

## A Study on the Perceptions of Consumers Towards Green Marketing of E-Commerce Products in Rajasthan

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### ABSTRACT

"Green marketing" refers to the practice of promoting services and goods on the basis of their positive environmental impact. Without the aid of secondary effect change, production process upgrades, economical packaging, and retooled advertising, such a nice or administration should be harmless to the ecosystem. Due to environmental concerns, green products have received more attention recently, and their availability is growing. The desire to protect the environment has become a universal concern. This study aims to analyze changing trends of customers and their perceptions towards green marketing. Corporate businesses believe that green marketing is a powerful instrument for achieving organisational objectives as well as for gaining a competitive edge and establishing brand equity in a time when consumers choose companies that are more environmentally friendly. The Indian government has made social responsibility a requirement for organisations. The demonstration of buying products and services E-Commerce through vendors who operate websites is known as Ecommerce. Since the beginning of the Internet, businesses have tried to market their goods to users. The study is empirical in nature wherein the survey responses of 135 clients were analyzed and interpreted. It was found that clients prefer green products and it has positive impact on the overall sales, perceptions of customers.

**Keywords:** *Green Marketing, E-Commerce, Consumers, Products, Marketing Strategy*

### 1. INTRODUCTION

A recent development in modern marketing is known as "green marketing". However, marketing takes a holistic approach to identifying and meeting the needs and desires of current and potential customers. Green marketing refers to the creation and advancement of labour and products manufactured in an environmentally friendly manner. (Alomari & Alomari, 2020) According to the American Marketing Association, "green marketing" is the promotion of products known to be safe for the environment. In that sense, "green marketing" includes various activities such as "item change", "assembly process change", "packaging change", and "advertising change".

Natural marketing and biological marketing are different names for "green marketing". Green marketing is in this way an extensive marketing idea in which labor and products are created, sold and afterward discarded in a harmless to the ecosystem way, alongside a rising familiarity with the climate. (Bae & Rishi, 2018) Green marketing goes beyond basically utilizing a green variety scheme for websites, bundling, or item design. An organization's overall efforts are focused on eliminating environmentally destructive processes and involving environmentally friendly procedures and bundling for the creation and presentation of the products. An organization might have to spend a little piece more money front and centre, however more sales will result over the long haul. (Cleveland & Bartikowski, 2018) All enterprises are presently reporting monetary results through email channels due to changes in SEBI regulations for corporate results compliance procedures, which has essentially reduced how much paper and trees used.

Sustainable environmental practises are the focus of the current period. All throughout the world, people are realising the necessity for green marketing. Global customers are aware of the damaging effects of non-green products on the environment and human health. Environmental awareness has become a crucial component. (D, 2018.) As consumers have higher expectations and are more informed, it has become the responsibility of corporate businesses to choose products and practises that are safe for the environment and the health of their customers. Consumers are far more concerned about the environment and their families. Customers are starting to expect green products. (Deliya, 2020) The

Indian government has also taken a number of actions to spur such actions. One expanding business that is concerned with green marketing challenges is the FMCG sector.

### **1.1 Green Marketing**

Green marketing entails creating and advancing labour and products that meet customers' demands for convenience, moderateness, performance, and quality while affecting the environment. (Dubey, 2018)

Green marketing, as defined by the American Marketing Association, involves spreading the word about goods and services that are verified to be environmentally friendly. Therefore, green marketing encompasses a wide range of strategies. Variations B. in Product, Production Method, Packaging, and Promotion. (Farzin, Yousefi, Amieheidari, & Noruzi, 2020). The fact that this term has a variety of social, environmental, and retail implications highlights how difficult it is to define green marketing because of how many meanings conflict with one another and overlap. Ecological marketing and environmental marketing are additional terms that have essentially the same usage.

### **1.2 E-Commerce in India:**

India's e-commerce industry grew by an astonishing 88 percent in 2013 to reach \$ 16 billion, despite slowing economic growth and increased expansion. Expanding retail tendencies in e-commerce were the cause of this increase. (. Kardos, Gabor, & Cristache, 2019) Because of greater Internet usage and more payment options in 2013, the e-commerce industry saw growth. B. Payments and delivery systems, e-commerce business in India is expected to grow to US\$50-70 billion by 2020 due to rapid growth in internet-connected population and associated infrastructure improvements such as: I'm here. (Kaur, 2018).

