CUSTOMERS' ATTITUDE TOWARDS WASTE MANAGEMENT - A STUDY WITH SPECIAL REFERENCE TO BIO-GAS PLANT

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ABSTRACT

An Energy resource is any physical or virtual entities of limited availability that needs to be consumed to obtain a benefit from it. The purely economic value of a resource is controlled by supply and demand. Resource has three main characteristics utility, quantity (often in terms of availability), and consumption. A transition from conventional energy system to those based on renewable resources is necessary to meet the ever increasing demand for energy and address environmental concerns. Today, India has one of the highest potential for effective use of renewable energy. There is significant potential in India for generation of power from renewable energy sources, small hydro energy, bio-mass energy, wind energy, wave energy and solar energy. A study on attitude and satisfaction towards bio-gas plant with special reference to Vedasandur has be made with objectives such as the study customer attitude towards bio-gas, reason for using bio-gas and level of satisfaction towards usage of bio-gas. The study concluded that it is environmental friendly and economical mode of energy production can be increased further with the constant efforts of NGO and Government.

Keyword: *Bio gas, Bio Mass, Eco Friendly etc.*

INTRODUCTION

An energy resources is universally recognised as an important inputs for economic growth and human development. There will be limited availability for any physical or virtual entities of energy resources that's need to be consumed and to obtain a benefit from it. The average per capita consumption of energy in India is around 500W, which is comparatively lower than that of developed countries. Due to decline in consumption of energy and effect of price changes by demand & supply gap, effective utilisation of renewable energy resources is considered, as a one of the major solutions to meet the ever increasing demand for energy and address environmental concerns, in this context, biogas is considered as a best renewable energy resources for the country.

The term "Bio gas" is produced from dung and animal wastes. Biogas is a mixture of methane and carbon-di-oxide. The use of biogas as a source of renewable energy leads as a source of energy goes back to the beginning of this century when sewage sludge was anaerobically digested and the resulting gas collected and utilized in the sewage treatment plant itself for heating the sludge during digestion. The idea of production biogas from domestic and far-yard wastes and its utilization in rural areas as a source of energy originated in India in the late thirties with the khadi movement.

STATEMENT OF THE PROBLEM

The big problem in many developing countries is that the energy resources are used in an unsustainable way. The demand for energy is far greater than the availability. Replacing Bio-Gas energy with Bio-Gas could help to solve a lot of problems that are typically found with Bio mass fuels. Indoor climate will be dramatically improved as a result using clean Bio-Gas stove instead of burning firewood, straw and dung cakes. This would means that lot of the problems with hazardous smoke particles would be avoided.

Women and children would have more time for education when they don't have to spend as much time collecting firewood and other Biomass fuels. The daily times spend in feeding a small Bio-Gas digester could be as little as 15 minutes compared to several hours in the collecting Biomass.

Lack of financial capabilities to invest in Bio-Gas plant among poor farmers in rural areas remains one of the biggest challenges. Biogas is easy to set up and require little capital investment on a small scale basis. This study mainly focused on the "attitudes and customer satisfaction towards the Bio-Gas plant".

OBJECTIVES OF THE STUDY

- To study the attitudes of the customer towards the Bio-Gas plant.
- To know the reason for using of Bio-Gas plant.
- To know the level of satisfaction towards the customers.

HYPOTHESES TESTING

The following hypotheses were formulated in the study.

Ho_1: There is no significant relationship between Bio-Gas plant Model preferred and level of satisfaction towards Bio-Gas plant.

Ho_2: There is no significant relationship between year of construction of Bio-Gas plant and level of satisfaction towards Bio-Gas plant.

Ho_3: There is no significant relationship between Cost of construction and level of satisfaction towards Bio-Gas plant.

METHODOLOGY

The methodology adopted for the research entitled the study on customer attitude and satisfaction towards Bio-Gas plant

Area of Study: Vedasandur

Sample Size: N=150

Sampling Process: Purposive sampling

Data Type: Primary data was collected to study the customer attitudes and satisfaction towards the Bio-Gas plant with special reference to Vedasandur.

