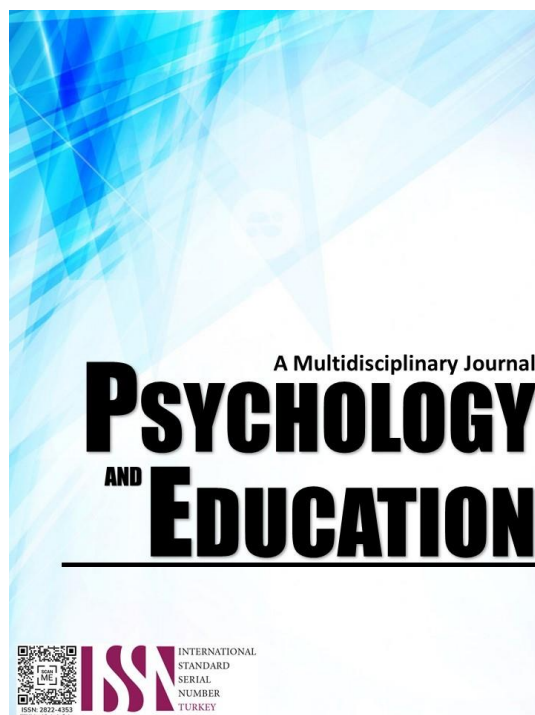


ACCEPTABILITY, MARKETABILITY, AND PHYSICOCHEMICAL ANALYSIS OF ZICABA FROZEN DELIGHT



PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

2023

Volume: 11

Pages: 162-181

Document ID: 2023PEMJ950

DOI: 10.5281/zenodo.8181355

Manuscript Accepted: 2023-23-7

Acceptability, Marketability, and Physicochemical Analysis of Zicaba Frozen Delight

Paola Andrea M. Concepcion*

For affiliations and correspondence, see the last page.

Abstract

This research investigated the acceptability, marketability, and physicochemical analysis of ZICABA Frozen Delight in three different proportions among teenagers, young adults, and adults in Barangay Gulod Malaya, San Mateo, Rizal, during the academic year 2021-2022. The research study employed an experimental research design, with 90 respondents divided into three groups: 30 teenagers, 30 young adults, and 30 adults, who were chosen through purposive sampling. The 9-point Hedonic Rating Scale was used to evaluate the Zicaba Frozen Delight in three different proportions of ginger, papaya, and sweet potato, and the 5-point Likert Scale to evaluate the marketability. The data were statistically treated using Weighted Mean and One Factor Anova. The respondents evaluated the acceptability of the Zicaba Frozen Delight with 70% (250 grams) and 3% (10 grams) and 85% (250 grams) and 4% (15 grams) proportion of Ginger Powder, Papaya Jam and Sweet Potato Jam as Very Acceptable, the 85% (300 grams) and 4% (15 grams) and 100% (350 grams) and 6% (20 grams) proportion were evaluated as Extremely Acceptable in terms of Appearance, Aroma, Color, Taste and Texture. Moreover, the three groups of respondents evaluated the product's marketability with 70% (250 grams) and 3% (10 grams), 85% (300 grams) and 4% (15 grams) and 100% (350 grams) and 6% (20 grams) proportion as Very High Potential in terms of Consumer Demand, Production Cost, and Supply Availability. The researcher also presented the physicochemical analysis of Zicaba Frozen Delight as regards to its pH level, fat and carbohydrate contents, vitamins, and other nutrients. The respondents also provided comments and suggestions for the improvement of the product.

Keywords: *zicaba frozen delight, acceptability, marketability, dessert*

Introduction

Dessert may be regarded as a meal-ending staple. It is also one of the most commonly consumed comfort meals on days when individuals are worried or restless. To put things into perspective, individuals have been under a lot of stress over the last two years as a result of the pandemic and take solace in sharing sweet treats. According to a study conducted by the iPrice e-commerce aggregator, the Philippines placed third among Southeast Asian nations in terms of a constant growing trend in their interest in sweets, trailing only Malaysia and Singapore.

Nowadays, finding healthy, but still considerably budget-friendly food to help cope with the daily routine and lifestyle has been considered as part of Pop-culture. As Thomas Fuller said, "Health is not valued until sickness comes." As a result, one should put health before riches. According to Jones (2020), eating right, exercising, getting enough sleep, and enhancing overall health and well-being, and mental health would also increase resilience in everyone.

Vegetables and fruits are essential to one's health since they provide essential nutrients. Camote, commonly known as Sweet Potato, is a popular root crop in the Philippines that is high in fiber and other minerals. It is regarded as one of the best-tasting, healthy, and cost-effective year-round staple foods in the Philippines. It

is a wonderful source of fiber, iron, calcium, and many other nutrients and may be cooked as a dessert, a side dish, cereals, and so on. According Julson (2023), sweet potatoes have several health advantages, including being very nutritious, promoting excellent health, supporting healthy vision, improving cognitive function, and supporting the immune system.

Papaya is next on the list. It was developed originally in Central America and Southern Mexico. It's a huge fruit with a spherical or cylindrical shape. Papaya is considered ripe when it feels mushy, its skin turns orange, and a plethora of microscopic black seeds form in its interior hollow. This fruit is abundant in antioxidants and vitamins A, C, and E, according to Webmd.com. It also has a lot of fiber and folic acid, which are both excellent for your body. Like Camote, Papaya may be added to a variety of family-friendly menu items such as salads, smoothies, desserts, and even numerous major entrees.

The list closes with ginger, a flowering plant whose rhizomes are frequently used as spices in different types of food. The Austronesian people developed this root crop after it was first cultivated in Southeast Asia. It is frequently used in recipes and can either be extracted and processed to create a beverage or oil. Ginger may also be turned into a variety of forms, including dried, powdered, extracted, and in its natural state. Gingerol, according to Leech (2021), has excellent antioxidant and anti-inflammatory effects. It

is supposed to assist with nausea, osteoarthritis, decreasing blood cholesterol levels, healing chronic dyspepsia, reducing menstruation pain, lowering cholesterol, preventing cancer, improving cognitive function, and fighting infections.

The researcher tested with using Sweet Potato and Papaya as nutritional components in the preparation of Ice Cream. The health advantages of ginger led the researcher to believe that it may be used as an ingredient to improve the product's nutritional worth. With the nutritional health advantages of the ingredients, this Ice Cream will be a fascinating and intriguing treat that one can enjoy and incorporate into the diet. The idea that what a person eats reflects in him has been brought up frequently. As a result, the goal of this study is to demonstrate how Sweet Potato, Papaya, and Ginger may be combined to create a tasty treat that is also healthy, nourishing, and full, with emphasis on health-conscious individuals. The researcher conducted this study to encourage people to be more mindful with their choice of food, to spark interest in other researchers to study agricultural products that can be used to create new and innovative food products, to serve as an additional source of income for people starting their own small business, and to maximize the use of ingredients sourced from our nature.

Research Questions

This study aimed to determine the acceptability and marketability of Zicaba Frozen Delight and its physicochemical analysis during the school year 2021-2022 at Barangay Gulod Malaya, San Mateo, Rizal. Specifically, it sought answers to the following problems:

1. What is the evaluation of the three groups of respondents on the level of acceptability of the Zicaba Frozen Delight with 70% (250 grams), 85% (300 grams), and 100% (350 grams) of papaya jam, sweet potato jam and 3% (10 grams), 4% (15 grams), and 6% (20 grams) of ginger powder in terms of the following criteria?
 - 1.1 Appearance;
 - 1.2 Aroma;
 - 1.3 Color;
 - 1.4 Taste; and
 - 1.5 Texture?
2. Are there significant differences in the evaluations of the three groups of respondents on the acceptability of Zicaba Frozen Delight with ginger powder, papaya jam, and sweet potato jam in different proportions in terms of the given criteria?
3. What is the evaluation of the teenagers, young

adults, and adult respondents on the level of marketability of Zicaba Frozen Delight in three different proportions of ginger powder, papaya jam, and sweet potato jam in terms of the following aspects?

- 3.1 Supply Availability;
- 3.2 Production Cost; and
- 3.3 Consumers Demand?
4. Are there significant differences in the evaluations of the three groups of respondents in the level of marketability of Zicaba Frozen Delight with three different proportions of ginger powder, papaya jam, and sweet potato jam as evaluated by the teenagers, young adults, and adult respondents in terms of the aforced aspects?
5. What is the physicochemical analysis of Zicaba Frozen Delight in three different proportions of ginger powder, papaya jam, and sweet potato jam on the following parameters?
 - 5.1 Fat contents;
 - 5.2 Carbohydrates;
 - 5.3 Potential for Hydrogen (pH);
 - 5.4 Moisture content; and
 - 5.5 Vitamins?
6. What are the comments and suggestions of the three groups of respondents to improve the acceptability and marketability of Zicaba Frozen Delight with ginger powder, papaya jam, and sweet potato jam?

Literature Review

In the article, "All About Sweet Potatoes: Nutrition, Facts, Health Benefits, Difference from Yams, Recipes and More," Salomon (2019) claims that a spectrum of colors, including orange, yellow, white, reddish purple, and purple, may be found in sweet potatoes. They were endemic to ancient America's tropical areas and are now being farmed in many parts of the world. In truth, yams and sweet potatoes are not the same thing. Yams, which have only one embryonic seed leaf, are starchier and drier than sweet potatoes, which are dicots with two embryonic seed leaves and edible leaves.

Megan Ware (2019) claims that sweet potatoes are a good source of Beta-carotene, choline, Fiber, potassium, vitamin A, vitamin C, and other nutrients which are all important. Regular consumption aids in the maintenance of normal blood pressure, a healthy cardiovascular system, and weight loss. It contains the antioxidant beta-carotene that guards the eyes and aids in preventing cell damage brought on by free radicals. Sweet potatoes also include fiber which helps with constipation and promotes a healthy digestive tract.

Sweet potatoes contain vitamin C, which helps the immune system and improves iron absorption. Choline, another crucial mineral found in sweet potatoes, promotes the functioning of the neurological system, and helps patients with asthma regulate inflammation.