The products that are typically purchased frequently include mobile phones, iPods, accessories, MP3 players, computerised cameras, jewellery, electrical gadgets, clothes, home and kitchen appliances, lifestyle items like watches, novels, beauty products, and perfumes, as well as child products.(Lee, 2020). The e-commerce market in India, which was only \$2.5 billion in 2009, increased by 88% to \$16 billion in 2013 from \$8.5 billion in 2012. According to the poll, the country's e-commerce business would grow to \$56 billion by 2023, primarily due to increased E-Commerce retail. The availability of a wide range of E-Commerce services, aggressive E-Commerce discounts, and rising fuel expenses all contributed to this growth.

### **1.3 Significance of the Study**

More than an organization's marketing claims are covered by green marketing. Despite the fact that businesses should shoulder a large piece of the blame for environmental deterioration, eventually, consumer's desire products thus fuel environmental issues. The following are some suggested explanations for why green marketing has been widely embraced by businesses globally. (Moisander, 2019). There are essentially five justifications for a marketer to use green marketing. These include chances to gain a competitive edge, CSR (corporate social responsibility), competitive pressure from other businesses, government pressure, and cost or profit concerns. (Oliver, 2019)

Green marketing refers to any business effort intended to have a beneficial impact on the environment or to decrease a product's negative impact in order to capitalise on consumer concern over environmental issues.(Rahbar, 2018). Utilizing scarce resources while meeting consumer and industry demand and the goals of the selling organisation are all made possible by green marketing.

Albeit this study is intended to analyze the advantages and opportunities of green marketing, its importance, advantages, and opportunities are developing. (D R. L., 2019). The business should personalize the advantages of environmentally friendly measures, regularly by permitting the customers to participate in such activities.

#### **1.4 Objectives of the study**

- To examine customer perceptions and preferences towards E-Commerce shopping
- To demonstrate the inclination of green products as for the qualification of the buyers
- To investigate Indian consumers' awareness of green products

#### **1.5 Hypothesis of the Study**

H01: Green values are not significantly different based on gender.

H02: The consumer's academic background has no discernible influence on their choice for green items.

H03: Consumers' intents to purchase green items are not significantly different based on their level of education.

H04: The consumer's gender has no discernible influence on their choice for green items.

## **2. REVIEW OF LITREATURE**

Szabo, S., and Webster, J. (2021) performed two studies: one included interviewing representatives from consultancy and consumer goods companies, and the other involved testing how customers interacted with a corporate website. We used a variety of methodologies for this research, including neurophysiological measures, questionnaires, and interviews. We found that apparent green washing influences site guests' satisfaction as well as their perspectives on the climate and items. Additionally, we discovered a correlation between website engagement and views of environmental and product perceptions, as well as perceived green washing. We wrap up by talking about the management and ethical implications for practise and research.

In the context of e-commerce, James, F., and Kurian, A. (2021) looked at Indian customers' pro-environmental sentiments towards sustainable packaging. To ascertain Indian customers' intents to buy items using sustainable packaging choices, the research uses quantitative methodologies. To gather information from a variety of users, a standardised questionnaire was used. The study's results indicate that Indian customers are favourable towards sustainable packaging.

454 valid samples were obtained from a survey of online purchasers of organic goods conducted by Lin, J., Li, T., and Guo in 2021. To begin with, the outcomes have exhibited that stage attributes — data quality, framework quality, and administration quality — as well as item attributes — healthful substance, inherent substance, and environmental riches — affect how buyers see both the decadent and utilitarian worth of items. Second, perceived value is a key mediating factor that affects how customers' ongoing purchase intentions are influenced by platform and product attributes. Finally, the findings imply that businesses should concentrate on product and platform qualities to improve customers' perceptions of value and raise their propensity to make repeat purchases.

