



ACCEPTABILITY OF *MORINGA-CAROTA* PIZZA CRUST AMONG VARYING AGE GROUPS

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ABSTRACT

This study aimed to determine the acceptability of moringa-carota pizza crust based on taste, aroma, texture, and presentation among varying age groups as an alternative healthy variation available to the consuming public. Specifically, it looked into the level of acceptability based on taste, texture, aroma, and presentation as well as its acceptability among age groups 15- 18, 19-25, 26-40, 41-50, and 51-64 years old. Afterwards, insights were drawn from the results based on questions 1 and 2 for further improvement. The descriptive survey was used as its design. It utilized 25 participants, 5 from each age group. Data was analyzed using descriptive statistics. Findings from the data showed that participants ages 41 to 50 enjoyed the taste of the MoringaCarota Pizza Crust the most. While ages 15-18 gave texture the highest rating, indicating strong preference. As regards its aroma, ages 41-50 considered the crust as enticing. Finally, the presentation of the pizza was most pleasant to ages 19-25. As such, it can be concluded that varying age groups have different preferences for taste, texture, aroma, and presentation. Thus, the need to improve and focus on the marketability of the moringa-carota pizza crust.

Keywords: *Moringa, Carota, Pizza Crust, Taste, Texture, Aroma, Presentation, Varying age groups, Acceptability.*

INTRODUCTION

Food is considered as one of the essential needs of humanity. It carries nutrients necessary for the development, maintenance, and repair of bodily tissues as well as the control of vital functions (Food, 2024). Foods also play a vital role in promoting and maintaining health and preventing diseases. The process of the body absorbing and using food is crucial for nutrition and is aided by digestion. In Maslow's Hierarchy of Needs, food is regarded as a basic physiological need in which higher-order needs can only be satisfied if the basic needs are met (Mcleod, 2025). Proteins, fats, carbohydrates, vitamins and minerals are some important benefits of food can give to our body. People who eat good food - healthy and balanced diet - are more likely to exert plenty of energy to work. A diet is said to be balanced when consumed correctly and its amounts and combinations of go, grow, and glow foods. GO foods provide energy to a person keeping himself or herself active. Grow foods, on the other hands, supply proteins to our body while glow foods provide vitamins and minerals (Children for Health, 2023).

The United Nations International Children's Emergency Fund (UNICEF Philippines, 2023) reported that the nutritional landscape in the Philippines is posing significant challenges to Filipino children as a result of the shift in their dietary habits. The shift is characterized by decreased intake of fruits and vegetables and increased consumption of sugary, salty, and fatty products. A global SURVEY conducted by Nielsen IQ Global Survey of Snacking (2021) revealed that consumers eat snacks for various reasons. In the same survey, 74% of Filipino respondents said they snack primarily as aid for in between meals hunger while other nationals like the Indonesians, Thais, Malaysian, Vietnamese and Singaporeans consider snacks for enjoyment and satiate cravings for food.

Like other consumers in the ASEAN region, many snackers view snacking as an opportunity to share with family and friends. Filipinos exhibited the highest inclination to appreciate cuisine from other countries like Italian food such as pizza (NielsenIQ, 2021). The Britannica Encyclopedia describes pizza as a baked flattened bread dough typically round and covered with tomato sauce and cheese mixed with other flavorings like anchovies and garlic. It is usually served as a meal, snack, or a treat on various occasions. Filipinos' inclination for diverse pizza flavors and its pocket-friendly price contributes to its popularity in the country (GMA Network, 2014).

Undeniably, pizza has since become an all-time favorite because of its customizability or the customers freedom to select on the flavor or ingredients they want to be added to its basic formulation. Similarly, studies also showed that eating pizza can potentially lower the risk of chronic diseases. Studies suggest that regular pizza eaters have a reduced likelihood of developing heart-related illnesses due to the inclusion of tomato sauce in the recipe making the food rich in lycopene which is an antioxidant known for promoting better heart health (De Vito et al., 2023). Another health benefit of eating pizza includes a reduced symptoms of rheumatoid arthritis especially when consumed hot and baked traditionally. However, unregulated and too much eating of pizza prepared by fast food chains may also results in weight gain, increased risk of at least 13 types of cancer and obesity among children (Bondoc et al. 2019).

