

Awareness and Willingness to Adopt Biodegradable palm Products among College Students

Ayesha Anjum Shaikh¹, Dr. Bhagabat Barik², Anjali Late³, Bhramarambha Mahajan⁴, Numan Khan⁵, Prajyot Gaikwad⁶, Vikas Daud⁷

¹Research Scholar, Institute of Management and Research, MGM University

²Prof.(Dr.) Bhagabat Barik, Deputy Director and Professor, Institute of Management and Research, MGM University, Chh. Sambhajinagar

^{3 4 5 6 7} B.Sc. Bioinformatics Vth Semester Students of Institute of Biosciences and Technology, MGM University, Chh. Sambhajinagar

Abstract - This study found awareness among students studying in higher education about biodegradable packaging products and their willingness to buy the products. The younger generation is shifting toward biodegradable packaging products to lessen environmental damage as ecological balance becomes more important to them. Higher education students provided data for this study, which was carried out in 2026 at the Mahatma Gandhi Mission University in the Chhatrapati Sambhajinagar district of Maharashtra, India. The study examines the psychological factors impacting the purchasing intentions of students with special reference to palm leaf products and they will prefer palm leaf products over plastic. It shows how Gender, Age, year of study and courses of study impact the awareness of students and then it converts into buying behaviour.

Keywords: Awareness, Willingness, Biodegradable, Palm Products, College Students

1. INTRODUCTION

The increasing environmental issue of non-biodegradable pollution necessitates a greater examination of consumer attitudes toward more sustainable alternatives, particularly among college students. The formation of purchasing habits and responsibility for the environment comes from the demographic characteristics if they understand the future consumption trends and it is a very sensitive point. Along with environmental sustainability it also supports socio-economic development in rural communities. This study therefore examines the awareness and preparedness of college students to use biodegradable palm products, investigating the factors influencing their decisions to incorporate such environmentally friendly choices into their everyday lives. The study among MGM University Students,

However, a lot of students might not be completely aware of these items, and even if they are, they might not choose to utilize them because of things like ease, costs, and availability. Studying students' understanding of and willingness to adopt biodegradable palm products is essential. This will help in explaining the causes of low usage and identifying strategies to encourage more environmentally friendly and sustainable decisions. It is not used by students because a) They are unaware of its b) It

shows the connectivity between make out advantages of palm leaves biodegradable packaging products and recognition about environment issues. The study's findings will demonstrate how the younger generation will assist the reduction of plastic waste and enhance the purchase of biodegradable palm products in order to help trash reduction and promote environmentally friendly alternatives. Students' emotions who are studying in higher education, their thoughts, habits, social influence, choices of purchasing, whether they prefer palm leaves products over harmful alternatives, these factors are studied as objectives. This study will give benefit to know more about the knowledge of the factors affecting students' buying decision who are taking higher education. Means whether they are influenced by social or educational campaigns or any kind of techniques of marketing for the awareness. Eco-Friendliness is the best advantage of palm leaves products as well as their ethnicity due to its nature of decomposing naturally in less time under suitable surroundings and vanishing completely without leaving any harmful residue. As increasing use of palm leaves is purchased, it directly affects the waste management system due to less impact of non-biodegradable products on the environment. Apart from that, when demand increases for the palm leaf products then production also increases which needs locally available natural resources and will help to create employment to sustain rural livelihood.

2. PROBLEM STATEMENT

The consumption of non-biodegradable substances like plastic is rising very fast in today's time, which leads to poor waste disposal and environmental pollution. There are numerous eco-friendly alternatives available in the market whose usage could be helpful in reducing pollution. If this kind of trend persists among young people, they will create a sustainable future for themselves as well as set a good example for others to follow

costs a lot c) It is not readily accessible and d) Plastic is more practical. All these things will help us to find the reason for choosing biodegradable packaging material.

3. OBJECTIVES

- I. To assess the level of awareness of biodegradable palm products among college students.
- II. To assess students' willingness to adopt biodegradable palm products as an alternative to plastic products.

4. SIGNIFICANCE

This study is important because it tries to identify college students' awareness of and willingness to adopt biodegradable palm products, which are eco-friendly substitutes for plastic. Promoting sustainable products has become important due to growing environmental concerns. The results of this study will help in determining students' knowledge levels and the variables affecting their propensity to use such products. This can help companies, governments, and educators create successful campaigns to promote environmentally friendly goods. Furthermore, Future purchasing trends may be influenced by the decisions and behaviors of college students, who represent the younger generation. Long-term environmental sustainability can be achieved by encouraging people to use biodegradable items. All things considered, this study will offer insightful information for encouraging sustainable habits and minimizing the usage of dangerous non-biodegradable materials.

5. LITERATURE REVIEW:

Literature review is a key component in research. Here, various articles relating to this area have been under-eaten for the study.