In their article from 2021, Rosário, A., and Raimundo need to reveal insight into the new development of internet business writing as well as how it interfaces with customer marketing methodology. Flow research has seen this change in human association achieved by the development of informal organizations, essentially through the topics of web based marketing and virtual entertainment marketing, while additionally considering issues like expense viability, data quality, and the rise of trust for web based shopping. Nonetheless, the review that has proactively been done has not completely shown all the examination streams, how they collaborate, and the potential for information creation. An investigation of the writing on customer marketing methodologies for internet business during the most recent decade is so proper. Through a Deliberate Bibliometric Writing Survey (LRSB) of the writing on research on marketing methodology for web based business, this report looks to uncover research patterns nearby.

With regards to the B2C online business area, Miao, Jalees, Khan, S., Hanif, N. U. A., and Javed, M. K. (2022) took a gander at the factors that influence e-client bliss, e-trust, saw worth, and clients' craving to make another buy. It looks at

the intervention effect of seen esteem, e-trust, and e-consumer loyalty on repurchase aim. It also looks at how previous internet experience affects moderating. Pre-selected enumerators gathered the information from Karachi's top five business colleges using the modified questionnaire. 425 questionnaires were given out, and 415 were returned. Twenty speculations were analyzed in the examination utilizing the fractional least squares structure condition demonstrating (PLS-SEM) approach for information examination, and our discoveries don't uphold five of them, including two immediate and two interceding speculations. Just the accompanying two direct suspicions are not upheld by our discoveries: (1) Conveyance administration affects online fulfilment (2) The effect of client support greatness on trust. The accompanying two intervention speculations: (1) e-fulfilment intercedes administration conveyance and repurchase goal; and (2) administration quality intercedes purchasers' administration quality and repurchase aim, couldn't find any proof to help them. The discoveries invalidate the presence of one directing association. Earlier web-based experience impacts e-saw worth and tendency to repurchase.

To investigate the impact of green bundling on brand connection in web based business and distinguish the various intercession impacts of seen esteem, brand demeanor, and trust, Zhao, X., Dish, C., Cai, J., Luo, X. R., and Wu, J. (2021) laid out a hypothetical system. 257 Chinese web customers were looked for the review's reactions, and primary condition displaying was utilized to dissect the information. The discoveries show that green bundling well affects brand mentality and saw esteem, the two of which may well influence brand connection both straightforwardly and by implication by means of trust. Furthermore, it was shown that apparent worth and brand mentality may straightforwardly or by implication intercede the positive relationship between green bundling and brand connection by utilizing a bootstrapping way to deal with approve the intercession impact. This examination proposes that web-based retailers ought to give close consideration to what green bundling means for brand connection and plan their green marketing systems around the requirements of clients.

### **3. RESEARCH METHODOLOGY**

#### **3.1 Research Design**

The investigator's understandings of the subject of the study and the methods and procedures to be used for the current investigation were both improved by the review of related literature. The methodology of the relevant study has been discussed in the current chapter, including the problem statement, operational definitions, sampling techniques, sample size, and tool description (Moisander, J. 2019). A logical, methodical plan created for guiding a research project is known as a research design. It is an effort to learn more. Research is the process of discovering new information and correlating it with previously known information by using scientific techniques to study a natural or social event.

#### **3.2 Sample Size and Technique**

A sample of 135 clients, both male and female, selected from Rajasthan returned the questionnaire after fully completing it. The sample size was 135 respondents, drawn from the whole customer base in Rajasthan. The respondents are also chosen at random. For the collection of primary data, individuals were specifically chosen who resided in Rajasthan. Systematic sampling technique was utilized in choosing the associations from the rundown of enrolled organizations in the Country (Rahbar, E., and Wahid, N. A. 2018).

Systematic Random sampling technique is a measurable procedure, to zero in on the objective populace for their examinations. By isolating the ideal example size by the absolute populace, scientists can decide the inspecting span. A more careful utilization of likelihood examining is efficient testing, which includes haphazardly choosing an example from the whole gathering consistently (Rambabu L et.al 2019). As per its definition, Systematic sampling technique in which the scientist chooses test members after a foreordained "inspecting span" and components from the objective populace utilizing a random starting point

### 3.3 Source of Data

**Primary data:** Primary data is gained through personal observation or direct data collection. It refers to information that is original in nature and gathered for a specific purpose from the area of study. Primary data for the project were mostly gathered utilising the survey method and the tool questionnaire.

