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RESEARCH ARTICLE

“CONSUMER ATTITUDE TOWARDS BRIQUETTE COOKING STOVE”- AN ANALYTICAL APPROACH.

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Abstract

Briquette cooking stoves are the new generation cooking stoves, which can be used to replace the conventional LPG cooking system that is generally used in corporate hostels, hospitals, restaurants, jails, function halls, caterers. And the Briquettes are used as economic fuel in stoves and as an alternative fuel for industrial boilers, furnaces and other industrial applications. Biomass briquettes, mostly made of green waste and other organic materials, are commonly used for electricity generation, heat and cooking fuel. These compressed compounds contain various organic materials, including rice husk, biogases, ground nut shells, municipal solid waste, and agricultural waste. The composition of the briquettes varies by area due to the availability of raw materials.

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Introduction:-

Biomass is a renewable and carbon neutral energy source. In times of rising energy cost, petroleum and gas reserves diminishing, and a world focus on environmental impact, alternative energy forms have become increasingly important. It makes sense to use energy resources that are readily available, plentiful, renewable and sustainable. Biomass provides one of the most environmentally friendly energy sources to meet the world's growing energy needs. Due to the increasing need for alternative fuel, briquettes have come into existence as an affordable and economical alternative to traditional forms of fuel such as charcoal and wood. They are suitable for cooking and water heating in households, and for use in drying; firing ceramic products, powering boilers to generate steam, and fuelling gasifiers.

Briquette is the substitute of firewood and so trees are saved and problems like soil erosion and desertification are prevented. It improves health by providing a cleaner burning fuel. It creates micro enterprise opportunities like making the briquette machine from locally available materials, supplying the materials, making the briquettes and selling and delivering the briquettes.

Many concessions are offered by the government.

Worldwide biomass currently provides more than 10 percent of our energy needs. Biomass may become an increasingly important energy source rising to 30 percent globally by 2050.

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Statement Of The Problem:-

The mission of the Harvest Fuel Initiative is to facilitate the market-based approach to the large-scale and widespread use of efficient technologies and sustainable solid biomass fuel alternatives that can help alleviate poverty, improve health, and protect the environment. Today's world high quality products that socially and economically benefit low and middle-income households and organizations looking for energy and cost saving solutions need to be focused. More than two billion people use bio-fuels such as wood, crop residue, and dung as their primary energy source for domestic needs such as heating and cooking. Bio-fuels are carbon neutral sources of renewable energy, but, the inefficient burning of wood is responsible for a significant fraction of global black carbon. Solutions such as solar stoves and ovens have great limitations regarding low energy, blackout times, and size.

The briquette cooking stove is a wonderful invention that has saved the cooking time for millions of people and organization. It has become a prestigious product in the new era of modernization. A large percentage of world population continues to use biomass in traditional cook stoves for cooking needs, low efficiency and high emissions from this result in adverse health and socio-economic impact. Though improved cook stoves have been developed, the environmental impact was not reduced. So, there is a need for a new innovation which can be accomplished with the help of the briquette cooking stove. Hence, the study is taken up.

Objective Of The Study:-

The main objectives of the study is to analyse the consumer attitude towards briquette cooking stove.

Scope Of The Study:-

The scope of the study is to analyse the consumer preference of briquette cooking stove among the hotels in Madurai city. The study encompasses and analysis of the level of satisfaction, reason for preferring and also the reason for switching over.

Research Design and Methodology:-

The study includes only primary data. The data have been collected from 100 respondents through questionnaire method in Madurai city on the basis of convenience sampling method.

Frame work of analysis:-

Percentage analysis, ANOVA, Chi-square test, Garrett's Ranking Technique, Intensity value is used to analyze the primary data.

Type of fuel previously used:-

In earlier days, people used various types of fuel for their heating and cooking processes. The types of fuel previously used are analysed by using Garrett's Ranking techniques and given in Table 1.

Table 1:- Type of fuel previously used.

Type of fuel	Ranks							Garret's Score	Mean Score	Rank
	1	2	3	4	5	6	7			
Fire wood	15	23	21	23	9	3	6	5671	56.71	2
Charcoal	10	9	19	18	29	13	2	5107	51.07	3
Groundnut Shells	7	4	13	24	17	22	13	4516	45.16	5
Cashew Shells	7	21	16	10	20	13	13	4935	49.35	4
Cow dung	31	22	12	10	13	7	5	5968	59.68	1
Kerosene	6	13	11	10	9	36	15	4390	43.9	6
Liquid Petroleum Gas	23	8	8	6	3	6	46	4385	43.85	7

Source: Primary data

From table 1, it is noted that, cow dung has become the first type of fuel used previously and is proved with the garret's score of 59.68. Firewood is the second fuel mostly used by the respondents (Garrets score 56.71). The third fuel cited by the respondents is the charcoal (Garrets score 51.07). Cashew shells have got the fourth rank (Garrets score 45.16). Groundnut shells and kerosene has got the fifth and six ranks respectively. Liquid petroleum gas has been cited lastly by the respondents with the garret score (43.85).

