

Influence of Social Marketing on Rain Water Harvesting Practices for Water Recycling System

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Abstract: Water is a limited natural resource for nourishing human life. Drinking water scarcity is one of the globally facing emerging issues. Harvesting is one among the major solution for this problem. There are three different ways of harvesting techniques like rainwater, ground water and flood water. Human health is intrinsically linked to the environment and water resources. Increasing water demand affecting more than majority of people throughout the world every year and are considered as a most critical risk to human sustainability. In the recent years social marketing is applied for general issues that are facing by public. This paper mainly focuses on the level of knowledge on water recycling. The study area is Sivagangai district. The sample size is 518 based on proportionate random sampling method. From this analysis they identified female are more aware on water harvesting.

Keywords: awareness, harvesting, health, limited, recycling, resources.

I. INTRODUCTION

Social Marketing is the extended version of marketing mix that deals with the various issues related to the society. It's a non-profit service oriented marketing field. (Deepak Chhabra et al. 2011) explained to understand the theory of social enterprise in the social marketing community and develop understand the awareness and apply of marketing within social enterprises. (Liping Yan et al. 2019) concerning the extent to which the inclusion of water issues between five chosen from English as well as Non-English newspaper sources distributed in Sydney uncovered that water issues were talked about. Media choice five papers in three languages English, Chinese and Korean, of among them 13 noteworthy subjects recognized, water contamination and improvement was the most much of the time examined theme followed by wet climate. The two papers considered the inclusion on the water dam condition.

(Yan Chen et al. 2019) explained the major issues are discussed like utilizing online networking information can help beat huge numbers of these disadvantages in spite of the

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fact that it has its very own impediments. User's with poor Internet openness or without the propensity for utilizing any or a specific online life. He insisted the Content based online networking like Twitter, has been utilized by decision makers in such settings to share data, tune in to sentiments, and encourage open talk. Picture sharing web based life destinations like Instagram and Flickr are up to this point underutilized.

(AV.Karthick et al., 2018) analysed the awareness level of waste water management among the household respondents in Sivagangai district municipalities. People are very little bit aware on waste water recycle and usage. (Alyssa M. Mayeda, 2018) Water hazard is one of the important Environmental issues, that is health effects associated with water resources includes contamination, illness and disease, weather-related incidents, lack of water and dehydration, recreational activities and accidents and respiratory-related health problems. Content analyses are common tool for systematically reviewing and analyzing the content of images, symbols, and bodies of text to produce data-driven inferences about their context. (Margaret Alston, 2014) paper traces water change strategy in Australia's Murray-Darling Basin territory. It diagrams the helplessness of people and networks and notes the requirement for activities to assemble flexibility and to empower change in these regions. (Daniel Goodwin, 2014) discussed there is a continuous test for water specialist organizations to usefully draw in with different societal concerns and to fabricate support for both the guideline of water reuse and singular tasks. (AV.Karthick, 2019) recent days digital technologies are applied in every sector.

(J.J. Haroua, 2014) evaluated the water is regularly proposed as a promising component to lessen water requests. It has three structures namely uniform, increasing block prices and decreasing block prices has every one of these cost structures is normally joined by a fixed water administration charge. Keen meters and In-Home Displays / versatile media applications are used to measure the possibly lessen water usage by changing the practices towards proactively mindful water use by purchasers. (M. Rae Moors, 2019) to explore the social media activism as a tool for social change and commentary, the role of affect in social media communication and location based social media understood together the support of two assertions.

(Cayce Myers, 2014) studied the issue of social media within workplace communications is a continually evolving issue that has a high likelihood of having changing laws and regulations because courts are uncertain how to apply traditional legal interpretations to ever changing social media. Despite the political and legal

volatility of this issue, that pointed public relations practitioners should take away from these recent social media decisions. (Jamie N. Smith, 2018) examined the Web based life has turned into a significant piece of advertising for non-benefit associations. Internet based life can possibly draw in partners and constituents of non-benefit associations. The hierarchical web based life movement influences users from Facebook and Twitter reacted on philanthropic promotion gatherings.