To avoid detrimental health impact of eating pizza, studies have been conducted to address the growing concerns over health, sustainability and dietary preferences. Current researchers have continually sought innovative approaches to meet the changing needs and demands of consumers. Within this context, the exploration of vegetable-based pizza emerges as a pertinent subject for investigation. Maintaining a healthy diet is important because it supports overall well-being and helps prevent various health problems.

Notwithstanding the need to address the health issues of eating pizza as one of the favorite foods among Filipinos across ages, the current study aims to determine the acceptability of moringa-carota pizza crust based on taste, aroma, texture, and presentation among varying age groups in the society towards its possible marketability. The pizza is also an innovation to existing demand of having a vegetable enriched pizza in the market as healthy alternative to the consuming public.

Research Questions

This study aimed to determine the acceptability of moringa-carota pizza crust based on taste, aroma, texture, and presentation among varying age groups as an alternative healthy variation available to the consuming public. Specifically, this study sought to answer the following:

1. What is the level of acceptability of moringa-carota pizza crust based on:
 - 1.1 taste
 - 1.2 aroma
 - 1.3 texture
 - 1.4 Presentation
2. What is the level of acceptability of moringa-carota pizza crust among the following age groups:
 - 2.1 15-18 years old
 - 2.2 19-25 years old
 - 2.3 26-40 years old
 - 2.4 41-50 years old
 - 2.5 51-64 years old
3. Based on the answers in questions 1 and 2, how could the taste, aroma, texture and presentation of the current moringa-carota pizza crust be improved?

METHODOLOGY

This study utilized the descriptive survey as its research design. The descriptive research design used both quantitative and qualitative research methods. A descriptive survey is a systematic method of gathering data from a sample of individuals through questionnaires or interviews to describe a population's characteristics, attitudes or behaviors (Siedlecki, 2020). This study employed a descriptive survey methodology to systematically investigate the acceptability of moringa-carota pizza crust among varying

age groups. The researchers justified the fitness of the current study because it primarily intends to determine the preferences and perceptions of diverse demographic groups regarding the proposed pizza crust formulation.

This study was conducted in one of the cities in Eastern Visayas. The city is considered as the first class highly urbanized city in the region with a population of 251,881 individuals as of the year 2020. The city has 138 barangays as of March 31, 2023. The city is located 360 miles (580 km) southeast from Manila and houses 16 institutions for higher learning both state-funded and privately-run. Furthermore, there are 16 universities and 10 best restaurants & bars in Tacloban. The city also is the hub to a number of restaurants, malls, hotels, cultural heritages, and various recreational establishments.

The participants in this study were bona fide residents of the pre-identified city in Eastern Visayas. They were within the age brackets of 15-18, 19-25, 26-40, 41-50 and 51-64. This served as the single criterion in the selection of the participants. Considerably, the researchers utilized the voluntary sampling technique, a type of non-probability sampling technique. According to Murairwa (2015), food tasting would require voluntary participation from the pre-identified respondents. In the interest of limited resources of the researchers only 5 from each age bracket or a total of 25 would serve as participants. Prior to asking them to taste the food, they were asked of their age and when the revealed age is within the identified brackets then they shall be considered as participants.

The following materials, tools, equipment, ingredients were used in the conduct of the experiment.

Table 1
Ingredients that were used in the experiment

INGREDIENTS	QUANTITY	UNIT OF MEASURE
Flour	2	Kilogram
Yeast	2	Tablespoon
Water	2 ½	Cup
Malunggay	2	Cup
Carrot	1	Cup
Tomato Sauce	500	Milliliter
Onion	2 big	Size
Water Spinach	2	Cup
Mushroom	250	Gram
Cheese	500	Gram
Bell Pepper	2	Piece
Cucumber	1 Big	Size
Tomato	3 Medium	Size
Ground Black Pepper	2	Tablespoon
Garlic	1	Whole
Yogurt	125	Gram
Mayonnaise	5	Tablespoon