Reasons for switching over to briquette cooking stove:-

Briquettes are a common type of solid fuel, largely replacing sodas of raw peat as a domestic fuel. These briquettes consist of shredded peat, compressed to form a virtually smokeless, slow burning, easily stored and transported fuel. Although often used as the sole fuel for a fire, they are also used to quickly and easily light a coal fire. Biomass briquettes are made from agricultural waste and are a replacement for fossil fuels such as oil or coal, and can be used to heat boilers in manufacturing plants, and also have applications in developing countries. Biomass briquettes are a renewable source of energy and avoid adding fossil carbon to the atmosphere. The reasons for switch over to briquette cooking stove are presented in Table 2

Table 2:- Reasons for switching over to briquette cooking stove

Reasons	Ranks					Garret's Score	Mean Score	Rank
	1	2	3	4	5			
Reduce cooking time	7	53	31	5	4	5711	57.11	II
No fly ash	6	8	14	36	36	5374	53.74	IV
Reduce cooking fuel cost	75	16	2	3	4	7061	70.61	I
Safety	1	10	23	32	34	5281	52.81	V
Easy to handle	11	13	30	24	22	5473	54.73	III

Source: Primary data

From Table 2, it is inferred that, briquette cooking stove reduces cooking fuel cost is the first reason represented by the respondents with the garret's score of 70.61. Secondly, the respondents switch over to briquette cooking stove as it reduces cooking time (garrets score 57.11). The third reason cited by the respondents is the easy handling of briquette stove (garrets score 54.73). The respondents have given the reason of No fly ash (garrets score 53.74) as the fourth reason. Safety is chosen as the fifth reason felt by the respondents with garret's score of 52.81.

Sources of information:-

Sources are the main thing which can give information about everything or anything. Information search is one of the important process of consumer's buying decision. Sources are nothing but the elements through which one can get the information for satisfying themselves. The sources of information about the briquette cooking stove are given in Table 3

Table 3:- Sources of information

Sources of information	Ranks				Mean Value
	1	2	3	4	
Advertisement	11	25	24	15	3.26
Agents	21	24	31	24	2.73
Focus groups	25	29	16	30	2.89
Pamphlets	41	12	18	29	3.16
Neighbors	27	16	12	24	2.96

H_0 – There is no significant relationship in ranks assigned by different respondents regarding the sources of getting information about briquette cooking stove.

Since the calculated value of χ^2 (2.345) at 5 percent level of significance (d.f=3) is greater than table value (9.49) the alternative hypothesis is accepted. Hence it is concluded that there is no significant relationship between sources of getting information about briquette cooking stove.

Size of briquette cooking stove:-

Briquette cooking stoves are new generation cooking stoves which are used to replace the conventional cooking stoves. The biomass briquette cooking stoves which are considered an economic fuel is available in small, medium, and large size. Table 4 shows the size of briquette cooking stove.

Table 4:- Size of briquette cooking stove

Size of briquette	Number of respondents	Percentage
Small	42	42
Medium	29	29
Large	29	29
Total	100	100

Source: Primary data

From the Table 4 it is inferred that 42 per cent of the respondents use small size briquette stoves. Almost, 29 per cent of the respondents equally use medium and large size briquette cooking stoves.

Relationship between the income and the size of briquette cooking stove.

To find out the relationship between the income and the size of briquette cooking stove Chi-square test is applied. Table 5 shows the income and the size of briquette cooking stove.

Table 5:- Income and size of briquette cooking stove

Income	Size of briquette cooking stove			Total
	Small	Medium	Large	
Up to 20,000	35	12	2	49
20,000-40,000	7	12	19	38
40,000-60,000	0	5	5	10
Above 60,000	0	0	3	3
Total	42	29	29	100

Source: Primary data

H₀: There is no significant relationship between the income and the size of the briquette cooking stove.

Since the calculated value of χ^2 (46.421) at 5 percent level of significance (d.f=6) is greater than table value (12.6) the null hypothesis is rejected. Hence it is concluded that there is a significant relationship between the income and the size of the briquette cooking stove.

Relationships between occupation and size of briquette cooking stove.

To find out the relationship between the occupation and the size of briquette cooking stove Chi-square test is applied. Table 6 show the occupation and size of briquette cooking stove.