(Cecilia Tortajada, 2011) investigates the job of the media in the Singapore and Malaysia in water supply, concentrating on the water arrangements between the time periods of 1997–2004. They identifies how the media gradually advanced from being principally a correspondent to turning into a functioning stage for correspondence between the invested individuals, acting both formally and informally, just as legitimately and unobtrusively, prompting molding general assessment in both of the two nations, especially with respect to their water relationship. Web related media in Singapore is less limited than print media however this is liable to questionable permitting guidelines. Radio and TV are claimed and controlled. The Internet, however still subject to some type of control, is the least confined sort of correspondence channel.

II. REVIEW OF LITERATURE

There are many research papers exploring the concept of social learning in environmental policy and water governance contexts. Some of these research papers are exploring the water based environmental issues on a more integrative approach and systemic understanding using systematic approach. Recent years Internet, face book, instagram etc plays a major role in creating awareness and somewhat they change the attitude. (Liping Yan et al. 2019) evidence shows the how matters identifying with water are ignored, among different media and to comprehend the conceivable impact on water issues among the various headings. His article deals about the water industries are facing the major challenges like dam condition, wet climate, dry spell and water framework issues all the more habitually. (Yan Chen et al. 2019) Online networking information ought to plainly enhance as opposed to supplant traditional methodologies. Instagram specifically can help pass on an image of individuals' everyday life in a scene, while it is going on, uncovering the inconsequential or worn-out things that might be less examined in dynamic methodologies in light of the strength of specific voices or analyst subjectivity.

(Daniel Goodwin, 2014) discussed there is a open dispositions and practices are known to be impacted by the media, which can modify open impression of hazard and trust in various wellsprings of data. Media confining may add to polarizing network frames of mind towards water the board. (Ifigeneia Koutiva, 2016) explained the two pieces of social research held in Athens quantitative poll gathering data in regards to the local water request frames of mind and practices and a progression of subjective meetings went for investigating inside and outside, the local water use dispositions and practices. (Jorgensen et al. 2009) led to writing survey of a few social models and reasoned that water utilization is affected legitimately by atmosphere and occasional components, socioeconomics, abiding attributes, family unit organization, past water use conduct and saw

social control and by implication by the client's preservation expectation.

(Barry Liner, 2012) explained the water supply process consists of 'triple main concern' for maintainability in terms of monetary, social and ecological are concerned. Metropolitan water supply organizers must conform to state and national arrangements, oversee client request, address vulnerability, for example, environmental change, and spotlight on the TBL. The four major principles considering this are equity, social inclusion and interaction, security and adaptability. (Cayce Myers, 2014) this study explains the increasing use of social media by Americans are rising number of instances where workplace grievances are aired very publically on Facebook, Twitter, and blogs. While workplace complaints are once expressed in a conversation between friends, co-workers and family. The social media now allows these complaints viewed by millions of Internet users. Conversations via social media have direct implications for business public relations in that it affects the image, public perception and profitability.

(Lloyd James et al., 2015), explained RWH Technology has been used to supplement the conventional water supply systems, but its potential has not been fully exploited. (Sridhar Vedachalam, 2015) investigated the media talk on this issue, the print media on the central piped water and sewer rate expands for the time period of 1999 to 2012 and measured the impact. (Uta Wehn, 2017) to suggest that there are numerous creators investigates this idea of social learning in natural approach and water administration settings.

III. OBJECTIVES OF THE STUDY

- To compute the level of awareness among respondents in rainwater harvesting.
- To predict the influence of various sources of awareness on rainwater harvesting.
- To analyze the impact of rainwater harvesting on societal well-being.
- To offer possible suggestions to the decision maker for promoting water recycling activities.

IV. METHODOLOGY

The study adopted descriptive and analytical research design, where the household respondents are from the Sivagangai district. It consists of three municipalities namely Karaikudi, Devakottai and Sivagangai. With the help of structured questionnaire using Raosoft calculator, where the actual sample size is 382, but it was increased to 518 respondents for more accuracy. In this research we adopting, proportionate random sampling method for sample selection.