Relatively, Papayas can aid in wound healing, improve digestion, lessen the likelihood of developing heart disease and lower blood pressure, according to Ware's Article (2017). Zeaxanthin, an antioxidant that shields the eyes from blue light rays and aids in the prevention of macular degeneration, is present in it. Beta-carotene, on the other hand, has been shown to reduce the chance of acquiring asthma. This vitamin is also present in foods such as apricots, broccoli, cantaloupes, and carrots. Another crucial vitamin contained in papayas is vitamin K, which aids calcium absorption and helps to grow and restore bones. Papain, an enzyme present in papayas, aids digestion and maintains our digestive tract healthy. Last but not least, papaya includes Vitamin A which is required for the formation of biological tissues as well as the production of sebum, which keeps the hair moisturized and healthy, and it aids in the creation and preservation of collagen, which provides the skin structure.

According to Goldman (2019), author of "A Detailed Guide to Ginger: What's in It, Why It's Good for You, and More," ginger is scientifically known as *Zingiber officinale*. It is a tropical flowering plant native to Southeast Asia. In addition to being used as a spice in some regions, its root or rhizome is used as medicine in countries including China, Greece, the Arab world, and Asia. Ginger can be consumed as a spice, a supplement, or a medical extract. You can eat it fresh or dried as well.

Ginger contains folate, iron, magnesium, nicotinamide, phosphorus, potassium, riboflavin, vitamin C, and zinc. Vitamins B3 and B6 are also present. According to the MyPlate guidelines of the US Department of Agriculture, ginger is a healthy food. Concentrated supplements may induce adverse effects such as heartburn, gas, or diarrhea since they contain large amounts of the chemical substance found in ginger's root. Both ginger's flavor and its medicinal properties are due to the chemical gingerol, which is present in the root. This substance reduces oxidative stress by acting as a strong anti-inflammatory and antioxidant.

Ice Cream is the next focus. Based on Moncel's (2020) essay, "What is Ice Cream," she said that milk, cream, and sugar are the basic ingredients of ice cream, with other ingredients periodically added and frozen for a

considerable amount of time. As ice cream gained popularity throughout time, several flavors were revolutionized. Ice cream needs between 10% and 16% fat in order to have a smoother texture and fewer ice crystals in the US. Water concentration is also lower. Ice cream containing less than 10% milk fat is known as "ice milk" or "low fat ice cream," and it also contains stabilizers such as gluten to maintain a uniform texture, as well as sugar or sugar substitutes to enhance the flavor of the ice cream. Its flavor palette has evolved over time, and it now offers both savory and sweet flavors.

Consequently, De Castro conducted another research study (2017) named "Production and Evaluation of Saba Banana Puree in Two Treatments in Making Ice Cream". Saba banana puree was utilized in two ice cream production techniques in De Castro's study. The researcher used a self-structured questionnaire to collect data as part of a descriptive study design. The weighted mean and the t-test were used to analyze the data. Based on the criteria used in the researcher's self-structured questionnaire, the researcher concluded that there were no appreciable differences between the two treatments of the made saba banana ice cream in the two groups of respondents.

More so, Giangco et al. (2017) conducted another study on the Formulation of Sweet Potato (*Ipomoea Batatas*) Bread. The purpose of this research was to develop a yeast bread that was enhanced with mashed sweet potato. Three different treatment formulations of the product were created: Treatment 1 contained 175 grams of mashed potatoes and other ingredients, Treatment 2 contained 250 grams of mashed potatoes and other ingredients, and Treatment 3 contained 250 grams of mashed potatoes and other ingredients. (350 g sweet potato plus other ingredients). According to the results of the product's sensory evaluation, treatment 3, which contains 350 grams of sweet potato along with other ingredients, was the best bread formulation. The weighted mean results are as follows: 5.0 indicates extremely edible, 4.78 indicates most pleasant, 4.93 indicates most acceptable for color, and 4.88 indicates good for aroma.

Likewise, the research on the "Production of Papaya Flavored Ice Cream with Puree and Spray-Dried Papaya Seed" by Chi Hong et al. (2021) was also evaluated. Its goal was to create a nutritious ice cream using papaya puree and spray dried papaya powder. The researcher used a 9-point hedonic scale and Quantitative Descriptive Analysis, as well as Physicochemical and Proximate Analysis, to evaluate the product's sensory qualities. The most well-liked of

the product's formulations, the ice cream with 20% papaya puree received the highest rating overall.

Furthermore, M. Vedashree et al. (2020) had a study on the "Characterization of Volatile Components from Ginger Plant at Maturity and its Value Addition to Ice Cream." The researcher compared the volatile content of both fresh ginger and ginger that has been freeze-dried and used it in ice cream. GC-MS profiles showed that sesquiterpenes were common. With a rise in maturation days, zingiberene, a key volatile component, grew from 2.52 to 18.15%, but α -curcumin fell from 12.58 to 3.84%. The oleoresin content of the freeze-dried ginger powder was 10.2 0.1%, with 3.6 0.2% 6-gingerol. It was discovered that the increased nutritional value of the ginger in the ice cream contributed to its tolerable flavor and appearance.

Lastly, the study, "Physicochemical, Melting, and Sensory Properties of Ice Cream Incorporating Processed Ginger (*Zingiber officinale*)" was conducted by Gabbi et al (2017). Ginger candy, juice, paste, and powder were used to make ice cream. The researchers discovered that adding ginger juice and paste reduces fats, protein, and total solids, while increasing antioxidant activity and phenols, whereas adding ginger candy and powder increases antioxidant activity, crude fiber, phenols, and total solids. When juice and powder are added, the acidity increases, while paste and sweets decrease. Ginger candy, juice, paste, and powder at 1, 4, 6, and 10% added to ice cream received the highest approval scores, according to the statistics.

Methodology

The research method used in the study was experimental. According to Sirisilla, Shrutika (2023), it is a framework of procedure that uses a scientific approach using two sets of variables to ascertain whether the first variable caused a change in the second variable. It also aids the researchers in gathering data for better research decisions and establishing the facts of the study. Because the ice cream will be created with ginger powder, papaya jam and sweet potato jam, the researcher is convinced that this strategy will succeed. Its purpose is to determine whether the use of ginger powder, papaya jam and sweet potato jam as ice cream ingredients is acceptable and marketable in terms of appearance, aroma, color, taste, and texture. Because the study focused on appearance, aroma, color, taste, and texture, the experimental research method is the best approach.

Instruments of the Study

The researcher collected data from adult, teenagers, and young adults, in Barangay Gulod Malaya, San Mateo, Rizal, using a questionnaire checklist. The three sets of respondents' evaluations of ginger powder, papaya jam, and sweet potato jam as ice cream ingredients were analyzed using the nine-point Hedonic Rating Scale based on the following criteria: a) appearance, b) aroma, c) color, d) taste, and e) texture. The five-point Likert Scale was used to estimate the marketability of ginger powder, papaya jam, and sweet potato jam as ice cream components based on customer demand, production cost and supply availability.

The researcher adapted and modified a designed questionnaire from the study of Aliteg (2018) "Acceptability and Marketability of Munchkin with Paragis and Kulitis Powder" and from the study of Lentiya (2018) "Utilization and Marketability of Squash and Carrot Puree as ingredients of Coconut Pudding", which consisted of two parts, the evaluation on the acceptance of the product, and the evaluation on the marketability of the product with comments and suggestions. The questionnaire was evaluated by an expert panel from Marikina Polytechnic College's graduate school.

Procedure

In Barangay Gulod Malaya, San Mateo, Rizal, the researcher performed a taste test on the prepared ice cream that contained 70% (250 grams), 85% (300 grams), and 100% (350 grams) of sweet potato jam and papaya jam along with 3% (10 grams), 4% (15 grams), and 6% (20 grams) of ginger powder. To ensure higher returns, the researcher personally organized and collected the questionnaires. Following the collection of responses, the data was tallied, tabulated, and statistically processed for analysis and interpretation.

Ethical Considerations

The researcher herself explained and gave the informed consent to each participant before the conduct of the study. She ensured them that the information would be used with utmost confidentiality and within the purpose of the study only.

Results and Discussion

Evaluation of the Three Groups of Respondents on the Level of Acceptability of the Zicaba Frozen Delight with 70% (250 grams), 85% (300 grams), and 100% (350 grams) of Papaya Jam and Sweet Potato Jam and 3% (10 grams), 4% (15 grams), and 6% (20 grams) of Ginger Powder

Table 1. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 70% (250 grams) Papaya Jam and Sweet Potato Jam and 3% (10 grams) of Ginger Powder in Terms of Appearance*

Appearance	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
The ice cream containing sweet potato jam, papaya jam, and ginger powder has a unique appearance.	8.13	EA	7.87	VA	8.00	VA
It has an inviting appearance.	7.83	VA	7.40	VA	7.97	VA
It has desirable thickness.	7.93	VA	8.03	VA	8.10	VA
It is free from cracks and other shape defects.	8.03	VA	7.77	VA	7.93	VA
It is tempting to eat.	7.90	VA	7.87	VA	8.17	EA
Overall Weighted Means	7.97	VA	7.79	VA	8.03	VA

It can be observed from the table that the three groups of respondents evaluated the Ice cream with 70% (250 grams) of papaya jam and sweet potato jam and 3% (10 grams) of ginger powder in terms of appearance as Very Acceptable (VA) with an overall weighted mean of 7.97 for teenagers, 7.79 for Young Adults and 8.03 for adult respondents. The data also showed that the teenagers rated indicator 1, "The ice cream containing sweet potato jam, papaya jam, and ginger powder has a unique appearance" as Extremely Acceptable (EA). On the other hand, the young adult respondents rated all indicators as Very Acceptable (VA) which means that the product has a unique and inviting appearance, has desirable thickness, free from cracks and other shape defects and is tempting to eat. For the adults the fifth indicator "It is tempting to eat" it is rated as Extremely Acceptable (EA). The result shows that the 3 groups of respondents appreciated the appearance of the product.

According to the data, the three groups of respondents appreciated the appearance of the Zicaba Frozen Delight with 70% (250 grams) of papaya jam and sweet potato jam and 3% (10 grams) of ginger powder because it was unusual and appealing.

Table 2. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 70% (250 grams) Papaya Jam and Sweet Potato Jam and 3% (10 grams) of Ginger Powder in Terms of Aroma*

Aroma	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
It has a jam-like smell.	7.53	VA	7.40	VA	7.63	VA
It has a mouthwatering aroma	7.83	VA	7.10	MA	7.67	VA
It has a balanced natural smell of an ice cream.	7.97	VA	7.27	VA	7.87	VA
It has a delicate sweet smell.	7.87	VA	7.53	VA	7.83	VA
It has a creamy smell of ice cream.	8.10	VA	7.67	VA	7.90	VA
Overall Weighted Means	7.86	VA	7.39	VA	7.78	VA

It can be seen in the table that the teenager, young adult, and adult respondents have the same evaluation with regards to the acceptance of sweet potato, papaya, and ginger ice cream in terms of its aroma as it was evident in the overall weighted mean of 7.86 for teenagers, 7.39 for young adults and 7.78 for adults described as Very Acceptable (VA). However, the young adults showed a rating of Moderately Acceptable (MA) aroma for indicator 2.

