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Evolution of Plastic Bags: Reduced and Recycling Consumer Usage Level on Bags in Day-to-Day Life

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ABSTRACT

Many retailers and marketers are using thick high density polyethylene bags. They will be recycled and reusing the bags, recycling of plastic bags is a very difficult process, the actual process of recycling bags is consuming time, cost. Many recycling facilities are not accepting plastic bags to recycle because plastic bags have got stuck in the equipment, the observations can take out of the machine for recycling the plastic to get eco-friendly bags. Plastic bags are so harmful and hazardous to the natural environment. In this paper explores the evolution of plastic bags: Recycling and reduced consumer usage level of bags in day-to-day life. The objective of the study is to analyse the consumer usage level of recycling bags, to examine the reason for consumer reasons for switching from plastic bags to eco-friendly bags and to study consumer preference in eco-friendly bags alternative to plastic bags for daily usage. A sample of 120 eco-friendly bag users in Chennai city were selected as a respondent for the study. Students, private, government employees, and entrepreneurs are the targeted population of the research. Convenience sampling method has been used to collect the primary data (questionnaire) from the sample respondent. Statistical tools like Chi-square, Garrett Ranking and Percentage analysis were used to analyse the data The findings of the study, usage level of bags one to three times per day. Females are conscious about the environment and health of human beings its reason to reduce plastics. Plastic is mostly used by urban people, in rural areas shows less plastics used by the people according to this study. Birds and animals are shredded plastics as food, it causes dangerous to animals so rural area people are more conscious about plastic things before they started using the product.

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1.0 INTRODUCTION

"Plastic is a most destructive weapon than a nuclear bomb or an atom bomb, its impact shall remain for centuries on the future generation".

- Sir P.S. Jagadeesh Kumar

Grocery shops are offering bio-degradable bags for free to reduce plastic bags, bio-degradable bags can use multiple times, it creates less waste, compared to paper and plastic bags. Consumers are shifting plastic to eco-friendly bags to reduce plastic bags for daily usage. They are trying to adapt glass storage containers, silicone bags, plant based composed food wraps and so on. There exists a range of eco-friendly alternatives to plastic bags, such as reusable options including cotton and jute bags. Among these alternatives, paper bags and jute bags are commonly recommended as environmentally conscious choices. Jute bags are particularly highlighted for their biodegradability, as they are derived from jute plants. These bags are considered eco-friendly and do not pose any harmful effects on the environment or agriculture.

In contrast, plastic bags originate from fossil fuels and contribute to hazardous waste accumulation in landfills and oceans. The presence of tattered plastic bags can be misleading to birds, who often mistake them for food, resulting in the ingestion of toxic debris. Sea turtles face difficulties distinguishing between floating plastic bags and jellyfish. Additionally, fish consume significant amounts of plastic, leading to the transfer of this waste up the food chain to larger fish and mammals.

Corporation Officials raided the shops, bakeries, hotels and they seized 25 kg of banned single use plastics bags from shops. As production of stock, sale and use of the plastic bags have been banned; commercial sectors have been informed to use biodegradable or paper bags for packing their products. After, the raid immediately came into force and usage levels of plastic bags have been extremely reduced.

The European Union set out measures to clean up the packaging sector from coffee pods to single use plastics bottles to reduce waste. European countries and organizations will have to ensure that every day using products can be whether, easily recycled or biodegradable naturally.

"A Circular economy of packaging will help decouple economic development from the use of natural resources."

- The European Commission in Draft

In recent times, there has been a notable rise in packaging, directly correlating with the growth of the gross national income. Unfortunately, this trend has resulted in excessive exploitation of natural resources and increased pollution. European countries, for instance, utilize 40% of plastic and half of paper specifically for packaging purposes, making it challenging to promote reuse or recycling efforts. It is crucial for companies to minimize their packaging requirements as much as possible, while countries should strive to achieve a target of recycling and reusing at least 65% of all packaging materials.

To effectively decrease the usage of plastic, it is essential to minimize the use of single-use plastic in our everyday routines. Various measures can be implemented to reduce the consumption of plastic bags:

1. Reducing disposable shopping bags instead of using reusable bags or containers.
2. Reusing old plastic bags for multiple shopping voyages.
3. Re-purpose the plastic bags like favourite devastates bags.
4. While purchasing, refuse to carry a bag.
5. Buying bulk products to avoid plastic bags.

Reasons for switching from plastic bags to eco-friendly bags. In Canada and USA are charging 5 cents for plastic bags and some countries charging 15 cent per bag. Because of using plastic bag oils and natural gas go into the production of plastic bags which are not recyclable. Plastic bags decomposition, think about how much space is taking for landfills. Reusable bags save the non-renewable resources environment. Reusable bags are a great promotional tool for marketing because they contribute eco-friendly bags, and they can easily promote their brand and will last for more years. Once the consumer decided to use bags are created and tossed in the recycling bin and not the landfills.

