INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

PRODUCTION OF MONDOVA (LEMONGRASS, AVOCADO LEAVES, AND GUAVA LEAVES) BOTTLED JUICE

JOANA MARIE T. ZALUN
SHS Teacher II
Andres Bonifacio Integrated School
Marikina Polytechnic College
teajoanamarie@gmail.com

ABSTRACT

This study aimed to determine the acceptability, profitability, and physicochemical and microbial properties of bottled juice made from lemongrass, avocado, and guava leaves in three different proportions. Laboratory testing conducted by PIPAC revealed that 100 ml of the bottled juice contains 0.1 g of dietary fiber, a pH level of 3.3 at 25°C, indicating low acidity, and a water activity level of 0.99 at 25°C, suggesting an acceptable level of microorganisms. The microbial analysis showed a Total Plate Count (TPC) of less than 250, indicating no detectable microorganisms in the sample, thus confirming the juice's nutritional value and safety. Acceptability and profitability were evaluated by three groups of respondents: young individuals, young adults, and adults. The study found varied evaluations among these groups regarding the product's acceptability and profitability.

Keywords: Acceptability; Profitability; Physicochemical analysis; Microbial analysis; Bottled juice; Lemongrass; Avocado leaves; Guava leaves.

1.0 Introduction

In our dynamic technological landscape, it is essential to remain informed and adaptable. Addressing the demands of science and technology requires a commitment to a healthy lifestyle, a trend accelerated by the pandemic. Many people have modified their lifestyle, including dietary habits, by incorporating leafy greens into their diets. This period of increased

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

home time allowed individuals to prioritize their health and fitness goals, leading to a growing interest in alternative beverages that offer nutritional benefits derived from fruits and vegetables.

Green juice, primarily made from green vegetables and leaves such as kale, spinach, parsley, and lemongrass, has gained popularity due to its health benefits. According to Jacob (2022), green juice offers six potential health benefits: it is rich in nutrients, promotes hydration, aids in weight loss, improves digestive health, lowers inflammation, and is easy to digest. These leafy ingredients are crucial for a healthy diet, providing essential vitamins, minerals, and fiber while being low in calories. Consuming leafy greens can offer numerous health benefits, including reduced risks of obesity, heart disease, high blood pressure, and cognitive decline.

Lemongrass, for instance, is known for its health benefits, such as reducing bloating and preventing infection, although more large-scale studies are needed to confirm these benefits (Wilson, 2020). Lemongrass can be consumed as a juice or added to other dishes, like soups and sautés, enhancing flavor and nutritional value. Similarly, avocado leaves have been recognized for their health benefits. According to The Avo Tree blog (2020), avocado leaves are high in protein, fiber, and minerals, which support whole-body health. The dietary fiber in avocado leaves aids digestion and supports gut and metabolic health. Moreover, avocado leaves contain serotonin, which supports brain function and helps alleviate stress and anxiety.

Given the benefits of consuming lemongrass, avocado, and guava leaves, there is a trend toward developing new techniques to create healthy and tasty juices from these ingredients. This research was motivated by a preference for herbal beverages, particularly among juice enthusiasts who seek drinks derived from leaves or plants. This study aimed to produce juices that meet the standards for seniors, using lemongrass and avocado leaf extract to create a universally loved, affordable, and healthy beverage. Further, this study aims to determine the safety, acceptability, and profitability of bottled juice (containing lemongrass, avocado, and

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

guava leaves) in three different extract proportions (15 ml, 30 ml, and 45 ml) among young people, young adults, and adults. This study aligns with the Philippine Innovation Act (2019) and DepEd Order No.13 s. 2017, which promotes the development of healthy eating and drinking habits among all age groups. Furthermore, DepEd Order No. 52, s. 2008, on food safety in schools, supports the need for healthier beverage alternatives to combat the excessive consumption of sodas.

2.0 Methodology

2.1 Research Design

The researcher employed experimental and descriptive research methods to address the bottled juice's safety, acceptability, and profitability, including lemongrass, avocado, and guava leaves at varying concentrations of 15 ml, 30 ml, and 45 ml. The experimental method involved quantifying ingredients and conducting safety and sensory evaluations. The descriptive method, following Adam Hayes (2023), involved analyzing data collected from young, young adult, and adult respondents using measures of central tendency (mean, median, mode) and variability (standard deviation, variance, range). This combined approach ensures a robust and comprehensive juice evaluation, providing scientifically valid and practically relevant conclusions.

2.2 Sample and Sampling Technique

The sensory and profitability evaluation respondents were 90 consumers from Mandaluyong, Philippines. Respondents were selected using convenience sampling.

2.3 Survey Instrument and Data Collection

A validated survey questionnaire was utilized to collect data. The bottled juice was tested for safety parameters and distributed to respondents.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

2.4 Ethical Considerations

This study adhered to strict ethical considerations. The purpose, procedures, and outcomes were clearly explained to all participants, with parental consent obtained for minors, and no monetary collection was involved in administering survey questions. Permission was secured from the head of the Graduate School. Informed consent was obtained from all participants, who provided signatures to confirm their agreement. All collected data were original, accurately transcribed, verified by participants, and underwent peer debriefing, with no fabrication or alteration of results. Careful and appropriate language was used in translating the responses to ensure clarity and accuracy.

2.5 Data Analysis

The mean was used as a statistical measure of acceptability and profitability. One-way analysis of Variance (ANOVA) was conducted to determine if significant differences existed among the three respondent groups concerning acceptability and profitability. Tukey Pairwise Comparison was utilized to identify specific mean differences among the groups.

3.0 Results and Discussion

3.1 Physicochemical Analysis and Microbial Analysis

In order to accurately analyze the physicochemical and microbial content of the product, the researcher submitted the required number of PIPAC Laboratory and had the following parameters examined: Dietary Fiber, Potential of Hydrogen, Water Activity, and Total Plate Count. Analytical methods such as Enzyme-metric measurement using a pH meter, measurement by water activity meter, and pour plate were administered. Table 1 shows a summary of the physicochemical analysis of the product.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Table 1. Physicochemical and microbial analysis result*

Analyte per 100ml	Analytical Method	Results	Interpretation
Dietary Fiber	Enzymatic-Gravimetric	0.1	Less Content
pH Level	Measurement by the use of pH Meter	3.3 at 25 °C	Less Acidic
Water Activity	Measurement by Water Activity Meter	0.99 at 25 °C	Acceptable Level of Microorganism
Total Plate Count	Pour Plate	<250	No Microorganism

*analysis conducted at Philippine Institute of Pure and Applied Chemistry (PIPAC) Laboratory – Ateneo De Manila University Campus, Quezon City.
Interpretation is from FDA Circular No.2022-012

Physicochemical Analysis

As indicated in Table 4, the dietary fiber content is 0.1, interpreted as less fiber content in the sample juice of 100ml. According to the chemist, this value is found in plants, typically eaten whole, raw, or cooked. This implies that the product has a dietary fiber content. Also, the pH test is conducted to determine how acidic the provided substance is. As presented in the table, the pH value of the product is 3.3 at 25 °C, interpreted as less acidic. This value is higher by the Dentistry at Winbury chart, i.e., herbal tea with a pH value of 3.15. Further, the water activity of bottled juice is 0.99 at 25 °C. This implies that the product's water activity has a maximum allowable number of marginally acceptable samples and a safe level of microorganisms determined by a specified method. The value is generally based on allowable levels under Good Manufacturing Practices (GMP).

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

****

Microbial Analysis

The Total Plate Count is measured in CFU or colony-forming units based on the premise that if it is larger than the range not allowable by the FDA, such as 100, 300 – 500, it may affect the result of TDF or Total Dietary Fiber because microorganisms may cause chemical change. As gleaned in Table 1, the TPC or total plate count result is less than 250. Less than the range value of TPC to declared presented to the sample was incubated as a process of analysis, which gave a negative result. This implies that there is no microorganism in the product.

