GREEN PACKAGING AND 3R'S: A JOURNEY TOWARDS ECOLOGICAL SUSTAINABILITY

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ABSTRACT

Any human activity brings along with it, many side effects. One aspect of it could bring about development while the other side of the coin could be a detrimental effect. These unfavorable changes often lead to environmental issues that affect the natural balance of the environment. The coastal villages of Kanyakumari district are highly affected due to pollution of garbage mostly of waste packages contributed by tourists and village natives moreover garbage collected outer of coastal villages also dumped near sea shore. So the only way to address this issue is to ensure a proper waste disposal system by way of green practice that is green packaging and 3R's that does not contaminate the environment. The data was collected with the help of an interview schedule. Proportionate stratified random sampling method was used to represent 395 respondents from the population of three taluk in Kanyakumari district. The result of the analysis indicates that the study positively influence the respondents that they have awareness on green packaging and features of green packaging initiatives of 3R has reduces the size, thickness, weight not only reduces the usage of natural resources, but also contribute to the minimization of waste generation and supports the ecological sustainability.

Key words: green practice, green packaging, reduce, reuse, and recycle, environmental sustainability, sustainable development.

INTRODUCTION:

Human existence alone cannot bring beauty to the world. The beauty of the world comprises of all creature, all living and non living organisms. Human contribution should add more beauty to the world, it should not destroy the existing one. That beauty could be achieved through green practice of green packaging and 3R i.e. reduce, reuse and recycle. The consumers of today are more eco-conscious knowingly or unknowingly follows the eco practice of green packaging and 3R's which contribute to ecological sustainability. Green packaging and 3R's are the two side of the coin, one will reduce the negative impact of the environment and the other one will sustain the eco system. It places a vital role between the packages that produced from factory to till it disposed to landfills. The use of green packaging that made out of natural materials and reduce the use of packaging, reuse the packaging until its life time and recycle the used packaging for new form of product are the immense support for ecological sustainability. The main features of green packaging are also this 3R's. There are lot of benefits behind the practice of green packaging and 3R's, the top ten are Preserve Natural Resources, Conserve Natural Spaces, Use And Reuse" Saves Energy, Reduce Greenhouse Gas Emissions, Reduce Pollution, Reduce Landfill Space, Create Jobs, Stimulate Technological Advances, Save Money and Create a Sustainable Future. There is a saying which goes like this 'Practice makes man perfect' hence green practice makes environment perfect.

STATEMENT OF THE PROBLEM

Any human activity brings along with it, many side effects. One aspect of it could bring about development while the other side of the coin could be a detrimental effect. These unfavorable changes often lead to environmental issues that affect the natural balance of the environment.

Some of the major environmental issues that causing immense concern that are coastal pollution, landfills that create garbage pollution, resource depletion, climatic changes and global warming. Most of these have resulted as a result of human overpopulation and also the indiscriminate of natural resources without conserving them. This overpopulation automatically brings waste accumulation and garbage pollution. It should be adhere to proper waste disposal mechanisms. In India especially in Tamilnadu, Kanyakumari district there are system like Swachh Bharat mission but none of the systems would completely tackle this problem of coastal pollution. The coastal villages of Kanyakumari district is highly affected due to pollution of garbage, mostly of waste packages. The packages are used once and then promptly discarded, it seems like only an ephemeral presence in our lives as it rushes from factory to landfill. The main contributors for the landfills are the tourists and village natives moreover garbage collected outer of coastal villages also dumped near sea shore. So the only way to address this issue is to ensure a proper waste disposal system by way of green practice that is green packaging and 3R's that does not contaminate the environment.

REVIEW OF LITERATURE

Shopping bags can be reused till its life time or it can be disposed in recycling bins provided by the government, rather than disposed of it to landfills, which causes harmful effect to the environment. (Subramanian Senthilkannan Muthu 2012). Consumers are becoming sensitive to the need and they switch over to green products and services. (Kuralovian and Paulraj 2016) green packing has a positive and a significant impact on business performance. The results of his study recommended that the manufacturing of small and medium enterprises(SME) can invest in the development of green packaging, which might enable packaging as lightweight, recyclable,

reusable, biodegradable materials and to prevent the use of non-ecological materials. (Eugine Tafadzwa Maziriri 2020).