1.1 Review of Literature

Moharam and Maqtari (2014) discovered that plastic bags have a detrimental impact on the public, which is particularly exacerbated in Yemen as an economically disadvantaged nation. Due to the adverse effects on the environment and agriculture, the country has implemented a ban on plastic bags. The study explores the causes and effects of this issue and examines various solutions for ensuring a clean environment for both present and future generations. Moreover, the researchers identified isolated microbial strains through a comprehensive analysis of their cultural, morphological, and biochemical characteristics.

Jalil *et al.,* (2013) conducted a study that aimed to explore the implications of economic growth and sustainable agriculture concerning the usage of harmful plastic bags. The research findings indicated that plastic shopping bags pose a significant threat due to their composition of toxic materials. These bags are non-biodegradable, which means they do not decompose and integrate with the soil. Consequently, the roots of crops and vegetable plants are unable to penetrate the thin plastic bags within agricultural lands, hindering their growth. Additionally, even when the bags eventually disintegrate into dust after several decades, they release toxic substances into the soil, rendering the agricultural land infertile and hazardous for crop cultivation.

Ahsan *et al.,* (2020) conducted a study examining the factors contributing to the usage of plastic bags and the public's perception regarding their impact on the natural environment, specifically in terms of water, air, and land pollution. The researchers collected data from 173 individuals in the cities of Islamabad and Rawalpindi in Pakistan, utilizing a convenience sampling method. The study concluded that plastic bags pose significant environmental hazards. As a solution, the researchers recommended the adoption of alternative bag forms made from materials such as cloth, paper, and fiber to mitigate environmental pollution.

Iheukwumere *et al.,* (2020) suggested conducting a thorough comparison of various options throughout the entire lifecycle, from resource extraction to waste disposal, to identify the most environmentally viable alternatives. Emphasizing the waste management hierarchy, which promotes reduction, reuse, and recycling, will be crucial in mitigating the observed impacts associated with the recommended bag types when integrated into waste management planning.

1.2 Objectives of the Study

- To analyse the consumer usage level of recycling bags.
- To examining the reason for consumer reasons for switching from plastic bags to eco-friendly bags.
- To evaluate consumer preference in eco-friendly bags for daily usage.

1.3 Hypotheses

- **H_1:** There is an association between Gender and Usage level of eco-friendly bags in day-to-day life.
- **H_2:** There is association between consumer preferences on eco friendly bags alternative to plastic bags and Age.

1.4 Research Gap

Plastic bags have some effect on the environment including aquatic life and foodstuff chains. Plastic bags provide side effects because the plastics have not been biodegradable. Bags filling up lands and becoming eyesores. In the past study, the researcher explores the plastic bags recycling and its effect on environment and agriculture, usage of plastic bags for grocery shops, public perception, challenges and opportunities in plastic bags. In this paper, the author expresses that consumer's daily usage level of eco-friendly bags, reasons for switching from plastic bags to eco-friendly bags and Consumer preference in eco-friendly bags for daily usage in the environment.

2.0 METHODOLOGY

A sample of 120 eco-friendly bag users in Chennai city were selected as a respondent for the study. Students, private, government employees, and entrepreneurs are the targeted population of the research. Convenience sampling method has been used to collect the primary data (questionnaire) from the sample respondent. Statistical tools like Chi-square, Garrett Ranking and Percentage analysis were used to analyse the data.

3.0 ANALYSIS AND INTERPRETATION

Table 1

Demographic Variables

Demographic	Frequency	Percentage
Gender		
Female	75	63.00
Male	45	37.00
Age		
15-20	35	29.00
21-24	55	46.00
24-30	18	15.00
31-34	6	5.00
More than 34	6	5.00
Designation		
Employees	67	56.00
Students	22	18.00
Entrepreneurs	17	14.00
Others	14	12.00
Area of Residence		
Urban	75	63.00
Semi Urban	25	21.00
Rural	20	16.00

Source: Primary data

The demographic details of the respondent using eco-friendly bags to reduce, and recycling of plastic bags determined factors expressly age, gender, designation, and area of residence were presented in Table *1*. In the age group, 46% of the responders are between 21 to 24, concerns more about the environment and to reduce the plastic bags. In the gender factor female respondents are elevated 63%, In the designation employee's category includes Private, public and government employee's data collected from them 56% and area of residence, living in the rural area people are using lowest plastic bags when compared to urban, semi urban people in this study.