**Secondary data:** on the other hand, are those that have already been gathered and subjected to the statistical procedure by someone else. Here is where the secondary data came from. Different dictionaries, registries, publications, and journals. Such as dissertations websites for the company (Rochikashvili, Mariia et.al 2018).

### 3.4 Tools Used for Collecting the Data

To get the information, a well-structured questionnaire is used. With clear questions. There are likewise closed-ended questions, closed-ended positioning questions, Likert scale questions, multiple-choice questions, and that's just the beginning.

### 3.5. Analytical Tools

**3.6.1 Percentage Analysis:** Finding the average of the information gathered is done using the percentage analysis method. The formula for percentage analysis is as follows: The number of respondents is divided by the total number of respondents, which is then multiplied by 100 to determine the percentage (Szabo, S. Et.al 2021). A table with the respondents' numbers is first created.

#### Number of participants

$$\text{Percentage} = \frac{\text{No. of Respondents}}{\text{Total No. of Respondents}} \times 100$$

- **Chi-Square Test:** A good tool for comparing empirically acquired findings with those anticipated theoretically and based on hypothesis is the chi-square test. The frequencies that should be evenly dispersed throughout a certain time period are known as the Expected frequencies.

$$X^2 = \sum [(O - E)^2 / E]$$

Here, O stands for observed and E for expected

- **Correlation Analysis:** The statistical technique used to assess how linearly connected two variables are to one another is correlation analysis. The degree of relationship between two variables is measured by correlation.
- **ANOVA:** Examination of variance (ANOVA) is a measurable technique for examining varieties in means. It comprises of a number of measurable models and the estimate techniques that go with them.

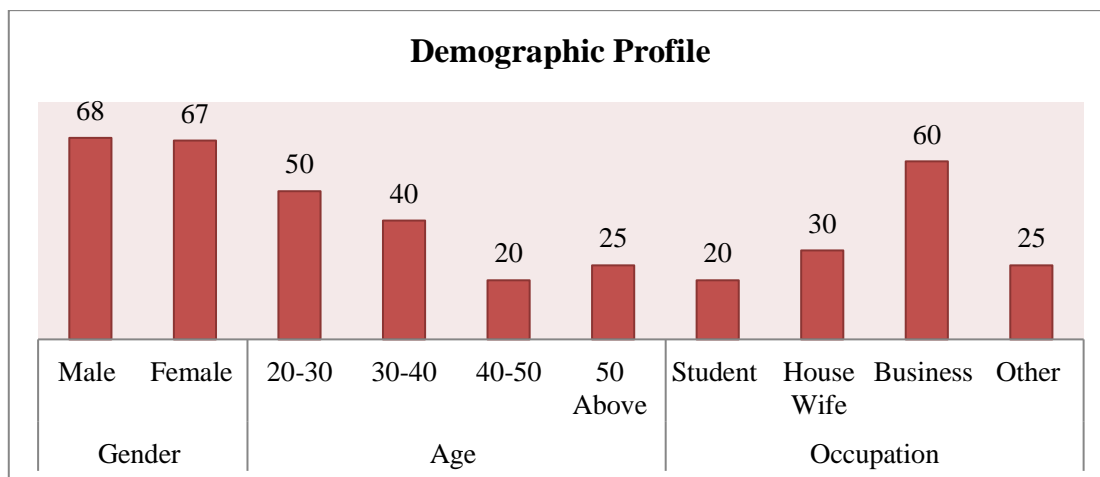
## 4. DATA ANALYSIS INTERPRETATION

### 4.1. Frequency of Demographical Profile

Table: 1 Demographical Profile

Variable	Frequency	Percentage
<b>Gender</b>		
Male	68	51%
Female	67	49%
<b>Total</b>	<b>135</b>	<b>100%</b>