3.2 Level of Acceptability of the 15 mL Proportions

Aroma

Table 2 shows the evaluation of the three groups of respondents on the acceptability of the products with a 15 ml proportion in aroma.

Table 2. Descriptive statistics of the level of acceptability of 15 mL product in terms of aroma

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has a mixed aroma.	8.50	Extremely Acceptable	8.27	Very Acceptable	7.73	Very Acceptable
2. Has a balanced aroma.	8.63	Extremely Acceptable	8.30	Very Acceptable	7.73	Very Acceptable
3. Has a leafy smell.	8.00	Very Acceptable	8.30	Very Acceptable	7.87	Very Acceptable
4. Has a sweet smell.	8.70	Extremely Acceptable	8.40	Very Acceptable	8.73	Extremely Acceptable
5. Has an inviting aroma.	8.70	Extremely Acceptable	8.33	Very Acceptable	8.50	Extremely Acceptable
Overall Mean	**8.51**	**Extremely Acceptable**	**8.32**	**Very Acceptable**	**8.11**	**Very Acceptable**

Young, young adults and adult respondents rated the aroma with an overall weighted mean of 8.51, interpreted as Extremely Acceptable (EA), 8.32, interpreted as Very Acceptable (VA), and 8.11, interpreted as Very Acceptable (VA), respectively.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

****

Color

Table 3 presents the evaluation of the three groups of respondents on the acceptability of a product with a 15ml proportion in terms of color. Table 3 showed that the young, young adults and adult respondents evaluated the color of the product with a 15 ml proportion with an overall weighted mean of 8.55 interpreted as Extremely Acceptable (EA) for young, 8.36 interpreted as Very Acceptable (VA) for young adults, and 8.34 interpreted as Very Acceptable (VA) for adults respectively.

Table 3. Descriptive statistics of the level of acceptability of 15 mL product in terms of color

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has a uniform color.	8.60	Extremely Acceptable	8.53	Extremely Acceptable	7.73	Very Acceptable
2. Has an attractive color.	8.63	Extremely Acceptable	8.30	Very Acceptable	8.43	Very Acceptable
3. Has an appetizing color.	8.47	Very Acceptable	8.27	Very Acceptable	8.50	Extremely Acceptable
4. Has an even distribution color.	8.53	Extremely Acceptable	8.33	Very Acceptable	8.47	Very Acceptable
5. It Has a refreshing color.	8.53	Extremely Acceptable	8.37	Very Acceptable	8.57	Very Acceptable
Overall Mean	**8.55**	**Extremely Acceptable**	**8.36**	**Very Acceptable**	**8.34**	**Very Acceptable**

Flavor

Table 4 shows the evaluation of the three groups of respondents on the acceptability of the products with a 15ml proportion in terms of flavor.

Table 4. Descriptive statistics of the level of acceptability of 15 mL product in terms of flavor

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has a sweet taste.	8.73	Extremely Acceptable	8.57	Extremely Acceptable	8.70	Extremely Acceptable
2. Has a leafy taste.	8.10	Very Acceptable	8.40	Very Acceptable	7.93	Very Acceptable
3. Has a well-blended flavor.	8.50	Extremely Acceptable	8.50	Extremely Acceptable	7.93	Very Acceptable
4. Has combined taste.	8.33	Very Acceptable	8.43	Very Acceptable	7.80	Very Acceptable
5. Has an acceptable aftertaste.	8.90	Extremely Acceptable	8.57	Extremely Acceptable	8.63	Extremely Acceptable
Overall Mean	**8.51**	**Extremely Acceptable**	**8.49**	**Very Acceptable**	**8.20**	**Very Acceptable**

****

****

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Table 4 revealed that the young, young adults and adult respondents evaluated the flavor of the product with a 15ml proportion with an overall weighted mean of 8.51 interpreted as Extremely Acceptable (EA) for young, 8.49 interpreted as Very Acceptable (VA) for young adults, and 8.20 interpreted as Very Acceptable (VA) for adults. This implies that adult respondents must still consider some aspects to attain the combined taste of three leaves: mouthfeel, flavor, and body.

Texture

Table 5 shows the evaluation of the three groups of respondents on the acceptability of the product with a 15 ml proportion in terms of texture.

Table 5. Descriptive statistics of the level of acceptability of 15 mL product in terms of texture

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has a fiber texture.	8.17	Very Acceptable	8.03	Very Acceptable	7.63	Very Acceptable
2. Has a fine texture.	8.90	Extremely Acceptable	8.50	Extremely Acceptable	8.53	Extremely Acceptable
3. Has a mouthfeel of leaves.	7.90	Very Acceptable	8.13	Very Acceptable	7.87	Very Acceptable
4. Has a smooth texture.	8.73	Extremely Acceptable	8.57	Extremely Acceptable	8.63	Extremely Acceptable
5. Has consistency in texture.	8.73	Extremely Acceptable	8.53	Extremely Acceptable	8.50	Extremely Acceptable
Overall Mean	**8.49**	**Very Acceptable**	**8.35**	**Very Acceptable**	**8.23**	**Very Acceptable**

Table 5 shows that the young, young adults and adult respondents evaluated the product's texture with a 15ml proportion as Very Acceptable, as evidenced by its overall mean of 8.49, 8.35, and 8.23, respectively. This implies that the 15ml proportions delighted the young more because of its fiber, fineness, mouthfeel of leaves, and consistency in texture.

Summary

Table 6 implies that the product with a 15 mL proportion is highly acceptable to the three groups of respondents in terms of aroma, color, flavor, and texture. Young respondents are

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

more satisfied with the 15 ml proportion of the Product than young adult and adult respondents. The summary recommends that the young respondents extremely recognize the juice with a 15 ml proportion in relation to its aroma, color, flavor, and texture.

Table 6. Summary of the level of acceptability of 15 mL product

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
a. Aroma	8.51	Extremely Acceptable	8.32	Very Acceptable	8.11	Very Acceptable
b. Color	8.55	Extremely Acceptable	8.36	Very Acceptable	8.34	Very Acceptable
c. Flavor	8.51	Extremely Acceptable	8.49	Very Acceptable	8.20	Very Acceptable
d. Texture	8.49	Very Acceptable	8.35	Very Acceptable	8.23	Very Acceptable
Grand Mean	**8.52**	**Extremely Acceptable**	**8.38**	**Very Acceptable**	**8.22**	**Very Acceptable**

3.3 Level of Acceptability of the 30 mL Proportions

Aroma

Table 7 shows the evaluation of the three groups of respondents on the acceptability of the products with a 15 ml proportion in terms of aroma. As observed in Table 7, both young adult and adult respondents evaluate the bottled juice with a 30ml proportion as Very Acceptable (VA) with an overall weighted mean of 8.47 and 8.39, respectively. In contrast, the young respondents gave it an overall rating of 8.56, interpreted as Extremely Acceptable (EA).

Table 7. Descriptive statistics of the level of acceptability of 30 mL product in terms of aroma

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has a mixed aroma.	8.80	Extremely Acceptable	8.67	Extremely Acceptable	8.60	Extremely Acceptable
2. Has a balanced aroma.	8.63	Extremely Acceptable	8.77	Extremely Acceptable	8.50	Extremely Acceptable
3. Has a leafy smell.	8.00	Very Acceptable	7.83	Very Acceptable	8.13	Very Acceptable
4. Has a sweet smell.	8.60	Extremely Acceptable	8.40	Very Acceptable	8.30	Very Acceptable
5. Has an inviting aroma.	8.56	Extremely Acceptable	8.47	Very Acceptable	8.39	Very Acceptable

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Overall Mean	**8.77**	**Extremely Acceptable**	**8.67**	**Extremely Acceptable**	**8.40**	**Very Acceptable**

This implies that the bottled juice with the greater proportion of 30ml pertains to the acceptable level. The three groups of respondents' evaluations vary, though it is still in the acceptability bracket from Very Acceptability to Extremely Acceptability.