Machhar (2018) presents the idea of "green marketing. "As a result, green marketing involves multiple initiatives, such as updating advertising, sustainable packaging, production process modifications, and product modifications. Due to an increasing awareness of the need to protect the environment, consumers are shifting their opinions of products and favoring environmentally friendly ones. Because resources are limited, it's essential that marketers make effective use of them. Sustainable development and the preservation of natural resources depend on the promotion and uptake of green products and technologies.

Kumar et al. (2019) assessed the economics of arecanut leaf sheath products and reported that the production created avenues of income and employment; however, the entrepreneurs were confronted with certain problems like sourcing of raw materials, electricity availability, and markets.

Nayak et al. (2021) discussed the utilization of areca leaves for producing eco-friendly, biodegradable, and compostable plates. The study highlighted areca leaf products as sustainable alternatives to conventional disposable plates and emphasized their environmental benefits.

Krishnaraj et al. (2022) examined the importance of the handicraft industry for creating employment and revenue, especially in rural and semi-urban areas. Due to their traditional value and eco-friendliness, palm leaf products have drawn attention. The results showed that in order to meet market demand and increase their income, artisans must have a thorough awareness of consumer tastes. Another aspect of the survey that raised the importance of matching the marketing strategy and product design to the customer's expectations was also emphasized.

Gowthami et al. (2023) discusses the advantages and alternatives to plastic take-out utensils and eating utensils, specifically using by-products of palm (areca) trees and coconut trees. It examines the revival of traditional skills and methods from a "rummage sale" in the South and Central parts of India, with a view to creating sustainable eating goods. The paper includes a life cycle analysis, design considerations, market analysis and comprehensive fabrication research. Biodegradable palm plates can be a great option in the international market as long as they are of good quality and design.

According to the study carried out by **Ahmad et al. (2024)**, students are very conscious and cautious about eco-friendly packaging, as they are aware of the benefits it provides to the environment. But due to the issue of cost escalation and potential financial problems, it is not widely used. Nonetheless, a sizable portion of students are unfazed and have a positive outlook on employing eco-friendly packaging techniques on a daily basis. Additionally, the study shows that knowledge and concern/preparedness are positively correlated, indicating a strong relationship between increasing awareness and adopting sustainable practices. These findings demonstrate the importance of education in driving sustainability and the need to overcome economic barriers to enable greater consumer uptake.

Aminuddin et al (2024) examined the effect on the understanding of the problem of environmental issues among the University Students. The results indicated that all of the daily activities, environmental attitudes and information seeking behavior contributed significantly to environmental awareness. It is the combination of these that may account for a substantial proportion of the environmental awareness of students and further reinforced the importance of the use of educational materials in raising awareness.

Babu and Barik (2024) Study gives an idea about using influencer marketing within the tourism and hospitality sector as well as the use of user-generated content for creating brand awareness and gaining new customers.

Areca leaf plates and bowls were analysed by **Chaitra (2024)** for the production and marketing between farmers, producers, wholesale dealers and retailers. The findings indicated that the areca leaf product manufacturing added an extra income to the farmers and created employment opportunities. The marketing costs and retail prices of the larger plates were higher and the smaller were lower. Another finding from the study was that marketing efficiency was also found to be different for various sizes of the products. The main problems that entrepreneurs encounter are that the supply of quality raw materials is limited, and the supply of electricity is insufficient, as well as access to export markets.

Oluwasanmi et al. (2024) recommends using eco-labels and biodegradable packaging to promote sustainable consumption and minimize environmental footprint. The study revealed that the eco-labeling and packaging materials had a strong impact on consumer's purchasing decision, but the environmental concern had only a minor effect on the purchasing decision.

Pranpriyakul and Farzana (2024) studied the knowledge and purchase intention of sustainable packaging among

students. Concern for environment and intention to pay has been reported to affect the buying behavior regarding sustainable packaging. Also, it is notified by the author, knowledge about sustainable packaging does not contribute to the buying behavior. The author recommended the need for a knowledge of the consumers and promoting the use of eco-friendly packaging products.

Salam et al. (2024) have reviewed the literature in a systematic way on sustainable agro-industrial research and investigated the different approaches to life cycle assessments. It was identified that areca nut is a sustainable raw material for industrial use and its potential role in supporting an environmentally friendly production system was pointed out. The results offer valuable information on the potential of natural or bio-degradable materials for a sustainable society that is applicable in the context of sustainable packaging development.

In the study conducted by **Tanzares et al. (2024)**, the willingness to pay and the behavior of consumers significantly affected the decisions about purchasing of sustainable packaging, while the level of environmental awareness was not significant. Consumer behavior and economics were emphasized as key factors for the uptake of sustainable packaging.

