

Green Consumption: Awareness and Purchase Decisions

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ABSTRACT

Economic growth unambiguously leads to environmental degradation. Several environmental problems such as greenhouse warming, soil degradation, loss of biodiversity, deforestation, air and water pollution etc. are becoming a matter of increasing concern day by day. As per the estimates of the International Panel on Climate Change, the average world temperature may rise by three degrees Celsius by the end of the next century under their "business-as-usual" scenario. Green consumerism has become the need of the day as one of the solutions to the abatement of the environmental problems. Based on the statistical analysis of primary data this paper provides insights into the consumers' behaviour towards the consumption of green products; describing the factors contributing to the green purchasing decisions of consumers, awareness towards the impacts of purchases, the opportunity cost of being a green consumer etc.

Keywords: green consumption, environmental hazards, awareness, purchase decisions, pie chart, chi-square test

I. INTRODUCTION

Production and Consumption are the driving forces of an economy that aim at the utilization of limited resources to fulfil the unlimited wants of the consumers. As an economy progresses, with it comes environmental degradation too. Research efforts, time and again, have sought to identify, analyse, and understand the "green consumer." Green implies the conservation of environmental resources while consumption means the use of goods and services for the acquisition of utility which often involves the destruction of natural resources. Green consumption implies ethical, sustainable, and responsible consumption that minimises environmental hazards and wastage. It has three stages: purchase, use and disposal of a product. We have managed to attain an in-depth insight into the topic by doing a thorough review of the existing literature and have tried to supplement it with our questionnaire-based survey coupled with personalised interviews by the authors.

The topic of green consumption has a lot of relevance and scope in light of the current events where the effects of climate change are having a catastrophic effect on the sustainability and well-being of the flora and fauna. Green, environment-conscious consumers and even a slight change in consumption patterns towards eco-friendly and ethical consumption will make a difference. Understanding these aspects of a contemporary consumer is a study of great importance. It is good to note that sustainability and responsibility towards the environment have come to dictate some people's decisions. Environmental economics terms such consumers as "green consumers". Green products are those that are created without having an immediate negative effect on the user, such as wood products from certified sustainable forests, clothing made from eco-friendly and sustainable materials, or electricity generated from solar/ wind power. The important thing here is that what drives this demand is consumer preferences, and consumer preferences are considered sovereign. If consumers are willing to pay more for a certain good, it is clearly a prerogative for them. The consumer may feel a duty to not harm the environment in consumption or may obtain utility from taking environmentally positive actions, or, the consumer may view goods that are produced in an environmentally friendly way as being of better quality in terms of final consumption (e.g., shadow-grown coffee). Whatever the reason, some consumers are willing to pay for green actions that do not benefit them directly.

This paper, hence, is an attempt, from an economic lens, to try to grasp and make sense of such behavioural and environmental effects. We were inquisitive about such issues and framed a questionnaire to collect primary data on the green consumption awareness, habits, preferences, and behavior of the consumers. The attempt has been to uncover the socio-economic aspects of green consumption. The next section provides a brief review of the existing studies on the topic. This is followed by the research methodology that incorporates the objectives, data description and methods of analysis. The fourth section provides a summary of findings from the field survey and insights from personal interviews. The results obtained are analysed using the Chi-square test of dependence, bar graphs, and pie charts. The last section gives suitable policy suggestions, summarises, and concludes while bringing out the limitations and scope for future research.

II. REVIEW OF LITERATURE

This section provides a review of the recent studies on the topic, with a focus on the Indian economy. Dhanwani et al (2020) reviewed the findings of various researchers on the green buying behaviour of Indian consumers from 2005 to 2019 with an emphasis on finding the critical factors affecting purchase decisions. "The study highlighted that age, education level, convenience and brand have no significant positive relationship with consumer green behavior whereas social influence, income, marketing, and promotion have remarkable influence on green buying behavior of consumers." Mingli Li (2020) has reviewed "the concept of green consumption, green consumption behavior and the factors affecting the consumers green consumption behavior under different aspects and perspectives" and has analyzed "the formation mechanism of green consumption behavior" for China.