Color

Table 8 shows the evaluation of the three groups of respondents regarding the acceptability of the product with a 30ml proportion in terms of color.

Table 8. Descriptive statistics of the level of acceptability of 30 mL product in terms of color

Indicators	**Respondents**					
	Youngs		**Young Adults**		**Adults**	
	Mean	**Interpretation**	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. Has a uniform color.	8.50	Extremely Acceptable	8.43	Very Acceptable	8.27	Very Acceptable
2. Has an attractive color.	8.53	Extremely Acceptable	8.37	Very Acceptable	8.20	Very Acceptable
3. Has an appetizing color.	8.40	Very Acceptable	8.30	Very Acceptable	8.27	Very Acceptable
4. Has an even distribution color.	8.90	Extremely Acceptable	8.60	Extremely Acceptable	8.37	Very Acceptable
5. It Has a refreshing color.	8.37	Very Acceptable	8.50	Extremely Acceptable	8.20	Very Acceptable
Overall Mean	**8.54**	**Extremely Acceptable**	**8.44**	**Very Acceptable**	**8.26**	**Very Acceptable**

It can be observed from the table that the young respondents rated the product with a 30ml proportion in terms of color, with an overall weighted mean of 8.54, which is interpreted as extremely acceptable (EA). In comparison, young adults and adult respondents rated the Product with a 30ml proportion regarding color, with an overall weighted mean of 8.44 for young adults and 8.26 for adult respondents, interpreted as Very Acceptable (VA). However, all indicators and evaluations of all the respondents had an even distribution of color. The lemongrass, avocado, and guava leaves indicator gained the highest weighted mean of 8.90, which was interpreted as Extremely Acceptable by young respondents.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

****

Flavor

Table 9 shows the evaluation of the three groups of respondents on the acceptability of the products with a 30 ml proportion in terms of flavor.

Table 9. Descriptive statistics of the level of acceptability of 30 mL product in terms of flavor

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has a sweet taste.	7.77	Very Acceptable	7.73	Very Acceptable	7.77	Very Acceptable
2. Has a leafy taste.	8.60	Extremely Acceptable	8.73	Extremely Acceptable	8.43	Very Acceptable
3. Has a well-blended flavor.	8.83	Extremely Acceptable	8.70	Extremely Acceptable	8.27	Very Acceptable
4. Has combined taste.	8.67	Extremely Acceptable	8.70	Extremely Acceptable	8.20	Very Acceptable
5. Has an acceptable aftertaste.	8.63	Extremely Acceptable	8.33	Very Acceptable	8.07	Very Acceptable
Overall Mean	**8.50**	**Extremely Acceptable**	**8.44**	**Very Acceptable**	**8.15**	**Very Acceptable**

As observed in Table 9, the young respondents rated the Product with a 30 ml proportion regarding flavor, with an overall weighted mean of 8.50, interpreted as Extremely Acceptable (EA). Meanwhile, young adults and adult respondents rated the Product with a 30 ml proportion regarding flavor, with an overall weighted mean of 8.44 for young adults and 8.15 for adult respondents, interpreted as Very Acceptable (VA), respectively. The well-blended flavor of leaves indicator received the highest weighted mean of 8.83 from young adults. The data also showed that the bottled juice contains an original flavor that suits the respondents' tastes. However, the sweet taste indicator gained the lowest weighted mean of 7.73 from young adult respondents. Adult respondents agreed that following the correct process attains desirable taste.

Texture

Table 10 shows the evaluation of the three groups of respondents on the acceptability of the product with a 30 ml proportion in terms of texture.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Table 10. Descriptive statistics of the level of acceptability of 30 mL product in terms of texture

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has a fiber texture.	8.53	Extremely Acceptable	8.50	Extremely Acceptable	8.13	Very Acceptable
2. Has a fine texture.	8.80	Extremely Acceptable	8.40	Very Acceptable	8.27	Very Acceptable
3. Has a mouthfeel of leaves.	8.50	Extremely Acceptable	8.63	Extremely Acceptable	8.53	Extremely Acceptable
4. Has a smooth texture.	8.57	Extremely Acceptable	8.47	Very Acceptable	8.17	Very Acceptable
5. Has consistency in texture.	8.73	Extremely Acceptable	8.57	Extremely Acceptable	8.17	Very Acceptable
Overall Mean	**8.63**	**Extremely Acceptable**	**8.51**	**Extremely Acceptable**	**8.25**	**Very Acceptable**

As seen in Table 10, the young respondents rated the product with a 30 ml proportion regarding texture with an overall weighted mean of 8.63, interpreted as Extremely Acceptable (EA). In contrast, young adults and adult respondents rated the product with a 30ml proportion regarding texture, with an overall weighted mean of 8.51 for young adults and 8.25. Adult respondents also gave the same interpretation interpreted as Very Acceptable (VA), respectively. These results imply that many aspects should be considered to meet customers' demands during manufacturing, such as its desirable taste, mouthfeel, flavor, body, and texture.

Summary

Table 11 summarizes the respondents' evaluations of the acceptability of the product ingredients with a 30 ml proportion.

Table 11. Summary of the level of acceptability of 30 mL product

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
a. Aroma	8.56	Extremely Acceptable	8.47	Very Acceptable	8.39	Very Acceptable
b. Color	8.54	Extremely Acceptable	8.44	Very Acceptable	8.26	Very Acceptable
c. Flavor	8.50	Extremely Acceptable	8.44	Very Acceptable	8.15	Very Acceptable
d. Texture	8.63	Extremely Acceptable	8.51	Extremely Acceptable	8.25	Very Acceptable
Grand Mean	8.56	Extremely Acceptable	8.47	Very Acceptable	8.26	Very Acceptable

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

It can be observed in Table 11 that the evaluations of the three groups of respondents vary from each other. The young respondents rated the level of acceptability with a grand weighted mean of 8.56, which was interpreted as extremely acceptable (EA). In contrast, young adult and adult respondents rated the level of acceptability with a grand weighted mean of 8.47 for young adults and 8.26 for adult respondents, interpreted as Very Acceptable (VA). This implies that the Product with a 30ml proportion is highly acceptable to the three groups of respondents in terms of aroma, color, flavor, and texture. Young respondents are more satisfied with a 30ml proportion of products than young adult and adult respondents. The summary revealed that the juice with the highest proportion of 30ml was extremely recognized by the young respondents for its aroma, color, flavor, and texture.

3.4 Level of Acceptability of the 45 mL Proportions

Aroma

Table 12. Descriptive statistics of the level of acceptability of 45 mL product in terms of aroma

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has a mixed aroma.	8.47	Very Acceptable	8.70	Extremely Acceptable	8.57	Extremely Acceptable
2. Has a balanced aroma.	8.27	Very Acceptable	7.97	Very Acceptable	7.97	Very Acceptable
3. Has a leafy smell.	8.73	Extremely Acceptable	8.80	Extremely Acceptable	8.70	Extremely Acceptable
4. Has a sweet smell.	7.33	Moderately Acceptable	7.37	Moderately Acceptable	7.17	Moderately Acceptable
5. Has an inviting aroma.	8.17	Very Acceptable	8.13	Very Acceptable	7.50	Very Acceptable
Overall Mean	**8.19**	**Very Acceptable**	**8.19**	**Very Acceptable**	**7.98**	**Very Acceptable**

Based on Table 12, in terms of aroma, the Product with 45ml proportions received the same evaluation of Very Acceptable (VA) from the three groups of respondents, as evidenced by its overall weighted means of 8.19, 8.19, and 7.98, respectively.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Color

Table 13 shows the evaluation of the three groups of respondents regarding the acceptability of the product with a 45 ml proportion in terms of color.