Table 6:- Occupation and size of briquette cooking stove

Occupation	Size of briquette			Total
	Small	Medium	Large	
Households	11	4	1	16
Canteen	27	9	8	44
Restaurants	4	10	11	25
Mess / Catering	0	6	9	15
Total	42	29	29	100

Source: Primary data

H₀: There is no significant relationship between the occupation and the size of briquette cooking stove.

Since the calculated value of χ^2 (31.385) at 5 percent level of significance (d.f=6) is lesser than table value (12.6) the alternative hypothesis is rejected. Hence it is concluded that there is a significant relationship between the occupation and the size of briquette cooking stove.

Relationship between the daily schedules of cooking process and the size of briquette cooking stove.

To find out the relationship between the daily schedule of cooking process and the size of briquette cooking stove Chi-square test is applied. Table 7 shows the daily schedule of cooking process and the size of briquette cooking stove.

Table 7:- Daily schedule of cooking process and size of briquette cooking stove

Daily schedule of cooking process	Size of briquette cooking stove			Total
	Small	Medium	Large	
Morning	14	4	1	19
Afternoon	11	11	6	28
Evening	0	2	1	3
Night	1	2	0	3
All	16	10	21	47
Total	42	29	29	100

Ho: There is no significant relationship between the daily schedule of cooking process and the size of briquette cooking stove.

Since the calculated value of χ^2 (21.070) at 5 percent level of significance (d.f=8) is greater than table value (15.5) the null hypothesis is rejected. Hence it is concluded that there is a significant relationship between daily schedule of cooking process and the size of the briquette cooking stove.

Frequency of usage:-

Consumers use briquette stove according to their needs and requirements depending upon the nature of application. Table 8 shows the frequency of usage.

Table 8:- Frequency of usage

Frequency of usage	Number of respondents	Percentage
Regularly	66	66
Once in a few days	10	10
Festivals	15	15
Occasionally	4	4
Functions	5	5
Total	100	100

Source: Primary data

From table 8 it's obtained that, 66 per cent of the respondents are using briquette cooking stove regularly. Nearly 1.5 percent of the respondents use the briquette stove during festivals seasons. The percentage of respondents using the stove once in a few days is 10. Only 5 per cent of the respondents use briquette cooking stove during the functions and 4 percent of the respondents are occasional users.

Size and frequency of usage:-

To analyse the relationship between the size of briquette cooking stove and the frequency of usage one way ANOVA is applied.

Table 9:- Size and frequency of usage

Size	Frequency of usage					Total
	Regularly	Once in a few days	Festivals	Occasionally	Functions	
Small	24 (36.4)	6(60)	6(40)	4(100)	2(40)	42
Medium	20 (30.3)	4(40)	4(26.7)	0(0)	1(20)	29
Large	22(33.3)	0(0)	5(33.3)	0(0)	2(40)	29
Total	66	10	15	4	5	100

Source: Primary Data.

Ho: There is no significant relationship between the size and the frequency of usage.

Table 9

Sources of Variance	Sum of Squares	Degree of freedom	Mean Square	F
Between group	2.541	2	1.270	1.270 F = ----- 1.357
Within group	131.619	12	1.357	= 0.936
Total	134.160	14		

Since as the calculated value (0.936) is less than the table value of f for $v=2$ $v_2=12$ at 5% level of significance (3.88), so the null hypothesis is accepted. Therefore it is inferred that, there is no significant relationship between the size and the frequency of usage briquette cooking stove.

Relationship between the occupation and the frequency of usage

To find out the relationship between the occupation and the frequency of usage Chi-square test is applied. Table 10 shows the occupation and the frequency of usage of briquette cooking stove.

Table 10:- Occupation and frequency of usages

Occupation	Frequency of usages					Total
	Regularly	Once in a few days	Festivals	Occasionally	Function	
Households	13	2	0	1	0	16
Canteen	27	5	6	3	3	44
Restaurants	15	3	5	0	2	25
Catering	11	0	4	0	0	15
Total	66	10	15	4	5	100

Source: Primary data

H₀: There is no significant relationship between the occupation and the frequency of usage of briquette cooking stove.

Since the calculated value of χ^2 (11.947) at 5 percent level of significance (d.f=12) is lesser than table value (21.0) the null hypothesis is accepted. Hence it is concluded that there no a significant relationship between the occupation and the frequency of usage of briquette cooking stove.

Benefits brought by briquette cooking stove.

The negative impacts are reduced by using improved cook stoves and fuels. Briquette cooking stoves bring change to the environment and changes to the users. The benefits are shown in Table 11.

Table 11:- Benefits

Benefits	Ranks					Mean Rank
	1	2	3	4	5	
Meals ready earlier	41	26	17	11	5	2.13
Do not have to watch the fire	16	15	26	22	21	3.17
Less chance for injuries	33	24	18	23	2	2.37
Fewer respiratory diseases	6	22	22	18	32	3.48
More time to do other activities	4	13	17	26	40	3.85

Source: Primary data

H₀- There is no significant relationship in ranks assigned by different respondents regarding the benefits that are brought by briquette cooking stove.