Wardania et al (2024). According to the report, consumers are willing to spend more for products with labels, organic vegetables, and online purchases.. Their results reveal that firms can use their understanding of WTP to use appropriate price, production and marketing strategies based on customer preferences.

Aadya (2025) studied the effect of packaging, labelling and branding strategies on consumer perception. The most significant aspects influencing consumers, according to this survey, are visual appeal, information quality, and brand trust. Successful results showed that good packaging design, clear labelling and strong branding can positively impact consumer relationships and provide a competitive edge. The study also highlighted the need for sustainability and ethical communication, suggesting that adopting environmentally friendly packaging and transparent communication practices would align with the growing demand of consumers.

Ang et al. (2025) developed a framework to understand consumer buying behavior.. The study showed that packaging designs that create positive feelings in consumers can increase their interest in buying a product. It also highlighted that companies should consider consumer emotions when designing packaging and making marketing decisions to attract customers and improve product performance.

Barik and Mishra (2025) identified whether the consumer initiates to purchase silk products after having the green consumption value. Personal factors leads to take initiative for purchase sustainable products.

Gupta and Singh (2025) examined consumer preferences and perceptions of environmentally friendly packaging. The study discovered that customer perceptions of eco-friendly packaging were positively impacted by nature and health consciousness. Additionally, attitudes, social norms, and

perceived behavioral control were found to have a considerable impact on purchasing intentions and behavior.

Karawita et al (2025) studied consumer decision-making behaviour to purchase for sustainable beverage packaging in various locality types within specific regions. It was studied that consumers in different geographic settings had different ways of thinking towards paying more for sustainable packaging. Consumers in urban settings showed higher readiness to pay for environmentally-friendly packaging than those in suburban and rural settings. Additionally, urban consumers were characterized by a stronger value of environmental concern and preference for alternatives to plastic packaging. The study proves that location, environmental concern, education, media impact, and income could influence consumers' willingness to pay for sustainable packaging.

Mohammed (2025) studied consumer awareness and acceptance of eco-friendly packaging products in India. The study shows that elements such as environmental consciousness and product quality, and the price are some of the things that impact the consumer choices in choosing eco-friendly packaging. In addition, the study revealed that cost and limited availability of sustainable packaging are among the greatest challenges for consumers.

Tirpude & Singh (2025). make an effort to create research on the use of leaves in product packaging. The lack of commonly recognized frameworks for choosing biodegradable materials for product packaging is the issue. Natural fibers that can be used in place of plastic include jute, hemp, banana, coir, bamboo, and different types of leaves.

Satish (2025). socio-economic and environmental advantages of adopting eco friendly practices are identified in this study. It is observed Areca plantations alone produce a huge number of sheaths which helps to contribute to improving farmers' financial condition. Lesser carbon footprint and greater biodegradability compared to plastic pointed out by life cycle analysis. A tableware made from biodegradable products offers market revenue and furthermore represents a complete approach.

Sinha and Gupta (2025) It was found by this study that there is an increasing awareness about sustainable products but there are issues such as cost, availability, and many others which hinder their usage. It has been recommended that with proper awareness programs, availability of sustainable goods, and assistance from government and industry organizations; there is an ability to promote sustainable products. This research plays a pivotal role in helping us understand consumer behavior.

Barik and Gupta (2026) investigates how Green Inclusive Leadership impacts Green Organizational Citizenship Behaviour, focusing on the mediating roles of Happiness at Work and Self-Efficacy. In order to fill a study gap, it looks at these dynamics in the manufacturing sector, emphasizing how pro-environmental behaviors, employee well-being, and leadership interact in an Indian setting.

Bhardwaj et al. (2026) This study analyzed the effects of packaging design on students'purchase intention. It was found that packaging design positively influenced purchase

intention, and brand attitude and perceived quality were mediating variables in this regard. Visual elements such as colors had the most effect on consumer decision making. In addition, this study found that environmentally friendly packaging positively influenced purchase intention.

Arteaga et al. (2026) expanded the theory of planned behavior (TPB) model by including consumer happiness as an intermediary for sustainable package purchasing decisions. This study found that customer satisfaction was significantly influenced by attitude, subjective norm, and perceived behavioral control, all of which positively affected consumers' intentions to make purchases. It was concluded that emotional considerations, namely happiness, motivate consumers to pursue responsible purchasing behavior.

Kulkarni et al. (2026) examined the impact of packaging on consumer buying behavior. The study found that packaging plays an important role in influencing consumers' purchasing decisions by affecting their perception of product quality, attractiveness, and overall appeal.

