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Influence of packaging design and sustainability on consumer purchase decisions for organic cereals in Delhi

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Abstract

This research paper examines how packaging design and sustainability affect the consumer buying choices regarding organic cereals in Delhi NCR. The study responds to the increased level of consumer interest in ecologically-friendly and aesthetically-pleasing products by analyzing how the two influence purchasing decisions. A descriptive cross-sectional survey was done with 300 respondents who were chosen in stratified random sampling to represent a representative selection in terms of age, gender, income and education. The structured questionnaire was utilized where the 5-point Likert scale was chosen as a means of data collection, and reliability and content validity were assessed through the reference to Cronbach's alpha and content validity index. The data was analyzed using descriptive statistic, correlation analysis, regression analysis and ANOVA. Findings show that purchase-related to packaging design (mean = 4.2) and sustainability awareness (mean = 3.9) have significant impacts on purchase (mean = 4.0). Correlation and regression results show that two factors have a positive influence on consumer choice, but the effect of packaging design is slightly more (0.48, $p<0.01$). ANOVA indicates drastic differences in terms of sustainability awareness levels. The results have indicated that marketers can maximize the sales rates of organic cereals by maximizing the appeal of the packaging and facilitating sustainability.

Keywords: Packaging design, sustainability awareness, consumer purchase decisions, organic cereals, Delhi NCR

Introduction

The consumption of organic food products has recorded extensive growth in different parts of the world due to the rising health consciousness levels and environmental awareness among people (Bazhan, 2024; Willer and Lernoud, 2019) [1, 4]. The production of organic food is growing very fast in India, and the consumers have increased interest in the foods that are not only environmentally friendly but also attract to the eye (Garg, Narwal, and Kumar, 2024) [10]. Cereals are a standard item of organic foods, and therefore, a crucial category when it comes to explaining consumer behavior in urban territories like Delhi NCR. Sustainability and packaging design have become two key aspects that determine purchase decisions. Sustainability is a sign of ethical and environmental responsibility, which increases packaging attractiveness and perceived quality of the product, which is in line with the values of environmentally conscious consumers (Nguyen, Lobo, and Greenland, 2019; Moser, 2016) [2, 14].

Although the influence of packaging design and sustainability awareness on consumer buying is becoming popular with organic cereals, there is a gap in the Indian context (Paul and Rana, 2012; Pino, Peluso, and Guido, 2012) [15, 11]. Further, these effects could be controlled with the help of demographic aspects, including age and education, making consumer choice patterns even more complicated (Joshi and Rahman, 2019; Biswas and Roy, 2015) [18, 17]. These associations are essential in comprehending that marketers wishing to make their products more appealing, evoke a purchase desire and promote the development of the organic cereal market in India. This paper will fill this gap by examining the impact of packaging design and sustainability awareness on consumer behavior in Delhi NCR as a whole and the results can be used to enhance marketing and product development strategies.

Literature Review

The consumer attitude toward organic food products has been extensively researched with reference made to the health concern, environmental concern, and the quality of products. According to Bazhan (2024) [1], perceived benefits such as nutritional value and ethical production are some of the strongest factors that affect purchase intention. On the same note, Nguyen, Lobo, and Greenland (2019) [2] find that consumers who have strong biospheric values tend to practice pro-environmental purchasing more frequently, but distrust of advertising could mediate the effect. The packaging has been termed as a crucial factor of consumer decision making affecting the quality view and brand image (Kahl, Baars, and Buegel, 2012 [5]; Schleenbecker and Hamm, 2013) [22]. Moser (2016) [14] emphasizes that sustainable packaging builds a stronger brand position and trust.

A number of studies reiterate how sustainability awareness is important in influencing purchase decisions. Vermeir and Verbeke (2006) [9] comment on the attitude-behavior gap, which is that consumers demonstrate a concern regarding the environment but fail to always transfer this to buying behavior. It is reported that health and environmental attitudes after the COVID-19 have increased the popularity of green products (Sharma and Foropon, 2022) [12]. Also, demographic characteristics like age, education, and income also determine how much packaging and sustainability stimulates purchase intentions (Yadav and Pathak, 2016; Biswas and Roy, 2015) [29, 17].

Although there is international research on the consumption of organic products, limited empirical study has been done on the interaction of packaging design and sustainability awareness in Indian context especially on organic cereals. This gap shows that there is need to have combined studies that would consider both the aesthetic and ethical aspect of consumer decision-making. The present study meets this requirement, studying the combination of all of these factors that influence consumer buying behavior in Delhi NCR.