Divyapriyadharshini et al (2019) surveyed the Chennai district of India to "know the consumers awareness about green products and how consumers would be helping the environment if they switch over to green products. Consumers green products awareness is significant in indicating the way of the green products buying decision. The data is collected from 30 respondents by survey method through a structured questionnaire. Convenience sampling method is used. Data are analysed using frequency analysis. The study has found that promotional activities on eco-friendly products influence consumers green products awareness. The majority of the respondents are aware of green products. This study also reveals that green products awareness is the critical factor, which affects consumers green purchasing decisions." Kapoor et al (2019) conducted a study on the cosmetic industry and concluded that consumers show a preference for products with an ecolabel. The main factors positively affecting green purchases were identified to be environmental concerns, online availability, certification and information, health consciousness, and satisfaction. Emekci (2019) has studied the factors affecting the green buying behaviour of the consumers of Turkey, and the interrelationships between those factors. They analysed the primary data with structural equation modelling and found that perceived consumer effectiveness had the highest influence on green buying behavior. The gap between consumers' attitudes towards green consumption and their actual behaviors has been researched in this study. It is essential to understand the underlying reasons for this gap to be able to frame suitable policies to increase green consumption.

Choudhry and Bisai (2018) identified attitude, purchase intention, perceived behavior control, environmental concerns, and subjective norms as the variables positively associated with the green purchase behaviour of consumers. Samala and Patel (2018) showed health benefits, environmental concerns, and product features to be the main factors that make for the willingness of people to pay a premium for the purchase of green products.

Bhatia and Jain (2017), collected data from six major cities in India and incorporated various "cultural, economic and demographic differences among consumers affecting green purchase behavior." Shamsi and Siddiqui (2017), based on primary data from Uttar Pradesh, showed education level to be directly associated with green consumption. Asha and Rathiha (2017), Joshi and Rahman (2015), Nittala (2014), Sheikh and Bilal (2014), Bhatia and Jain (2013), Kataria et al. (2013), Purohit (2011) are the important studies of the decade that have attempted to study the green consumption behavior in India.

Earlier, Mostafa (2007), used green purchase behavior for "the consumption of products that are benevolent or beneficial to the environment, recyclable or conservable and sensitive or responsive to ecological concerns." A study conducted by D'Souza et al, (2006) reported that generally, "perception of green products is negatively associated with customer's intention to purchase them if they are of higher prices and low quality in comparison to traditional products". According to Jain and Kaur (2004) "There is a constant pressure on the marketers from governments, media, and environmental activists to care for the environment and inculcate in their products the features which are beneficial to the environment or mitigate those features which are harmful to the environment". Johri et al (1998) in their study on "Green marketing of cosmetics and toiletries in Thailand" analysed the green marketing strategy of the Thai market.

Most of the studies for India have been based on primary data. These coincide in showing that the majority of consumers are aware of environmental issues. This concern, however, does not often turn into green consumption behaviour. The factors identified as being important/ unimportant in affecting the consumption of green products vary across the studies. Moreover, various aspects and dimensions of environmental concerns are dynamic in nature. This makes for the relevance of this study to identify the factors currently hindering/ promoting green consumption.

III. RESEARCH METHODOLOGY

In this section, we discuss the objectives of the study, data type and sources, and the statistical techniques employed. The basic *objective* has been to analyse consumer awareness and behaviour towards the usage of green and sustainable products. To assess and investigate green consumption behaviour and awareness, we considered factors like the availability of sustainable products, health concerns, pricing, quality of the available products etc.

Data Description

The study is based on primary data collected through a structured questionnaire created through Google forms and circulated online in the state of Delhi, India, to respondents belonging to different age groups and educational backgrounds. Additionally, a hard copy of the questionnaire was shared with numerous respondents, in particular with the ones who were

expected to be got left out through the online mode. Before formally sharing the questionnaire for responses, we shared it with a few prospective respondents to judge the understanding and answerability of the questions and incorporated their suggestions in the final version. Additionally, we interviewed some people from different backgrounds and different age groups personally to gain further insight into the consumer behavior intricacies related to environmental issues.