These results imply that though the young adults vary in one indicator which is the mouthwatering aroma, it must be improved more for the consumers to be satisfied. Overall, the three groups of respondents have a positive result on the aroma of the product, and this is because of its balanced natural smell, and it is preferred by all the respondents.

Table 3. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 70% (250 grams) Papaya Jam and Sweet Potato Jam and 3% (10 grams) of Ginger Powder in Terms of Color*

Color	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
The ice cream containing sweet potato jam, papaya jam and ginger powder has a good and balanced color combination.	8.37	EA	7.97	VA	8.13	EA
It has a distinctive color.	7.60	VA	7.87	VA	7.97	VA
It has an attractive and appetizing color.	7.77	VA	7.23	VA	7.80	VA
It has an even-toned inner/outer color.	7.87	VA	7.57	VA	8.00	VA
It has an acceptable light color.	8.33	EA	8.17	EA	8.10	VA
Overall Weighted Means	7.99	VA	7.76	VA	8.00	VA

As presented in the table the three groups of respondents have the same evaluation regarding the acceptability of the Zicaba Frozen Delight with ginger, papaya, and sweet potato in terms of its color as presented in the overall weighted means of 7.99, 7.76 and 8.00 which was rated as Very Acceptable (VA). The data also revealed that the teenagers and adult

respondents rated indicator 1 “The ice cream containing sweet potato jam, papaya jam and ginger powder has a good and balanced color combination” as Extremely Acceptable (EA) while the young adults rated it as Very Acceptable (VA). On the other hand, indicator 5, “It has an acceptable light color” is rated by the teenagers and young adult respondents as Extremely Acceptable (EA) while the adult respondents rated it as Very Acceptable (VA).

These results imply that the produced Zicaba Frozen Delight has an appetizing and attractive color.

Table 4. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 70% (250 grams) Papaya Jam and Sweet Potato Jam and 3% (10 grams) of Ginger Powder in Terms of Taste*

Taste	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
It has a flavorsome taste of ice cream containing sweet potato jam, papaya jam and ginger powder.	8.27	EA	8.30	EA	8.37	EA
It has unique flavor that complement each other.	8.10	VA	8.13	EA	8.27	EA
It has a satisfying and palatable taste.	8.00	VA	8.07	VA	8.27	EA
It provides delightful taste of ingredients.	8.17	EA	8.13	EA	8.30	EA
It has no aftertaste.	7.57	VA	7.63	VA	8.17	EA
Overall Weighted Means	8.02	VA	8.05	VA	8.27	EA

It can be gleaned on the table that the teenagers and young adults evaluated the taste of the Zicaba Frozen Delight with sweet potato, papaya, and ginger as Very Acceptable (VA) with an overall weighted mean of 8.02 for the teenagers and 8.05 for the young adults. On the other hand, the adult respondents rated the product in terms of taste with a weighted mean of 8.27 verbally interpreted as Extremely Acceptable (EA).

This signifies that the taste of 70% (250 grams) of papaya jam and sweet potato jam and 3% (10 grams) of ginger powder was highly acknowledged by the three groups of respondents.

It can also be observed in the table that the teenagers, young adults and adult respondents rated item 1, “It has a flavorsome taste of ice cream containing sweet potato jam, papaya jam and ginger powder” and item 4, “It provides delightful taste of ingredients” as Extremely Acceptable (EA) while the teenager and young adult rated the items 3 “It has a satisfying and palatable taste” and 5 “It has no aftertaste” as Very Acceptable (VA). The young adult and adult

respondents rated item 2, “It has unique flavor that complement each other” as Extremely Acceptable (EA) while the teenager respondents rated it as Very Acceptable (VA)

This implies that the respondents agreed that the ice cream has a flavorsome and delightful taste.

Table 5. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 70% (250 grams) Papaya Jam and Sweet Potato Jam and 3% (10 grams) of Ginger Powder in Terms of Texture*

Texture	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. The ice cream is pleasurable and consistent in texture.	8.13	EA	8.07	VA	8.30	EA
2. It has a creamy texture.	8.23	EA	8.07	VA	8.33	EA
3. It has a chunky texture.	7.73	VA	7.83	VA	8.07	VA
4. It has a luscious fine texture	7.87	VA	7.87	VA	8.07	VA
5. It has a balanced texture.	7.97	VA	8.00	VA	8.23	EA
Overall Weighted Means	7.99	VA	7.97	VA	8.20	EA

It can be observed in the data that the teenagers and young adults have the same evaluation regarding the acceptability of papaya, sweet potato, and ginger powder as ingredients of Zicaba Frozen Delight in terms of its texture as it was evident on the overall weighted mean rating of 7.99 and 7.97, respectively interpreted as Very Acceptable (VA), while the adult respondents rated it as Extremely Acceptable (EA) with an overall weighted mean of 8.20.

More specifically, the teenagers and the adult respondents rated item 1, “The ice cream is pleasurable and consistent in texture,” and item 2, “It has a creamy texture,” as Extremely Acceptable (EA). For the young adults all indicators are rated as Very Acceptable (VA). This is because of its pleasurable and consistent texture which the respondents loved in the product. According to the data, the three groups of respondents are pleased with the texture of the Zicaba Frozen Delight.

Table 6. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 85% (300 grams) Papaya Jam and Sweet Potato Jam and 4% (15 grams) of Ginger Powder in Terms of Appearance*

Appearance	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
The ice cream containing sweet potato jam, papaya jam, and ginger powder has a unique appearance.	8.33	EA	7.87	VA	8.50	EA
It has an inviting appearance.	7.93	VA	7.77	VA	8.27	EA
It has desirable thickness.	8.03	VA	8.10	VA	8.33	EA
It is free from cracks and other shape defects.	8.17	EA	7.87	VA	8.23	EA
It is tempting to eat.	8.20	EA	7.83	VA	8.50	EA
Overall Weighted Means	8.13	EA	7.89	VA	8.37	EA

As gleaned on the data in the table the teenager and adult respondents have the same level of evaluation on the appearance of the ice cream which is rated as Extremely Acceptable (EA) as evidently shown in the overall weighted mean rating of 8.13 for teenagers and 8.37 for the adult respondents. While the young adults rated the product as Very Acceptable (VA) with a weighted mean of 7.89.

More specifically, the teenagers and the adult respondents rated item 1, "The ice cream containing sweet potato jam, papaya jam, and ginger powder has a unique appearance, item 4, "It is free from cracks and other shape defects," and item 5, "It is tempting to eat" as Extremely Acceptable (EA) while the young adults rated the said items as Very Acceptable (VA). The teenagers and the young adults rated Item 2 "It has an inviting appearance," and item 3 "It has desirable thickness" as Very Acceptable (VA) while the adults rated it as Extremely Acceptable (EA).

These findings imply that though the three groups of respondents vary in some indicators, generally all the respondents are satisfied with the appearance of the Zicaba Frozen Delight with 85% (300 grams) sweet potato jam and papaya jam and 4% (15 grams) ginger powder this is because of its unique and inviting appearance.

Table 7. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 85% (300 grams) Papaya Jam and Sweet Potato Jam and 4% (15 grams) of Ginger Powder in Terms of Aroma*

Aroma	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. It has a jam-like smell.	7.83	VA	7.37	VA	7.90	VA
2. It has a mouthwatering aroma	7.97	VA	7.20	MA	7.97	VA
3. It has a balanced natural smell of an ice cream.	8.13	EA	7.40	VA	7.97	VA
4. It has a delicate sweet smell.	8.00	VA	7.60	VA	8.03	VA
5. It has a creamy smell of ice cream.	8.13	EA	7.73	VA	8.03	VA
Overall Weighted Means	8.01	VA	7.46	VA	7.98	VA

As presented in the table, all the respondents evaluated the product as Very Acceptable (VA) with a weighted mean of 8.01 for teenagers, 7.46 for young adults and 7.98 for the adult respondents.

Moreover, the three groups of respondents rated item 1, "It has a jam-like smell" and item 4, "It has a delicate sweet smell" as Very Acceptable (VA). Another item which is rated by the young adults and adult respondents is item 3, "It has a balanced natural smell of an ice cream" and item 5, "It has a creamy smell of ice cream" the respondents rated it as Very Acceptable (VA) while the teenagers rated it as Extremely Acceptable (EA). Item 2, "It has a mouthwatering aroma" is rated by the teenagers and adults as Very Acceptable (VA) while the young adults rated it as Moderately Acceptable (MA).

These findings imply that the three groups of respondents agreed that the Zicaba Frozen Delight with 85% (300 grams) sweet potato, papaya and 4% (15 grams) ginger powder have a pleasant and creamy aroma of ice cream.

Table 8. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 85% (300 grams) Papaya Jam and Sweet Potato Jam and 4% (15 grams) of Ginger Powder in Terms of Color*

Color	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. The ice cream containing sweet potato jam, papaya jam and ginger powder has a good and balanced color combination.	8.27	EA	7.83	VA	8.10	VA
2. It has a distinctive color.	7.70	VA	7.93	VA	8.07	VA
3. It has an attractive and appetizing color.	7.77	VA	7.27	VA	7.93	VA
4. It has an even-toned inner/outer color.	8.00	VA	7.60	VA	8.20	EA
5. It has an acceptable light color.	8.40	EA	7.87	VA	8.27	EA
Overall Weighted Means	8.03	VA	7.70	VA	8.11	VA

The data show that the teenagers, young adults, and adult respondents have the same level of evaluation on the acceptability of the Zicaba Frozen Delight with the proportion of 85% (300 grams) jams and 4% (15 grams) powder in terms of color as evidenced by the overall weighted mean rating of 8.03, 7.70 and 8.11 respectively and verbally interpreted as Very Acceptable (VA).

It can be seen in the table that the three groups of respondents rated item 2, "It has a distinctive color" and 3 "It has an attractive and appetizing color" as Very Acceptable (VA) while item 1, "The ice cream

containing sweet potato jam, papaya jam and ginger powder has a good and balanced color combination”, is rated by the teenagers as Extremely Acceptable (EA) and the young adults and adult respondents rated it as Very Acceptable (VA). On the other hand, item 4 “It has an even-toned inner/outer color” is rated by the teenagers and young adults as Very Acceptable (VA) while the adult respondents rated it as Extremely Acceptable (EA). Lastly, item 5 “It has an acceptable light color” is rated by both the teenagers and the adult respondents as Extremely Acceptable (EA) while the young adults rated it as Very Acceptable (VA).