Age		
20-30	50	37%
30-40	40	30%
40-50	20	14%
50 Above	25	19%
<b>Total</b>	<b>135</b>	<b>100%</b>
Occupation		
Student	20	14%
House Wife	30	22%
Business	60	44%
Other	25	20%
<b>Total</b>	<b>135</b>	<b>100%</b>



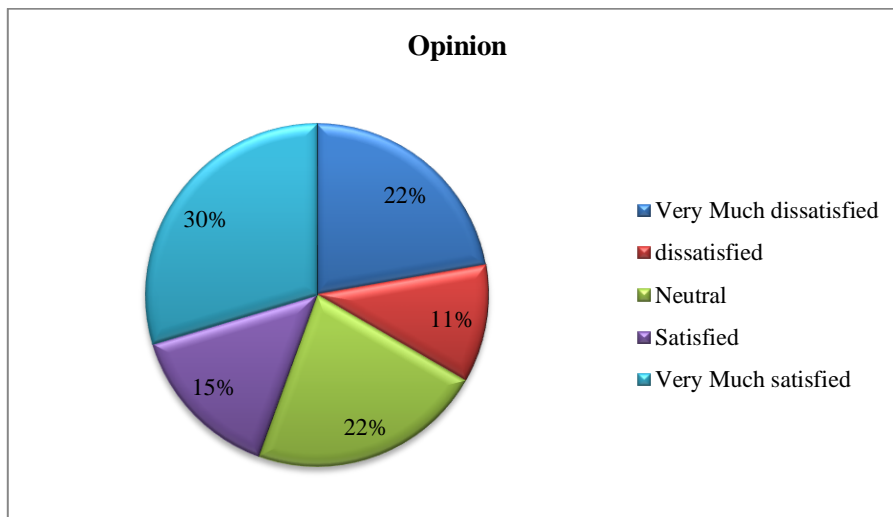
**Figure: 1** Demographical Profile

Table No. 1 provides explanations of consumer demographics, such as monthly income. Age, gender, and profession. The majority of customers (65/135) access the internet from their homes, followed by offices and colleges (48/150)

**4.2. Researching Consumer Satisfaction with Green Products**

**Table 2: Satisfaction level with Environmentally Friendly Items**

Opinion	No. of Respondent	Percentage
<b>Very Much dissatisfied</b>	30	22%
<b>Dissatisfied</b>	15	11%
<b>Neutral</b>	30	22%
<b>Satisfied</b>	20	15%
<b>Very Much satisfied</b>	40	30%
<b>Total</b>	<b>135</b>	<b>100%</b>



**Figure: 2**satisfaction level with environmentally friendly items

According to the aforementioned diagram, out of the 135 total respondents, 22% are very much dissatisfied and Neutral, 15% are dissatisfied with green products, 15% are satisfied.

**Table 3: Perception Related Questions**

Perception Related Questions		Gender		
		Male	Female	Total
<b>Better Shopping Alternative</b>	E-Commerce shopping	50	40	80
	Manual Shopping	30	15	55
	<b>Total</b>	<b>80</b>	<b>55</b>	<b>135</b>
<b>Satisfaction With E-Commerce Shopping</b>	Yes	20	15	35
	NO	30	20	50
	Can't say	20	30	50
	<b>Total</b>	<b>70</b>	<b>65</b>	<b>135</b>
<b>Most Dangerous Obstacles to Online Shopping</b>	Concerned about not using my credit card,	20	15	35
	Before making a purchase, I prefer to personally inspect the item.	25	15	35
	Due to access, the procedure is costly.	15	10	25
	Internet connectivity issues and security	20	20	40
	<b>Total</b>	<b>75</b>	<b>60</b>	<b>135</b>
<b>When compared</b>	No	40	20	60

to manual shopping, online shopping is more expensive.	Yes	40	35	75
	<b>Total</b>	<b>80</b>	<b>55</b>	<b>135</b>
Delivery of goods via e-commerce is more time consuming.	No	40	20	60
	Yes	45	30	75
	<b>Total</b>	<b>85</b>	<b>50</b>	<b>135</b>

The Aforementioned table showed Perception of consumers Related Ecommerce Shopping 80 Respondents prefer E-commerce Shopping and Rest 55 Respondent prefers Manual Shopping. 35 Respondents are satisfied and 50 Respondents are not satisfied with E-Commerce Shopping. 35 Respondents are not concerned about using credit as well Card Before making a purchase; I prefer to personally inspect the item. 75 Respondents said Delivery of goods via e-commerce is more time Consuming (Kurian, A. (2021). Rest 65 Respondents said it's a time Consuming Process.