V. ANALYSIS AND INTERPRETATION

A. Awareness level of Rain Water Harvesting

General Linear model: Univariate analysis is performed to analyze whether there is a significant difference in level of awareness on considering various demographic profile of the respondents.

H₀: There is no significant difference among the Sex, municipality, ownership, year when the building was built and Age with respect to the level of awareness on Rain water harvesting.

Table- I: Level of awareness of RainWater Harvesting

Tests of Between-Subjects Effects						
Dependent Variable: Level of awareness of Rain Water Harvesting						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	
Sex	1.468	1	1.468	1.029	.311	
Municipality	3.252	2	1.626	1.139	.321	
Ownership	.500	1	.500	.350	.554	
Year when building was built	2.097	3	.699	.490	.690	
Age	1.168	3	.389	.273	.845	
Statistics						
Level of awareness of Rain Water Harvesting						
N	Valid	518				
	Missing	0				
Mean	3.6255					
Mode	4.00					
Std. Deviation	1.18937					
Variance	1.415					
Minimum	1.00					
Maximum	5.00					
Level of awareness of Rain Water Harvesting						
	Frequency	Percent	Valid Percent	Cumulative Percent		
Valid	Not at all aware	31	6.0	6.0	6.0	
	Somewhat aware	69	13.3	13.3	19.3	
	Rarely aware	106	20.5	20.5	39.8	
	Aware	169	32.6	32.6	72.4	
	Highly aware	143	27.6	27.6	100.0	
	Total	518	100.0	100.0		

Source: (Primary data)

Interpretation:

The calculated significance value is greater than 0.05, therefore the null hypothesis is accepted. Hence there is no significant difference in level of awareness on Rain water harvesting with respect to Sex, municipality, ownership, year when the building was built and age.

Mean value is estimated to be 3.6255 and mode value is identified to be 4, which indicates most of the respondent have awareness on rain water harvesting.

B. Social media and rain water harvesting awareness

ANOVA and rank test using Mean score analysis were made to identify whether there is significant difference in various social media in creating awareness. Further to find out most effective social media in creating awareness on rain water harvesting.

H₀: There is no significant difference between the Sex, Municipality, Marital Status and Qualification with respect to various media in providing the source of information regarding Rain water harvesting.

Table- II: Various social media in creating awareness on Rain water harvesting

Tests of Between-Subjects Effects	
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Source	Type III Sum of Squares	df	Mean Square	F	Sig.	
Sex	Word of mouth	8.532	1	8.532	4.829	.028
	Newspaper	1.795	1	1.795	.960	.328
	TV	.138	1	.138	.089	.766
	Serial Media	.208	1	.208	.122	.727
	Government Order	3.205	1	3.205	1.909	.168
	Social Advertisement : NGO, Government text books	6.774	1	6.774	4.286	.039
Municipality	Word of mouth	2.601	2	1.3005	.736	.479
	Newspaper	3.096	2	1.548	.828	.437
	TV	1.304	2	.652	.419	.658
	Serial Media	5.601	2	2.8005	1.648	.194
	Government Order	.041	2	.0205	.012	.988
	Social Advertisement : NGO, Government text books	1.997	2	.9985	.632	.532
Qualification	Word of mouth	6.776	2	3.388	1.918	.148
	Newspaper	2.785	2	1.3925	.745	.475
	TV	2.705	2	1.3525	.870	.420
	Serial Media	1.311	2	.6555	.386	.680
	Government Order	1.430	2	.715	.426	.654
	Social Advertisement : NGO, Government text books	6.010	2	3.005	1.901	.150
Mean Score Analysis Using Rank Test						
Social Media	Sex	N	Mean	Ranks: Male and Female	Mean: Male and Female	Rank: Social media
Word of mouth	Male	269	3.48	2	3.5869	3
	Female	249	3.68	1		
Newspaper	Male	269	3.55	1	3.4856	5
	Female	249	3.41	2		