Table 9. *Respondents’ Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 85% (300 grams) Papaya Jam and Sweet Potato Jam and 4% (15 grams) of Ginger Powder in Terms of Taste*

Taste	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
It has a flavorsome taste of ice cream containing sweet potato jam, papaya jam and ginger powder.	8.47	EA	8.03	VA	8.33	EA
It has unique flavor that complement each other.	8.40	EA	8.17	EA	8.27	EA
It has a satisfying and palatable taste.	8.17	EA	8.17	EA	8.30	EA
It provides delightful taste of ingredients.	8.17	EA	8.07	VA	8.40	EA
It has no aftertaste.	8.03	VA	7.73	VA	8.23	EA
Overall Weighted Means	8.25	EA	8.03	VA	8.31	EA

As observed in the table, the teenagers and adult respondents have the same evaluation on the product as Extremely Acceptable (EA) with an overall weighted mean rating of 8.25 for the teenagers and 8.31 for the adult respondents while the young adults had an overall weighted mean of 8.03 verbally interpreted as Very Acceptable (VA).

More specifically, all the respondents rated items 2 “It has unique flavor that complement each other” and 3 “It has a satisfying and palatable taste” as Extremely Acceptable (EA). While items 1 “It has a flavorsome taste of ice cream containing sweet potato jam, papaya jam and ginger powder,” and 4, “It provides delightful taste of ingredients” is rated by the teenagers and adult respondents as Extremely Acceptable (EA) while the young adults rated it as Very Acceptable (VA). The last indicator, “It has no aftertaste” is rated by the teenagers and young adults as Very Acceptable (VA) while the adult rated it as Extremely Acceptable (EA). These findings imply that the respondents are one in saying that the product has a satisfying and unique taste.

As presented in table 11, the teenagers and young adult

respondents have the same evaluation regarding the acceptability of the product in terms of texture as evidently shown on the overall weighted mean rating of 8.05 for teenagers and 8.02 for young adults verbally interpreted as Very Acceptable (VA) while the adult respondents rated it as Extremely Acceptable (EA) with a weighted mean of 8.27.

The results mean that the three groups of respondents consider the texture of the product as very acceptable.

Table 10. *Respondents’ Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 85% (300 grams) Papaya Jam and Sweet Potato Jam and 4% (15 grams) of Ginger Powder in Terms of Texture*

Texture	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
The ice cream is pleasurable and consistent in texture.	8.13	EA	8.20	EA	8.37	EA
It has a creamy texture.	8.20	EA	8.13	EA	8.37	EA
It has a chunky texture.	7.80	VA	7.80	VA	8.23	EA
It has a luscious fine texture	7.90	VA	7.97	VA	8.17	EA
It has a balanced texture.	8.23	EA	8.00	VA	8.23	EA
Overall Weighted Means	8.05	VA	8.02	VA	8.27	EA

Moreover, items 1 “The ice cream is pleasurable and consistent in texture” and 2 “It has a creamy texture” is rated by all the respondents as Extremely Acceptable (EA). On the other hand, items 3 “It has a chunky texture” and 4 “It has a luscious fine texture” are rated by the teenagers and young adults as Very Acceptable (VA) while the adults rated it as Extremely Acceptable (VA). The item 5, “It has a balanced texture” was evaluated by the teenagers and adults as Extremely Acceptable (EA) while the young adults evaluated it as Very Acceptable (VA).

The data implies that the respondents’ evaluation on the acceptability of the Zicaba Frozen Delight with 85% (300 grams) and 4% (15 grams) proportion in terms of texture has a positive result and is liked by the respondents because of its pleasurable, consistent, and creamy texture.

Table 11. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 100% (350 grams) Papaya Jam and Sweet Potato Jam and 6% (20 grams) of Ginger Powder in Terms of Appearance*

Appearance	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
The ice cream containing sweet potato jam, papaya jam, and ginger powder has a unique appearance.	8.33	EA	7.90	VA	8.53	EA
It has an inviting appearance.	8.00	VA	7.77	VA	8.53	EA
It has desirable thickness.	8.00	VA	8.03	VA	8.50	EA
It is free from cracks and other shape defects.	8.20	EA	7.93	VA	8.43	EA
It is tempting to eat.	8.30	EA	7.53	VA	8.57	EA
Overall Weighted Means	8.17	EA	7.83	VA	8.51	EA

It can be gleaned on the table that the teenagers and adult respondents have the same evaluation regarding the acceptability of zicaba frozen delight in terms of appearance as Extremely Acceptable (EA) with overall weighted means rating of 8.17 and 8.51 respectively while the young adult respondents evaluated it as Very Acceptable (VA) with a weighted mean of 7.83. These findings imply that the respondents are pleased with the appearance of the product.

More specifically, the teenagers and adult respondents measured items 1 "The ice cream containing sweet potato jam, papaya jam, and ginger powder has a unique appearance", 4 "It is free from cracks and other shape defects" and 5 "It is tempting to eat" as Extremely Acceptable (EA) whereas the young adult respondents rated it as Very Acceptable (VA). On a different note, items 2 "It has an inviting appearance" and 3 "It has desirable thickness" were rated by the teenagers and young adults as Very Acceptable (VA) while the adults rated it as Extremely Acceptable (EA). This is because of its unique appearance that makes the respondents like the product.

Table 12. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 100% (350 grams) Papaya Jam and Sweet Potato Jam and 6% (20 grams) of Ginger Powder in Terms of Aroma*

Aroma	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
It has a jam-like smell.	7.97	VA	7.70	VA	8.23	EA
It has a mouthwatering aroma	8.03	VA	7.40	VA	8.30	EA
It has a balanced natural smell of an ice cream.	8.13	EA	7.37	VA	8.37	EA
It has a delicate sweet smell.	8.13	EA	7.77	VA	8.23	EA
It has a creamy smell of ice cream.	8.13	EA	7.67	VA	8.30	EA
Overall Weighted Means	8.08	VA	7.58	VA	8.29	EA

It can be observed on the data that the teenagers and the young adults have equal evaluations on the acceptability of zicaba frozen delight in terms of

aroma with an overall weighted means of 8.08 and 7.58 verbally interpreted as Very Acceptable (VA) while the adults evaluated it as Extremely Acceptable (EA) with a mean rating of 8.29.

Furthermore, the teenagers and the young adults rated items 1 "It has a jam-like smell" and 2 "It has a mouthwatering aroma" as Very Acceptable (VA) while the adults rated it as Extremely Acceptable (EA). On the other hand, items 3 "It has a balanced natural smell of an ice cream", 4 "It has a delicate sweet smell" and 5 "It has a creamy smell of ice cream" were rated by the teenagers and the adults as Extremely Acceptable (EA) while the young adult rated it as Very Acceptable (VA). This means that the respondents accepted the delicate aroma of the Zicaba Frozen Delight.

Table 13. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 100% (350 grams) Papaya Jam and Sweet Potato Jam and 6% (20 grams) of Ginger Powder in Terms of Color*

Color	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
The ice cream containing sweet potato jam, papaya jam and ginger powder has a good and balanced color combination.	8.33	EA	7.67	VA	8.30	EA
It has a distinctive color.	7.67	VA	7.80	VA	8.30	EA
It has an attractive and appetizing color.	7.63	VA	7.13	MA	8.17	EA
It has an even-toned inner/outer color.	8.13	EA	7.63	VA	8.43	EA
It has an acceptable light color.	8.37	EA	7.70	VA	8.40	EA
Overall Weighted Means	8.03	VA	7.59	VA	8.32	EA

It can be gleaned in table 14 that the ice cream with sweet potato, papaya and ginger powder is rated as Very Acceptable (VA) by the teenagers and young adults with an overall weighted mean rating of 8.03 and 7.59 respectively while the adult respondents rated it as Extremely Acceptable (EA) with a mean rating of 8.32.

In details items 1 "The ice cream containing sweet potato jam, papaya jam and ginger powder has a good and balanced color combination.", 4 "It has an even-toned inner/outer color" and 5 "It has an acceptable light color" is evaluated by the teenagers and adults as Extremely Acceptable (EA) while the young adults evaluated it as Very Acceptable (VA). In item 2 "It has a distinctive color" both the teenagers and young adults rated it as Very Acceptable (VA) while the adults rated it as Extremely Acceptable (EA). The third item "It has an attractive and appetizing color" is rated differently by the respondents, the teenagers as Very Acceptable (VA), young adults as Moderately Acceptable (MA) and adults as Extremely Acceptable (EA). Though they vary in some indicators generally

the three groups of respondents are satisfied with the distinctive and attractive color of the zicaba frozen delight.

Table 14. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 100% (350 grams) Papaya Jam and Sweet Potato Jam and 6% (20 grams) of Ginger Powder in Terms of Taste*

Taste	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
It has a flavorsome taste of ice cream containing sweet potato jam, papaya jam and ginger powder.	8.40	EA	8.10	VA	8.57	EA
It has unique flavor that complement each other.	8.40	EA	8.13	EA	8.63	EA
It has a satisfying and palatable taste.	8.13	EA	7.87	VA	8.50	EA
It provides delightful taste of ingredients.	8.13	EA	8.13	EA	8.60	EA
It has no aftertaste.	7.47	VA	7.90	VA	8.53	EA
Overall Weighted Means	8.11	VA	8.03	VA	8.57	EA

It can be observed in the table that both the teenagers and young adults rated the ice cream with ginger powder, papaya jam and sweet potato jam as Very Acceptable (VA) in terms of its taste while the adult respondents rated its taste as Extremely Acceptable (EA) with an overall weighted mean rating as follows 8.11 for teenagers, 8.03 for young adults and 8.57 for adult respondents.

Moreover items 2 "It has unique flavor that complement each other" and 4 "It provides delightful taste of ingredients" is rated by all the respondents as Extremely Acceptable (EA). On the other hand, items 1 "It has a flavorsome taste of ice cream containing sweet potato jam, papaya jam and ginger powder" and 3 "It has a satisfying and palatable taste" is rated by the teenagers and adult respondents as Extremely Acceptable (EA) while the young adults interpreted it as Very Acceptable (VA). Item 5 "It has no aftertaste" is being evaluated by the teenagers and young adults as Very Acceptable (VA) while the adult respondents evaluated it as Extremely Acceptable (EA). It implies that the respondents accepted the delightful taste of the product.