Table 13. Descriptive statistics of the level of acceptability of 45 mL product in terms of color

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has a uniform color.	8.37	Very Acceptable	8.27	Very Acceptable	7.90	Very Acceptable
2. Has an attractive color.	8.30	Very Acceptable	8.10	Very Acceptable	8.27	Very Acceptable
3. Has an appetizing color.	8.20	Very Acceptable	8.13	Very Acceptable	7.80	Very Acceptable
4. Has an even distribution color.	8.40	Very Acceptable	8.33	Very Acceptable	7.97	Very Acceptable
5. It Has a refreshing color.	8.13	Very Acceptable	8.20	Very Acceptable	7.60	Very Acceptable
Overall Mean	**8.28**	**Very Acceptable**	**8.21**	**Very Acceptable**	**7.91**	**Very Acceptable**

As revealed in Table 13 in terms of color, the Product with 45 ml proportions received the same evaluation of Very Acceptable (VA) from the three groups of respondents, as evident from its overall weighted means of 8.28, 8.21, and 7.91, respectively.

Flavor

Table 14 shows the evaluation of the three groups of respondents on the acceptability of the products with a 45 ml proportion in terms of flavor.

Table 14. Descriptive statistics of the level of acceptability of 45 mL product in terms of flavor

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has a sweet taste.	7.30	Moderately Acceptable	6.97	Moderately Acceptable	6.97	Moderately Acceptable
2. Has a leafy taste.	8.80	Extremely Acceptable	8.83	Extremely Acceptable	8.77	Extremely Acceptable
3. Has a well-blended flavor.	8.67	Extremely Acceptable	8.40	Very Acceptable	8.37	Very Acceptable
4. Has combined taste.	8.63	Extremely Acceptable	8.47	Very Acceptable	8.47	Very Acceptable

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

5. Has an acceptable aftertaste.	7.80	Very Acceptable	7.47	Moderately Acceptable	7.27	Moderately Acceptable
Overall Mean	**8.24**	**Very Acceptable**	**8.03**	**Very Acceptable**	**7.97**	**Very Acceptable**

Based on Table 14, in terms of flavor, the Product with 45ml proportions received the same evaluation of Very Acceptable (VA) from the three groups of respondents, as evidenced by its overall weighted means of 8.24, 8.03, and 7.97, respectively.

Texture

Table 15 shows the evaluation of the three groups of respondents on the acceptability of the product with a 45 ml proportion in terms of texture.

Table 15. Descriptive statistics of the level of acceptability of 45 mL product in terms of texture

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has a fiber texture.	8.73	Extremely Acceptable	8.63	Extremely Acceptable	8.53	Extremely Acceptable
2. Has a fine texture.	8.23	Very Acceptable	8.17	Very Acceptable	7.77	Very Acceptable
3. Has a mouthfeel of leaves.	8.70	Extremely Acceptable	8.73	Extremely Acceptable	8.90	Extremely Acceptable
4. Has a smooth texture.	7.90	Very Acceptable	8.23	Very Acceptable	7.63	Very Acceptable
5. Has consistency in texture.	8.40	Very Acceptable	8.43	Very Acceptable	7.63	Very Acceptable
Overall Mean	**8.39**	**Very Acceptable**	**8.44**	**Very Acceptable**	**8.09**	**Very Acceptable**

As shown in Table 15, in terms of texture, the Product with 45ml proportions received the same evaluation of Very Acceptable (VA) from the three groups of respondents, as evident from its overall weighted means of 8.39, 8.44, and 8.09, respectively.

Summary

Table 16 summarizes the respondents' evaluations of the acceptability of the product ingredients with a 45 ml proportion.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Table 16. Summary of the level of acceptability of 45 mL product

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
a. Aroma	8.19	Very Acceptable	8.19	Very Acceptable	7.98	Very Acceptable
b. Color	8.28	Very Acceptable	8.21	Very Acceptable	7.91	Very Acceptable
c. Flavor	8.24	Very Acceptable	8.03	Very Acceptable	7.97	Very Acceptable
d. Texture	8.39	Very Acceptable	8.44	Very Acceptable	8.09	Very Acceptable
Grand Mean	8.28	Very Acceptable	8.22	Very Acceptable	7.99	Very Acceptable

Table 16 showed that young, young adult, and adult respondents rated the product with a 45ml proportion as Very Acceptable (VA), as indicated by its grand weighted mean of 8.28, 8.22, and 7.99, respectively. The product with a 45ml proportion is acceptable to the three groups of respondents in terms of aroma, color, flavor, and texture. The results imply that the three groups of respondents were not as highly satisfied with the product, which had a 45ml proportion in terms of aroma, color, flavor, and texture, though they were categorized as acceptable. It may also be inferred that the juice produced must be made more desirable to meet the higher expectations of all the respondents.

3.5 Differences in the Evaluation of the Three Groups on the Level of Acceptability

Aroma

Table 17 shows the test of significant differences in evaluating the three groups of respondents on the level of acceptability of the product.

Table 17. Analysis of variance of respondents' evaluations on the acceptability level in terms of aroma

P	Source	df	SS	MS	Computed F Value	Critical F Value	Decision	Interpretation
15ml	Factor	2	2.323	1.1613	5.99	3.10	Reject the H_0	Significant

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

	Error	87	16.881	0.194				
30ml	Factor	2	0.452	0.226	1.37	3.10	Fail to Reject the H_0	Not Significant
	Error	87	14.373	0.165				
45ml	Factor	2	0.910	0.455	2.33	3.10	Fail to Reject the H_0	Not Significant
	Error	87	16.985	0.195				

Table 17 shows the analysis of variance of the three groups of respondents' evaluations of the acceptability of the Product with 15ml, 30ml, and 45ml proportions in terms of aroma. Table 17 shows that the computed F value (5.99) exceeds the critical F value (3.10) with 2 and 87 degrees of freedom. This supports that there are significant differences among the evaluations of the three groups of respondents on the acceptability level of the prepared Product in 15ml proportion in terms of aroma. This implies that the three groups of respondents have varied evaluations of the product's aroma with lemongrass, avocado, and guava leaves with extract proportions of 15ml, 30ml, and 45ml. However, the 30ml and 45ml proportions received a No Significant Difference evaluation from the three groups of respondents because the respondents accepted the overall aroma of the produced bottled juice.

Table 18 shows that the p-values (0.002) of the 15 ml proportion are below the 0.05 significance level. This suggests that the null hypothesis should be rejected at a significance level of 5%. This indicates a significant difference between the evaluations of adults and young respondents on the acceptability level of the prepared product in terms of aroma. This means the young respondents gave the highest ratings despite extremely permissible to very acceptable evaluations from adult respondents.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Table 18. Tukey Pairwise Comparisons of respondents' evaluations on the acceptability level of the product regarding aroma

Comparison	Difference of Mean	Std. Error of Difference	Computed t value	Adjusted P-value	Results
15 ml					
Young Adults Youngs	0.19	0.114	1.64	0.234	Means are not different.
Adults Youngs	0.39	0.114	3.46	0.002	Means are different*
Adults Young Adults	0.21	0.114	1.82	0.170	Means are not different.

Note: *Significant if P-value ≤ 0.05

Color

Table 19 shows the analysis of the variance of the three groups of respondents' evaluation of the acceptability of products with 15ml, 30ml, and 45ml proportions in terms of color.