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TV	Male	269	35204	2	3.5293	4
	Female	249	35382	1		
Serial Media	Male	269	35093	2	3.5880	2
	Female	249	3667	1		
Government Order	Male	269	32045	2	3.3211	6
	Female	249	34378	1		
Social Advertisement : NGO, Government text books	Male	269	3742	2	3.7672	1
	Female	249	3781	1		
Test the significant differences between the Social media and municipalities						
Social Media	Municipality	N	Mean	Rank: Karaikudi, Devakottai and Sivagangai	Mean: Karai kudi, Devak ottai and Sivaga ngai	Rank: Social media
Word of mouth	Karaikudi	161	36211	2	3.5887	3
	Devakottai	191	34764	3		
	Sivagan gai	166	36687	1		
Newspaper	Karaikudi	161	365	1	3.4892	5

TV	Devakottai	191	34817	2	3.5321	4
	Sivagan gai	166	34518	3		
TV	Karaikudi	161	36087	1	3.5321	4
	Devakottai	191	34817	3		
TV	Sivagan gai	166	35070	2	3.5321	4
	Karaikudi	161	36087	1		
Serial Media	Karaikudi	161	38199	1	3.5914	2
	Devakottai	191	35026	2		
	Sivagan gai	166	34551	3		
Government Order	Karaikudi	161	3975	1	3.3181	6
	Devakottai	191	33037	2		
	Sivagan gai	166	32630	3		
Social Advertisement : NGO, Government text books	Karaikudi	161	3743	3	3.7666	1
	Devakottai	191	3532	2		



			9 2			
	Sivagan gai	1 6 6	3 . 7 9 5 2	1		
Test the significant differences between the Social media with marital status.						
Social Media	Marital Status	N	Me a n	Ranks: Married, Unmarried and separated	Mean: Marri ed, Unma rried and separa ted	Rank: Social media
Word of mouth	Married	3 2 4	3 . 5 6 7 9	2	3.3942	6
	Unmarri ed	1 9 2	3 . 6 1 4 6	1		
	Separate d	2	3 . 0 0 0	3		
Newspap er	Married	3 2 4	3 . 5 0 6 2	1	3.8180	3
	Unmarri ed	1 9 2	3 . 4 4 7 9	2		
	Separate d	2	4 . 5 0 0	3		
TV	Married	3 2 4	3 . 5 7 7 2	2	4.0032	1
	Unmarri ed	1 9 2	3 . 4 3 2 3	3		
	Separate d	2	5 . 0 0 0	1		
Serial Media	Married	3 2 4	3 . 6 0 1 9	2	3.8829	2

	Unmarri ed	1 9 2	3 . 5 4 6 9	3		
	Separate d	2	4 . 5 0 0 0	1		
Govern ment Order	Married	3 2 4	3 . 2 0 9 9	3	3.7314	4
	Unmarri ed	1 9 2	3 . 4 8 4 4	2		
	Separate d	2	4 . 5 0 0 0	1		
Social Advertis ement : NGO, Govern ment text books	Married	3 2 4	3 . 7 9 6 3	1	3.6717	5
	Unmarri ed	1 9 2	3 . 7 1 8 8	2		
	Separate d	2	3 . 5 0 0 0	3		
Test the significant differences between the various social media with educational qualification.						
Social Media	Qualific ation	N	Me a n	Rank: Graduate and Post Graduate	Mean: +2, Gradu ate and Post Gradu ate	Rank: Social media
Word of mouth	+2	1 3 1	3 . 4 8 0 9	3	3.5587	3
	Graduat e	1 3 3	3 . 5 3 3 8	2		
	Post Graduat e	2 5 4	3 . 6 6 1 4	1		

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Newspaper	+2	1 3 1	3 . 5 8 0 2	2	3.5200	5
	Graduate	1 3 3	3 . 5 9 4 0	1		
	Post Graduate	2 5 4	3 . 3 8 5 8	3		
TV	+2	1 3 1	3 . 4 8 8 5	3	3.5244	4
	Graduate	1 3 3	3 . 5 4 1 4	2		
	Post Graduate	2 5 4	3 . 5 4 3 3	1		
Serial Media	+2	1 3 1	3 . 6 1 0 7	2	3.5941	2
	Graduate	1 3 3	3 . 6 1 6 5	1		
	Post Graduate	2 5 4	3 . 5 5 5 1	3		
Government Order	+2	1 3 1	3 . 2 5 1 1 9	3	3.3060	6
	Graduate	1 3 3	3 . 3 1 5 8	2		
	Post Graduate	2 5 4	3 . 3 5 0 4	1		
Social Advertisement: NGO, Government text books	+2	1 3 1	3 . 8 4 7 3	1	3.7533	1
	Graduate	1	3	3		

	e	3 3	. 6 0 1 5		
	Post Graduate	2 5 4	3 . 8 1 1 0	2	

Source: (Primary data)