METHODOLOGY

The present study is empirical in nature based on both primary and secondary data. Primary data were collected from the coastal taluks in Kanyakumari district.The District is divided into six taluks. Among the six taluks Agastheeswaram, Kalkulam and Vilavancode are in the coastal belt. The fishermen population of Kanyakumari District forms the universe. The researcher has selected these three taluks as the universe for the study. The total sample respondents are 395. The data were collected with the help of proportionate stratified random sampling. The results obtained after the reliability test Cronbach's Alpha value of 0.823 in the 18 items suggest that the questionnaire is reliable and the results are higher than 0.8 are considered as reliable

OBJECTIVES

- To study the demographic profile of the sample respondents.
- To identify awareness on green packaging of sample respondents in the study area.
- To analysis the features of green packaging initiatives of 3R, this leads to ecological sustainability in the study area.

LIMITATIONS

There is vast difference in educated and uneducated respondent as the uneducated needed more explanation when compared to educated respondents. Hence the research has to spent long hours with the uneducated respondents.

TOOLS OF ANALYSIS

In this study, various statistical techniques like Percentage analysis, Fried man test and factor analysis were used to analyze and interpret the collected data.

DATA AND DISCUSSION

DEMOGRAPHIC PROFILE

The following table shows the demographic profile of the respondents which is very much important to know their level of awareness regarding the factors which affect the environment.

Table 1

Demographic profile of the respondents

Variables	**Particulars**	**No.of respondents**	**Percentage**
Age	18-35 Years	252	63.8
	36-55 Years	135	34.2
	56 Years and Above	8	2.0
	Total	**395**	**100.0**
Gender	male	207	52.4
	female	188	47.6
	Total	**395**	**100.0**
Educational qualification	Up to School Level	186	47.1
	Graduates	121	30.6
	Post Graduates	49	12.4
	Illiterates	14	3.5

	Others	25	6.3
	Total	**395**	**100.0**

Source: primary data

Table 1 shows that, 63.8 per cent (252) of the sample respondents belong to the age group of 18-35 Years. 34.2 per cent (135) of the respondents belong to the age group of 36-55 Years. 52.4 per cent (207) of the respondents are male and 47.6 per cent (188) respondents are female. 47.1 per cent (186) of the respondents did only schooling and 3.5 per cent (14) of the respondents are illiterate.

AWARENESS ON DIFFERENT TYPES OF GREEN PACKAGING

Null Hypothesis

H_0: There is no significant difference between mean ranks towards awareness on different types of green packaging.

Table 2

Friedman test for significant difference between mean ranks towards awareness on different types of green packaging

S. No.	Types of green packaging	Mean Rank	Chi-square value	P value
1	Paper Bags	6.68	225.337	0.000**
2	Jute Bags	5.70		
3	Cloth Bags	6.39		

4	Corrugated cardboard cartons (paper)	5.28		
5	News papers	5.87		
6	Earthen wares	4.80		
7	Banana leaves	5.36		
8	Palm leaves	5.07		
9	Lotus leaves	4.97		
10	Teak leaves	4.86		

Source: Statistically analyzed data

**Denotes significance at 1% level

Since P value is less than 0.01, the null hypothesis is rejected at 1 per cent level of significance. Hence it is concluded that there is significant difference between mean ranks towards awareness on different types of green packaging

Based on the mean rank the highest score of 'Paper Bags' (6.68) is strongly agreed by the respondents, followed by Cloth Bags (6.39), News papers (5.87) and the least score of Teak leaves (4.86) and Earthen wares (4.80).It inferred that consumers are more aware of paper bag than other green packaging due to its availability everywhere from shopping malls to petty shops. And they know it is recyclable and reusable too. This study does not support the study of (Fahzy Abdul Rahman 2014) that paper bags cannot be recycled in most cases. But (GheorheOrzan et al 2018) and (Jiapeng Huang 2017) agree and prove in their studies that

consumer prefer paper, glass and cardboard moreover, proper production and recycling of green paper packaging does not harm the human body and the environment.