Sugar	1	Tablespoon
Salt	1/2	Tablespoon

Table 2
Utensils that were utilized in the making of pizza

UTENSILS	QUANTITY	UNIT OF MESURE
Mixing Bowl	3	Piece
Colander	1	Piece
Knife	2	Piece
Chopping Board	2	Piece
Measuring Cup	4	Piece
Round Pan	3	Piece
Tablespoon	2	Piece
Pizza Cutter	1	Piece
Rubber Scrapper	1	Piece
Spoon	2	Piece
Rolling pin	1	Piece

Table 3
Equipment/ Machine that were used in the experiment

EQUIPMENT/MACHINE	QUANTITY	UNIT OF MEASUREMENT
Blender	1	Piece
Oven	1	Piece

Table 4
Composition of ingredients of the three (3) vegetable pizza variations

INGREDIENTS	VARIATION 1	VARIATION 2	VARIATION 3
For the Dough:			
Dough	90%	70%	50%
Malunggay	5%	15%	25%
Carrot	5%	15%	25%
TOPPINGS:			
Base sauce	2 tblsp	3 tblsp	4 tblsp
Onion	1 Small Size	1 Small Size	1 Small Size
Water Spinach	7 Leaves	10 Leaves	12 Leaves
Mushroom	7 Slices	10 Slices	12 Slices
Cheese	5 tblsp	6 tblsp	7 tblsp

Bell Pepper	Half of Medium Size	Medium	Half Size	Medium	Half Medium Size
Tomato	3 Slices		4 Slices		5 Slices
FRESH TOPPINGS					
Cucumber	5 Slices		6 Slices		7 Slices
White Sauce (Garnish)	2 tblsp		3 tblsp		4 tblsp

1.1. General Procedure

Before anything else, pre-heat first the oven then prepare the pre-baked dough and add the tomato sauce that was cooked earlier, after that add the topping according to the variation, brush the pan for the pizza not to stick in the pan during the baking process, then place the pizza in the pan with oil and bake for 45 minutes to 1 hour in a medium heat; when the pizza is ready remove it from the oven and put the fresh toppings.

The Moringa-Carota pizza crust was enclosed in a paper box brought from the supermarket upon tasting. This ensured that the product was not prone for food contamination.

Another instrument that was used in this study is the survey questionnaire. According to Creswell and Creswell (2022), this research tool can be described as a list of written questions aimed at getting information about individuals and is usually used in looking for trends, behavior, and the bigger picture that cases the phenomenon under investigation. In this study, this questionnaire will be composed of two parts. The first part is the demographic profile of the respondents which includes their address, age, sex, and possible allergen of the participant. The name of the participant is optional. This gives the researchers the basic profile of the respondents needed for the study. The second part of the questionnaire is the evaluation of participants for Moringa-Carota Pizza Crust that takes into consideration the four factors of the product: Taste, Texture, Aroma, and Presentation. After tasting the samples, the participants scored based on a 5-point hedonic scale wherein; 1- strongly disagree, 2- disagree, 3- fair, 4-agree, and 5- strongly agree.

Data in this study were collected in a conspicuous area of the identified locale. The researchers positioned themselves in the agreed area and asked passersby to take part in the study by asking them to taste the prepared moringa-carota pizza crust. Before doing this, the researchers introduced themselves to the chosen passersby, explained to them how the food was prepared and the purpose of the study. If they consented to participate, then, they were given a slice of the moringa-carota pizza crust and were asked to answer the survey questionnaire. With their consent also, pictures were taken for documentation purposes only.

Furthermore, descriptive statistics were employed as the primary statistical treatment to analyze and interpret the collected data regarding the acceptability of

Moringa-Carota Pizza Crust. Descriptive statistics are particularly suitable for this study as it facilitates a systematic and comprehensive approach to summarize the participants' perceptions in various aspects, including taste, texture, aroma, and presentation. To determine the profile of the respondents, frequency and percentage distribution were used. To determine the acceptability of the moringa-carota pizza crust, mean was used.

RESULTS AND DISCUSSION

Profile of the Respondents

The researchers determined the age brackets of respondents of the study, "Acceptability of Moringa-Carota Pizza Crust among Varying Age Groups," by utilizing the population statistics by age group from Tacloban City, provided by PhilAtlas (2024). This ensured that the age grouping were aligned with the city's demographic data, resulting in a representative sample for the research.

