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An empirical study of consumer buying behaviour towards eco-friendly FMCG products in Western Odisha

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Abstract
This study investigates consumer buying behavior regarding eco-friendly Fast Moving Consumer Goods (FMCG) products within the context of Western Odisha, India. With the increasing concern for environmental sustainability and the growing market for eco-friendly products, understanding the factors influencing consumer choices in this region becomes pivotal. The study employs ANOVA and Logistic regression for the analysis. The study found that availability is a positive but insignificant predictor of consumer buying behavior, while awareness is a significant negative predictor variable. The outcome of this study offers valuable insights to marketers, policymakers, and businesses seeking to enhance the adoption of eco-friendly FMCG products in Western Odisha.

Keywords: Eco-Friendly, FMCG, buying behaviour, environmental sustainability, consumer awareness

Introduction

Businesses must continuously evaluate the most appealing marketing trends. By continuously researching the changes in consumer behavior, marketing trends can be discovered. Businesses can adopt required modifications in what they are offering to customers by noticing changes in consumer behavior. Consumers are more worried today about environmental degradation and the damaging effects of the products and services they use. Climate change is also a burning issue nowadays (Maharana & Pal, 2023) [8]. Thus, employing green marketing gives businesses a chance to satisfy customer needs and allay their environmental worries while simultaneously gaining a competitive edge and a loyal customer base.

Environmental marketing and ecological marketing are other names for green marketing. According to the American Marketing Association, green marketing refers to the promotion of items that are thought to be ecologically safe. Consequently, a wide range of activities are included in green marketing, it involves altering the product, changing the manufacturing and packaging processes, altering advertising, and ceasing any activities that have a harmful influence on the environment. The need for businesses to produce and sell products as environmentally friendly has never been greater because the earth now faces more environmental problems than ever before. Due to growing consumer awareness and concerns, green marketing is becoming a well-liked advertising technique. When working with clients, vendors, dealers, and employees' firms are urged to use ethical and environmental practices. This is known as "green "or "ecological" marketing. Businesses have been promoting themselves as environmentally friendly. Environmental challenges like global warming, pollution, and water pollution, are now receiving a lot of attention from the public sector units and state governments. The top consumers on the survey named "consumer Greendex "were from industrialized nations that come in last in the developing economies of China, Brazil, and India. In order for a business to succeed with green marketing, it must be dedicated to acting sustainably. Gupta *et al.*, (2014) [5] found that green marketing is made more appealing to consumers thanks to environmental education.

Considering all these points, the present study attempts to know the awareness level of consumers about green FMCG products, to analyze the factors influencing the consumption of green FMCG products, and to analyze the impact of income level and age on awareness of eco-friendly products in western Odisha.

Ular Savita & Kumar (2010) [11] examined the attitudes of urban and rural consumers, as well as males and females, toward environmentally friendly goods. According to the survey, there are no discernible gender-related differences in attitudes. Compared to rural folks, urban people are more inclined toward environmentally friendly items.

Ottman (2011) [9] in her article indicated that a significant portion of consumers use green products today. Many producers are entering the market with environmentally friendly goods. The majority of green products are successful on the market. In supermarkets, you can easily find sustainable goods. People care about the environment and the earth. For their green products, marketers should focus on the current and future generations. Children and grandkids should be taught environmental principles and attitudes. Waste management's three Rs Schools must teach students how to reduce, reuse, and recycle. Gupta *et al*., (2014) [5] found that green marketing is made more appealing to consumers thanks to environmental education. The economic aspects of marketing should not be overlooked in green campaigns. Government pressure is a major factor in the growth of green marketing. Among consumers, green brands are well-known. Marketers need to get over the idea that people won't necessarily pay more for eco-friendly items.

Methodology

The study is based on primary data that has been collected from the western part of Odisha, with the help of a structured questionnaire through google forms. This study focuses on the customer perception of green marketing. In addition, this study also focused on customer attitudes towards eco-friendly products relating to first-moving consumer goods. The target respondents are from the western district of Odisha. A random sampling technique has used in our study. In our study, we require nominal, ordinal, and scale. demographic factors like gender, educational level, occupation, etc. are measured in nominal, the attitude of consumers towards green products has measured in scale and the overall opinion of respondents have measured in ordinal scale. Binaries logistic regression and ANOVA have been used to analyze the data. Data analysis is done using software like SPSS and Microsoft Excel.