GREEN PACKAGING INITIATIVES OF 3R

Table 3

Factor analysis on features of green packaging initiatives

S.No.	Rotated Component Matrix[a]					
	Features of Green Packaging Initiatives	Component				
		1	2	3	4	5
1	Reducing size, thickness and weight	**0.743**				
2	Saves natural resources by using less	**0.705**				
3	Using minimum packaging	**0.563**				
4	Reducing cost by preventing waste	**0.559**	0.327			
5	Creates market for waste materials	**0.398**	0.323			
6	Containers can be reused for school projects		**0.690**			
7	Containers can be reused at home		**0.676**			
8	Buying products that contain recycled materials		**0.484**		0.464	
9	Buying unwrapped products(retail bases)		**0.450**	0.356		
10	Buying refillable packages		**0.392**		0.382	

11	Reducing toxicity of waste			**0.777**		
12	Less garbage go to the landfill		0.394	**0.521**		
13	Help in wastage reduction	0.337	0.418	**0.423**		
14	Buy beverages in returnable containers				**0.686**	
15	Reducing the number of layers, materials and toxins at source			0.463	**0.577**	
16	Buying products which has recycling symbols and numbers		0.339		**0.348**	
17	Buying products that don't have over packaging					**0.758**
18	Buying products in bulk with less packaging	0.414				**0.442**

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

The above table 3 exhibits the rotated factor loading for the 18 statements infeatures of green packaging initiatives, it is clear from the table that all 18 statements have been extracted into five factors.

out of 18 factors 5 appear to be primary factors such us reducing size, thickness and weight, saves natural resources by using less, using minimum packaging, reducing cost by preventing

waste and creates market for waste materials of these the most dominant one is reducing size, thickness and weight with 0.743 followed by saves natural resources by using less with 0.705.

The secondary factors are containers can be reused for school projects, containers can be reused at home, buying products that contain recycled materials, buying unwrapped products (retail bases) and buying refillable packages. The dominant factor is containers can be reused for school projects followed by containers can be reused at home with the score of 0.690, and 0.676.the other factors are ignored.

The rotated factor matrix, for the features green packaging initiatives by the respondents is given below.

The variables defining factor 1 with their factor loading and communality for the features green packaging initiatives by the respondents are presented below.

Table 3.1

S.No.	Factor	Eigen Value	Percentage of Variance	Cum-Percentage of Variance
1	Reduce	4.536	25.199	25.199
2	Reuse	1.355	7.530	32.728
3	Rapport to the eco-system	1.185	6.585	39.313
4	Recycle	1.053	5.851	45.165
5	Remove the over burden.	1.009	5.608	50.773

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		: 0 .846
Bartlett's Test of Sphericity	Chi-Square	: 1297.609
Degrees of Freedom		: 153
Significance		: 0.000

It is observed from table 3.1 that five factors such as reduce, reuse, rapport to the eco-system, recycle and remove the over burden were extracted out of 18 elements. These factors account for about 50.773 per cent of variance in the data. Eigen value for the first factor “Reduce” is 4.536 which indicate that the factor is highly influenced than the other factors. The first factor “Reduce” that is preferred by the respondents is analyzed from the study area. The highly preferred features in green packaging initiatives are reducing size, thickness and weight and saves natural resources by using less. It is inferred that by reducing the size, thickness, weight not only reduces the usage of natural resources, but also contribute to the minimization of waste generation. (Ruslinda et al 2019) found the similar results in their study states that the respondents practice the 3R by contributing the waste minimization. The second important factor called “Reuse” account for 7.530 per cent of variance. This assertion is supported by (Arokiaraj David et al 2019) that consumers or users have a responsibility to return the product to the producers and help them recycle and reuse the product. The Eigen value of this factor is 1.355. The third factor such as “Rapport to the eco-system” accounts for 6.585 per cent variance with the Eigen value of 1.185.It is inferred that the main factor for sustainability in packaging is to reduce, reuse and rapport to the eco system by practicing of these factor bring changes to the coastal village and the sea.