Table 5 presents the frequency and percentage distribution of the profile of the respondents in terms of age, sex, and allergies to food.

Table 5
Frequency and Percentage Distribution of the Respondents in terms of Age and Sex

		Frequency	%
SEX	Male	8	32.00
	Female	17	68.00
	Total	25	100.00
AGE	15-18	5	20.00
	19-25	5	20.00
	26-40	5	20.00
	41-50	5	20.00
	51-64	5	20.00
	Total	25	100.00
Allergies to Food	Dairy	0	0.00
	Gluten/Wheat	0	0.00
	Yeast	0	0.00
	Eggs	0	0.00
	Vegetables	0	0.00
	Others	0	0.00
	Total	0	0.00

It can be gleaned from the table that 68% are female, while 32% are male. Moreover, ages 15-18, 19-25, 26-40, 41-50, and 51-64 each have 5 respondents, which equates to 20% for each group. Finally, none of the respondents is susceptible to any forms of allergies.

Level of Acceptability of Moringa-Carota Pizza Crust

Table 6 presents the mean profile of the acceptability of Moringa-Carota Pizza Crust in terms of taste.

Table 6
Acceptability of Moringa-Carota Pizza Crust in terms of taste.

FACTORS	Weighted mean	Mean2	SD	Interpretation
15-18				
The Moringa-Carota Pizza Crust is savory.	3.2	11.6	2.89	Neutral
The Moringa-Carota Pizza Crust is palatable.	3.2	10.8	2.75	Neutral
The Moringa-Carota Pizza Crust has distinct taste.				Strongly Agree
	4.8	23.2	4.28	
The Moringa-Carota Pizza Crust's flavor is well blended.	3.8	16.6	3.57	Agree
The Moringa-Carota Pizza Crust is relishing in the mouth	4.6	21.4	4.09	Agree
TOTAL	3.92	16.72	3.52	Agree
19-25				
The Moringa-Carota Pizza Crust is savory.	3.8	15	3.34	Neutral
The Moringa-Carota Pizza Crust is palatable.				Strongly Agree
	4.8	23.2	4.28	Agree
The Moringa-Carota Pizza Crust has distinct taste.	4.2	18.2	3.74	Agree
The Moringa-Carota Pizza Crust's flavor is well blended.	3.6	14	3.22	Neutral
The Moringa-Carota Pizza Crust is relishing in the mouth				Strongly Agree
	4.8	23.2	4.28	
TOTAL	4.24	18.72	3.77	Agree
26-40				
The Moringa-Carota Pizza Crust is savory.	4.4	20	3.94	Agree
The Moringa-Carota Pizza Crust is palatable.				Strongly Agree
	4.8	23.2	4.28	Agree
The Moringa-Carota Pizza Crust has distinct taste.	4.4	20	3.94	Agree
The Moringa-Carota Pizza Crust's flavor is well blended.	4.2	18.2	3.74	Agree

The Moringa-Carota Pizza Crust is relishing in the mouth				Strongly Agree
	4.2	23.2	4.35	
TOTAL	4.4	20.92	4.05	Agree
41-50				
The Moringa-Carota Pizza Crust is savory.				Strongly Agree
	4.2	23.2	4.35	
The Moringa-Carota Pizza Crust is palatable.				Strongly Agree
	4.2	23.2	4.35	
The Moringa-Carota Pizza Crust has distinct taste.				Strongly Agree
	5	25	4.47	
The Moringa-Carota Pizza Crust's flavor is well blended.	4.4	19.6	3.89	Agree
The Moringa-Carota Pizza Crust is relishing in the mouth	4.6	21.8	4.14	Agree
TOTAL	4.48	22.56	4.24	Strongly Agree
50-64				
The Moringa-Carota Pizza Crust is savory.	2.6	7.8	2.28	Disagree
The Moringa-Carota Pizza Crust is palatable.	4.6	21.4	4.09	Agree
The Moringa-Carota Pizza Crust has distinct taste.	3.2	10.8	2.75	Neutral
The Moringa-Carota Pizza Crust's flavor is well blended.	2.8	9.2	2.52	Disagree
The Moringa-Carota Pizza Crust is relishing in the mouth	3.6	15.2	3.40	Agree
TOTAL	3.36	12.88	3.01	Neutral