**Table 4: Findings of Hypothesis**

Hypothesis	Sig. Value	Accept/ Reject
H01: Green values are not significantly different based on gender.	0.675	Accepted
H02: The consumer's academic background has no discernible influence on their choice for green items.	0.622	Accepted
H03: Consumers' intends to purchase green items are not significantly different based on their level of education.	0.727	Accepted
H04: The consumer's gender has no discernible influence on their choice for green items.	0.532	Accepted

All the Null Hypothesis of My Study is accepted and Reject the Alternate Hypothesis.

#### 4.3. Finding of the study

- This survey included 51% more men than women.
- The majority of respondents were in the 20 to 30 year age range.
- Regarding the first hypothesis (H01), it was discovered that there is no discernible difference in green consumer values by gender; the overall green value of consumers was 3.88, and the p-value for the overall green consumer value was 0.675, indicating that the null hypothesis is accepted and that the consumers' gender has no bearing on their green values.
- The null hypothesis (H01) was not rejected, indicating that consumers' credentials do not influence their preferences for and intentions to purchase green products. The p-values for H02 and H03 were 0.622 and 0.727,



respectively. There were no statistically significant differences between consumers of varying educational attainment on either the preference or intent to buy green products.

- Concerning the fourth hypothesis (H04), it was found that there is no association between gender and demand for green goods, suggesting that a consumer's preference for green products is not influenced by the consumer's gender.

## 5. CONCLUSION

This study examined how buyers of plastic bottles saw and acted towards the idea of green marketing. Found that the majority of them were aware of it. They also think that action must be taken right away for a better future. The corporation needs to adapt its production process and its production materials primarily to protect the environment and move towards a more environmentally friendly business model. (Yang & Zhao, 2019) Consumers' willingness to pay a premium for eco-friendly goods was demonstrated by their response to the price increase.

Human activities are still impacted by environmental challenges, which is why society is now quite concerned about them. The majority of businesses have begun utilising the sustainable development framework, also referred to as green marketing, and the majority of organisations now recognise green products as being ecologically benign. (Young, 2018) Marketing executives can profit by using green marketing. Additionally, green marketing can meet customer wants while protecting the environment. Today's society is increasingly reliant on E-Commerce buying.

## REFERENCES

1. Alomari, B. M. A., & Alomari, I. A. A. (2020). Green marketing and its impact on consumer purchasing behavior and the tourism sector/an analytical study—The Jordanian green market. *J. Econ. Bus. Market Res*, 1, 8-24
2. Arli, D., Tan, L. P., Tjiptono, F., & Yang, L. (2018). Exploring consumers' purchase intention towards green products in an emerging market: The role of consumers' perceived readiness. *International journal of consumer studies*, 42(4), 389-401 <https://onlinelibrary.wiley.com/doi/abs/10.1111/ijcs.12432>
3. Bae, J. H., & Rishi, M. (2018). Increasing consumer participation rates for green pricing programs: A choice experiment for South Korea. *Energy Economics*, 74, 490-502. <https://www.sciencedirect.com/science/article/pii/S0140988318302457>
4. Cleveland, M., & Bartikowski, B. (2018). Cultural and identity antecedents of market mavenism: Comparing Chinese at home and abroad. *Journal of Business Research*, 82, 354-363 <https://www.sciencedirect.com/science/article/abs/pii/S0148296317303247>.
5. Deliya, M. M. M., & Parmar, B. (2012). Role of Packaging on Consumer Buying Behavior a Patan District. *global Journal of management and Business research*, 12(10), 49-68. <https://journalofbusiness.org/index.php/GJMBR/article/view/100226>
6. Dubey, A. R. (2018). Study of factors of green loyalty in context of green products and services: Mediation evidences of green trust of customers of hotel chains in UAE. *J. Asian Bus. Manag*, 10, 87-100.
7. Farzin, A., Yousefi, S., Amieheidari, S., & Noruzi, A. (2020). Effect of green marketing instruments and behavior processes of consumers on purchase and use of e-books. *Webology*, 17(1), 202-215. <http://eprints.rclis.org/39969/>
8. James, F., & Kurian, A. (2021). Sustainable Packaging: A Study on Consumer Perception on Sustainable Packaging Options in E-Commerce Industry. *Nveo-Natural Volatiles & Essential Oils Journal| Nveo*, 10547-10559 <https://www.nveo.org/index.php/journal/article/view/2975>
9. Kardos, M., Gabor, M. R., & Cristache, N. (2019). Green marketing's roles in sustainability and ecopreneurship. Case study: Green packaging's impact on Romanian young consumers' environmental responsibility. *Sustainability*, 11(3), 873 <https://www.mdpi.com/2071-1050/11/3/873>.
10. Kaur, M., & Bhatia, A. (2018). The impact of Consumer Awareness on buying behavior of green products. *International Journal of Scientific Research and Management*, 6(04), 250-255.