Pawale et al. (2026) conducted a systematic thematic review to examine factors that make sustainable packaging attractive to consumers. The study identified biodegradable, bio-based, recycled, and paper-based materials as important sustainable packaging options. The studies demonstrated that sustainable packaging significantly effects consumer views, purchasing intentions, willingness to pay, and brand image. But issues like price sensitivity and the discrepancy between favorable views and real purchasing behavior were also emphasized. In order to promote consumer acceptability of sustainable packaging, the study highlighted the significance of packaging design, functionality, visual appeal, and eco-labeling.

Research Gap: Although there have been prior studies conducted concerning the awareness and consumers' payment intention for sustainable packaging, very few study has particularly addressed the topic of Higher education students. Earlier research findings have been carried out in various settings and cannot be generalized among Higher education Students. Lastly, there is an ambiguity regarding the association of demographic variables, knowledge, and consumers' readiness to pay for sustainable packaging. It is therefore need conduct further research to establish the same.

6. METHODOLOGY

Research Design:

In this research, where we check College Students' Knowledge and Willingness to Use Biodegradable Palm Products, gathering data is the first of several important steps in this process. Gathering data in a systematic way ensures that the information is accurate, thorough, and relevant. This could involve surveys and research of college students' awareness of and tendency to use biodegradable products. After the data collecting stage, a comprehensive analysis is necessary to correctly interpret the data and identify any trends or patterns that might be present.

• **Data collection tool:** - Primary data collection will be conducted through an online approach that utilizes Google Forms as the primary tool for gathering information.

• **Types of data:-** Primary data and Secondary data.

• **Methods of data collection:** - Quantitative Data, (Surveys/Questionnaire)

• **Sample method:** - Convenience sample.

• **Sample size:-** For this survey, a target sample size of 500 respondents was set.

• **Sample area:** - MGM University, Chhatrapati Sambhaji Nagar (Aurangabad city)

• **Sample unit:** - The data of 504 students has been carefully examined.

Data analysis and Interpretation

Eighteen assertions were included in the questionnaire given to respondents for the title's research. The following figures and tables display data regarding students' awareness of and willingness to utilize biodegradable products.

Table 1: Age of Respondents

		Frequency	Percent
Valid	18-20	322	63.9
	21-23	159	31.5
	24-26	14	2.8
	above 26	9	1.8
	Total	504	100.0

504 respondents from Mahatma Gandhi Mission University, Chhatrapati Sambhaji nagar (Aurangabad) contributed the descriptive statistical data seen above, which is categorized and arranged by age, in order to examine awareness of and desire to purchase biodegradable palm products. Of the 504 responders, 63.% are between the ages of 18 and 20, and 31.% are between the ages of 21 and 23. Just 1.8% of people are older than 26, while the majority are between the ages of 24 and 26.

Table 2: Gender of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	254	50.4	50.4	50.4
	Male	250	49.6	49.6	49.6
	Total	504	100.0	100.0	

According to the below data, 49.6% of participants in this study survey are men and 50.4% are women.

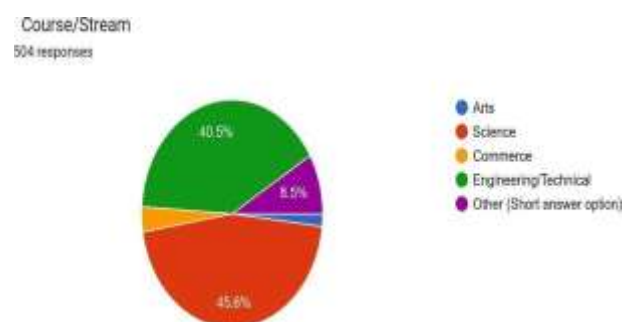


Fig 1 Course/Stream

The percentage of students enrolled in each course may be seen in the fig 1. 40.5% of students come from technical and engineering backgrounds. 45.6% of students are enrolled in science courses. 3.6% come from the Commerce Course. 1.8% belong to Arts baground, while the remaining 8.5% come from various bagrounds.

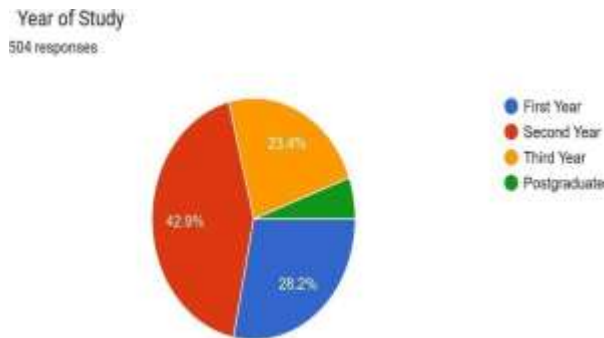


Fig 2 Year of Study

Figure 2 shows that 42.9% of respondents are second-year students, followed by third-year students (23.4%), first-year students (28.2%), and postgraduate students (5.6%).