Results and Discussions

Table 1: Rotated Component Matrix

Variables Name	Component	
	1	2
I feel green products do not create any harm to society:	.727	
I feel Green products will be preferred by consumers near future:	.726	
Green products have a reputation in the market:	.712	
Green products can be easily identified:	.677	
Green products do not create any pollution:	.665	
Green products usage is the status symbol in society:	.637	
Green products concept is an existing long time back but it does not implement by many companies:	.597	
Green products available only at shopping malls:		.830
Green products are costlier one?		.574
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		

***Source*:** Author's own compilation

We had taken 12 variables for factor analysis. After the analysis we removed all the variables that had a factor loading below 0.5, thus we finally got 9 variables for further analysis. As per the suggestion we have grouped the variables into two factors. We have named them "awareness" and "availability".

Table 2: Classification Table

Observed		Predicted		
		How much are your monthly expenses on FMCG products:		Percentage Correct
		Low spending	High spending	
How much are your monthly expenses on FMCGG products:	low spending	106	0	100.0
	high spending	104	0	.0
Overall Percentage				50.5
a. Constant is included in the model.				
b. The cut value is.500				

***Source*:** Author's own compilation

Table 3: Omnibus Tests of Model Coefficients

Omnibus Tests of Model Coefficients			
	Chi-square	Df	Sig.
Step	15.597	2	.000
Block	15.597	2	.000
Model	15.597	2	.000

***Source*:** Author's own compilation

The omnibus test helps in assessing whether the independent variables have some impact on the dependent variable. It represents the increments of the incremental fit.

H0: There is no incremental fit in the model.

Here the null hypothesis is rejected, as the chi-square value is 15.597 with a p-value less than.05 and hence the model is having significant improvement in fit in comparison to the null model.

Table 4: Model Summary

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	275.506[a]	.072	.095

***Source*:** Author's own compilation

Estimation terminated at iteration number 4 because parameter estimates changed by less than.001.

Both Cox & Snell R-square and Nagelkerke R-square are pseudo R- square variables. The Nagelkerke pseudo R square ranges from 0-1 and is an adjusted version of the Cox and Snell. According to the Nagelkerke pseudo-R- square here, a 9.5% change in the dependent variable can be accounted for by the independent variables.

Table 5: Hosmer and Lemeshow Test

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	4.359	8	.823

Source: Author's own compilation

The Hosmer and Lemeshow test is a goodness of fit test, testing the estimated model to none that has perfect (Pituch & Stevens, 2016) [10].

H0: The model is a perfect fit.

Here, the null hypothesis is not rejected as the Hosmer and Lemeshow test is not statistically significant [χ^2 (8) =4.359, p=.823] which indicates a perfect fit of the model.

Table 6: Monthly Expenses on FMCG Products

Classification Table				
Observed		Predicted		
		How much is your expense on FMCG products:		Percentage Correct
		Low spending	High spending	
How much are your monthly expense on FMCG products:	Low spending	66	40	62.3
	High spending	40	64	61.5
Overall Percentage				61.9
The cut value is.500				

***Source*:** Author's own compliance

Table 7: Logistic Regression Coefficient

Variables in the Equation								
Variables	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Awareness	-.804	.214	14.155	1	.000	.447	.294	.680
Availability	.174	.180	.934	1	.334	1.190	.836	1.693
Constant	2.184	.787	7.705	1	.006	8.881		
Variable(s) entered on step 1: awareness, availability								

***Source*:** Author's own compliance

Awareness is the negative and significant predictor of the consumption behavior of eco-friendly consumers, here the odds ratio is 0.447 which implies that for every unit increase in awareness levels, the tendency of eco-friendly consumers for consuming eco-friendly products will decrease by 55.3%, it will result in low spending for eco-friendly products. The finding of our study is an exception to the existing theories. In our study, it was found that an increase in the awareness level does not lead to the purchase of FMCG environmentally friendly products. The possible reason can be the low income of the consumer, habitual buying behavior, non-availability of products in nearby stores, etc. Availability is positive but an insignificant predictor of consumption behavior. Here the odds ratio is 1.19 which implies that for every unit increase in availability, consumers' tendency for high consumption will increase by 19%.

Table 8: Age Group

ANOVA					
Awareness					
Variables	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	39.221	4	9.805	27.016	.000
Within Groups	74.404	205	.363		
Total	113.625	209			

***Source*:** Author's own compliance

This is the table that shows the output of the ANOVA analysis and whether there is a statistically significant difference between age group means. We can see that the significance value is 0.00 (i.e., *p* =.00), which is below 0.05. And, therefore, there is a statistically significant difference among the age groups with respect to awareness of eco-friendly FMCG products.