Data CollectionTools: The data required for the study was collected with the help of a well design questionnaire. The questionnaire was collected using convenient sampling method.

Statistical Tools Used: Percentage, Chi-square test, Rank analysis, Scaling technique, Mean, Standard Deviation was applied for the purpose of the study.

ANALYSIS AND INTERPRETATION

Table.1.Characterstics of the respondents

Factors	Classification	No.of.Respondents	Percentage
Age	Up to 30 Years	10	7
	30 to 40 Years	33	22
	40-50 years	60	40
	Above 50 year	47	31
Gender	Male	79	53
	Female	71	47
Marital status	Married	147	98
	Unmarried	3	2
Educational Qualification	Illiterate	69	46
	School level	54	36
	Diploma	10	7
	Degree	14	9
	Professional	3	2
Occupation	Employee	1	1
	Business man	9	6
	Farmer	129	86
	Professional	5	3
	Others	6	4
Annual Income	Rs.50000-Rs.6000	20	14
	Rs.60000-Rs.70000	57	38
	Rs.70000-Rs.80000	51	34

	Above Rs.80000	22	14
Cost of Construction	Rs.5000- Rs.10000	48	32
	Rs.10001- Rs.15000	26	17
	Rs.15001- Rs.20000	63	42
	Rs.21001- Rs.25000	10	7
	Rs.25001- Rs.30000	3	2

The above table states that highest percentage (40 percent) of the respondents were in the age group of 40-50 years**,** Majority (53 percent) of the respondents were male., Majority (98percent) of the respondents were married, Highest percentage (46 percent) of the respondents was Illiterate, Majority(86 percent) of the respondents were farmers, The highest(38percent) of the respondents belongs to the annual income group of Rs.60000-Rs.70000.

Table.2.Reasons for preferring Bio-Gas plant

Factors	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VII**	**Total**	**Rank**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**		
Avoid air pollution	15 (120)	45 (315)	20 (120)	15 (75)	13 (52)	20 (60)	9 (18)	13 (13)	**773**	**III**
Save time & energy	21 (168)	7 (49)	38 (228)	23 (115)	20 (80)	15 (45)	18 (18)	8 (13)	**716**	**IV**
To Avail subsidy	24 (192)	15 (315)	8 (48)	17 (85)	12 (48)	15 (45)	37 (74)	22 (22)	**829**	**II**
Enjoy social benefits	5 (40)	10 (70)	8 (48)	5 (25)	10 (40)	10 (30)	34 (68)	68 (68)	**389**	**VIII**
To protect Health care	15 (120)	24 (168)	18 (108)	12 (60)	17 (68)	23 (69)	20 (40)	21 (21)	**654**	**VI**
Easy to use	48 (384)	26 (182)	14 (84)	21 (105)	15 (60)	12 (36)	9 (18)	5 (5)	**874**	**I**
Non availability of Natural Gas	5 (40)	12 (84)	26 (156)	30 (150)	26 (104)	26 (78)	15 (30)	10 (10)	**652**	**VII**
Low cost	17 (136)	11 (77)	18 (108)	27 (135)	36 (144)	29 (87)	8 (16)	4 (4)	**707**	**V**

The above table shows out the respondents, various reasons for constructing Bio-Gas plant. Out of the various reason easy to use was ranked first (874) and to avail subsidy was ranked as second (829) reason for preferring Bio-Gas plant. Avoid air pollution was ranked as third (773), save time and energy was ranked as fourth (716), low cost was ranked as fifth (707), protecting of the health care was ranked as sixth (654), non availability of natural gas was ranked as seventh (652) and enjoy social benefits was ranked as eighth.

Easy to use and subsidy were the major reason for preferring Bio-Gas plant.

Table.3.Level Satisfaction

Level of satisfaction	**No.of.respondents**	**Percentage**
High	112	75
Medium	25	17
Low	13	8
Total	**150**	**100**

It is observe from the above table 75 percent of the respondents perceived high level of satisfaction, 17 percent of the respondent perceived medium level of satisfaction and 8 percent of respondents perceived low level of satisfaction.

It is found from the table that a majority (75 percent) of the respondents have high level of satisfaction.