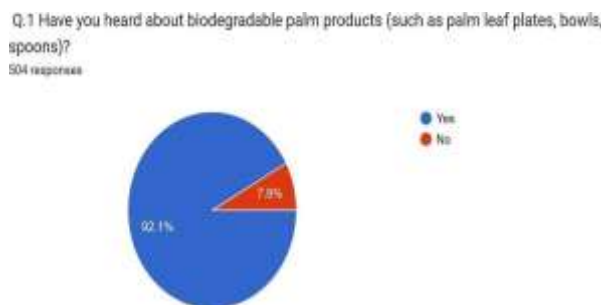


Fig 3 Heard about palm Products

According to this Fig 3, 7.9% of students are unaware of biodegradable palm products, whereas 92% of students had heard of them.

Figure 4 Did you learn of Palm product

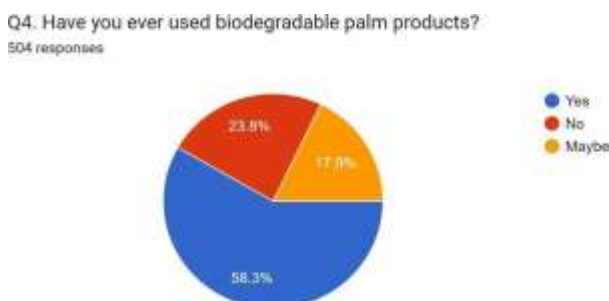
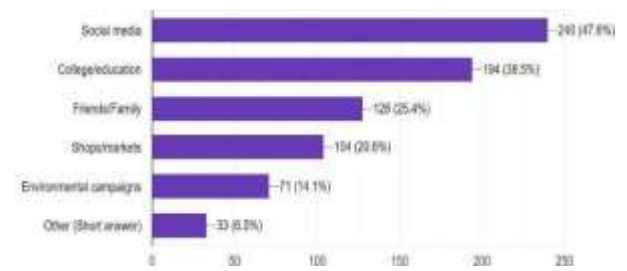


Fig 6 Used palm product

58.3% of students utilized biodegradable palm products, according to data gathered through questionnaires. 17.9% of students were unsure whether the products they used were biodegradable palm products, while 23.8% of students had never used biodegradable palm products.

Social media is where 47.6% of respondents learn about Q2. Where did you learn about palm products?
504 responses



palm products, followed by higher education (38.5%), friends and family (25.4%), and stores and marketplaces (20.6%). Environmental campaigns are responsible for 14.1% of respondents' knowledge, whereas other sources account for 6.5%.

Q3. Which of the following type of palm products are you aware of?
504 responses

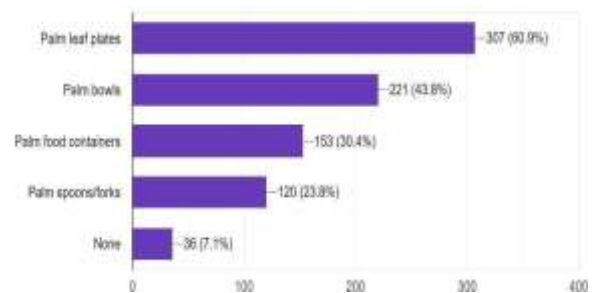


Figure 5 Palm products you aware

Of the 504 respondents, 60.9% are aware of palm leaf plates, 43.8% are aware of palm bowls, 30.4% are aware of palm food containers, 23.8% are aware of palm spoons and forks, and 7.1% are unaware of anything made from palm.

Q5. How would you rate your knowledge about palm products?
504 responses

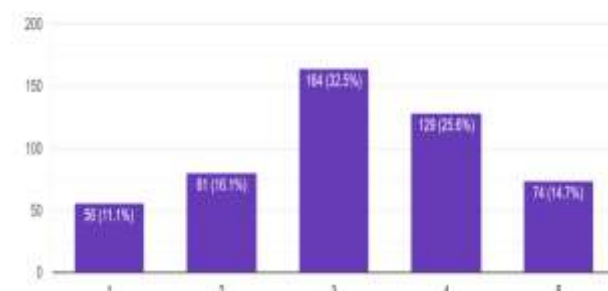


Fig 7 Knowledge about Palm products

11% of respondents analyze their knowledge as extremely low, while 14% rank it as really high. 16.1% are unaware of palm products, whereas 25.6% are highly knowledgeable. while the majority of respondents, about 32.5%, are indifferent, meaning they are unsure about their level of understanding regarding palm products.