Table 15. *Respondents' Evaluations on the Level of Acceptability of the Zicaba Frozen Delight with 100% (350 grams) Papaya Jam and Sweet Potato Jam and 6% (20 grams) of Ginger Powder in Terms of Texture*

Texture	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. The ice cream is pleasurable and consistent in texture.	8.27	EA	8.13	EA	8.60	EA
2. It has a creamy texture.	8.33	EA	8.23	EA	8.63	EA
3. It has a chunky texture.	7.90	VA	8.07	VA	8.43	EA
4. It has a luscious fine texture	8.20	EA	8.07	VA	8.50	EA
5. It has a balanced texture.	8.20	EA	8.17	EA	8.47	EA
Overall Weighted Means	8.18	EA	8.13	EA	8.53	EA

In a more detailed observation, all the respondents rated the ginger powder, papaya jam, and sweet potato jam as ingredients of Zicaba Frozen Delight as Extremely Acceptable (EA) with an overall weighted mean rating of 8.18, 8.13 and 8.53 respectively. This shows that the 100% (350 grams) and 6% (20 grams) proportion is well accepted by all the respondents.

The data also shows that items 1 "The ice cream is pleasurable and consistent in texture", 2 "It has a creamy texture" and 5 "It has a balanced texture" is rated as Extremely Acceptable (EA) by all the respondents, except for items 3 "It has a chunky texture" rated as Very Acceptable (VA) by the teenagers and young adults and verbal interpretation of Extremely Acceptable (EA) by the adult respondents and item 4 "It has a luscious fine texture" which is rated by the teenagers and adult respondents as Extremely Acceptable (EA) while the young adults interpreted it as Very Acceptable (VA). It can be concluded that the product meets the creamy and luscious standard quality texture of the ice cream.

Significant Differences in the Evaluations of the Three Groups of Respondent on the Acceptability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam in Different Proportions

Table 16. *Analysis of Variance of Respondents' Evaluations on the Acceptability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam with Different Proportions as to Appearance*

P	Source of Variation	df	SS	MS	F _{computed} Value	F _{table} Value ($\alpha=5\%$)	Decision	Interpretation
70% and 3%	Between Groups	2	0.977	0.488				
	Within Groups	87	64.328	0.739	0.66	3.10	Fail to Reject the H ₀	Not Significant
85% and 4%	Between Groups	2	3.457	1.728				
	Within Groups	87	43.048	0.495	3.49	3.10	Reject the H ₀	Significant
100% and 6%	Between Groups	2	6.937	3.468				
	Within Groups	87	54.468	0.626	5.54	3.10	Reject the H ₀	Significant

The table shows that the computed F values for 85% (300 grams) and 4% (15 grams) (3.49) and 100% (350 grams) and 6% (20 grams) (5.54) are greater than the critical F value (3.10) with 2 and 87 degrees of freedom, respectively. As a result, the null hypothesis should be rejected at a 5% level of significance. This means that there are significant differences in the appearance ratings of ice cream with ginger powder, papaya jam, and sweet potato jam among the three groups of respondents.

However, because the computed f value of 0.66 is less than the critical f value of 3.10, the statistical decision to reject the null hypothesis fails. This demonstrates that there is no significant difference in the three groups of respondents' evaluations of the acceptability of zicaba frozen delight with 70% (250 grams) and 3% (10 grams) proportions in terms of appearance.

This implies that the three groups of respondents have different views on the acceptability of zicaba frozen delight in terms of appearance with 85% (300 grams) and 4% (15 grams) and 100% (350 grams) and 6% (20 grams) proportion. The 70% (250 grams) and 3% (10 grams) proportions, on the other hand, have no significant difference in the respondents' evaluations because they are all satisfied with the ice cream's unique and inviting appearance.

Table 17. Tukey Pairwise Comparisons of Respondents' Evaluations on the Acceptability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam w/ 85% (300 grams) & 4% (15 grams) and 100% (350 grams) and 6% (20 grams) Proportions as to Appearance

Comparison	OTM	Difference of Mean	Std. Error of Difference	Computed t value	Adjusted P-value	Results
85% (300 grams) and 4% (15 grams)						
Young Adults	7.89	0.24	0.18	1.36	0.37	Means are not different
Teenagers	8.13					
Adults	8.37					Means are not different
Teenagers	8.13	0.24	0.18	1.28	0.41	Means are not different
Adults	8.37					Means are different*
Young Adults	7.89	0.48	0.18	2.64	0.03	
100% (350 grams) and 6% (20 grams)						
Young Adults	7.83	0.34	0.20	1.63	0.24	Means are not different
Teenagers	8.17					
Adults	8.51					Means are not different
Teenagers	8.17	0.34	0.20	1.70	0.21	Means are not different
Adults	8.51					Means are different*
Young Adults	7.83	0.68	0.20	3.33	0.00	
Adults						

As noticed in the table, the P-values for the 85% (300 grams) and 4% (15 grams) (0.03), and 100% (350 grams) and 6% (20 grams) (0.00) proportions are smaller than the 0.05 level of significance. This leads that the statistical decision is to reject the null hypothesis. Hence, there is a significant difference between the evaluations of the following: for the 85% (300 grams) and 4% (15 grams) proportion, adults, and young adult respondents; and for the 100% (350 grams) and 6% (20 grams) proportion, adults, and young adult respondents on the acceptability of ice cream with sweet potato jam, papaya jam and ginger powder pertaining to appearance.

This implies that the young adults and adult respondents have a much more relevant appreciation for the appearance of the ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam in the proportions of 85% (300 grams) & 4% (15 grams) and 100% (350 grams & 6%), respectively (20 grams).

Table 18. Analysis of Variance of Respondents' Evaluations on the Acceptability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam with Different Proportions as to Aroma

P	Source of Variation	df	SS	MS	F _{computed} Value	F _{critical} Value ($\alpha=5\%$)	Decision	Interpretation
70% and 3%	Between Groups	2	3.737	1.868				
	Within Groups	87	93.279	1.072	1.74	3.10	Fail to Reject the Ho	Not Significant
85% and 4%	Between Groups	2	5.777	2.888				
	Within Groups	87	71.475	0.822	3.52	3.10	Reject the Ho	Significant
100% and 6%	Between Groups	2	7.921	3.960				
	Within Groups	87	81.651	0.939	4.22	3.10	Reject the Ho	Significant

It is apparent in the table, the computed F values for the proportion of 85% (300 grams) and 4% (15 grams) (3.52), and 100% (350 grams) and 6% (20 grams) (4.22) are above than the critical F value (3.10). At the 5% significance level, the statistical decision is to reject the null hypothesis.

This indicates that there are significant differences in the aroma acceptability of ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam among the three groups of respondents. However, the computed f values for 70% (250 grams) and 3% (10 grams) (1.74) are less than the critical f value (3.10). The statistical decision to reject the null hypothesis fails at the 5% significance level. This demonstrates that there is no significant difference in the three groups of respondents' assessments of the aroma acceptability of zicaba frozen delight.

This implies that the teenagers, young adults, and adult

respondents have different preferences in the acceptability of zicaba frozen delight with 85% (300 grams) and 4% (15 grams) and 100% (350 grams) and 6% (20 grams) proportion in terms of aroma. However, there is no significant difference in the evaluation of the teenagers, young adults, and adult respondents in the 70% (250 grams) and 3% (10 grams) proportion because they are satisfied with the delicate sweet smell of the ice cream.

Based on next table, the P-values for the 85% (300 grams) and 4% (15 grams) (0.05) and 100% (350 grams) and 6% (20 grams) (0.02) proportions are less than or equal to 0.05 level of significance. So, statistical decision is to reject the null hypothesis. This implies that there is a significant difference between the evaluation of the following: for the 85% (300 grams) and 4% (15 grams) proportion, young adults, and teenager respondents; and for the 100% (350 grams) and 6% (20 grams) proportion, adults, and young adult respondents on the acceptability of ice cream with sweet potato jam, papaya jam and ginger powder pertaining to aroma.

Table 19 . *Tukey Pairwise Comparisons of Respondents' Evaluations on the Acceptability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam w/ 85% (300 grams) & 4% (15 grams) and 100% (350 grams) & 6% (20 grams) Proportions as to Aroma*

Comparison	OWM	Difference of Mean	Std. Error of Difference	Computed t value	Adjusted P-value	Results
85% (300 grams) and 4% (15 grams)						
Young Adults	7.46	0.55	0.23	2.36	0.05	Means are different*
Teenagers	8.01					
Adults	7.98					
Teenagers	8.01	0.03	0.23	0.14	0.99	Means are not different
Adults	7.98					
Young Adults	7.46					
100% (350 grams) and 6% (20 grams)						
Young Adults	7.58	0.50	0.25	2.00	0.12	Means are not different
Teenagers	8.08					
Adults	8.29					
Teenagers	8.08	0.21	0.25	0.83	0.69	Means are not different
Adults	8.29					
Young Adults	7.58					

This could mean that the respondents have distinct appreciation with regards to the aroma of the product with 85% (300 grams) & 4% (15 grams) for the teenagers and young adult respondents and 100% (350 grams) & 6% (20 grams) proportion for the young adults and adult respondents.

The computed F values for the proportions of 70% (250 grams) and 3% (10 grams) (0.99), and 85% (300 grams) and 4% (15 grams) (2.22) are less than the critical F value, as shown in Table 24. (3.10). As a result, the statistical decision is to reject the null hypothesis.

Table 20. *Analysis of Variance of Respondents' Evaluations on the Acceptability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam with Different Proportions as to Color*

P	Source of Variation	df	SS	MS	Computed F Value	Critical F Value ($\alpha = 5\%$)	Decision	Interpretation
70% and 3%	Between Groups	2	1.092	0.546	0.99	3.10	Fail to Reject the H_0	Not Significant
	Within Groups	87	47.787	0.549				
85% and 4%	Between Groups	2	2.851	1.425	2.22	3.10	Fail to Reject the H_0	Not Significant
	Within Groups	87	55.933	0.643				
100% and 6%	Between Groups	2	8.174	4.087	5.70	3.10	Reject the H_0	Significant
	Within Groups	87	62.341	0.717				

At the 5% level of significance, this indicates that there are no significant differences in the color acceptability of ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam among the three groups of respondents. The 100% (350 grams) and 6% (20 grams) proportion, on the other hand, has a computed f value of 5.70, which is greater than the critical F value of 3.10. The statistical test is designed to reject the null hypothesis. At the 5% level of significance, there is a significant difference in the evaluation of the three groups of respondents.