The details of the difference can be understood from the post hoc table below:

Table 9: Awareness of Different Age Groups

Dependent Variable: Awareness							
	(I) 3. Age:	(J) 3. Age:	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	18-30 years	31-40 years	.77198*	.11062	.000	.4675	1.0764
		41-50 years	.76873*	.14313	.000	.3748	1.1627
		51-60 years	.97942*	.10822	.000	.6816	1.2773
		Above 60 years	.87912*	.25393	.006	.1803	1.5780
	31-40 years	18-30 years	-.77198*	.11062	.000	-1.0764	-.4675
		41-50 years	-.00325	.15731	1.000	-.4362	.4297
		51-60 years	.20745	.12638	.473	-.1404	.5553
		Above 60 years	.10714	.26218	.994	-.6144	.8287
	41-50 years	18-30 years	-.76873*	.14313	.000	-1.1627	-.3748
		31-40 years	.00325	.15731	1.000	-.4297	.4362

		51-60 years	.21069	.15563	.658	-.2176	.6390
		Above 60 years	.11039	.27747	.995	-.6533	.8740
	51-60 years	18-30 years	-.97942*	.10822	.000	-1.2773	-.6816
		31-40 years	-.20745	.12638	.473	-.5553	.1404
		41-50 years	-.21069	.15563	.658	-.6390	.2176
		Above 60 years	-.10030	.26118	.995	-.8191	.6185
	Above 60 years	18-30 years	-.87912*	.25393	.006	-1.5780	-.1803
		31-40 years	-.10714	.26218	.994	-.8287	.6144
		41-50 years	-.11039	.27747	.995	-.8740	.6533
		51-60 years	.10030	.26118	.995	-.6185	.8191
The mean difference is significant at the 0.05 level.							
Dunnett t-tests treat one group as a control and compare all other groups against it.							

***Source*:** Author's own compliance

The above table shows the comparison of the awareness level of the consumers on the basis of different age groups. Tukey HSD shows the mean difference between the awareness levels. At first, the age group 18-30 years is compared with the 31-40 years, 41-50 years, 51-60 years, and finally with the age group above 60 years. Here all the comparisons show a p-value of 0.00 which is less than the 0.05 level. It indicates that there is a significant difference in their awareness level on the basis of age group. Then the 2nd comparison is done between the age group 31-40 years with the other given age groups like 18-30 years, 41-50 years, 51-60 years, and above 60 years. The p-value is 0.000, 1.000, 0.473, and 0.994. It is concluded that the age group 18-30 years has a significant impact as the p-value is less than 0.05. In the third case, the age group was 41-50 years compared with the given other age group. Likewise, the age group 51-60 years and the age group above 60 years are compared with the given other age group. It is concluded that the age group 18-30 years has a significant impact compared to other age groups regarding the awareness level of the consumer as the p-value is less than 0.05 level which is clear from the given above table. From the overall comparison, it is concluded that the age group 18-30 years are more aware of the product because this group is mainly consisting the young population and they kept themselves up to date always.

Table 10: Income Level on Buying Behavior

ANOVA					
Awareness					
Variables	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	4.178	4	1.044	1.956	.103
Within Groups	109.447	205	.534		
Total	113.625	209			

***Source*:** Author's own compliance

The above table depicts the impact of income level on buying behaviour. From the analysis, it is concluded that there is no significant difference among different income groups with respect to awareness regarding eco-friendly FMCG products as the p-value is more than 5% significance level, hence the given hypothesis is not rejected.

Conclusion and Policy Implications

As the study suggests availability is a positive predictor of buying behavior, so companies should focus on their distribution channel to ensure the smooth availability of green FMCG products. While formulating strategies, importance should be given to the age group while the income level can be ignored. The overall opinion of the respondents about green FMCG products is positive. Hence this is the right time for companies to put effort and for consumers to spend more on green practices.

Consumers' attitudes toward the environment are positively related to their actions. To protect the environment and their health, consumers are willing to purchase the products. Due to their concern for their health, individuals are interested in buying Green FMCG products. Therefore, businesses strive to create products that are safe for society and consumers. The business also should put effort to create awareness among the people about green products. As per the finding, we found that availability is a positive indicator of consumer buying behavior, hence businesses should give more focus on the place which is one of the major p of 4Ps of marketing. There are some questions about the items' ingredients even though they are created using organic materials. Therefore, the government works to establish minimum standards for the goods and issues certification that they are made from organic materials. Despite the fact that consumers are ready to buy green products, many corporate organizations are still lagging behind in supporting the need for an eco-friendly society. Agricultural goods may be used as input by businesses to create items like shampoo, face wash, hair color, etc. Both money and the environment will be saved.

JEL: Q56, M31, Q56, D12.

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