Fig 8 Awareness Statement

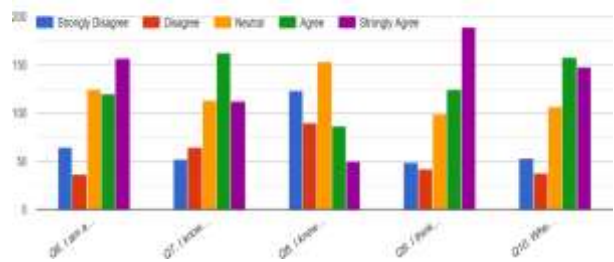
The above fig 8 includes five questions based on a Likert scale from Strongly Disagree to Strongly Agree. This

Table 3: Awareness Statement

Items	N	Minimum	Maximum	Mean
I am aware of biodegradable palm leaf products	504	1	5	2.47
I know that these products are made from naturally fallen palm leaves (without cutting trees)	504	1	5	2.57
I know biodegradable palm products taken long time to decompose in nature.	504	1	5	3.30
I think palm products are less harmful to the environment as compared to plastic products.	504	1	5	2.28
Whenever, I see palm leaf plates in the market, I identify it as eco-friendly products	504	1	5	2.38
Valid N (listwise)	504	1	5	2.6

The mean value of individual questions analyzed using SPSS which comes to 2.6. (1: Strongly Agree and 5: Strongly Disagree). The results show that most students are aware of palm leaf products and recognize their eco-friendliness. They also agreed that these products are made from naturally fallen palm leaves and are less harmful to the environment than plastic products (Mean Value is 2.57). They however identified palm leaf plates as eco-friendly alternatives, but

Awareness Statement



analyzes students' awareness regarding biodegradable palm leaf product

responses to the statement regarding the decomposition process were largely neutral, indicating limited awareness about how biodegradable palm leaf products decompose in nature (Mean Value: 3.30). This suggests that respondents were uncertain about the decomposition characteristics of biodegradable palm products and may require greater awareness regarding their environmental properties.

Table 4: Willingness to Adopt Biodegradable Palm Products

Items	N	Minimum	Maximum	Mean
I am willing to use palm products instead of plastic plates	504	1	5	2.41
I prefer eco-friendly products over plastic products	504	1	5	2.34
I am ready to switch to palm products in personal and in college events	504	1	5	2.34
I am willing to pay a higher price for biodegradable palm products because they are environmentally friendly	504	1	5	2.68
I prefer eco-friendly products over plastic products	504	1	5	2.31
I will choose palm products if they are easily available	504	1	5	2.26
I would recommend palm products to my friends and family	504	1	5	2.26
Valid N (listwise)	504	1	5	2.37

Hypothesis Testing

To ascertain whether there is a significant link between the study variables, the ANOVA test was employed for hypothesis testing. A null hypothesis (H_0) and an alternative hypothesis (H_1) were created for every relationship. To find

out if the link was statistically significant, the findings were analyzed using a significance level of 0.05.

Hypothesis 01: Awareness vs Age

H1: "Awareness and age" differ significantly.

H0: "Awareness and age" do not significantly differ from one another.

Table 5: ANOVA Analysis of Awareness vs Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.281	3	1.427	1.412	.239
Within Groups	505.47	500	1.011		
Total	509.760	503			

To ascertain whether awareness and age are related, the ANOVA test was used. The null hypothesis is not rejected because there is no significant correlation between age and awareness, as indicated by the P value of 0.239, which is greater than 0.05.

Hypothesis 02: Awareness vs Gender

H1: "Awareness and Gender" differ significantly.

H0: "Awareness and Gender" do not significantly differ from one another.

Table 6: ANOVA Analysis of Awareness vs Gender

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.773	1	3.773	3.743	.054
Within Groups	505.987	502	1.008		
Total	509.760	503			

An ANOVA test was used to see how awareness varied by gender. The outcome is shown above. It is noted that the null hypothesis is accepted because the P value is 0.054, which is more than 0.05. In other words, "gender and awareness" are the same.

Hypothesis 03: Awareness vs Course

H1: "Awareness and Courses" differ significantly.

H0: "Awareness and Courses" do not significantly differ from one another.

Table 7: ANOVA Analysis of Awareness vs Course

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.069	4	3.017	3.025	.017
Within Groups	497.691	499	.997		
Total	509.760	503			

To determine whether the degree of awareness varied among courses, the ANOVA test was used. The above result shows that the P-value is smaller than 0.05, at 0.017. As a result, we can accept the alternative theory. It demonstrates that "Awareness and Courses" differ significantly.

Hypothesis 04: Awareness vs year of Study

H1: "Awareness and Year of Study" differ significantly.

H0: "Awareness and Year of study" do not significantly differ from one another.

Table 8: ANOVA Analysis of Awareness vs year of Study

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.654	3	5.218	5.280	.001
Within Groups	494.105	500	.988		
Total	509.760	503			

To determine how students' awareness varied depending on their academic year, an ANOVA test was used. The outcome is shown above. It is noted that the alternative hypothesis is accepted because the P value is 0.001, which is less than 0.05. This indicates that "Awareness and Year of Study" differ significantly.