Research Gap

Although the demand of organic cereals has been on the rise in urban India, there is a gap in the research literature that examines the synergistic effect of packaging design, sustainability consciousness, and demographic factors on consumer buying behaviour in urban India, in the context of Delhi NCR. Most of the past literature is built on either the concept of visual appeal or sustainability, and the gap in the current literature is how these two variables interact to drive consumer decisions. Additionally, the influence of demographic factors, including age, income, and education, on whether the packaging and sustainability have more impact on the purchase decisions is scarcely evidenced.

Conceptual Framework

The theoretical model is that the packaging design, sustainability awareness, and demographic factors play a role in consumer buying of organic cereals.

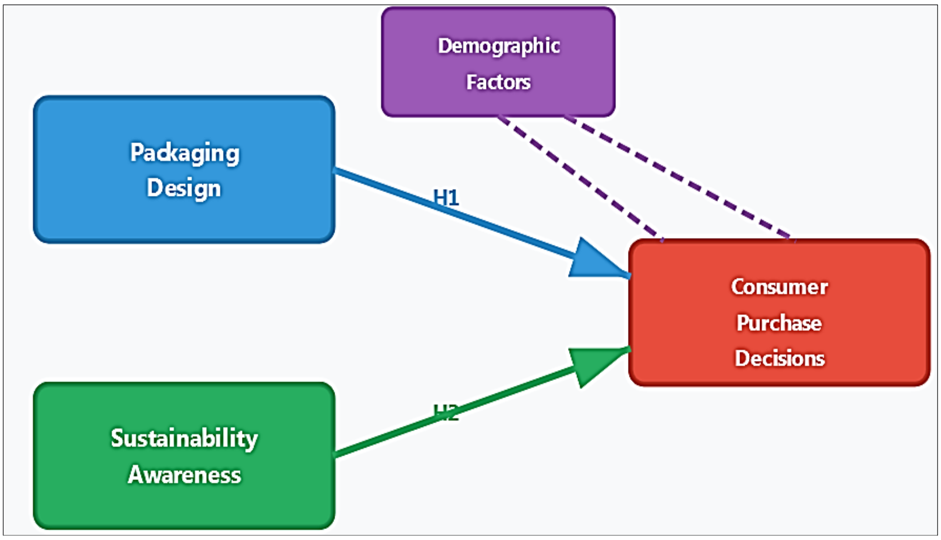

Fig 1: Conceptual Framework.

Packaging design is the aesthetic and functional attractiveness of the product, eco-consciousness in consumers in terms of sustainability and demographic factors can influence the likelihood of such relationships being strong.

Hypotheses

- **H1:** The packaging design has a positive effect on the consumer purchase decision of organic cereals.
- **H2:** Sustainability awareness has a positive impact on consumer decision making of organic cereals.
- **H3:** The relationship between packaging design, sustainability awareness, and consumer purchase decisions is moderated by the demographic factors (age, income, education).

Methods

The research design used was a descriptive cross-sectional survey that was done to study how packaging design and sustainability affect consumers to buy organic cereals in Delhi NCR. The study intended on capturing a representative sample of consumers in the region and offer a picture of what the consumers liked and how they made their choices at a given time. The stratified random sampling method was applied to make sure that the sample of respondents includes a certain percentage of different age groups, income and educational backgrounds. The respondents involved in the study were 300 in number who were selected in urban and semi-urban regions of Delhi NCR.

The structured questionnaire based on the comprehensive study of the available literature on consumer behavior and packaging was used to collect primary data. The questionnaire was based on consumer perception of the packaging design, sustainability awareness, and purchase choice based on a 5-point Likert scale (strongly disagree, strongly agree). The alpha coefficient of Cronbach was determined to evaluate the consistency of the scale internally and the values were found to be higher than 0.8 in all the constructs which suggest high reliability. Also, a content validity index (CVI) was calculated in such a way that the questionnaire items are able to represent the intended constructs.