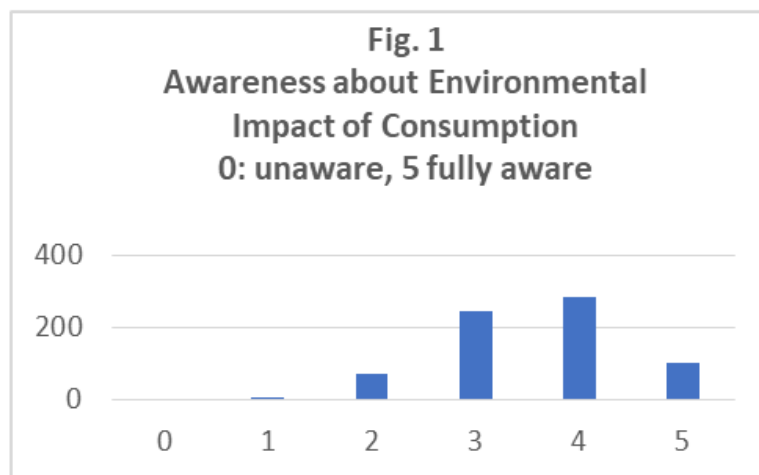
Methodology

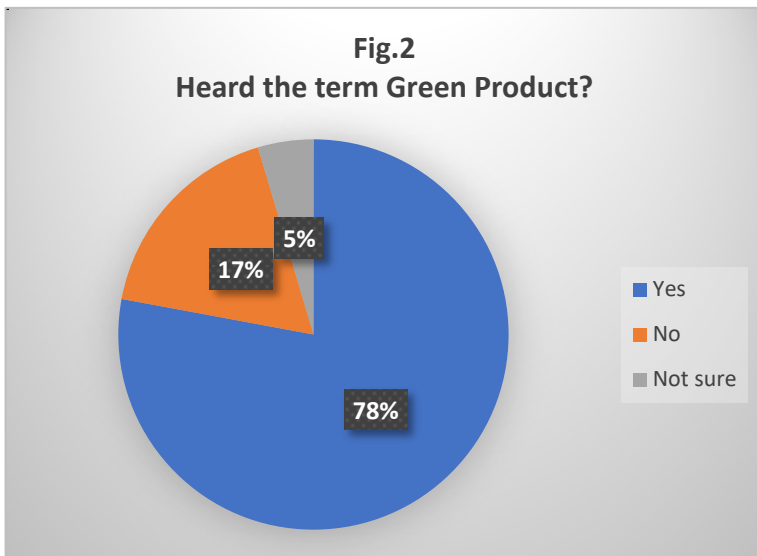
The collection of primary data has been done using the random sampling technique. Both online and offline modes were used. The statistical tools used are percentage analysis and pictorial representation of the data in the form of pie charts and bar graphs. Statistical and econometric software, MS Excel has been used for the analysis. Chi-square tests of independence have been performed to find out if the green consumption behaviour is related to the age and/or educational qualification of the respondents. Personal interviews with some respondents have been conducted to gain further insights.