Since the calculated value of χ^2 (85.424) at 5 percent level of significance (d.f=5) is greater than table value (11.1) the null hypothesis is rejected. Hence it is concluded that there is a significant relationship in ranks assigned by different respondents regarding the benefits that are brought by briquette cooking stove.

Reasons for preferring briquette cooking stove:-

Briquette cooking stove support sustainability and is a viable alternative to the stoves. These stoves are specially designed and are named for durability and can with stands 300kgs of weight. Depending on the holding capacity of

briquettes are prepared from the minimum to the maximum. As it is eco-friendly it is free from fumes. Briquette cooking stoves are available at affordable prices depending on the needs of the consumers. The reasons for the preference of briquette cooking stoves are shown in table 12.

Table 12:- Reasons for preferring briquette cooking stove

Reasons	Rank					Intensity value	Rank
	1	2	3	4	5		
Affordable price	3	3	3	53	38	180	III
Attractive models	7	3	15	38	37	174	V
Energy saving	1	4	16	59	20	207	I
Nature saving	-	8	7	52	33	190	II
Eco friendly	2	2	4	57	35	179	IV
Durability	-	1	8	46	45	165	VI

Source: Primary data

Table 12 it is understood that energy saving is the first reason cited by the respondents with the intensity value of 207. Nature saving have got the second rank with the intensity value of 190. The respondents have considered affordable price as the third reason. Eco-friendliness and attractive models are the fourth and the fifth reason expressed by the respondents. Durability has got the six ranks with the intensity score of 165.

Relationship between the income and the reasons for preferring of briquette cooking stove.

As the income is the significant determine, to find out whether the income has any influence on the reasons for preferring briquette cooking stove, the income and the reasons for preferring briquette cooking stove is given in Table 13

Table 13:- Income and reasons for preferring briquette cooking stove

Income	Reasons for preferring			Total
	Low	Medium	High	
Up to 20,000	5	38	6	49
20,000-40,000	8	24	6	38
40,000-60,000	1	7	2	10
Above 60,000	1	2	0	3
Total	15	71	14	100

Source: Primary data

H₀: There is no significant relationship between the income and the reasons for preferring the briquette cooking stove.

Since the calculated value of χ^2 (4.025) at 5 percent level of significance (d.f=6) is lesser than table value (12.6) the null hypothesis is accepted. Hence it is concluded that there is no significant relationship between income and reasons for preferring of briquette cooking stove.

Relationship between the occupation and the reasons for preferring of briquette cooking stove.

To find out the relationship between the occupation and the reasons for preferring of briquette cooking stove Chi-square test is applied. Table 14 shows the occupation and the reason for preferring of briquette cooking stove.

Table 14:- Occupation and reasons for preferring briquette cooking stove

Occupation	Reasons for preferring			Total
	Low	Medium	High	
Households	0	13	3	16
Canteen	4	34	6	44
Restaurants	9	12	4	25
Mess /catering	2	12	1	15
Total	15	71	14	100

Source: Primary data

H₀: There is no significant relationship between the occupation and the reasons for preferring briquette cooking stove.

Since the calculated value of χ^2 (14.226) at 5 percent level of significance (d.f=6) is greater than table value (12.6) the null hypothesis is rejected. Hence it is concluded that there is a significant relationship between the occupation and the reasons for preferring of briquette cooking stove.

Suggestions:-

- ❖ Campaign can be organised by the manufacturer to bring awareness about the reduction in cooking fuel cost.
- ❖ Small size specially made briquette cooking stoves are available and the households can be encouraged to use such stoves for their daily cooking.

Conclusion:-

A detailed analysis of the respondents shows the general attitude in relation to their choice of briquette cooking stove and highlighted reasons for preferring briquette cooking stove. In the near future people may prefer to use fumeless , eco-friendly briquette cooking stoves for their daily use.

Reference:-

1. Sadakath.blogspot.com/2010/11/blog-post.html.
2. Statistical Package for the Social Science (SPSS) 10.1 version.
3. K.d.Kokate and S.S. Wadkar (2009), “Indian’s Cashew Export – Issues and Strategies”, Pg: 219-231.
4. SampadaZantye, “Nutritional aspects of cashewnuts”, Cashew bulletin Vol. XC III, Nov,2005, PP.3-5.
5. <http://www.hedon.info/goto.php/ImprovedCookstove>
Indian government report on improved stoves and designs
6. <http://www.rwedp.org/acrobat/fd41.pdf>
Phillips propaganda piece on their stove
7. <http://www.research.philips.com/password/archive/28.pdf>