To conduct statistical analysis, the summary of demographic data and consumer preferences were summarized using the descriptive statistics, which included mean, frequency, and percentage. The correlation analysis was conducted to establish a relationship between the design of the packaging, sustainability, and the purchasing decision and the regression analysis was used to ascertain the influence of these independent variables on consumer behavior. ANOVA (Analysis of Variance) was also done to investigate the variances in purchasing decisions between the demographic segments. All the analyses were conducted with the help of standard statistical software (version 27) which was selected due to the strong capabilities of the programs to process surveys and multivariate analysis. The chosen approaches were suitable because they provided the opportunity to both describe the trends of consumers and conduct a strict analysis of the connections and effects between variables.

Results

The research reviewed the reaction of 300 individuals in Delhi NCR. The demographic profile is displayed in Table 1 indicating that 55 percent of the respondents were women and 45 percent men. Most of them were aged 2554 years (42%), and the most frequent income category was 50,000-70,000 per month (38%). The level of education was different, graduate level respondents making half the sample. These demographic information has provided a balance in the consumer representation in the study area.

Table 1: Demographic Profile of Respondents

Demographic Variable	Frequency	Percentage
Gender		
Male	135	45%
Female	165	55%
Age (years)		
18-24	60	20%
25-34	126	42%
35-44	78	26%
45+	36	12%
Income (₹/month)		
<50,000	72	24%
50,000-70,000	114	38%
70,001-100,000	78	26%
>100,000	36	12%
Education		
High School	48	16%
Graduate	150	50%
Postgraduate	102	34%

The 5-point Likert scale was to measure the consumer perception regarding packaging design and sustainability. Table 2 provides results of the average scores of the key variables. The mean of packaging design was 4.2, which implies positive perception whilst the sustainability awareness had a mean of 3.9. The average purchase decision scores were 4.0 indicating that these factors overall positively influenced the buying behavior.

Table 2: Descriptive Statistics of Consumer Perception

Variable	Mean	SD
Packaging Design	4.2	0.6
Sustainability Awareness	3.9	0.7
Purchase Decision	4.0	0.5

Figure 1.2 shows relationships between the packaging design, sustainability and the purchase decision making. The correlation between packaging design and purchase decisions was positive and the correlation was 0.68 and the correlation between sustainability and purchase decisions was 0.55 indicating that both are significantly related to consumer choice.

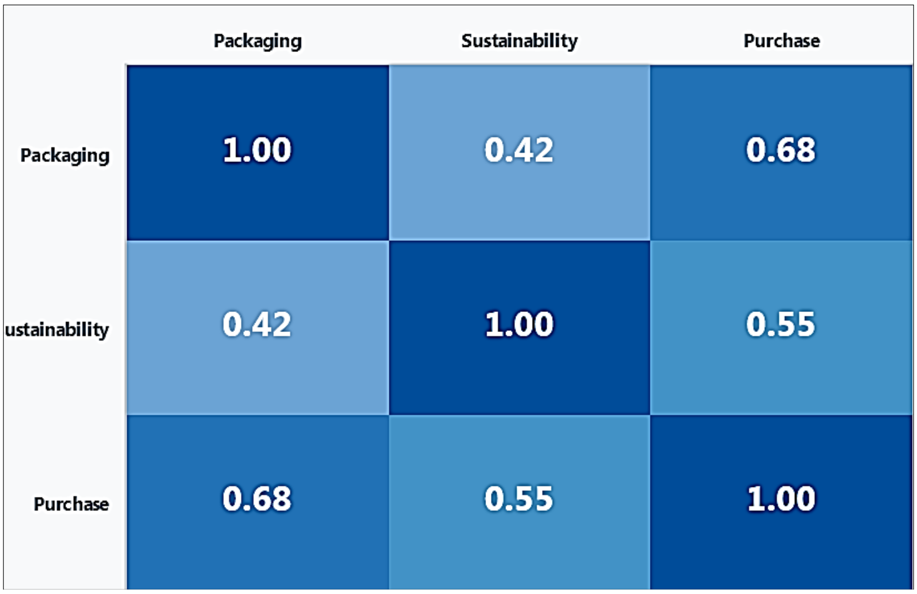

Fig 1.2: Correlation Matrix that denotes Relations between Packaging Design, Sustainability, and Purchase Decision.

Figure 2 is the comparison of mean scores of packaging preferences in demographic groups. The highest average preference of eco-friendly packaging was mentioned in respondents aged 25- 34 (4.3) but the respondents aged more than 45 had a slightly lower level of preference (3.7), which indicates that generational differences had influence on packaging.