IV. FINDINGS AND PRACTICAL IMPLICATIONS

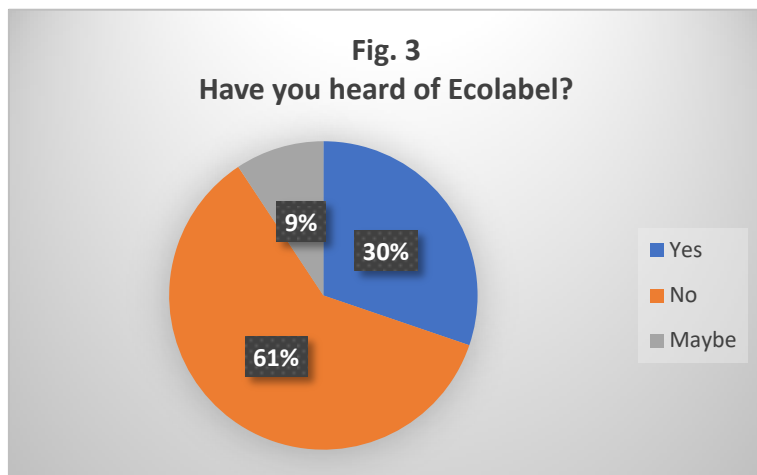
Our survey has been conducted for the state of Delhi. Due to substantial socio-economic and other heterogeneity across various states, a state-level analysis was preferred. Respondents were chosen from different districts of Delhi. We shared our questionnaire with numerous school and college students, teachers, other professionals, etc. through online mode. Several local shopkeepers, parlours, maids, hawkers, helpers, senior citizens, and residents from various areas etc. were contacted through the offline mode. Wherever required, the questions were duly explained to them in English/ Hindi, as required, to elicit a proper response. Overall, we were able to obtain about 700 responses. For all the questions asked, we also analysed the results age-wise and for different levels of education. Where the percentages seemed to vary substantially, the Chi-square test has been conducted.

The focus of our survey has been to judge environmental awareness and factors affecting green consumption. As for awareness about the environmental impact of the products consumed, a little less than half the respondents communicated a reasonably high level of awareness (4 and 5 on a scale of 0 to 5, zero indicating no awareness and five indicating being fully aware), while a little more than one-third, conveyed an average awareness level (3). About a tenth was relatively less aware (point 2), while only a small fraction, less than one per cent reported being only marginally aware of the environmental impact of the products consumed. No respondent communicated being totally unaware. These results were broadly invariant to the age or education level.





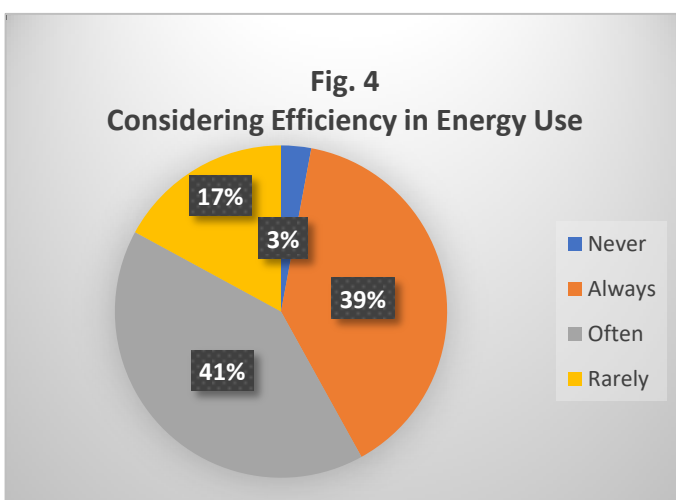
The term green consumption was found to be familiar to little more than three-fourths of the respondents, and about five per cent responded of being not sure whether they had heard the term before. A little less than one-fifth denied having heard the term at all. Most of these were the ones who had little or no formal education. No major difference in the relative percentages was noted with age. The compulsory teaching of Environmental studies in schools and colleges for the past 10-15 years has been instrumental in creating and increasing awareness of such issues. When children learn about these things, they discuss them with their families too.



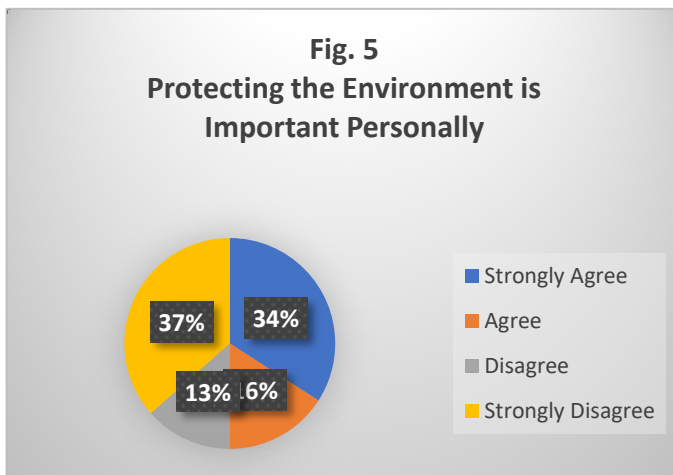
Awareness about the term ecolabel was found to be much less with just thirty per cent having heard of it while nearly a double percentage had never heard about ecolabel. The respondents from the age group of twenty to forty-five years were found somewhat less aware of the term ecolabel as compared to their younger and older counterparts. Also, relatively less educated respondents showed a greater ignorance of the term. Further, in the aggregate, more than half of the environmentally conscious people refused to buy similar but environment-friendly products if they had to pay a higher price. For most of these, affordability was the issue. Nearly half of those who could afford were ready to pay a higher price for sustainability. The reasons for this