Legend: 1.00-1.79=Strongly Disagree, 1.80-2.59=Disagree, 2.60-3.39=Neutral, 3.40-4.19=Agree, 4.20 and above = Strongly Agree

It can be gleaned from table 6 that the taste of moringa-carota pizza crust is strongly agreed to ages 41-50 years with a weighted mean of 4.48 and standard deviation of 4.24. It followed by the ages 26-40 with a weighted mean of 4.4 and standard deviation of 4.05 that interpreted "agree". Next is the ages 19-25 years with a weighted mean of 4.24 and standard deviation of 3.77 that interpreted "agree". Additionally, the ages 18-25 followed next with a weighted mean of 3.92 and standard deviation of 3.52 that interpreted "agree". Lastly, the ages 51-64 has the lowest weighted mean which is 3.36 and standard deviation of 3.01 that interpreted "neutral".

This implies that the taste is most acceptable to ages 41-50 years old and the ages 51-64 has the less acceptable of taste.

Table 7
Acceptability of Moringa-Carota Pizza Crust in terms of texture

FACTORS	Weighted mean	Mean2	SD	Interpretation
15-18				
The Moringa-Carota Pizza Crust has the right level of chewiness.	4.8	23.2	4.28	Strongly Agree
The Moringa-Carota Pizza Crust toppings are tender/soft.	4.2	28.2	4.89	Strongly Agree
The sauce of Moringa-Carota Pizza Crust complements the crust and toppings.	4.4	20	3.94	Agree
The melting quality of Moringa-Carota Pizza Crust is desirable.	4.6	21.8	4.14	Agree
The Moringa-Carota Pizza Crust is bite resistant.	4.6`	21.4	4.09	Agree
Total	4.52	22.92	4.27	Strongly Agree
19-25				
The Moringa-Carota Pizza Crust has the right level of chewiness.	4	16.4	3.52	Agree
The Moringa-Carota Pizza Crust toppings are tender/soft.	4	16.8	3.57	Agree
The sauce of Moringa-Carota Pizza Crust complements the crust and toppings.	4.2	18.2	3.74	Agree
The melting quality of Moringa-Carota Pizza Crust is desirable.	4.6	21.4	4.09	Agree

The Moringa-Carota Pizza Crust is bite resistant.	4.8	23.2	4.28	Strongly Agree
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TOTAL	4.32	19.2	3.84	Agree
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26-40

The Moringa-Carota Pizza Crust has the right level of chewiness.	4.4	20	3.94	Agree
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The Moringa-Carota Pizza Crust toppings are tender/soft.	4.2	18.2	3.74	Agree
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The sauce of Moringa-Carota Pizza Crust complements the crust and toppings.	4	16.8	3.57	Agree
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The melting quality of Moringa-Carota Pizza Crust is desirable.	4.6	21.4	4.09	Agree
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The Moringa-Carota Pizza Crust is bite resistant.	4.2	18.2	3.74	Agree
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TOTAL	4.28	18.92	3.82	Agree
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41-50

The Moringa-Carota Pizza Crust has the right level of chewiness.	4	16.4	3.52	Agree
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The Moringa-Carota Pizza Crust toppings are tender/soft.	4.8	23.2	4.28	Strongly Agree
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The sauce of Moringa-Carota Pizza Crust complements the crust and toppings.	4	16.8	3.57	Agree
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The melting quality of Moringa-Carota Pizza Crust is desirable.	4.4	20	3.94	Agree
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The Moringa-Carota Pizza Crust is bite resistant.	4.4	20	3.94	Agree
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TOTAL	4.32	19.28	3.85	Agree
51-64				
The Moringa-Carota Pizza Crust has the right level of chewiness.	2.4	6.4	2	Disagree
The Moringa-Carota Pizza Crust toppings are tender/soft.	4.8	23.2	4.28	Strongly Agree
The sauce of Moringa-Carota Pizza Crust complements the crust and toppings.	4.6	21.4	4.09	Agree
The melting quality of Moringa-Carota Pizza Crust is desirable.	4.4	19.6	3.89	Agree
The Moringa-Carota Pizza Crust is bite resistant.	4.6	21.8	4.14	Agree
TOTAL	4.16	18.48	3.68	Agree

Legend: 1.00-1.79=Strongly Disagree, 1.80-2.59=Disagree, 2.60-3.39=Neutral, 3.40-4.19=Agree, 4.20 and above = Strongly Agree.