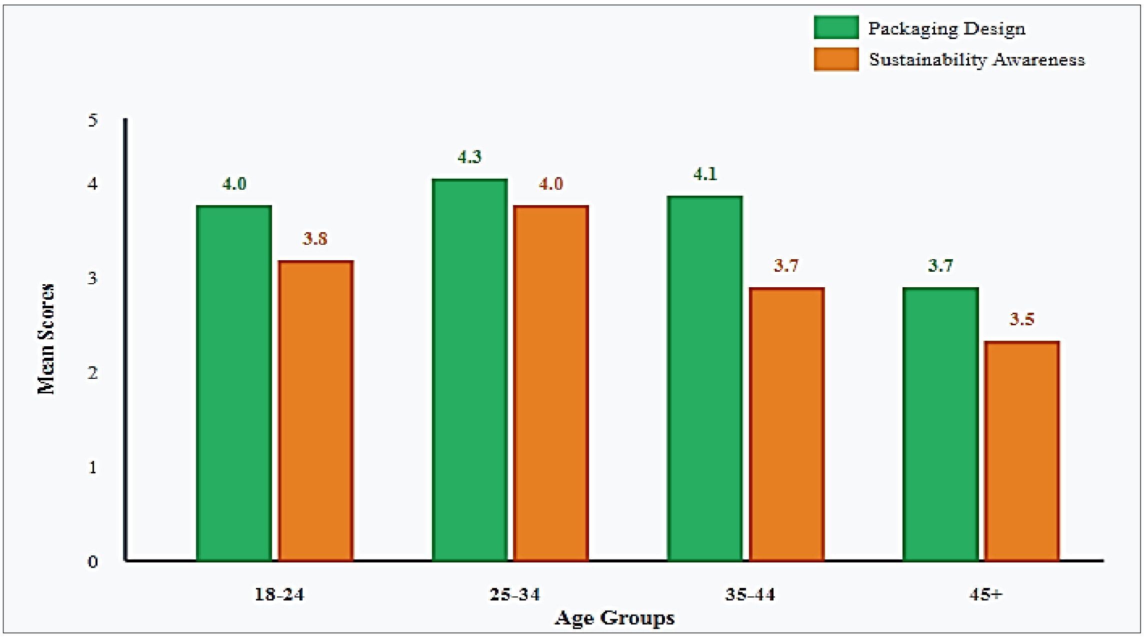

Fig 2: Comparison of Mean Scores of the various preferable packagings between various demographic groups.

The outcome of the regression analysis is provided in Table 3 where both the packaging design (0.48, *p*<0.01) and sustainability awareness (0.36, *p*<0.01) had strong predictive power over purchase decisions. This model was found to explain 62 percent of the variance (R 2 = 0.62) indicating that there was a strong combined effect of these variables.

Table 3: Regression Analysis of Packaging Design and Sustainability on Purchase Decisions

Predictor	β	t-value	p-value
Packaging Design	0.48	8.5	<0.01
Sustainability	0.36	6.4	<0.01
Constant	1.05	4.2	<0.01

Figure 3 shows the results of ANOVA, demonstrating that there are significant differences in the purchase decisions depending on the level of sustainability awareness (F(2, 297) = 5.67, *p*<0.01), and consumers who possess a higher level of sustainability awareness have higher chances of choosing organic cereals.