ranged from sense of responsibility for protecting the environment to personal health benefits and enhancing the quality of life.

The respondents were also questioned on the extent to which they considered energy efficiency while purchasing the products like television, air conditioner etc that use electricity or fuel using products like cars, machinery etc. About

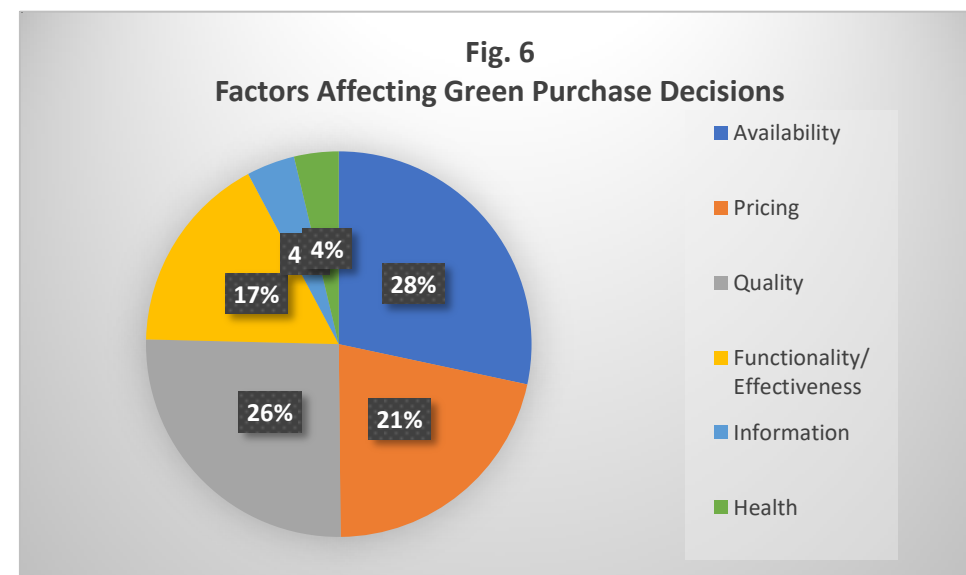


forty per cent said that they always considered energy efficiency and nearly the same percentage informed that mostly they do consider energy efficiency. The reason for many of these was, however, to save on their personal bills rather than a concern for the environment. A very small percentage (only three per cent) denied this consideration while about one-sixth said that most of the time they do not consider energy efficiency, but other features like brand, looks and various features/specifications.



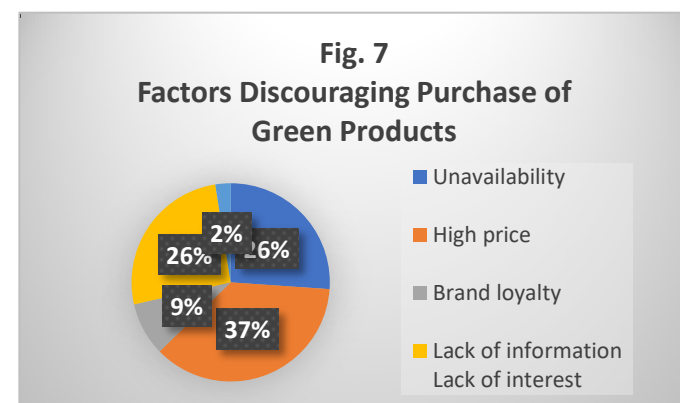
While we note that people, in general, are broadly aware of the environmental issues and are also careful about electricity usage, about a half denied that protecting the environment is important to them at a personal level. In this case, an unexpected result noted was that a huge majority of the college students felt environmental issues to be personally unimportant to them. Although they were aware of the issues, in no way were they willing to put any restraints on themselves for protecting the environment. Another such category was the higher age group. Although the percentage denying the importance of green consumption at their personal level was much less (about sixty) as compared to college students (more than ninety per cent), this is greater than the aggregate. Many of those above forty-five years of age gave higher priority to their personal issues and age-old habits, rather than issues of larger concern like the environment. They also showed a trust deficit in the new products coming up as green products. A little more than half the respondents felt that they must sacrifice something (such as high price, low functionality, or quality or similar) most often to be green. Nearly a fifth did not feel so, and about thirty per cent were not sure.