Hypothesis 05: Willingness vs Age

H1: "Willingness vs. Age" differs significantly.

H0: "Willingness vs. Age" does not significantly differ from one another.

Table 9: ANOVA Analysis Willingness vs Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.849	3	1.616	1.310	.270

Within Groups	617.043	500	1.234		
Total	621.892	503			

To determine how adoption willingness varied by age, an ANOVA test was used. The outcome is shown above. The null hypothesis is accepted since the P value is 0.270, which is significantly greater than 0.05. This indicates that "Willingness vs. Age" does not significantly differ from one another.

Hypothesis 06: Willingness vs gender

H1: There are notable differences between "willingness and gender."

H0: There is no discernible difference between "willingness and gender."

Table 10: ANOVA Analysis of Willingness vs Gender

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.908	1	5.908	4.815	.029
Within Groups	615.984	502	1.227		
Total	621.892	503			

To determine how adoption willingness varied by gender, an ANOVA test was used. The outcome is shown above. The alternative hypothesis is accepted since the P value is 0.029, which is less than 0.05. This indicates that "Willingness and gender" to adopt varies significantly.

Hypothesis 07: Willingness vs year of study

H1: "Willingness vs. year of study" differs significantly.

H0: "Willingness vs. year of study" does not significantly differ.

Table 11: ANOVA Analysis of Willingness vs year of study

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	19.505	3	6.502	5.397	.001
Within Groups	602.386	500	1.205		
Total	621.892	503			

To determine how college students' readiness to adopt varied depending on their years of study, an ANOVA test was used. The outcome is shown above. It is noted that the alternative

hypothesis is accepted because the P value is 0.001, which is less than 0.05. This indicates that "Willingness vs. year of study" differs significantly. Adoption of biodegradable products varies according on the study year.

Hypothesis 08: Willingness vs course

H1: "Willingness vs. Course" differs significantly.

H0: "Willingness vs. Course" does not significantly differ from one another.

Table 12: ANOVA Analysis of Willingness vs course

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.717	4	1.929	1.567	.182
Within Groups	614.175	499	1.231		
Total	621.892	503			

To determine how college students' adoption willingness varied by course, an ANOVA test was used. The outcome is shown above. The null hypothesis is accepted since the P value is 0.182, which is greater than 0.05. This indicates that "Willingness vs. Course" does not significantly differ.

To determine the association between awareness and adoption willingness among college students' years of study, a regression test was used. The outcome is shown below.

Hypothesis 09: Awareness vs Willingness to purchase

H1: "Awareness and willingness to purchase" are related.

H0: "Awareness and willingness to purchase" are unrelated.

Table 13: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.796 ^a	.633	.632	.674
a. Predictors: (Constant), Average of Awareness responses				

Table 14: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	393.789	1	393.789	866.634	<.001 ^b
	Residual	228.103	50	.454		
	Total	621.892	50			
a. Dependent Variable: Willingness to purchase						
b. Predictors: (Constant), Awareness						

Table 15: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.086	.083		1.028	.304
	Average of Awareness Questions	.879	.030	.796	29.439	<.001
a. Dependent Variable: Average of Responses of Willingness to purchase						

The awareness coefficient value was positive ($\beta = 0.796$, $B = 0.879$, $p < 0.001$), indicating a significant rise in ready to buy. This indicates that the alternative hypothesis (H_1), which asserts that "awareness and willingness to purchase" are related, is accepted.

7. RESULT AND DISCUSSION:

The majority of students are aware about biodegradable palm products. As all are in the college, their level of awareness changes by the year of study. 63.9% belong to 18-22 years of age. There is a slight difference between Female and Male participants. Nearly 50-50 percent are there in each category. A lot of respondents are from science and technical backgrounds. The level of awareness among the students were undertaken. 92% of the students are aware about biodegradable palm products and most of them got the information from social media. A deeper analysis shows that majority of them only knew about palm leaf plates and bowls and further shows that 7% of respondents don't know about palm leaf products. 58% of the respondents have agreed that they have used the products too.

From the overall analysis, it was observed that most students are aware of palm leaf products and understand their eco-friendly nature. However, some students are still unaware about certain aspects such as the decomposition process of biodegradable products. For the first statement, "*I am aware of biodegradable palm leaf products,*" most students strongly agreed, which shows that students are aware of palm leaf products.

For the second statement, "*I know that these products are made from naturally fallen palm leaves,*" most students agreed, which means they know about the source of these products. For the third statement, "*I know biodegradable palm products take a long time to decompose innature,*" most students gave neutral responses, showing that they are not fully aware about the decomposition process of palm leaf products.

For the fourth statement, "*I think palm products are less harmful to the environment compared to plastic products,*" most students strongly agreed, which shows positive environmental awareness. For the last statement, "*Whenever I see palm leaf plates in the market, I identify them as eco-friendly products,*" most students agreed with the statement, showing that students recognize palm leaf products as eco-friendly alternatives.