This implies that the teenagers, young adults, and adult respondents agreed and has the same evaluation on the acceptability of ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam with 70% (250 grams) and 3% (10 grams) and 85% (300 grams) and 4% (15 grams) proportion while on the 100% (350 grams) and 6% (20 grams) proportion the three groups of respondents have different preferences on the product in terms of its color.

Table 21. *Tukey Pairwise Comparisons of Respondents' Evaluations on the Acceptability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam with 100% (350 grams) and 6% (20 grams) Proportions as to Color*

Comparison	OWM	Difference of Mean	Std. Error of Difference	Computed t value	Adjusted P-value	Results
100% (350 grams) and 6% (20 grams)						
Young Adults	7.59	0.44	0.22	2.01	0.12	Means are not different
Teenagers	8.03					
Adults	8.32					
Teenagers	8.03	0.29	0.22	1.34	0.38	Means are not different
Adults	8.32					
Young Adults	7.59					
Adults	8.32	0.73	0.22	3.36	0.00	Means are different*
Young Adults	7.59					

The table shows that the P-value for the 100% (350 grams) and 6% (20 grams) (0.00) proportions is less than 0.05. The statistical decision is thus to reject the null hypothesis. This leads to the conclusion that there is a significant difference in the acceptability of ice cream with sweet potato jam, papaya jam, and ginger powder based on color between adults and young adult respondents.

This implies that the young adults and adult respondents has different acknowledgement with regards to the color of the zicaba frozen delight with 100% (350 grams) and 6% (20 grams) proportion.

Table 22. *Analysis of Variance of Respondents' Evaluations on the Acceptability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam with Different Proportions as to Taste*

P	Source of Variation	df	SS	MS	F _{computed} Value	F _{critical} Value ($\alpha = 5\%$)	Decision	Interpretation
70% and 3%	Between Groups	2	1.137	0.568	0.76	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	65.501	0.753				
85% and 4%	Between Groups	2	1.238	0.619	1.07	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	50.200	0.577				
100% and 6%	Between Groups	2	5.096	2.548	3.76	3.10	Reject the Ho	Significant
	Within Groups	87	58.924	0.677				

The table shows that the computed F values for 70% (250 grams) and 3% (10 grams) (0.76) and 85% (300 grams) and 4% (15 grams) (1.07) are less than the critical F value (3.10). This means that at a 5% level of significance, the null hypothesis cannot be rejected. In terms of taste, there are no significant differences between the three groups of respondents' assessments of the acceptability of ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam. The proportion of 100% (350 grams) and 6% (20 grams) has a calculated F value of 3.76, which is greater than the critical F value (3.10). This means that the null hypothesis can be rejected at a 5% level of significance, indicating that there is a significant difference in the taste evaluations of the three groups of respondents.

This implies that the three groups of respondents have identical evaluation on the acceptability of zicaba frozen delight with 70% (250 grams) and 3% (10 grams) and 85% (300 grams) and 4% (15 grams) proportion in terms of taste while the 100% (350 grams) and 6% (20 grams) proportions of the ice cream had a different acceptance level from the three groups of respondents.

As described in the next table, the P-value for the 100% (350 grams) and 6% (20 grams) (0.03) proportion is lower than the 0.05 level of significance. Therefore, the statistical decision is to reject the null hypothesis. This indicates that there is a significant difference between the evaluation of adults and young adult respondents on the acceptability of ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam pertaining to taste.

Table 23 . *Tukey Pairwise Comparisons of Respondents' Evaluations on the Acceptability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam with 100% (350 grams) and 6% (20 grams) Proportions as to Taste*

Comparison	OWM	Difference of Mean	Std Error of Difference	Computed t value	Adjusted P-value	Results
100% (350 grams) and 6% (20 grams)						
Young Adults	8.03	0.08	0.21	0.38	0.93	Means are not different
Teenagers	8.11					
Adults	8.57	0.46	0.21	2.16	0.08	Means are not different
Teenagers	8.11					
Adults	8.57	0.54	0.21	2.54	0.03	Means are different*
Young Adults	8.03					

This implies that the young adults and adult respondents have different appreciation on the delightful taste of the ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam in 100% (350 grams) and 6% (20 grams) proportion.

Table 24. *Analysis of Variance of Respondents' Evaluations on the Acceptability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam with Different Proportions as to Texture*

P	Source of Variation	df	SS	MS	F _{computed} Value	F _{critical} Value ($\alpha = 5\%$)	Decision	Interpretation
70% and 3%	Between Groups	2	1.004	0.502	0.84	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	52.081	0.599				
85% and 4%	Between Groups	2	1.137	0.568	1.06	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	46.861	0.539				
100% and 6%	Between Groups	2	2.771	1.385	2.91	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	41.373	0.476				

As observed in Table 28, the computed F values for

the proportions of 70% (250 grams) and 3% (10 grams) (0.84), 85% (300 grams) and 4% (15 grams) (1.06), and 100% (350 grams) and 6% (20 grams) (2.91) are all less than the critical F value (3.03). At a 5% level of significance, the statistical decision is not to reject the null hypothesis. This means that there are no significant differences in texture between the three groups of respondents' evaluations of ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam. This implies that the three groups of respondents have the same opinion about the product's texture.

Level of Marketability of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam

Table 25. Respondents' Evaluations on the Level of Marketability of Zicaba Frozen Delight with 70% (250 grams) of Papaya Jam, Sweet Potato Jam and 3% (10 grams) of Ginger Powder as Regards Supply Availability

Supply Availability	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
The sweet potato, papaya, ginger, and other raw materials to be used in the product are available locally and all year round.	4.63	VHP	4.60	VHP	4.73	VHP
Minimal amount is needed for product ingredients.	4.40	VHP	4.33	VHP	4.40	VHP
The product requires less effort to produce.	4.27	VHP	4.13	HP	4.33	VHP
Overall Weighted Means	4.43	VHP	4.36	VHP	4.49	VHP

The table presents the three groups of respondents evaluated the product in terms of its supply availability as Very High Potential (VHP) with an overall weighted means of 4.43, 4.36 and 4.49 respectively. These results imply that the supply availability of the sweet potato, papaya and ginger used in the product has a very high potential because the ingredients are available all year round.

Table 26. Respondents' Evaluations on the Level of Marketability of Zicaba Frozen Delight with 70% (250 grams) of Papaya Jam, Sweet Potato Jam and 3% (10 grams) of Ginger Powder as Regards Production Cost

Production Cost	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. The product can be sold at a lower price compared to the other brand.	4.40	VHP	4.20	VHP	4.57	VHP
2. It is cost-effective and cost-efficient.	4.40	VHP	4.27	VHP	4.57	VHP
3. It is affordable.	4.60	VHP	4.43	VHP	4.67	VHP
Overall Weighted Means	4.47	VHP	4.30	VHP	4.60	VHP

The table shows that the adult, teenagers, and young adult respondents evaluated the Zicaba Frozen Delight in terms of its production cost as Very High Potential (VHP) with an overall weighted mean rating of 4.47 for teenagers, 4.30 for young adults and 4.60 for adult respondents. These findings implies that the production cost of zicaba frozen delight with 70% (250 grams) and 3% (10 grams) proportion is affordable and has a reasonable price for its product.

Table 27. Respondents' Evaluations on the Level of Marketability of Zicaba Frozen Delight with 70% (250 grams) of Papaya Jam, Sweet Potato Jam and 3% (10 grams) of Ginger Powder as Regards Consumer Demand

Consumer Demand	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. The product can meet the demand of the consumer.	4.43	VHP	4.33	VHP	4.43	VHP
2. The ingredients can provide health benefits to the consumer.	4.63	VHP	4.53	VHP	4.73	VHP
3. It has an attractive and appetizing color.	4.37	VHP	4.33	VHP	4.50	VHP
Overall Weighted Means	4.48	VHP	4.40	VHP	4.56	VHP

It can be observed in the table that the three groups of respondents evaluated the product in terms of its consumer demand as Very High Potential (VHP) with an overall weighted mean rating of 4.48, 4.40 and 4.56 respectively. These results imply that the product can meet the demand of the consumers and can be beneficial for the consumers.

Table 28. Respondents' Evaluations on the Level of Marketability of Zicaba Frozen Delight with 85% (300 grams) of Papaya Jam, Sweet Potato Jam and 4% (15 grams) of Ginger Powder as Regards Supply Availability

Supply Availability	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. The sweet potato, papaya, ginger and other raw materials to be used in the product are available locally and all year round.	4.67	VHP	4.57	VHP	4.83	VHP
2. Minimal amount is needed for product ingredients.	4.43	VHP	4.30	VHP	4.50	VHP
3. The product requires less effort to produce.	4.30	VHP	4.13	HP	4.43	VHP
Overall Weighted Means	4.47	VHP	4.33	VHP	4.59	VHP

It can be gleaned in the table that the teenagers, young adults, and adult respondents evaluated the product as Very High Potential (VHP) with an overall weighted mean rating of 4.47 for teenagers, 4.33 for young adults and 4.59 for adult respondents. All the items are evaluated by the three groups of respondents as Very High Potential (VHP). With the data gathered it implies that the product can be easily produced because the ingredients are locally and all year round available.

Table 29. Respondents' Evaluations on the Level of Marketability of Zicaba Frozen Delight with 85% (300 grams) of Papaya Jam, Sweet Potato Jam and 4% (15 grams) of Ginger Powder as Regards Production Cost

Production Cost	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. The product can be sold at a lower price compared to the other brand.	4.47	VHP	4.23	VHP	4.67	VHP
2. It is cost-effective and cost-efficient.	4.63	VHP	4.27	VHP	4.67	VHP
3. It is affordable.	4.70	VHP	4.40	VHP	4.73	VHP
Overall Weighted Means	4.60	VHP	4.30	VHP	4.69	VHP

The findings show that the adults, teenagers, and young adult respondents evaluated the product with an overall weighted means of 4.60, 4.30 and 4.69 respectively and verbally interpreted as Very High Potential (VHP). It can also be seen that all the items are evaluated as Very High Potential (VHP). It implies that the product can be made easily available in the market because the ingredients are readily available and affordable.