It can be gleaned from table 7 that the Texture of Moringa-Carota pizza crust is "strongly agree" to ages 15-18 years old with a weighted mean of 4.52 and has a standard deviation of 4.27. It was followed by the ages 41-50 with a weighted mean of 4.32 and has a standard deviation of 3.85 that interpreted "Agree". Next, ages 19-25 got a weighted mean of 4.32 and has a standard deviation of 3.84 that interpreted "Agree". While, 26-40 years old got a weighted mean of 4.28 and has a standard deviation of 3.82 that interpreted "Agree". Lastly, ages 51-64 years old weighted mean is 4.16 and has a standard deviation 3.68 that interpreted "Agree". This implies that the Texture is most acceptable to ages 15-18 years old while ages 51-64 is less acceptable to Texture.

Table 8
Acceptability of Moringa-Carota Pizza Crust in terms of aroma

FACTORS	Weighted mean	Mean 2	SD	Interpretation
15-18				
The Moringa-Carota Pizza Crust has good smell.	3.4	14.2	3.28	Neutral
The Moringa-Carota Pizza Crust has no strong smell from the added ingredients.	3.2	14	3.28	Neutral
The Moringa-Carota Pizza Crust has savoring aroma.	2	18.4	4.04	Agree

The Moringa-Carota Pizza Crust has appetizing smell.	4	18.4	3.79	Agree
The Moringa-Carota Pizza Crust smell conveys a sense of freshness.	4	18.4	3.79	Agree
TOTAL	3.32	16.68	3.64	Agree
19-25				
The Moringa-Carota Pizza Crust has good smell.	4.4	20	3.94	Agree
The Moringa-Carota Pizza Crust has no strong smell from the added ingredients.	3.4	14.2	3.28	Neutral
The Moringa-Carota Pizza Crust has savoring aroma.	3.6	14.8	3.34	Neutral
The Moringa-Carota Pizza Crust has appetizing smell.	4	18.4	3.79	Agree
The Moringa-Carota Pizza Crust smell conveys a sense of freshness.	4.2	19	3.84	Agree
TOTAL	3.92	17.28	3.64	Agree
26-40				
The Moringa-Carota Pizza Crust has good smell.	3.8	15	3.34	Neutral
The Moringa-Carota Pizza Crust has no strong smell from the added ingredients.	3.4	12.6	3.03	Neutral
The Moringa-Carota Pizza Crust has savoring aroma.	4.4	20	3.94	Agree
The Moringa-Carota Pizza Crust has appetizing smell.	3.2	12	2.96	Neutral
The Moringa-Carota Pizza Crust smell conveys a sense of freshness.	4.2	18.2	3.74	Agree
TOTAL	3.8	15.56	3.40	Agree
41-50				
The Moringa-Carota Pizza Crust has good smell.	4.8	23.2	4.28	Strongly Agree
The Moringa-Carota Pizza Crust has no strong smell from the added ingredients.	4.6	21.4	4.09	Agree
The Moringa-Carota Pizza Crust has savoring aroma.	4.6	21.4	4.09	Agree
The Moringa-Carota Pizza Crust has appetizing smell.	5	25	4.47	Strongly Agree
The Moringa-Carota Pizza Crust smell conveys a sense of freshness.	5	25	4.47	Strongly Agree
TOTAL	4.8	23.2	4.28	Strongly Agree
51-64				
The Moringa-Carota Pizza Crust has good smell.	3.8	15	3.34	Neutral
The Moringa-Carota Pizza Crust has no strong smell from the added ingredients.	3.2	12	2.96	Neutral

The Moringa-Carota Pizza Crust has savoring aroma.	4.4	20	3.94	Agree
The Moringa-Carota Pizza Crust has appetizing smell.	4.4	20	3.94	Agree
The Moringa-Carota Pizza Crust smell conveys a sense of freshness.	3.2	12	2.96	Neutral
TOTAL	3.8	15.8	3.43	Agree

Legend: 1.00-1.79=Strongly Disagree, 1.80-2.59=Disagree, 2.60-3.39=Neutral, 3.40-4.19=Agree, 4.20 and above = Strongly Agree.