Interpretation:

Sex: The calculated significance value is greater than 0.05, therefore the null hypothesis is accepted. Hence, there is no significant difference among various media in providing the source of information regarding Rain water harvesting with respect to Sex. Except of items “Word of Mouths and Social Advertisement: NGO, Government text books” the calculated significance value is lesser than 0.05, therefore the null hypothesis is rejected. Hence, there is significant difference among various media in providing the source of information regarding Rain water harvesting with respect to Sex.

From rank test made using mean score, it can be interpreted that female had become more aware about rain water harvesting than male through social media such as Newspaper, TV, Serial Media, Government Order and Social Advertisement : NGO, Government text books. Further it was found that Social advertisement through NGO, Government text books and serial media were playing a vital role in bring awareness about Rain water harvesting.

Municipality: The calculated significance value is greater than 0.05, therefore the null hypothesis is accepted. Hence, there is no significant difference among various media in providing the source of information regarding Rain water harvesting with respect to Municipality.

From rank test made using mean score, it can be interpreted that people of Karaikudi had become more aware about rain water harvesting than people of Devakottai and Sivagangai through social media such as Newspaper, TV, Serial Media and Government Order. Further it was found that Social advertisement through NGO, Government text books and serial media were playing a vital role in bring awareness about Rain water harvesting among people in various municipalities.

Qualification: The calculated significance value is greater than 0.05, therefore the null hypothesis is accepted. Hence, there is no significant difference among various media in providing the source of information regarding Rain water harvesting with respect to Qualification.

From rank test made using mean score, it can be interpreted that Post Graduates become more aware about rain water harvesting than +2 and Under-graduates through Word of mouth, TV and Government Order. Further it was found that Social advertisement through NGO, Government text books and serial media were playing a vital role in bring awareness about Rain water harvesting among respondents with different qualification.



VI. FINDINGS AND SUGGESTIONS

Through the analysis it was found that most of the household respondents were aware about rain water harvesting. It can be well understood that female were more aware about rain water harvesting than male. Further among the people from different municipalities, people in Karaikudi were having more awareness on Rain water harvesting. Among the individual with different qualification, post-graduates possess better awareness on rain water harvesting. It can be well explicated that Social advertisements and serial media are playing an important role in creating awareness among people on Sivagangai district on rain water harvesting. It thereby recommended to the government and NGO's to provide more awareness programmes on Rain water harvesting. Further the awareness level about Rain water harvesting is not significant among male, so appropriate steps had to be taken to target male individuals while creating rain water harvesting programmes. It suggested to serial producer to integrate social welfare programme such as rain water harvesting as it is being an important influencing source in creating awareness. Moreover, it is perceived the awareness is more for Post Graduates compared to Under Graduates and +2, hereby awareness on RWH should be brought at elementary level so that every individual in society getting educated would be aware about rain water harvesting. It is advised to NGO and other organization performing social awareness programme to focus on Devakottai and Sivagangai municipalities while creating rain water harvesting programme.

VII. CONCLUSION

Government of India enforced RWH is mandatory for every household. People are constructed the RWH tank, but not they are not maintained them properly. Most of the people does not having clear differentiate between the rain water mixed with drainage water and they stored in RWH tank. Irrespective of the demographic profile, social advertisement and serials media were found to be an effective way to bring more awareness on rain water harvesting. It thereby recommended to the government and NGO's to provide more awareness programmes on Rain water harvesting. It is suggested to include rain water harvesting into the curriculum at elementary and primary level to create better awareness. It suggested to serial producer to integrate social welfare programme such as rain water harvesting as it is being an important influencing source in creating awareness.

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