Table 19. Analysis of variance of respondents' evaluations on the acceptability level in terms of color

P	Source	df	SS	MS	Computed F Value	Critical F Value	Decision	Interpretation
15ml	Factor	2	0.833	0.416	2.09	3.10	Fail to Reject the H_0	Not Significant
	Error	87	17.299	0.199				
30ml	Factor	2	1.208	0.604	4.39	3.10	Reject the H_0	Significant
	Error	87	11.976	0.138				
45ml	Factor	2	2.348	1.174	5.83	3.10	Reject the H_0	Significant
	Error	87	17.505	0.201				

Checking to Table 19, the computed F values (4.39, 5.83) are higher than the critical F value (3.10). Accordingly, there are significant differences among the evaluations of the three groups of respondents on the acceptability level of the prepared Product in 30 ml and 45 ml proportions in terms of color. This implies that the respondents highly recognize the 15ml

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

proportions in terms of the product's color, while the 30ml and 45ml may still be improved to be liked better by the respondents.

Table 20. Tukey Pairwise Comparisons of respondents' evaluations on the acceptability level of the product regarding color

Comparison	Difference of Mean	Std. Error of Difference	Computed t value	Adjusted P-value	Results
30 ml					
Young Adults Youngs	0.10	0.096	1.040	0.551	Means are not different.
Adults Youngs	0.28	0.096	2.920	0.012	Means are different*
Adults Young Adults	0.18	0.096	1.880	0.151	Means are not different.
45 ml					
Young Adults Youngs	0.07	0.116	0.630	0.802	Means are not different.
Adults Youngs	0.37	0.116	3.220	0.005	Means are different*
Adults Young Adults	0.30	0.116	2.590	0.030	Means are different*

Note: *Significant if P-value ≤ 0.05

Table 20 presents the Tukey Pairwise Comparisons of Respondents' Evaluation of the Acceptability of Products with 30ml and 45ml proportions in terms of color. Table 20 depicted that the P-values (0.012, 0.005, 0.030) of the 30 ml and 45 ml proportions are less than the 0.05 significance level. At a 5% significance level, this implies that the null hypothesis should be rejected. Given this, there is a significant difference between the evaluations of the following pairs: (1) adults and young respondents for 30 ml and 45 ml proportions and (2) adults and young adult respondents for 45 ml proportion on the acceptability level of the prepared bottled juice as to color. For the 30 ml proportions, adult respondents provided the lowest rating, whereas young respondents gave the highest rating. Likewise, for the 45 ml portion, adult respondents received the lowest rating compared to evaluations within the groups.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

****

Flavor

Table 21 shows the analysis of the variance of the three groups of respondents' evaluations of the product's acceptability in terms of flavor in 15ml, 30ml, and 45ml proportions.

Table 21. Analysis of variance of respondents' evaluations on the acceptability level in terms of flavor

P	Source	df	SS	MS	Computed F Value	Critical F Value	Decision	Interpretation
15ml	Factor	2	1.846	0.923	6.81	3.10	Reject the H_0	Significant
	Error	87	11.793	0.136				
30ml	Factor	2	2.145	1.072	10.13	3.10	Reject the H_0	Significant
	Error	87	9.207	0.106				
45ml	Factor	2	1.238	0.619	4.87	3.10	Reject the H_0	Significant
	Error	87	11.057	0.127				

Table 21 shows that the computed F values (6.81, 10.13, 4.87) are greater than the critical F value (3.10). This affirms that there are significant differences among the evaluations of the three groups of respondents on the acceptability level of the prepared Product in three proportions in terms of flavor. This implies significant differences among the evaluations of the three groups of respondents on the acceptability of the product with the proportions of 15ml, 30ml, and 45ml regarding flavor.

Table 22. Tukey Pairwise Comparisons of respondents' evaluations on the acceptability level of the product regarding flavor

Comparison	Difference of Mean	Std. Error of Difference	Computed t value	Adjusted P-value	Results
15 ml					
Young Adults Youngs	0.02	0.095	0.210	0.976	Means are not different.
Adults Youngs	0.31	0.095	3.300	0.004	Means are different*
Adults Young Adults	0.29	0.095	3.090	0.008	Means are different*
30 ml					
Young Adults	0.06	0.084	0.710	0.756	Means are not different.

****

****

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Youngs					
Adults Youngs	0.35	0.084	4.210	0.000	Means are different*
Adults Young Adults	0.29	0.084	3.490	0.002	Means are different*
45 ml					
Young Adults Youngs	0.21	0.092	2.320	0.059	Means are not different.
Adults Youngs	0.27	0.092	2.970	0.011	Means are different*
Adults Young Adults	0.06	0.092	0.650	0.792	Means are not different.

Note: *Significant if P-value ≤ 0.05

Table 22 presents the Tukey Pairwise Comparisons of Respondents' Evaluations of the Product's acceptability in terms of flavor in 15ml, 30ml, and 45ml proportions. This implies that the evaluations of the three groups of respondents are different from each other. Young respondents give the highest evaluation, and adult respondents give the least.

Texture

Table 23 shows that the computed F values (3.81, 9.93, 6.89) are above the critical F value (3.10). This implies that the null hypothesis should be rejected at a significance level of 5%.

Table 23. Analysis of variance of respondents' evaluations on the acceptability level in terms of texture

P	Source	df	SS	MS	Computed F Value	Critical F Value	Decision	Interpretation
15ml	Factor	2	0.964	0.482	3.81	3.10	Reject the H_0	Significant
	Error	87	10.996	0.126				
30ml	Factor	2	2.198	1.099	9.93	3.10	Reject the H_0	Significant
	Error	87	9.628	0.111				
45ml	Factor	2	2.124	1.062	6.89	3.10	Reject the H_0	Significant
	Error	87	13.409	0.154				

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

****

As a result, there are significant differences among the evaluations of the three groups of respondents on the acceptability level of the prepared Product in three proportions in terms of texture. This implies significant differences among the evaluations of the three groups of respondents on the acceptability of the product with the proportions of 15ml, 30ml, and 45ml regarding texture.

Table 24 presents the Tukey Pairwise Comparisons of Respondents' Evaluation of the Acceptability of Products with 15ml, 30ml, and 45ml proportions in terms of texture. Table 24 shows that the P-values (0.019, 0.000, 0.009, 0.011, 0.003) of the three proportions are lesser than the 0.05 significance level. At a 5% significance level, the null hypothesis is rejected. This signifies that there is a significant difference between the evaluations of the following pairs: (1) adults and young respondents (for the three proportions) and (2) adults and young adult respondents (for the 45ml proportion) on the acceptability level of the prepared Product as to texture.

Table 24. Tukey Pairwise Comparisons of respondents' evaluations on the acceptability level of the product regarding texture

Comparison	Difference of Mean	Std. Error of Difference	Computed t value	Adjusted P-value	Results
15 ml					
Young Adults Youngs	0.13	0.092	1.45	0.319	Means are not different.
Adults Youngs	0.25	0.092	2.76	0.019	Means are different*
Adults Young Adults	0.12	0.092	1.31	0.395	Means are not different.
30 ml					
Young Adults Youngs	0.11	0.086	1.32	0.388	Means are not different.
Adults Youngs	0.37	0.086	4.35	0.000	Means are different*
Adults Young Adults	0.26	0.086	3.03	0.009	Means are different*
45 ml					

****

****

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Young Adults Youngs	0.05	0.101	0.46	0.890	Means are not different.
Adults Youngs	0.30	0.101	2.96	0.011	Means are different*
Adults Young Adults	0.35	0.101	3.42	0.003	Means are different*

3.6 Level of Profitability

Affordability

Table 25 shows the evaluation of the profitability level of the produced product with a 30ml proportion regarding affordability. Table 25 revealed that the young and young adult respondents evaluated the produced product's affordability as Extremely Potential (EP) with its overall weighted mean of 4.71 and 4.59, respectively. However, the adult respondents rated it as Highly Potential (HP) with a mean of 4.41.