Table 30. Respondents' Evaluations on the Level of Marketability of Zicaba Frozen Delight with 85% (300 grams) of Papaya Jam, Sweet Potato Jam and 4% (15 grams) of Ginger Powder as Regards Consumer Demand

Consumer Demand	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. The product can meet the demand of the consumer.	4.47	VHP	4.30	VHP	4.57	VHP
2. The ingredients can provide health benefits to the consumer.	4.80	VHP	4.50	VHP	4.77	VHP
3. It has an attractive and appetizing color.	4.50	VHP	4.33	VHP	4.60	VHP
Overall Weighted Means	4.59	VHP	4.38	VHP	4.64	VHP

It can be observed in the table that the marketability of the Zicaba Frozen Delight in terms of its consumer

demand was evaluated as Very High Potential (VHP) by the three groups of respondents with an overall weighted mean rating of 4.59, 4.38 and 4.64 respectively. These findings implies that the Zicaba Frozen Delight with 85% (300 grams) sweet potato jam and papaya jam and 4% (15 grams) of ginger powder can be consumed by all ages and can be beneficial to all.

Table 31. Respondents' Evaluations on the Level of Marketability of Zicaba Frozen Delight with 100% (350 grams) of Papaya Jam, Sweet Potato Jam and 6% (20 grams) of Ginger Powder as Regards Supply Availability

Supply Availability	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. The sweet potato, papaya, ginger and other raw materials to be used in the product are available locally and all year round.	4.70	VHP	4.60	VHP	4.80	VHP
2. Minimal amount is needed for product ingredients.	4.60	VHP	4.37	VHP	4.50	VHP
3. The product requires less effort to produce.	4.40	VHP	4.23	VHP	4.47	VHP
Overall Weighted Means	4.57	VHP	4.40	VHP	4.59	VHP

As presented in table, the adults, teenagers, and young adult respondents obtained an overall weighted mean rating of 4.57, 4.40 and 4.59 respectively and verbally interpreted as Very High Potential (VHP). It could mean that the product has a high market potential. It can be concluded that the product can meet the satisfaction and needs of the consumers.

Table 32. Respondents' Evaluations on the Level of Marketability of Zicaba Frozen Delight with 100% (350 grams) of Papaya Jam, Sweet Potato Jam and 6% (20 grams) of Ginger Powder as Regards Production Cost

Production Cost	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. The product can be sold at a lower price compared to the other brand.	4.40	VHP	4.27	VHP	4.63	VHP
2. It is cost-effective and cost-efficient.	4.57	VHP	4.47	VHP	4.70	VHP
3. It is affordable.	4.73	VHP	4.57	VHP	4.73	VHP
Overall Weighted Means	4.57	VHP	4.43	VHP	4.69	VHP

Based on the given data the three groups of respondents rated all the items as Very High Potential (VHP). This could mean that the product can be sold easily once it is offered in the market.

Table 33. Respondents' Evaluations on the Level of Marketability of Zicaba Frozen Delight with 100% (350 grams) of Papaya Jam, Sweet Potato Jam and 6% (20 grams) of Ginger Powder as Regards Consumer Demand

Consumer Demand	Teenagers		Young Adults		Adults	
	WM	VI	WM	VI	WM	VI
1. The product can meet the demand of the consumer.	4.47	VHP	4.60	VHP	4.57	VHP
2. The ingredients can provide health benefits to the consumer.	4.83	VHP	4.63	VHP	4.77	VHP
3. It has an attractive and appetizing color.	4.50	VHP	4.50	VHP	4.60	VHP
Overall Weighted Means	4.60	VHP	4.58	VHP	4.64	VHP

It can be gleaned on the table that the three groups of respondents rated the Zicaba Frozen Delight as Very High Potential (VHP) as regards to consumer demand with an overall weighted mean rating of 4.60 for teenagers, 4.58 for young adults and 4.64 for adult respondents. This could mean that the product can meet the demand of the consumers and can provide health benefits to the consumers.

Significant Differences in the Evaluations of the Three Groups of Respondents on the Level of Marketability of Zicaba Frozen Delight in Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam

Table 34. Analysis of Variance of Respondents' Evaluations on the Marketability of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam with Respect to Supply Availability

P	Source of Variation	df	SS	MS	F _{computed} Value	F _{critical} Value	Decision	Interpretation
70% and 3%	Between Groups	2	0.269	0.135	0.51	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	22.848	0.263				
85% and 4%	Between Groups	2	0.980	0.490	1.99	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	21.396	0.246				
100% and 6%	Between Groups	2	0.640	0.320	1.27	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	21.830	0.251				

It is perceptible on the table that the computed F values for the proportion of 70% (250 grams) and 3% (10 grams) (0.51), 85% (300 grams) and 4% (15

grams) (1.99), and 100% (350 grams) and 6% (20 grams) (1.27) are smaller than the critical F value (3.03). Hence, the statistical decision is to fail to reject the null hypothesis at a 5% level of significance. This means that there are no significant differences among the evaluations of the three groups of respondents on the marketability of ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam in terms of supply availability.

The collected data showed that the adults, teenagers, and young adult respondents had the same views on all the proportion of ice cream terms of its supply availability because the ingredients used in the product is available all year round.

Table 35. Analysis of Variance of Respondents' Evaluations on the Marketability of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam with Respect to Production Cost

P	Source of Variation	df	SS	MS	F _{computed} Value	F _{critical} Value	Decision	Interpretation
70% and 3%	Between Groups	2	1.356	0.678	2.00	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	29.411	0.338				
85% and 4%	Between Groups	2	2.491	1.246	4.70	3.10	Reject the Ho	Significant
	Within Groups	87	23.041	0.265				
100% and 6%	Between Groups	2	0.980	0.490	1.68	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	25.385	0.292				

As displayed in the table, the computed F values for the proportion of 70% (250 grams) and 3% (10 grams) (2.00), and 100% (350 grams) and 6% (20 grams) (1.68) are below the critical F value (3.03). At a 5% level of significance, the statistical decision is not to reject the null hypothesis. Therefore, there are no significant differences among the evaluations of the three groups of respondents on the marketability of ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam in terms of production cost.

However, for the proportion of 85% (300 grams) and 4% (15 grams), the respondents' evaluations are statistically different. The 85% (300 grams) and 4% (15 grams) proportion has a computed F value of 4.70 and is higher than the critical F value of 3.03, so the statistical decision is to reject the null hypothesis. At a 5% level of significance, this shows that there is a significant difference in the evaluation of the three groups of respondents with 85% (300 grams) and 4% (15 grams) proportion in terms of production cost.

This implies that the adults, teenagers, and young adult

respondents agreed and has the same evaluation on the marketability of ZICABA frozen delight with 70% (250 grams) and 3% (10 grams) and 100% (350 grams) and 6% (20 grams) proportion in terms of production cost while the 85% (300 grams) and 4% (15 grams) proportion has different views on the evaluation of the respondents.

Table 36 . *Tukey Pairwise Comparisons of Respondents' Evaluations on the Marketability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam with 85% (300 grams) and 4% (15 grams) Proportion as to Production Cost*

Comparison	OWM	Difference of Mean	Std. Error of Difference	Computed t value	Adjusted P-value	Results
85% (300 grams) and 4% (15 grams)						
Young Adults	4.30	0.30	0.13	2.26	0.07	Means are not different
Teenagers	4.60					
Adults	4.69	0.09	0.13	0.67	0.78	Means are not different
Teenagers	4.60					
Adults	4.69	0.39	0.13	2.93	0.01	Means are different*
Young Adults	4.30					

The table shows that the P-value for the 85% (300 grams) and 4% (15 grams) (0.01) proportion is lesser than the 0.05 level of significance. As a result, the statistical decision is to reject the null hypothesis. This suggests that there is a significant difference between the evaluation of adults and young adult respondents on the marketability of ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam pertaining to production cost. This could mean that the young adults and adult respondents have a deeper understanding of the prime cost of the zicaba frozen delight.

Table 37. *Analysis of Variance of Respondents' Evaluations on the Marketability of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam with Respect to Consumer Demand*

P	Source of Variation	df	SS	MS	F _{computed} Value	F _{critical} Value	Decision	Interpretation
70% and 3%	Between Groups	2	0.363	0.181	0.93	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	16.981	0.195				
85% and 4%	Between Groups	2	1.188	0.594	2.86	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	18.078	0.208				
100% and 6%	Between Groups	2	0.069	0.035	0.21	3.10	Fail to Reject the Ho	Not Significant
	Within Groups	87	14.059	0.162				

The table depicted that the computed F values for the proportion of 70% and 3% (0.93), 85% and 4% (2.86), and 100% and 6% (0.21) are less than the critical F value (3.03). At a 5% level of significance, this leads that the null hypothesis cannot be rejected. This concludes that there are no significant differences among the evaluations of the three groups of respondents on the marketability of ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam in terms of consumer demand. It implies that the three groups of respondents have the same evaluation on the ZICABA frozen delight with different proportions.

Physicochemical Analysis of the Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam

Table 38. *Fat Content of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam*

SAMPLE DESCRIPTION	METHOD	FAT CONTENT	REMARKS
Zicaba Frozen Delight with 70% (250 grams) papaya jam and sweet potato jam and 3% (10 grams) ginger powder proportion	Acid Hydrolysis (Soxhlet)	10.9 g	High Fat
Zicaba Frozen Delight with 85% (300 grams) papaya jam and sweet potato jam and 4% (15 grams) ginger powder proportion	Acid Hydrolysis (Soxhlet)	10.4 g	Moderate Fat
Zicaba Frozen Delight with 100% (350 grams) papaya jam and sweet potato jam and 6% (20 grams) ginger powder proportion	Acid Hydrolysis (Soxhlet)	9.7 g	Low Fat

The results imply that the 100% (350 grams) and 6%(20 grams) proportion of zicaba frozen delight is the most advisable to consumer since it has the lowest fat content and taking into consideration the other foodsthat we take in a day.

Table 39. *Ash Analysis of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam for the computation of Carbohydrates*

SAMPLE DESCRIPTION	METHOD	ASH ANALYSIS
Zicaba Frozen Delight with 70% (250 grams) papaya jam and sweet potato jam and 3% (10 grams) ginger powder proportion	AOAC 900.02A	0.8 g
Zicaba Frozen Delight with 85% (300 grams) papaya jam and sweet potato jam and 4% (15 grams) ginger powder proportion	AOAC 900.02A	0.8 g
Zicaba Frozen Delight with 100% (350 grams) papaya jam and sweet potato jam and 6% (20 grams) ginger powder proportion	AOAC 900.02A	0.9 g

It can be observed in the table that the ash analysis presents different mean values for the three proportions of ice cream tested in the Food and Nutrition Research Institute. For the 70% (250 grams) & 3% (10 grams) and 85% (300 grams) & 4% (15 grams) proportion it has a total ash content of 0.8 grams and for the 100% (350 grams) and 6% (20 grams) proportion it has 0.9 grams ash content. Ash analysis was applied to get the carbohydrate content of the zicaba frozen delight.