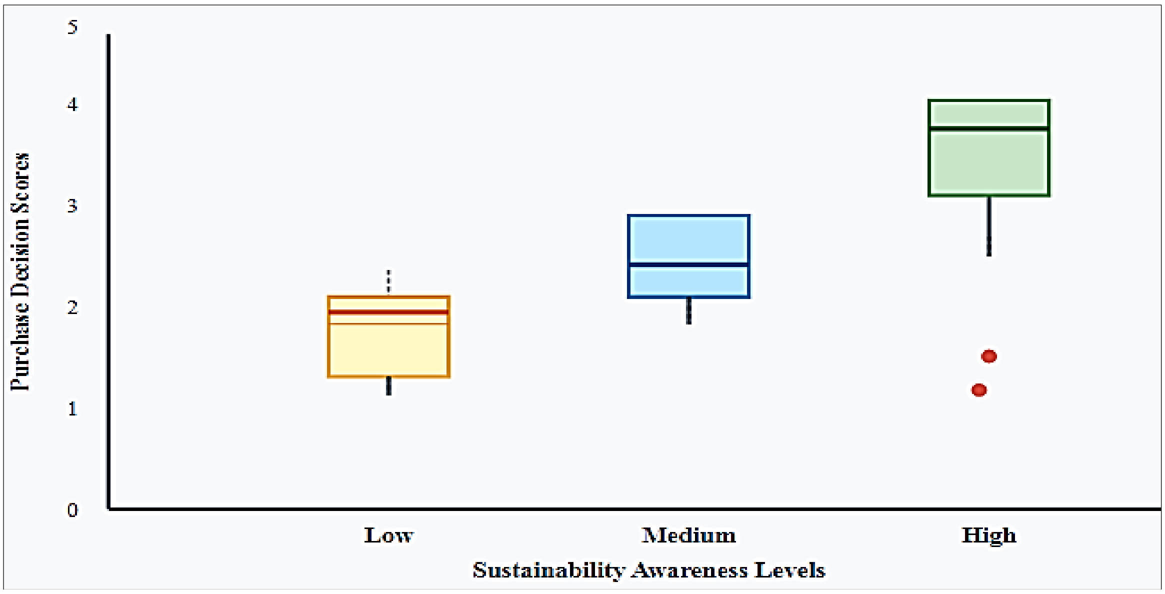

Fig 3: ANOVA Results that indicate the existence of a difference in the purchase decisions depending on the level of the sustainability awareness.

The demographic analysis (Table 1) showed that the sample consisted of a slightly higher proportion of females (55) compared to males (45), the largest proportion of respondents was between the ages of 25034 with a large proportion of graduates. This population diversity will make the findings concerning consumer buying behavior reflective of the target market in Delhi NCR.

Unless indicated otherwise, Descriptive statistics (Table 2) indicate that packaging design was highly rated by the respondents with an average rating of 4.2, whereas sustainability awareness was rated at 3.9. The mean of purchase decisions was 4.0, which means that the two factors have a positive impact on consumer behavior. These findings indicate that consumers like attractive packaging and environmentally friendly operations.

The correlation analysis (Figure 1) shows that the relationship between the packaging design and purchase decisions (r = 0.68) and sustainability and purchase decisions (r = 0.55) is strong and medium, respectively. This implies that whereas the two factors are significant, packaging design has a relatively higher short-term effect on consumer selection.

Table 3 reveals the regression analysis results that indicate both packaging design (= 0.48, p = 0.01) and sustainability awareness (= 0.36, p = 0.01) are significant predictors of the purchase decision and the regression model explains 62% of the variance (R 2 = 0.62). This proves that by having optimized design and sustainability characteristics, companies can shape the way people make purchases.

As indicated by the results of ANOVA (Figure 3), consumers with greater sustainability awareness report significantly high levels of purchase decision (F (2, 297) = 5.67, $p<0.01$), which validates the possibility of organic cereals sales increasing through the awareness programs. Also, Figure 2 demonstrates that younger consumers (2534) are somewhat more concerned with packaging than the older ones, and demographic factors may be moderating these effects.

Generally speaking, the analysis suggests that the packaging design and sustainability awareness are important and can have quantifiable impacts on the purchases of organic cereals, and that significant differences can be observed in terms of age and awareness level.

Conclusion

The research findings validate that packaging design and sustainability consciousness play a major role in consumer decision to purchase organic cereal in Delhi NCR. Design of packaging was seen as aa little bit more predictive, giving prominence to the visual and functional attractiveness, and sustainability awareness also had a positive influence on purchasing behavior. Also, age and education serve as moderating demographic variables which indicate that marketing strategies should take consumer profile into account to achieve maximum effect. Comprehensively, through a combination of aesthetical packaging and environmental friendliness, companies are able to increase the sales of organic cereals.

The research is limited to the NCR of Delhi and does not necessarily indicate the consumer behavior in other parts of the country. The data was gathered through a cross-sectional survey; hence a mere picture and not a longitudinal picture. Moreover, the research is based on self-reported scales that are prone to social desirability bias.

The results provide practical information about the two-fold significance of design and sustainability to the work of a marketer and product designer. To match consumer values, businesses can customize their packaging and market green activities particularly to the younger and educated consumers.

Longitudinal effects should be considered in future researches in order to embrace the changes in consumer behavior as time goes by and the study carried out on other parts of India where the findings can be generalized. Additionally, incorporating qualitative methods, such as focus groups, could provide deeper insights into consumer motivations and preferences.

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