Table 2

How Often Using Eco-Friendly Bags in Day-to-Day Life

How Often Using Eco-Friendly Bags in Day-to-Day Life	Frequency	Percentage
1– 3 times	50	42.00
4 – 6 times	25	21.00
7 – 10 times	20	17.00
11 – 15 times	18	15.00
More than 15 times	7	5.00
Total	120	100.00

Source: Primary data

Table *2* shows the usage level of eco-friendly bags 1 to 3 times 42% of them using the bags in daily life followed by 4 to 6 times 21%, 7 to 10 times 17%, 11 to 15 times 15% and more than 15 times 5%.

Table 3

To Examining the Consumer Reasons Switching from Plastic Bags to Eco-Friendly Bags

Examining the consumer reasons switching from plastic bags to ecofriendly bags	Frequency	Percentage
Degradation	35	29.00
Environmental impact	20	17.00
Land fills	15	13.00
Petroleum	10	8.00
Long lasting	8	7.00
More efficient	12	10.00
Less germs	10	8.00
Multi-purpose usage	10	8.00
Total	120	100.00

Source: Primary data

Table *3* shows that the examining the consumer reasons switching from plastic bags to eco-friendly bags. The major reason for shifting from plastic to eco-friendly bags is degradation 29%, Impact on the environment 17%, Landfills due to the plastic 13%, More efficient for using the eco-friendly bags for consumers 10%, 8% to manufacture plastic bags needs more petroleum, when decided to use recyclable bags it's easy to wash and reuse, so, it's less germs 8% in bags, Multipurpose usage 8% and eco-friendly bags are long lasting though compared to plastic bags.

3.1 Chi-Square Tests

- **H_1:** There is an association between gender and usage level of eco-friendly bags in day-to-day life.

Table 4

Usage level of eco-friendly bags in day-to-day life

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.200E2a	4	.000
Likelihood Ratio	158.775	4	.000
Linear-by-Linear Association	95.125	1	.000
N of Valid Cases	120		

Symmetric Measures

		Value	Asymp. Sig.
Nominal by Nominal	Phi	1.000	.000
	Cramer's V	1.000	.000
	Contingency Coefficient	.707	.000
N of Valid Cases		120	

Source: Primary data

Table *4* shows that the value of Pearson Chi-square is 1.200E2a at 5% level of significance. Since the p-value is less than 0.001, hence hypothesis (H_1) is accepted. It is concluded that, there is a significant association between gender and usage level of eco-friendly bags in day-to-day life.

3.2 Garrett Ranking Techniques

- **H_2:** There is association between consumer preferences on eco-friendly bags alternative to plastic bags and Age.

Table 5

Consumer Preferences on Eco-Friendly Bags Alternative to Plastic Bags

Factors	Rank *(X)*	I *(75)*	II *(60)*	III *(50)*	IV *(40)*	V *(25)*	Total	Garrett Mean	Mean Rank
Jute Bag	F	59	23	10	28	0	120	61.8	II
	Fx	4425	1380	500	1120	0	7425		
Cotton Bag	F	4	0	11	57	48	120	55.2	III
	Fx	300	0	2850	2280	1200	6630		
Paper Bag	F	96	24	0	0	0	120	72.0	I
	Fx	7200	1440	0	0	0	8640		
Canvas Bag	F	3	0	10	66	41	120	36.5	V
	Fx	225	0	500	2640	1025	4390		
Woolen Bag	F	0	0	27	56	37	120	37.6	IV
	Fx	0	0	1350	2240	925	4515		

Source: Primary data

On the basis of the ranks assigned by the sample respondents, reason for choosing biodegradable bags were analysed through Garrett Ranking Techniques and presented in Table *5*. It was revealed that Paper bag scored (72.0) was the main reason for choosing eco-friendly bags followed by Jute bag (61.8), Cotton bag (55.2), Woolen bag (37.6) and Canvas bag (36.5).

4.0 CONCLUSION

Consumers are shifted from plastic bags to biodegradable bags. Plastic bags are harmful to the environment and living beings. Consumers are trying to reduce plastics, mostly recommended bags for daily usage Paper bag, jute bag, cotton bag, and woollen bag and canvas bags. When recycling a plastic, it takes a lot of force charge in recycling can be more than what it takes to construct products from score because the process is often more multifaceted. Plastic bags are deadly to the environment even after they break down because they do not biodegrade. After it degrades, it breaks down into less important and smaller poisonous bits of itself and contaminates the environment. Nowadays, eco-friendly bag users are increased and awareness about the plastic bags and its causes. The suggestions of the study eco-friendly bags are more convenient to use, reduce plastic and save the environment.

4.1 Scope for Further Research

Plastic recycling provides sustainable sources of raw materials to the manufacturing industry. After recycling the plastics are transported to manufacturing industry to redesign and transform to new products are used in different aspects. Reusable bags save the non-renewable sources environment. Plastic bags decomposition, think that how much space it takes in landfills, plastic bags adding only to the problem. In future study, the research should be presented on eco-friendly cups, pens, coffee pods in any other state or region.

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