It can be gleaned from table 8 that the aroma of moringa - Carota Pizza crust is strongly agreed to ages 41-50 years with a weighted mean of 4.8 and the standard deviation of 4.28. It followed by the ages of 19-25 years with a weighted mean of 3.92 and standard deviation of 3.64 that interpreted "agree". Next is the ages of 51-64 year with a weighted mean of 3.8 and standard deviation of 3.43 that interpreted "agree". Next is the ages of 26-40 years with a weighted mean of 3.8 and standard deviation of 3.40 that interpreted "agree". Lastly is the ages of 15-18 years with a weighted mean of 3.32 and standard deviation of 3.64 that interpreted "agree".

Implies that the aroma is highly acceptable to age 41–50-year-old while ages 15-18 is less acceptable to aroma.

Table 9
Acceptability of Moringa-Carota Pizza Crust in terms of presentation

FACTORS	Weighted mean	Mean2	SD	Interpretation
15-18				
The Moringa-Carota Pizza Crust is well baked.	4	17.6	3.68	Agree
The Moringa-Carota Pizza Crust is looks appetizing.	3.4	15.2	3.43	Agree
The Moringa-Carota Pizza Crust's toppings are evenly distributed/ balanced.	4.4	20	3.94	Agree
The Moringa-Carota Pizza Crust retains its freshness and vibrant colors.	4.4	20	3.94	Agree
The Moringa-Carota Pizza Crust is presented in a neat and organized manner.	3.8	17	3.63	Agree
TOTAL	4	17.96	3.73	Agree
19-25				
The Moringa-Carota Pizza Crust is well baked.	4.8	23.2	4.28	Strongly Agree
The Moringa-Carota Pizza Crust looks appetizing.	4.6	21.4	4.09	Agree
The Moringa-Carota Pizza Crust's toppings are evenly distributed/ balanced.	4.6	21.4	4.09	Agree
The Moringa-Carota Pizza Crust retains its	5	25	4.47	Strongly Agree

freshness and vibrant colors.				
The Moringa-Carota Pizza Crust is presented in a neat and organized manner.	5	25	4.47	Strongly Agree
TOTAL	4.8	23.2	4.28	Strongly Agree
26-40				
The Moringa-Carota Pizza Crust is well baked.	4	16.8	3.57	Agree
The Moringa-Carota Pizza Crust looks appetizing.	3.6	15.2	3.40	Agree
The Moringa-Carota Pizza Crust's toppings are evenly distributed/ balanced.	4.6	21.4	4.09	Agree
The Moringa-Carota Pizza Crust retains its freshness and vibrant colors.	4.4	20	3.94	Agree
The Moringa-Carota Pizza Crust is presented in a neat and organized manner.	4.6	21.4	4.09	Agree
TOTAL	4.24	18.96	3.82	agree
41-50				
The Moringa-Carota Pizza Crust is well baked.	3.8	15	3.34	Neutral
The Moringa-Carota Pizza Crust looks appetizing.	3.4	12.6	3.03	Neutral
The Moringa-Carota Pizza Crust's toppings are evenly distributed/ balanced.	4.4	20	3.94	Agree
The Moringa-Carota Pizza Crust retains its freshness and vibrant colors.	3.2	12	2.96	Neutral
The Moringa-Carota Pizza Crust is presented in a neat and organized manner.	4.2	18.2	3.74	Agree
TOTAL	3.8	15.56	3.40	Agree
51-64				
The Moringa-Carota Pizza Crust is well baked.	4	16.4	3.52	Agree
The Moringa-Carota Pizza Crust looks appetizing.	4.4	20	3.94	Agree
The Moringa-Carota Pizza Crust's toppings are evenly distributed/ balanced.	3.8	15	3.34	Neutral
The Moringa-Carota Pizza Crust retains its freshness and vibrant colors.	3.2	12	2.96	Neutral
The Moringa-Carota Pizza Crust is presented in a neat and organized manner.	4.2	23.2	4.35	Strongly Agree
TOTAL	3.92	17.32	3.62	Agree

Legend: 1.00-1.79=Strongly Disagree, 1.80-2.59=Disagree, 2.60-3.39=Neutral, 3.40- 4.19=Agree, 4.20 and above = Strongly Agree.