11. Lee, K. (2020). Opportunities for green marketing: young consumers. *Marketing intelligence & planning*, 26(6), 573-586.
12. Lin, J., Li, T., &Guo, J. (2021). Factors influencing consumers' continuous purchase intention on fresh food e-commerce platforms: An organic foods-centric empirical investigation. *Electronic Commerce Research and Applications*, 50, 101103 <https://www.sciencedirect.com/science/article/abs/pii/S1567422321000752>.
13. Miao, M., Jalees, T., Zaman, S. I., Khan, S., Hanif, N. U. A., &Javed, M. K. (2022). The influence of e-customer satisfaction, e-trust and perceived value on consumer's repurchases intention in B2C e-commerce segment. *Asia Pacific Journal of Marketing and Logistics*, 34(10), 2184-2206. <https://www.emerald.com/insight/content/doi/10.1108/APJML-03-2021-0221/full/htm>
14. Moisander, J. (2019), "Motivational complexity of green consumerism", *International Journal of Consumer Studies*, Vol. 31 No. 4, pp. 404-409<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1470-6431.2007.00586.x>.
15. Rahbar, E., and Wahid, N. A. (2018), "Investigation of green marketing tools' effect on consumers' purchasebehavior. *Business Strategy Series*, 12(2), 73-83. <https://www.emerald.com/insight/content/doi/10.1108/17515631111114877/full/html?mobileUi=0&fullSc=1&fullSc=1&mbSc=1>
16. Rambabu L and Sreeramulu D (2019). Fmcg Green Marketing: A Study on Pre-Consumption Perspective of Customers. *International Journal of Innovative Research in Management Studies*, Vol. 4 (6); 1-11.
17. Rochikashvili, Mariia, and Jan C. Bongaerts. 2018. "How Eco-Labeling Influences Environmentally Conscious Consumption of Construction Products" *Sustainability* 10, no. 2: 351. <https://doi.org/10.3390/su10020351>
18. Rosário, Albérico, and Ricardo Raimundo. 2021. "Consumer Marketing Strategy and E-Commerce in the Last Decade: A Literature Review" *Journal of Theoretical and Applied Electronic Commerce Research* 16, no. 7: 3003-3024. <https://doi.org/10.3390/jtaer16070164>
19. Szabo, S., & Webster, J. (2021). Perceived greenwashing: the effects of green marketing on environmental and product perceptions. *Journal of Business Ethics*, 171, 719-739 <https://link.springer.com/article/10.1007/s10551-020-04461-0>.
20. Zhao, X., Pan, C., Cai, J., Luo, X. R., & Wu, J. (2021). DRIVING E-COMMERCE BRAND ATTACHMENT THROUGH GREEN PACKAGING: AN EMPIRICAL INVESTIGATION. *Journal of Electronic Commerce Research*, 22(3), 178-198. [http://www.jecr.org/sites/default/files/2021vol22no3\\_Paper1.pdf](http://www.jecr.org/sites/default/files/2021vol22no3_Paper1.pdf)