Table 40. *Protein Analysis of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam for the computation of Carbohydrates*

SAMPLE DESCRIPTION	METHOD	PROTEIN ANALYSIS
Zicaba Frozen Delight with 70% (250 grams) papaya jam and sweet potato jam and 3% (10 grams) ginger powder proportion	Automated Kjeldahl Method	2.1 g
Zicaba Frozen Delight with 85% (300 grams) papaya jam and sweet potato jam and 4% (15 grams) ginger powder proportion	Automated Kjeldahl Method	2.1 g
Zicaba Frozen Delight with 100% (350 grams) papaya jam and sweet potato jam and 6% (20 grams) ginger powder proportion	Automated Kjeldahl Method	2.1 g

It can be gleaned on the table that the three proportions of the ice cream containing Ginger Powder, Papaya Jam and Sweet Potato Jam have the same amount of protein as presented in mean value of 2.1 grams. Protein analysis was performed to get the carbohydrate content of the ice cream.

Table 41. *Energy Analysis of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam for the computation of Carbohydrates*

SAMPLE DESCRIPTION	METHOD	ENERGY ANALYSIS
Zicaba Frozen Delight with 70% (250 grams) papaya jam and sweet potato jam and 3% (10 grams) ginger powder proportion	Computed using Atwater Factor	275 kcal
Zicaba Frozen Delight with 85% (300 grams) papaya jam and sweet potato jam and 4% (15 grams) ginger powder proportion	Computed using Atwater Factor	264 kcal
Zicaba Frozen Delight with 100% (350 grams) papaya jam and sweet potato jam and 6% (20 grams) ginger powder proportion	Computed using Atwater Factor	256 kcal

It is presented in the table that the three proportions of Zicaba Frozen Delight contain different number of kilocalories as presented in mean value. For the 70% (250 grams) and 3% (10 grams) proportion it contains 275kcal, 85% (300 grams) and 4% (15 grams) contains 264kcal and for the 100% (350 grams) and 6% (20 grams) it has a total of 256kcal. This means that the 70% (250 grams) and 3% (10 grams) proportions have the highest number of kilocalories. Energy analysis is also performed to compute the carbohydrate content of the product.

Table 42. *Carbohydrates Content of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam*

SAMPLE DESCRIPTION	METHOD	CARBOHYDRATE CONTENT	REMARKS
Zicaba Frozen Delight with 70% (250 grams) papaya jam and sweet potato jam and 3% (10 grams) ginger powder proportion	Computed by difference	42.0 g	Presence of Carbohydrate
Zicaba Frozen Delight with 85% (300 grams) papaya jam and sweet potato jam and 4% (15 grams) ginger powder proportion	Computed by difference	40.4 g	Presence of Carbohydrate
Zicaba Frozen Delight with 100% (350 grams) papaya jam and sweet potato jam and 6% (20 grams) ginger powder proportion	Computed by difference	40.1 g	Presence of Carbohydrate

This indicates that the ice cream with different proportions is a good source of energy because of its carbohydrate content and the recommended proportion of ice cream is the 100% (350 grams) and 6% (20 grams) proportion, taking into consideration the other

food containing carbohydrates an individual takes on a daily basis.

Table 43. Potential for Hydrogen Content of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam

SAMPLE DESCRIPTION	METHOD	POTENTIAL FOR HYDROGEN (Ph) CONTENT	REMARKS
Zicaba Frozen Delight with 70% (250 grams) papaya jam and sweet potato jam and 3% (10 grams) ginger powder proportion	AOAC 981.12 (Modified)	6.45 pH	Less Acid
Zicaba Frozen Delight with 85% (300 grams) papaya jam and sweet potato jam and 4% (15 grams) ginger powder proportion	AOAC	6.53 pH	Less Acid
Zicaba Frozen Delight with 100% (350 grams) papaya jam and sweet potato jam and 6% (20 grams) ginger powder proportion	981.12	6.71 pH	Less Acid

This indicates that the three proportions of Zicaba Frozen Delight contain less acid and is advisable to consume because of its mean value presented.

Table 44. Moisture Content of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam

SAMPLE DESCRIPTION	METHOD	MOISTURE CONTENT	REMARKS
Zicaba Frozen Delight with 70% (250 grams) papaya jam and sweet potato jam and 3% (10 grams) ginger powder proportion	AOAC 920.151A	44.2 g	Less Moisture
Zicaba Frozen Delight with 85% (300 grams) papaya jam and sweet potato jam and 4% (15 grams) ginger powder proportion	AOAC 920.151A	46.3 g	Moderate Moisture
Zicaba Frozen Delight with 100% (350 grams) papaya jam and sweet potato jam and 6% (20 grams) ginger powder proportion	AOAC 920.151A	47.2 g	High Moisture

This indicates that the 100% (350 grams) and 6% (20 grams) proportion has the highest risk of food spoilage since it contains high moisture content with a mean value of 47.2g.

Table 45. Vitamin Content of Zicaba Frozen Delight with Different Proportions of Ginger Powder, Papaya Jam and Sweet Potato Jam

SAMPLE DESCRIPTION	METHOD	VITAMIN C CONTENT	REMARKS
Zicaba Frozen Delight with 70% (250 grams) papaya jam and sweet potato jam and 3% (10 grams) ginger powder proportion	AOAC 967.21 (modified)	3 mg	Moderate Vitamin C
Zicaba Frozen Delight with 85% (300 grams) papaya jam and sweet potato jam and 4% (15 grams) ginger powder proportion	AOAC 967.21 (modified)	3 mg	Moderate Vitamin C
Zicaba Frozen Delight with 100% (350 grams) papaya jam and sweet potato jam and 6% (20 grams) ginger powder proportion	AOAC 967.21 (modified)	5 mg	High Vitamin C

This indicates that the 70% (250 grams) & 3% (10 grams) and 85% (300 grams) & 4% (15 grams) proportion are the recommended amount of ice cream to consume for it has 3mg of Vitamin C and taking into consideration the other foods containing Vitamin C an individual takes on a daily basis.

Comments and Suggestions of the Three Groups of Respondents on the Level of Marketability of Zicaba Frozen Delight with Ginger Powder, Papaya Jam and Sweet Potato Jam

The comments and suggestions of the three groups of respondents on the produced ice cream with Ginger Powder, Papaya Jam and Sweet Potato Jam.

Comments: (1) The product is full of nourishment. It is good for kids and adults. The texture is great however it is a bit sweet. Love the bites of the papaya and sweet potato. (2) The product has the edge to compete on the market due to its great taste. (3) The ice cream is creamy and yummy but needs to lessen the sweetness of the product. Just add salt to balance the taste.

Suggestions: (1) Use blender for a more consistent texture and it would improve the appearance of the product. (2) The color of the ice cream can affect its potential to the market maybe. It can be improved to make it more appealing to all consumers. (3) The sweet potato and papaya has a natural sweetener it somehow overpowered the flavor of the ginger. Lessen the sweetness of the product.

Conclusion

Based on the results of the survey, the following conclusions were drawn. (1) The Zicaba Frozen Delight is acceptable to the three groups of respondents as a dessert. (2) The three groups of respondents have a unanimous evaluation of Zicaba

Frozen Delight. (3) Zicaba Frozen Delight has a high potential to be accepted in the market. (4) The evaluations of the three groups of respondents on the marketability of ZICABA frozen delight in terms of consumer demand, production cost, and supply availability do not differ from each other. (5) The Zicaba Frozen Delight ice cream with three different proportions has a considerable amount of nutrients which could give the product its added value.

The following recommendations are offered based on the findings and conclusions of the study. (1) The ZICABA frozen delight can be promoted as one of the nutritious ice creams in the market because of its health benefits that it can provide to consumers. (2) The color of the product can be further improved to make it more appealing. (3) The taste of the product can be further improved in terms of its sweetness to consider consumers who opt to consume ice cream with lesser sugar using natural sweeteners such as stevia, coconut sugar, molasses etc. (4) The study may be conducted by other researchers by adding other nutritious ingredients to enhance the quality of the ice cream. (5) Potential entrepreneurs such as school canteens and cafeterias are encouraged to produce the zicaba frozen delight and become another source of income

References

- Chi Hong, et.al (2017) Production of Papaya flavored Ice-cream with Puree and Spray-Dried Papaya Powder, University of the Philippines Los Banos.
- De Castro Jr., M. A. (2017) Production and Evaluation of the Saba Banana Puree in Two Treatments in Making Ice Cream. A Master's

Thesis Marikina Polytechnic College, Marikina City.

Giangco, et al. (2017). The Formulation of Sweet Potato (Ipomea batatas) Bread". Published Master's Thesis, Cebu Technological University, Cebu City, Philippines.

Goldman, Rena (2022), What Is Ginger? Nutrition Facts, Health Benefits Uses and More Retrieved October 16, 2022 from <https://www.everydayhealth.com/diet-nutrition/diet/ginger-nutrition-facts-health-benefits-alternative-uses-more/>.

Moncel, Bethany (2020), "What is Ice Cream"- Retrieved September 17, 2020, from <https://www.thespruceeats.com/what-is-ice-cream-1328784>.

Salomon (2019), All About Sweet Potatoes: Nutrition, Facts, Health Benefits, Difference from Yams, Recipes and More Retrieved July 3, 2019 from <https://www.everydayhealth.com/diet-nutrition/diet/sweet-potato-nutrition-benefits-recipes-more/>.

Sirisilla, Shrutika (2023), Experimental Research Design- 6 mistakes you should Never make! Retrieved January 19, 2023, from https://www.enago.com/Academy/experimentalresearchdesign/#What_Is_Experimental_Research_Design.

Ware, Megan (2017), What are the health benefits of papaya? Retrieved December 21, 2017, from <https://www.medicalnewstoday.com/articles/275517>.

Ware, Megan (2019), What's to know about sweet potatoes? Retrieved November 4, 2019, from <https://www.medicalnewstoday.com/articles/281438>.

Affiliations and Corresponding Information

Paola Andrea M. Concepcion
Marikina Polytechnic College - Philippines