Table 25. Descriptive statistics of the level of profitability of 30 mL product in terms of affordability

Indicators	**Respondents**					
	Youngs		**Young Adults**		**Adults**	
	Mean	**Interpretation**	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. Can be sold at a lower price	4.67	Extremely Potential	4.60	Extremely Potential	4.37	High Potential
2. Is cost-effective and cost-efficient.	4.83	Extremely Potential	4.70	Extremely Potential	4.40	High Potential
3. Has a reasonable price.	4.73	Extremely Potential	4.67	Extremely Potential	4.43	High Potential
4. Is easy to sell.	4.60	Extremely Potential	4.40	High Potential	4.43	High Potential
Overall Mean	**4.71**	**Extremely Potential**	**4.59**	**Extremely Potential**	**4.41**	**High Potential**

This implies that the young and young adult respondents have the same assessment in terms of the affordability of the Product with the 30ml proportion and that the product has a reasonable price and is cost-effective and cost-efficient so that it can be sold at a lower price compared to commercial ones.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Labeling

Table 26 shows the evaluation of the profitability level of the produced Product with a 30ml proportion regarding labeling.

Table 26. Descriptive statistics of the level of profitability of 30 mL product in terms of labeling

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Is a product that has informative labels.	4.67	Extremely Potential	4.70	Extremely Potential	4.23	High Potential
2. Has a product description/ list of ingredients.	4.73	Extremely Potential	4.67	Extremely Potential	4.40	High Potential
3. Indicates the content weight.	4.90	Extremely Potential	4.83	Extremely Potential	4.47	High Potential
4. Has a suitable product label.	4.90	Extremely Potential	4.80	Extremely Potential	4.40	High Potential
Overall mean	**4.80**	**Extremely Potential**	**4.75**	**Extremely Potential**	**4.38**	**High Potential**

Table 26 presents that the young and young adult respondents rated all the indicators of produced Products with 30ml labeling as Extremely Potential (EP) with overall weighted means of 4.80 and 4.75, respectively. Meanwhile, the adult respondents rated all the indicators as High Potential (HP) with an overall weighted mean of 4.38. This finding implies that the young and young adult respondents have the same assessment of extreme potential. The product with a 30ml proportion has a product description and list of ingredients, an indication of the content and weight, and a suitable product label.

Packaging

Table 27 shows the evaluation of the level of profitability of the produced Product with a 30ml proportion regarding packaging. The product with a 30ml proportion received the same evaluation from the three groups of respondents in terms of its packaging, with the same rating of Extremely Potential (EP). The overall weighted mean was 4.74 from young, 4.81 from young adults, and 4.75 from adult respondents.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Table 27. Descriptive statistics of the level of profitability of 30 mL product in terms of packaging

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Is properly sealed.	4.67	Extremely Potential	4.90	Extremely Potential	4.80	Extremely Potential
2. Has cost-adequate intelligent packaging.	4.77	Extremely Potential	4.77	Extremely Potential	4.80	Extremely Potential
3. Has no spillage.	4.97	Extremely Potential	4.87	Extremely Potential	4.87	Extremely Potential
4. Is gas sensors free.	4.57	Extremely Potential	4.70	Extremely Potential	4.53	Extremely Potential
Overall Mean	**4.74**	**Extremely Potential**	**4.81**	**Extremely Potential**	**4.75**	**Extremely Potential**

As a result, the young, young adult, and adult respondents rated all the indicators as having extreme potential in the packaging of the produced Product with 30ml proportion that has cost-effective intelligent packaging, is properly sealed, has no spillage, and is gas sensors free.

Production Cost

Table 28 shows the evaluation of the profitability level of the produced Product with a 30ml proportion regarding production cost.

Table 28. Descriptive statistics of the level of profitability of 30 mL product in terms of production cost

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Has economical ingredients.	4.97	Extremely Potential	4.80	Extremely Potential	4.87	Extremely Potential
2. Uses less effort in production.	4.47	High Potential	4.57	Extremely Potential	4.70	Extremely Potential
3. Uses less equipment.	4.57	Extremely Potential	4.63	Extremely Potential	4.77	Extremely Potential
4. Uses local ingredients.	4.93	Extremely Potential	4.83	Extremely Potential	4.87	Extremely Potential
Overall Mean	**4.73**	**Extremely Potential**	**4.71**	**Extremely Potential**	**4.80**	**Extremely Potential**

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Table 28 shows that the produced Product with a 30ml proportion received the same evaluation from the three groups of respondents in terms of its production cost with the same rating of Extremely Potential (EP) with overall weighted means of 4.73 from young, 4.71 from young adults, and 4.80 from adult respondents respectively. This implies that the young, young adult and adult respondents agreed with the same rating bracket that the produced Product requires fewer ingredients and economical ingredients to use local ingredients.

Supply Availability

Table 29 shows the evaluation of the profitability level of the produced Product with a 30ml proportion regarding supply availability.

Table 29. Descriptive statistics of the level of profitability of 30 mL product in terms of supply availability

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Ingredients are readily available.	4.53	Extremely Potential	4.47	High Potential	4.70	Extremely Potential
2. Ingredients are abundant.	4.70	Extremely Potential	4.80	Extremely Potential	4.93	Extremely Potential
3. Ingredients are available all year round.	4.67	Extremely Potential	4.73	Extremely Potential	4.97	Extremely Potential
4. Has a supply that can meet the demand.	4.80	Extremely Potential	4.63	Extremely Potential	4.93	Extremely Potential
Overall Mean	**4.68**	**Extremely Potential**	**4.66**	**Extremely Potential**	**4.88**	**Extremely Potential**

Table 29 shows that the produced Product with the greater 30 ml proportion was evaluated by the three groups of respondents in terms of its supply availability, with the same rating of Extremely Potential (EP). The overall weighted mean was 4.68 for young, 4.66 for young adults, and 4.88 for adult respondents. This implies that the adult respondents gave the highest ratings as extremely potential while the young and young adult respondents gave the lowest rating. However, it is the same as extremely potential regarding supply availability. They all agree that the ingredients of the bottled juice produced are abundant, available all year round, and have a supply that can meet the demand of potential consumers.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

****

Summary

Table 30 summarizes respondents' evaluations of the profitability of the produced Product in 30 ml proportion.

Table 30. Summary of respondents' evaluations on the level of profitability

Indicators	Respondents					
	Youngs		Young Adults		Adults	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
a. Affordability	4.71	Extremely Potential	4.59	Extremely Potential	4.41	High Potential
b. Labelling	4.80	Extremely Potential	4.75	Extremely Potential	4.38	High Potential
c. Packaging	4.74	Extremely Potential	4.81	Extremely Potential	4.75	Extremely Potential
d. Production Cost	4.73	Extremely Potential	4.71	Extremely Potential	4.80	Extremely Potential
e. Supply Availability	4.68	Extremely Potential	4.66	Extremely Potential	4.88	Extremely Potential

Table 30 shows that the produced Product with a 30ml proportion received the same evaluation from the three groups of respondents on the level of profitability as Extremely Potential (EP) as evidenced by its grand weighted means of 4.73 from young, 4.70 from young adults, and 4.64 from adult respondents respectively. This implies that the three groups of respondents have the same perceptions of the profitability of the Product, with the 30ml proportion having an extreme potential in terms of affordability, labeling, packaging, production cost, and supply availability because it needs less effort to produce the product, the ingredients are cheaper because of the abundance availability of materials, and respondents' satisfaction due to its nutritive value. As a result, this proportion of the product was perceived as marketable. However, the adult respondents evaluated the criteria A "affordability and B "labeling" despite extreme potential to high potential.