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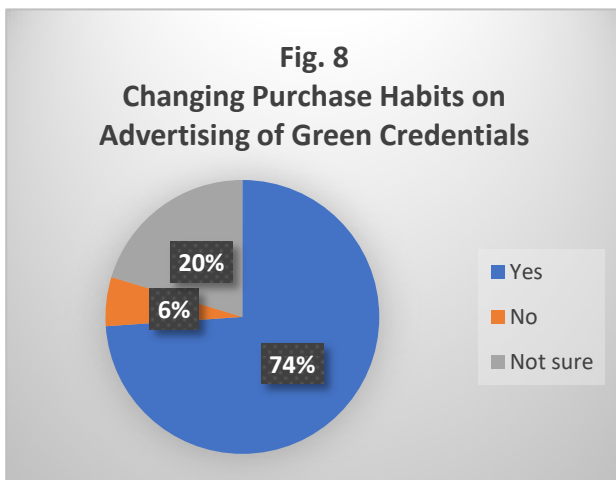


Now we move on to the analysis of the factors affecting green purchasing decisions. As can be seen from the following two figures; availability, quality, pricing, and functionality/effectiveness were cited as the important factors affecting green purchasing decisions. The factors hindering the purchase of green products were the high price for a little more than one-third of the respondents, unavailability and lack of information were found to be affecting more than one-fourth of respondents each. About nine

per cent mentioned their loyalty to the existing brands stopping them from the purchase of environmentally friendly products, while a small percentage showed no interest in the purchase of such products.



About forty per cent of the respondents were ready to purchase green products at a slightly higher price. Of those who were ready to pay a high price for these products, about half quoted their environmental responsibilities to be the reason. A little less than one-third felt it enhances their quality of life, while about ten per cent each mentioned a high level of satisfaction and a potential increase in product value as the reason. Further, on asked whether they would change their habits on advertising of green credentials of the product, a little less than three-fourths replied in the affirmative, while just about six per cent denied it. The remaining respondents were not sure.



During the course of personal interviews, some noteworthy observations were made. While people from all age groups and backgrounds are largely aware of the environmental impacts of their consumption, and advocate green consumerism, but are themselves not following the same to a great extent. People having a background in the regions of Uttarakhand were found to be engaging relatively more in green consumption. Accessibility and ease of use, in general, are important concerns for all.

Various less educated/ illiterate respondents showed a high level of awareness but were not engaging in green consumption largely due to affordability issues. For instance, the maids, rickshaw pullers and the like knew about the adverse effects of polybags on their health and environment, but continued to use them due to low cost and easy availability; discarded used water bottles are frequently used by them for the same reason.

The student community in general was found to be highly aware and great advocates of green consumption, even educating their families about it, but when it comes to making a purchase choice, they were found to be more bothered about the factors like looks, brands, features, what their peer group is purchasing, etc. Not just that, they exercised a substantial influence on the purchase decisions of their families. Preserving the environment, or even their own health concerns were not important for them. Strikingly, in beauty products/ cosmetics, most of them were concerned about their skin health.

The relatively elder population was found to be greatly concerned about their health issues, but they largely did not relate those issues with any aspect of green consumption. They were reluctant to change their habits and try out the new 'green' products, and even doubted the authenticity of such products.