High value of Kaiser-Meyer-Olkin Measure (KMO) test of sampling adequacy (0.846) indicates correlation between the pairs of variables explained by other variables and thus factor analysis is considered to be appropriate in this model. The Bartlett's Test of Sphericity chi-square indicates the population correlation matrix. It is an identity matrix. The test of statistics for Sphericity is based on X^2 test which is significant and the value is 1297.609.

FINDINGS

- 63.8 per cent (252) of the sample respondents belong to the age group of 18-35 Years. 34.2 per cent (135) of the respondents belong to the age group of 36-55 Years.

- 52.4 per cent (207) of the respondents are male and 47.6 per cent (188) respondents are female.

- 47.1 per cent (186) of the respondents did only schooling and 3.5 per cent (14) of the respondents are illiterate.

- 35.7 per cent (141) of the respondents are fishermen and 3.3 per cent (13) are government employed and doing business.

- 30.4 per cent (120) of the respondents monthly income is between ₹10,001- ₹ 20,000 this is the average income of a fishermen who go in Mechanized boat. And 7.3 per cent (29) of the respondents belong to ₹ 40,001- ₹ 50,000 they are the government employee, Businessmen and other professionals, this also includes fishermen who has share in the boats and has own boat.

- Since P value is less than 0.01, the null hypothesis is rejected at 1 per cent level of significance. Hence it is concluded that there is significant difference between mean ranks towards awareness on different types of green packaging. Based on the mean rank the highest score of 'Paper Bags' (6.68) is strongly agreed by the respondents, and the least score of Teak leaves (4.86) and Earthen wares (4.80).
- High value of Kaiser-Meyer-Olkin Measure (KMO) test of sampling adequacy (0.846) indicates correlation between the pairs of variables explained by other variables and thus factor analysis is considered to be appropriate in this model.

  The Bartlett's Test of Sphericity chi-square indicates the population correlation matrix. It is an identity matrix. The test of statistics for Sphericity is based on X^2 test which is significant and the value is 1297.609.

SUGGESTIONS

- Government can provide subsidy to cottage industries to promote green packages in the form of cloth bags and other natural materials.
- Manufacturers of product packaging should recognize the social responsibility of producing packages only in biodegradable materials which will support the ecological sustainability.
- Manufacturers can make their products with less packaging which may reduce the use of raw material and reduces waste and costs.
- Consumers can buy in bulk, for example, can reduce packaging and save money.
- Consumers can allow the product packaging to be used to their fullest extent.
- Customers can look for products that use less packaging.

- Consumers can look for items that can be reused For example; they can bring their own bag while shopping, rather than using disposable items.
- Consumers can maintain and repair product packaging, like cloth and jute bags, so that they won't have to be thrown out and replaced as frequently.

CONCLUSION

One person's trash is another person's treasure. Thereby the used packages collected for recycle and reuse purpose becomes a useful material for manufacturing industries to bring about a new form of products. Therefore to avoid the accumulation of used and unwanted packages which contribute for landfills and pollution, consumers and the manufacturers can try the practice of 3R and use green packaging for ecological sustainability. The results of the study positively influence the respondents that they have awareness on green packaging and 3R. Hence they recognize that green packaging that has reduces the size, thickness, weight not only reduces the usage of natural resources, but also contribute to the minimization of waste generation and supports the ecological sustainability. Therefore as a manufacturer and consumer let’s try to contribute for the sustainable development and let’s be a part of the solution and not a part of the pollution.

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