In the survey, questions were circulated to know about the willingness of students to learn about biodegradable palm products. The results show that most students are willing to use palm products instead of plastic plates and prefer eco-friendly products over plastic products. Students are also ready to switch to palm products in personal use as well as college events. The majority of students concurred that because biodegradable palm products are more environmentally friendly, they are willing to pay a slightly higher price. Additionally, the data demonstrates that students will select palm products if they are readily available in the market and are inclined to suggest them to their friends and family.

We used ANOVA and regression analysis to explore what factors influence awareness and the willingness to adopt from whatever is being studied. Our findings showed that age doesn't affect awareness — whether students are younger or older doesn't change how aware they are. The results demonstrate that there is no statistically significant correlation between customers' awareness of sustainable packaging and gender. It suggests that when it comes to issues pertaining to sustainable packaging, both male and female respondents have demonstrated a comparatively comparable level of awareness. Consequently, consumers' understanding of sustainable packaging is unaffected by gender. However, it was shown that consumers' willingness to pay for sustainable packaging is significantly correlated with gender. It indicates that respondents' willingness to pay for sustainable packaging varies depending on whether they are male or female. There could be many reasons behind such discrepancies like consumer preferences, purchase behavior, financial status, etc. However, what students study does matter. Students in science and technical fields showed higher awareness than those in other degree programs. This suggests that the quality and nature of their education shapes their understanding. Finally, we found that awareness increases with years of study. As students progress through their degree, they become more aware.

According to this study, awareness increases with education. From an awareness standpoint, the results of the ANOVA test indicate that age and willingness to use biodegradable palm products are unrelated. These two things are not the same. Their choice to embrace a product varies when it comes to understanding the relationship between willingness and gender. According to the data, there is no correlation between a person's desire to adopt a product and their courses or year of study. They may be aware, but that does not guarantee that they will use the product. The association between awareness and willingness to buy was then investigated using regression analysis. According to the regression model summary, awareness accounts for 63.3% of the variation in desire to buy, with a R Square value of 0.63. This implies that consumers' propensity to buy is significantly influenced by awareness. The regression model is statistically significant, according to the ANOVA results ($F = 866.634$, $p < 0.001$). The model is deemed significant because the p-value is less than 0.05. The awareness coefficient value was positive ($\beta = 0.796$, $B = 0.879$, $p < 0.001$), suggesting that awareness significantly influences purchase willingness. This implies that readiness to buy may rise in tandem with customer awareness. As a result, the null hypothesis (H_0), which asserts that awareness and willingness to buy are unrelated, is rejected. The alternative hypothesis (H_1), which asserts that awareness and willingness to buy are related, is accepted. It demonstrates how awareness affects a person's propensity to buy.

8. LIMITATIONS:

1. The study was limited to students from Mahatma Gandhi Mission University, Chhatrapati Sambhajinagar (Aurangabad), which restricts the generalizability of the findings to other regions or populations.
2. The respondents primarily belonged to the age group of 18–23 years, resulting in limited representation of older age groups.
3. The study focused only on college students and did not include working professionals, households, business owners, or other consumer segments.
4. Data were collected through a structured questionnaire, and responses were based on self-reported perceptions, which may be subject to response bias.
5. The study examined knowledge and willingness to adopt biodegradable palm products but did not investigate actual purchasing behavior or long-term usage patterns.
6. The results are based on the understanding by the respondent of the nature of biodegradable products. Some individuals might not be technically well informed with issues related to sustainability.

9. CONCLUSION:

Level of awareness and willingness to adopt the role of a key element in this study. The study found that age had no significant influence on consumers' awareness and willingness to pay for sustainable packaging. This suggests that students of MGM University across different age groups have similar perceptions and attitudes towards sustainable packaging. Gender did not have a significant association with students' awareness regarding sustainable packaging. On the other hand, there was a significant difference between

gender and consumers' willingness to pay for sustainable packaging. However, there was a difference when compared to the awareness levels of students who were enrolled in science and technical courses. This implies that awareness can be improved in individuals through their education and academic exposure to certain topics. It has been discovered that willingness to adopt the use of biodegradable palm leaf products is not affected by one's age, course and year of study and increased awareness does not guarantee the willingness to adopt the use of biodegradable palm leaf products.

On the other hand, there is a positive relationship between awareness and willingness to purchase biodegradable palm leaf products. Students with a high awareness level are more likely to be willing to purchase this type of product.. Consequently, raising awareness will go a long way in helping individuals to adopt biodegradable palm leaf products.

In summary, this study reveals the critical significance of awareness in encouraging the adoption of environmentally friendly materials among Students of MGM University.

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