3.7 Differences in the Evaluation of the Three Groups on the Level of Profitability

Affordability

Table 31 shows the test of significant differences in evaluating the three groups of respondents on the product's profitability level.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Table 31. Analysis of variance of respondents' evaluations on the profitability level in terms of affordability

P	Source	df	SS	MS	Computed F Value	Critical F Value	Decision	Interpretation
15ml	Factor	2	0.560	0.280	1.32	3.10	Fail to Reject the H_0	Not Significant
	Error	87	18.460	0.212				
30ml	Factor	2	1.372	0.686	4.05	3.10	Reject the H_0	Significant
	Error	87	14.756	0.170				
45ml	Factor	2	1.317	0.658	2.54	3.10	Fail to Reject the H_0	Not Significant
	Error	87	22.565	0.259				

Table 31 describes that the computed F value (4.05) is above the critical F value (3.10). The statistical decision leads to rejecting the null hypothesis at a significance level of 5%. So, there are significant differences among the three groups of respondents' evaluations regarding affordability and the prepared product's profitability level in 30 ml proportions. This implies that the respondents' evaluations are the same for the 15ml and 45ml proportions but have different views on the produced bottled juice with the 30ml proportion in terms of affordability.

Table 32 shows that the p-value (0.016) of the 30 ml proportion is lower than the 0.05 significance level. This means that the null hypothesis should be rejected at a significance level of 5%. This supports the fact that there is a significant difference between the evaluations of adults and young respondents regarding the profitability level of the product in terms of affordability. For the 30 ml proportion, adult respondents obtained the lowest rating, while young respondents got the highest rating.

Table 32. Tukey Pairwise Comparisons of respondents' evaluations on the profitability level in terms of affordability

Comparison	Difference of Mean	Std. Error of Difference	Computed t value	Adjusted P-value	Results
30 ml					
Young Adults Youngs	0.12	0.106	1.100	0.518	Means are not different.
Adults	0.30	0.106	2.820	0.016	Means are different*

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

****

Youngs Adults Young Adults	0.18	0.106	1.720	0.202	Means are not different.

Note: *Significant if P-value ≤ 0.05

Labeling

Concerning Table 33, the computed F values (12.77, 11.97, 12.63) exceed the critical F value (3.10).

Table 33. Analysis of variance of respondents' evaluations on the profitability level in terms of labeling

P	Source	df	SS	MS	Computed F Value	Critical F Value	Decision	Interpretation
15ml	Factor	2	3.318	1.659	12.77	3.10	Reject the H_0	Significant
	Error	87	11.304	0.130				
30ml	Factor	2	3.237	1.619	11.97	3.10	Reject the H_0	Significant
	Error	87	11.769	0.135				
45ml	Factor	2	3.318	1.659	12.63	3.10	Reject the H_0	Significant
	Error	87	11.429	0.131				

This suggests that there are significant differences among the evaluations of the three groups of respondents on the profitability level of the prepared Product in three proportions regarding labeling. This implies that young adults and adult respondents have different views on the produced bottled juice, with three different proportions regarding labeling.

Results from Table 34, the P-values (0.000, 0.000, 0.000, 0.000, 0.000, 0.000) of the three proportions are below the 0.05 level of significance. Consequently, the statistical decision is to reject the null hypothesis at a 5% significance level. This affirms a significant difference between the evaluations of the following pairs: (1) adults and young respondents and (2) adults and young adult respondents for the three proportions on the profitability level of the Product in terms of labeling. Among the evaluations within the groups for the three proportions, adult respondents received the lowest rating in terms of labeling.

****

****

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Table 34. Tukey Pairwise Comparisons of respondents' evaluations on the profitability level in terms of labeling

Comparison	Difference of Mean	Std. Error of Difference	Computed t value	Adjusted P-value	Results
15 ml					
Young Adults Youngs	0.06	0.093	0.630	0.806	Means are not different.
Adults Youngs	0.43	0.093	4.660	0.000	Means are different*
Adults Young Adults	0.38	0.093	4.030	0.000	Means are different*
30 ml					
Young Adults Youngs	0.05	0.095	0.530	0.859	Means are not different.
Adults Youngs	0.43	0.095	4.480	0.000	Means are different*
Adults Young Adults	0.38	0.095	3.950	0.000	Means are different*
45 ml					
Young Adults Youngs	0.06	0.094	0.620	0.808	Means are not different.
Adults Youngs	0.43	0.094	4.630	0.000	Means are different*
Adults Young Adults	0.38	0.094	4.010	0.000	Means are different*

Note: *Significant if P-value ≤ 0.05

Packaging

As displayed in Table 35, the computed F values (0.54, 0.44, 0.71) are less than the critical F value (3.10). Hence, the statistical decision is to retain the null hypothesis at a 5% significance level.

Table 35. Analysis of variance of respondents' evaluations on the profitability level in terms of packaging

P	Source	df	SS	MS	Computed F Value	Critical F Value	Decision	Interpretation

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

15ml	Factor	2	0.093	0.047	0.54	3.10	Fail to Reject the H_0	Not Significant
	Error	87	7.510	0.086				
30ml	Factor	2	0.079	0.040	0.44	3.10	Fail to Reject the H_0	Not Significant
	Error	87	7.771	0.089				
45ml	Factor	2	0.126	0.063	0.71	3.10	Fail to Reject the H_0	Not Significant
	Error	87	7.704	0.089				

This provides evidence that there are no significant differences among the evaluations of the three groups of respondents regarding the profitability level of the prepared Product in three proportions regarding packing. This implies that the respondents' evaluations are the same. As a result, the three groups of respondents share the same views on the profitability level of products with different proportions about packaging.

Production Cost

Table 36 demonstrated that the computed F values (0.54, 0.56, 0.62) are lower than the critical F value (3.10). Thus, the statistical decision is not to reject the null hypothesis at a 5% significance level. This shows that there are no significant differences among the evaluations of the three groups of respondents on the profitability level of the prepared Product in three proportions regarding production cost.

Table 36. Analysis of variance of respondents' evaluations on the profitability level in terms of production cost

P	Source	df	SS	MS	Computed F Value	Critical F Value	Decision	Interpretation
15ml	Factor	2	0.129	0.065	0.54	3.10	Fail to Reject the H_0	Not Significant
	Error	87	10.496	0.121				
30ml	Factor	2	0.135	0.067	0.56	3.10	Fail to Reject the H_0	Not Significant
	Error	87	10.552	0.121				
45ml	Factor	2	0.154	0.077	0.62	3.10	Fail to Reject the H_0	Not Significant
	Error	87	10.902	0.125				

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

This implies that the respondents' evaluations are the same. More specifically, the three respondents share the same perceptions of the product's profitability level, with different proportions about production cost.

Supply Availability

It is clear from Table 37 that the computed F values (4.28, 4.14, 4.31) are higher than the critical F value (3.10). The statistical decision implies the rejection of the null hypothesis at a significance level of 5%.

Table 37. Analysis of variance of respondents' evaluations on the profitability level in terms of supply availability

P	Source	df	SS	MS	Computed F Value	Critical F Value	Decision	Interpretation
15ml	Factor	2	1.093	0.547	4.28	3.10	Reject the H_0	Significant
	Error	87	11.113	0.128				
30ml	Factor	2	0.943	0.472	4.14	3.10	Reject the H_0	Significant
	Error	87	9.921	0.114				
45ml	Factor	2	0.985	0.492	4.31	3.10	Reject the H_0	Significant
	Error	87	9.935	0.114				

Therefore, there are significant differences among the evaluations of the three groups of respondents on the profitability level of the prepared Product in three proportions regarding supply availability. As a result, the young, young adult, and adult respondents have different evaluations of the Product's profitability level in various proportions with regard to supply availability.