On the whole, a big gap between awareness, attitudes and actual behavior was noted. Also, lack of appropriate information about green products, trust in the products, and proper ways of waste disposal was noted.

Next, we turn to the **Chi-square test of independence** to examine the relevance of age in the issue of green consumption. A substantial variation in the responses related to considering efficiency in energy use while making purchase decisions was noted. So, the test was performed to investigate if age had any relevance in the matter. Under the null hypothesis the two variables involved are considered independent, while under the alternate hypothesis, the two are recognised as dependent. The calculated value of the statistic is compared with the tabulated/ critical value at the relevant degrees of freedom. The measure of degrees of freedom is obtained as the product of the number of columns minus one and the number of rows minus one. The null hypothesis is rejected if the estimated value exceeds the critical value. Rejection indicates that the given variables are dependent.

Table 1 below summarises the data obtained related to considering energy efficiency in the purchase decisions and the next table gives the associated expected frequencies. These are obtained as the product of the corresponding row and column totals as a ratio of the grand total.

H₀ (Null Hypothesis): Age and considering efficiency in energy use are independent.

H₁ (Alternate Hypothesis): Age and considering efficiency in energy use are dependent.

Table 1: Summary Results on considering efficiency in energy use vis-à-vis different age groups

Considering efficiency in energy use↓/ Age groups→	Less than 22 years	22-45 years	More than 45 years	Total
Always	28	108	117	253
Often	120	90	67	277
Rarely	63	28	25	116
Never	17	5	6	28
Total	228	231	215	674

Table 2: Expected frequencies corresponding to table 1 data

Considering efficiency in energy use↓/ Age groups→	Less than 22 years	22-45 years	More than 45 years	Total
Always	85.58457	86.71068	80.70475	253
Often	93.70326	94.9362	88.36053	277
Rarely	39.24036	39.75668	37.00297	116
Never	9.47181	9.596439	8.931751	28
Total	228	231	215	674

The critical value is 12.592 at a significance level of five per cent and six degrees of freedom, while the estimated chi-square statistic is 103.99. This implies a clear rejection of the null hypothesis, indicating that the two variables are dependent. The associated p-value is 3.66912E-20. Thus, we find that the extent to which people consider efficiency in the use of energy (electricity, fuel etc) while making their purchase decisions is significantly dependent on the age of the respondents. In particular, it was noted that the college students were more concerned about the brand name/ looks/ features and the like in making their purchase decisions and paid little attention to the electricity usage of the gadgets like television or fuel consumption of vehicles. And their choices are an important factor in making decisions about household purchases. Not only this, the younger generation is very careless in the usage of electricity, water etc.

V. CONCLUSIONS

Before winding up, it is appropriate to suggest suitable policy measures, point out the limitations and put forward meaningful extensions of the research. It needs to be noted that most efforts to date are more concerned about creating awareness, and not with the practicality of the aspects. A huge gap exists between awareness and actual behavior that needs to be removed. Accessibility and ease of use are two crucial factors that need to be addressed. Different coloured dustbins for garbage segregation are not available in many public places, nor have the big residential societies designed mechanisms for the same. So, huge volumes of recyclable materials are disposed of in red general waste bins and end up in landfills. Once in landfills, it decomposes and rots away.

Promotional advertising by the government or reputed agencies about the health benefits and authenticity of green products will be helpful. A large proportion of people will turn to green consumption only when they see their own benefits in it. The promotional efforts need to be accordingly tailored. Strict laws related to production, consumption and disposal need to be passed and implemented. South Korea, which now recycles nearly cent per cent of food waste is a good example to follow.

The primary constraint faced relates to the collection of reliable data during the pandemic period. Forms filled through online mode were often incomplete. The sample population responding to the survey may not truly be a random sample. The data obtained may not be generalised throughout Delhi, but it is expected to give a fair idea of the average consumer behavior. The results obtained and the implications derived need to be understood with caution, considering the various limitations of the survey. Disaggregated analysis in terms of rural-urban areas, or a comprehensive survey of specific districts can provide more meaningful results.

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