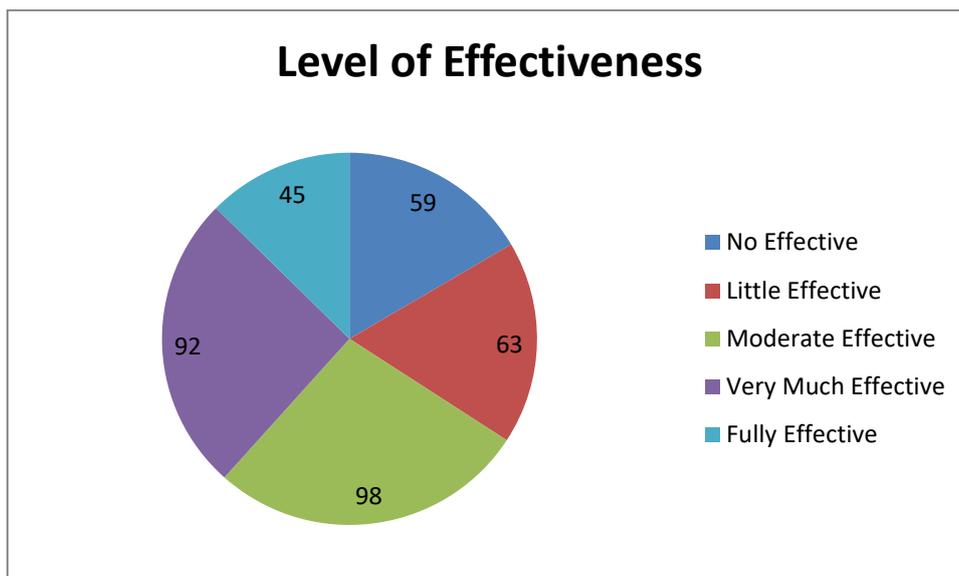
**6. To prove the hypothesis No. 6 i.e. To know the effectiveness of Government promotional efforts for Scheme:**

Ho: The Government promotional policy and efforts does not affect on solar energy promotion scheme.

H1: The Government promotional policy and efforts affect on solar energy promotion scheme

Do you think Government policy of solar energy promotion is effective? This question was asked to the customers. The responses received from the customers are tabulated as per follows:

Level of Effectiveness	No. of Respondents	Percentage
No Effective	59	16.53%
Little Effective	63	17.65%
Moderate Effective	98	27.45%
Very Much Effective	92	25.77%
Fully Effective	45	12.61%
Total	357	100%



**Explanation:** The above table and graph represent the data collected over the opinion of effectiveness of promotion of this policy. As per the responses collected 12.61% of the respondents are the opinion of the government is promoting this scheme fully effectively. 16.53% of the respondents feel that government is not promoting this scheme effectively. 17.65% respondents feel that government is promoting this scheme little effectively. Majority of the respondents representing 27.45% think that government is promoting this scheme moderate effectively. Followed by these majority respondent 25.77% respondents are the opinions that government is promoting this scheme very much effectively.

To prove this hypothesis One Way ANOVA Test is used. As per this test calculations are done as per follows:

1. To Apply ANOVA Test to convert ordinal scale to numeric score, accordingly following score is assigned to each option:

Level of Effectiveness	Assigned Score
No Effective	1
Little Effective	2
Moderate Effective	3
Very Much Effective	4
Fully Effective	5

2. Application of ANOVA Framework:

Source of Variation	Sum of Square	Df	Mean Square	F-Ratio	Significant (p-value)
Between Group	58.42	4	14.61	9.24	0.000
Within Group	557.89	352	1.59		
Total	616.31	356			

3. Interpretation of Test:

Calculated F-Value is 9.24

Table F-Value at 5% Significant Level and df (4, 352) is 2.37

Here,

Calculated F- Value i.e. 9.24 > Table F-Value i.e. 2.37 and 0.000 < 0.05



Hence, Null Hypothesis i.e. The Government promotional policy and efforts does not affect on solar energy promotion scheme is rejected

## 7. CONCLUSIONS:

As part of promoting solar energy the government providing the subsidy, financial support and grant to install the solar energy. The aim of this is maximum individuals should come forwards and install roof solar panel at their home. This aim cannot be fulfilled until every citizen knows about this scheme. Most of the consumers are not fully aware about this scheme of government. Consumers know about the some portion of the scheme and their knowledge is limited up to the subsidy provided by the government. There is significant relationship between the awareness and promotion of scheme it means more awareness is required among the consumers.

Apart from the awareness the willingness of the consumers are also affect the promotion of the scheme. Installation of solar energy helps to save high cost of electricity bill, use of high electricity consumed equipments, environmental benefits etc. considering all these factors majority of the respondents are mostly willing to install solar panel at their home. The willingness and actual installation is depends on the various factors like age, income and educational qualification. It sees that the younger generation belonging the age of 20 to 30 years is more inclined towards the installation of solar energy. The well educated respondents how are graduated or more than that are more ready to installed solar panel at their home. Similarly the income level of consumers is also makes the impact of decision of consumers. The higher income group of consumers is more willing to install solar energy. It is found that there is no relationship between the occupation of the consumer and willingness to install solar energy.

The consumers are installing the solar panel at their home to get the facilities of subsidy and grants given by the governments. These are considering as motivating factors because consumers are attracting towards these factors for installing solar panel. The government is trying to promote the scheme but still there are many factors like lack of knowledge, high initial cost of installation, cost of maintenance and delay in installation of solar panel are some factors which influence the consumers to install the solar system. These factors mare called as challenging factors for installing solar energy but these factors make very less impact on the decision of the consumers.

For installation of the solar energy at place of consumer the government is playing significant role. The efforts and appropriate promotion of government through various allied agencies are becoming successful. In overall the role of government and willingness of consumers are very much positive towards solar energy which yield various benefits to governments, consumers, society and environment as well.

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