Table 38. Tukey Pairwise Comparisons of respondents' evaluations on the profitability level in terms of supply availability

Comparison	Difference of Mean	Std. Error of Difference	Computed t value	Adjusted P-value	Results
15 ml					
Young Adults Youngs	0.02	0.092	0.180	0.982	Means are not different.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

Adults Youngs	0.24	0.092	2.620	0.028	Means are different*
Adults Young Adults	0.23	0.092	2.440	0.044	Means are different*
30 ml					
Young Adults Youngs	0.02	0.087	0.190	0.980	Means are not different.
Adults Youngs	0.21	0.087	2.390	0.049	Means are different*
Adults Young Adults	0.23	0.087	2.580	0.031	Means are different*
45 ml					
Young Adults Youngs	0.03	0.087	0.290	0.956	Means are not different.
Adults Youngs	0.21	0.087	2.390	0.050	Means are different*
Adults Young Adults	0.23	0.087	2.670	0.024	Means are different*

Note: *Significant if P-value ≤ ⋅ = 0.05

Table 38 illustrates that the three proportions' P-values (0.028, 0.044, 0.049, 0.031, 0.050, 0.024) are less than the 0.05 significance level. Hence, the null hypothesis should be rejected based on statistical analysis at a significance level of 5%. This means that there is a significant difference between the evaluations of the following pairs: (1) adults and young respondents and (2) adults and young adult respondents for the three proportions on the profitability level of the Product in terms of supply availability. Across all three proportions, adult respondents received the highest rating among the groups, even though their evaluations were the same.

4.0 Conclusion

The study on the new bottled juice has yielded significant insights into its potential as a nutritious and marketable beverage. The comprehensive physicochemical and microbial analyses have confirmed that the juice is safe for consumption across various age groups, including young individuals (13-17), young adults (18-25), and adults (26 and above). Additionally, the sensory evaluations revealed high acceptability among these groups regarding aroma, color, flavor, and texture, indicating broad consumer appeal. Market analysis

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

****

further highlighted the juice's strengths in affordability, labeling, packaging, production cost, and supply availability, suggesting a promising future for its market introduction. As a result, this product presents itself as a viable option for school canteens and the general market.

To enhance its marketability, the study recommends promoting the product as a nutritious alternative in the local market, with ongoing product development to refine its flavor and texture. Specifically, increasing the concentration of main ingredients and adding complementary ingredients like calamansi extract and honey could further improve the product. Future research could focus on recipe modifications and process enhancements to boost its nutritional profile and consumer benefits. Moreover, potential market players are encouraged to conduct further studies to ensure compliance with industry standards and explore additional nutritional benefits. Additionally, there is an opportunity for consumers to produce it for personal use or as a business venture for supplemental income. Lastly, it is recommended that future research investigates the product's safety for children aged 12 and below, expanding its potential consumer base.

5.0 Contributions of Authors

No contribution

6.0 Funding

No contribution

7.0 Conflict of Interests

The author declares no conflicts of interest about the publication of this paper.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

****

8.0 References

- **Reference to a journal publication**: Avocado Buddy (2019) Benefits of Avocado Leaves, Retrieved from avocadobuddy.com.
- **Reference to an internet source:** Burgerss, Lana. (2023) The Benefits of Guava Leaves, USA (medicalnewstoday.com).
- **Reference to an internet source:** Dagupen, Marie Klondy T., Lino, Lorna L., and Tagarino, Darlyn D. (2019) Consumer Behavior Towards Lemongrass as Drink, Benguet Province, BANWA. Multidisciplinary Journal, Vol. 6, 12.
- **Reference to an internet source:** FDA (2022) "Revised Guidelines for the Analysis of Microbiological Quality of Processed Foods". Department of Health, Philippines. FDA Circular No.2022-012. Page 18-20. www.fda.gov.ph. info@fda.gov.ph
- **Reference to an internet source:** Foods4Health (2021) Boil Guava Leaves for these Incredible Health Benefits, Canada Coin Hunting.
- **Reference to an internet source:** Garba, Husaina A., Mohammed, Aminu, Ibrahim, M.A., and Shuaibu, M.N. (2020) Effect of Lemongrass (Cymbopogo) Hot Drink in Type 2 Diabetes, Clinical Phytoscience, Vol. 6. Article No.19 Retrieved April 1, 2020 from Springer Nature Sharedlt Content.
- **Reference to an internet source:** Kania, et.al (2019) Assessment of Potential Use of Young Barley Shoots and Leaves for the Production of Green Juices Retrieved July 21, 2019 from Sustainable Production in Food and Agriculture Engineering.
- **Reference to an internet source:** Mar'iyah, K., Rohman, A., Negara, C. (2022) The Effect of Giving Avocado Leaves Boiled Water a Lowering Blood Pressure in the Elderly with Hypertension, Work Area Gambut Health Center, Preprints. 2022100392.
- **Reference to an internet source:** Natural Health Remedies (2021) 19 Incredible Guava Leaves Benefits and Uses, Retrieved February 8, 2021 from Youtube/Blog.
- **Reference to an internet source:** Patel, Rukmani., and Prathibhakurup. (2023) Lemongrass-A Boon to Mankind, International Journal of Futuristic Innovation in Engineering, Science and Technology (IJFIEST), Vol. 2. Pages 192-205.

****

****

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue I
August 2024
Available online at https://www.instabrightgazette.com

- **Reference to an internet source:** Specialty Produce Network. (2020) Avocado Leaves, San Diego, CA., info@specialtyproduce.com. Vol. 2.
- **Reference to an internet source:** Adnan, Ahmad, Mushtaq, Muhammed, Islam, Tanveer U. (2018) FRUIT JUICES, Academic Press, page 217-240.
- **Reference to an internet source:** Chakravartty, et.al (2023) The Complete Sequence of Cymbopogon Citratus (Poaceae, Poales) Lemongrass. Biodiversity Genome, Vol. 2023, pp. 28-29
- **Reference to an internet source:** Colona (2022) Avocado Leaves and Blood Pressure, avocadotea.com, University of Ibadan, Nigeria. www.teausa.org.
- **Reference to an internet source:** Garba, Husaina A., Mohammed, Aminu, Ibrahim, M.A., and Shuaibu, M.N. (2020) Effect of Lemongrass (Cymbopogo Citratus) Tea in Type 2 Diabetes, Clinical Phytoscience, Vol. 6.
- **Reference to an internet source:** Golez, et.al (2020) Assessment on Level of Permissibility of Banagano Juice, Best Link College of the Philippines, BCP Journal of Multidisciplinary Research Abstract. Vol. 2. No.1.
- **Reference to an internet source:** Gupta, S., Singhal, P., Singh, A., Chauhan, R., and Kumar, B. (2018) Nutritronal and Pharmceutical Benefits of Avocado Leaves, Journal pf Advance Scientific Research, Vol. 9, page 4-11.
- **Reference to an internet source:** Ranjah, Muhammad A. (2021) Lemongrass A Treasure Ingredients for Useful Foods, International Journal of Food and Allied Sciences, Vol. 4. Pages 11-19.
- **Reference to an internet source:** Sutiningsih, et.al (2020) Effectiveness of Avocado Leaf Extract, Persia America, F1000Research, Ver.2.
- **Reference to an internet source:** TEA Association (2019-2020) Tea Fact Sheet, USA.