Hypothesis Testing

Ho_1: There is no significant relationship between Bio-Gas Model and level of satisfaction towards Bio-Gas plant

Table.4.Bio-Gas Model and level of satisfaction towards Bio-Gas plant

Level of satisfaction / Model	High	Medium	Low	Total
KVIC model	5	2	1	8
Janata model	77	10	4	91
Pragati model	3	2	1	6
Deenbandhu model	3	1	1	5
Ganesh model	2	3	1	6
Concrete model	20	5	3	28
Fiberglass reinforced polystermodel	1	1	1	3
Deenbandhu biogas plant constructed with ferrocement material model	1	1	1	3

Calculated Value : 20.95
Table Value : 23.7
Degree of Freedom : 14
Level of significance : 5%

The calculated value (20.95) is less than the table value (23.7), hence the hypothesis is accepted at 5% level of significance. So there is no significant relationship between Bio-Gas Model and Level of satisfaction towards Bio-Gas plant.

Ho_2: There is no significant relationship between year of construction and level of satisfaction towards Bio-Gas plant

Table.5.Year of construction and level of satisfaction towards Bio-Gas plant

Level of satisfaction / Year	High	Medium	Low	Total
1986-1990	2	2	1	5
1991-1995	12	3	2	17
1996-2000	28	8	2	38
2001-2005	36	7	5	48

2006-2010	23	3	2	28
2011-2015	11	2	1	14
Total	**112**	**25**	**13**	**150**

Calculated Value : 5.65; Table Value : 21
Degree of Freedom : 12
Level of significance : 5%

The calculated value (5.65) is less than the table value (21), hence the hypothesis is accepted at 5% level of significance. So there is no significant relationship between year of construction and Level of satisfaction towards Bio-Gas plant.

Ho_3: There is no significant relationship between Cost of construction and level of satisfaction towards Bio-Gas plant

Table.6.Cost of construction and level of satisfaction towards Bio-Gas plant

Cost / Level of satisfaction	Rs.5000-10000	Rs.11000-15000	Rs.16000-20000	Rs.21000-25000	Rs.26000-30000	Total
High	41	16	47	7	1	112
Medium	3	6	13	2	1	25
Low	4	4	3	1	1	13
Total	48	26	63	10	3	150

Calculated Value : 11.58
Table Value : 15.507
Degree of Freedom : 8
Level of significance : 5%

The calculated value (11.58) is less than the table value (15.507), hence the hypothesis is accepted at 5% level of significance. So there is no significant relationship between cost of construction and Level of satisfaction towards Bio-Gas plant.

FINDINGS

- Highest percentage (40 percent) of the respondents were in the age group of 40-50 years.
- Majority (53 percent) of the respondents were male.
- Majority (98percent) of the respondents were married.
- Highest percentage (46 percent) of the respondents was Illiterate.
- Majority(86 percent) of the respondents were farmers.
- The highest (38percent) of the respondents belongs to the annual income group of Rs.60000-Rs.70000.
- Majority (75 percent) of the respondents have high level of satisfaction.
- There is no significant relationship between Bio-Gas Model and Level of satisfaction towards Bio-Gas plant.
- There is no significant relationship between year of construction and Level of satisfaction towards Bio-Gas plant.
- There is no significant relationship between Bio-Gas Model,Year of construction and, Cost of construction.

SUGGESTION

- The government and non- government organizations should take appropriate measures to popularize the construction and use of bio-gas plants among rural areas for increasing the efficiency in energy use.
- Efforts must be taken by the NGO's to make necessary arrangements for bank loans and subsidy to increase the number of bio-gas plants.

- Guidance and care must be taken in construction of Bio-Gas plants as failure of plant is the major problems suggested by the respondents.

CONCLUSION

Majority of the respondents are highly satisfied with the Bio-Gas plants as the efforts and cost of maintenance of Bio-Gas plants are very minimum. Janata model was the most preferred model by majority of the respondents. Safety and long life were considered as the major factors in deciding the model for Bio-Gas plant. This environmental friendly and economical mode of energy production can be increased further with the constant efforts of NGO and Government.

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