It can be gleaned that from the table 9 that the presentation of moringa-carota pizza crust is strongly agreed to ages 19-25 years with a weighted mean of 4.8 and standard deviation of 4.28. It followed by the ages 26-40 with a weighted mean of 4.24

and standard deviation of 3.82 that interpreted "agree". Next is the ages 15-18 years with a weighted mean of 4 and standard deviation of 3.73 that interpreted "agree". Additionally, the ages 51-64 followed next with a weighted mean of 3.92 and standard deviation of 3.62 that interpreted "agree". Lastly, the ages 41-50 has the lowest weighted mean of 3.8 and standard deviation of 3.40 that interpreted "agree".

This implies that the presentation is most acceptable to ages 19-25 years old and the ages 41-50 has the less acceptable of presentation.

The acceptability of the Moringa-Carota Pizza Crust among various age groups tends to help introduce and familiarize individuals with vegetable-infused food products. In particular, the study found that the Moringa-Carota Pizza Crust is a great way to appeal to health-conscious consumers, especially those in the 41–50 age group, who demonstrated the highest satisfaction with its taste and aroma. This suggests that incorporating nutritious ingredients like moringa and carrots can promote healthier eating habits across age groups. Furthermore, the researchers concluded that varying age groups have different preference for taste, texture, aroma and presentation.

Finally, the Moringa-Carota Pizza Crust is a healthy and innovative option that can cater to various preferences, promoting better dietary choices, especially among middle-aged consumers seeking nutritious, flavorful alternatives.

Recommendations

The study recommends the following:

1. **Product Improvement Based on Age Preferences.** It is recommended to make additional formulation improvements to increase the acceptance of the moringa-carota pizza crust among the older age group, as the taste is most preferred by those aged 41–50 and less desired by those aged 51–64. A wider consumer base may find the product more appealing if the flavor profile or seasoning are changed.
2. **Additional Study on Texture Preferences.** Given that people between the ages of 15 and 18 found the texture of the moringa-carota pizza crust to be most agreeable, it is advised that future studies examine the particular textural characteristics that appeal to this group. This will aid in improving the product's refinement so that it continues to appeal to younger customers.
3. **Product Development for Enhanced Aroma.** Given that the aroma was most favored by those aged 41-50, product development should focus on maintaining or enhancing the aromatic properties of the pizza crust. Aromatic additives or natural flavors that complement the moringa- carota blend can be explored to appeal to a wider audience.
4. **Enhancement of Presentation for Elderly Adults.** Given that the 41–50

age group found the moringa–carota pizza crust to be the least appealing, efforts ought to be undertaken to enhance the product's aesthetic appeal. This could involve experimenting with various crust forms, hues, or extra toppings to enhance the product's visual appeal for this particular market.

5. **Broadening Study Scope to Different Demographics.** Further studies should involve a wider range of demographic groups beyond the current age categories to gain a comprehensive understanding of preferences across different populations. This could help in formulating strategies to improve product acceptability universally.

Compliance with Ethical Standards

The authors hereby certify that this research study complies to the highest ethical standards. Prior to their involvement, all participants provided their informed consent. The freedom to discontinue participation in the study at any moment and without consequence was made clear to participants. The confidentiality of participant data was ensured by maintaining anonymity throughout the research process. The well-being of participants was prioritized, and no actions were taken that could compromise their physical or psychological safety. There were no conflicts of interest that could have influenced the conduct or interpretation of the study. Plagiarism was strictly avoided, and all sources were appropriately cited. The results were interpreted in an impartial and objective manner. The outcomes of this study will only be applied to scholarly and research endeavors.

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