



## FACTORS AFFECTING CONSUMERS' PURCHASE INTENTION FOR BUFFALO MILK-BASED YOGURT ENRICHED WITH STABILIZED PIGMENTED RICE BRAN

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Traditionally used for animal feed or disposed of as waste, rice bran shows considerable potential for food applications because of its elevated nutritional content. Introducing stabilized rice bran (SRB) as a supplementary ingredient in food represents an innovative concept in the Philippines. This research seeks to evaluate the factors influencing consumers' purchase intention towards Buffalo Milk-Based Yogurt (BMBY) Enriched with Stabilized Pigmented Rice Bran (SRB) in Negros Occidental, Philippines. A total of 198 respondents in the five major cities of Negros Occidental were interviewed through a face-to-face survey to gather primary data using a structured questionnaire. Data were analyzed using descriptive and binary regression analyses. Results showed that majority (62.1%) of the respondents consumed yogurt products for refreshment and healthy diet purposes (36.6%). Most (85.9%) of them were not aware about stabilized rice bran and its health benefits but were willing to buy the Buffalo Milk-Based Yogurt (BMBY) Enriched with Stabilized Pigmented Rice Bran (SRB) if made available in the market. Regression analysis revealed that household size ( $\beta = -.245$ , odd ratio = .091, p-value = .783), flavor ( $\beta = .536$ , odd ratio = 1.708, p-value = .015), and taste ( $\beta = .817$ , odd ratio = 2.263, p-value = .000) are positive and significant factors affecting consumers' purchase intention toward BMBY enriched with SRB, while price is a negative predictor ( $\beta = -.050$ , odd ratio = .952 p-value = .031). Educational campaign is crucial to raise consumer awareness on the benefits of consuming functional foods incorporated with stabilized rice bran. Food product developers should consider adding different flavors to cater consumers preferences, enhance product taste for increased consumers' satisfaction, and

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offering various sizes of yogurt to allow consumers to tailor their purchase to fit their budget. Furthermore, policymakers can use the study findings to formulate nutrition policies that promote the use of rice bran as an adjunct food ingredient to improve health among Filipino consumers and promote circular economy.

**Keywords:** Binary Regression Analysis, Buffalo Milk-Based Yogurt, Purchase Intention, Stabilized Rice Bran

**JEL Classification codes:** D12, M31, Q13

## 1. INTRODUCTION

Rice bran is the top by-product of the rice milling process. It is typically used as animal feed due to its poor taste (Demirci, et al., 2017) or burned in the field causing adverse effects to the environment such as formation of smog, air pollution and economic waste (Singh and Arya, 2021). Nevertheless, rice bran has a huge potential for human consumption as it is rich in health-promoting components such as dietary fiber, protein, minerals, and phytochemicals. Previous studies showed that rice bran can aid in reducing diabetes, cardiovascular disease, cancer and other life-threatening diseases (Kadape et al., 2025; Park et al., 2024; Kubota et al., 2020; Misawa et al., 2018).

Despite the health benefits of rice bran, its rapid deterioration limits the exploitation of its full potential for food applications. Thus, to enhance the nutritional qualities of rice bran, food processing techniques have been employed, such as fermentation and stabilization. Fermentation enhances the bio-activity of rice bran (Ardiansyah et al., 2021). On the other hand, stabilization stop lipolytic activity, thus preserving the nutritional value and extending shelf life of rice bran, enabling it to be incorporated into foods for human consumption (Das et al., 2025; Tuncel, 2023)

Over the past decades, there has been an increasing preference for nutritious food among consumers to support their health and wellbeing. Conversely, the food processing industries have widely accepted the use of rice bran, making it a major source of functional ingredient in industry (Tan and Norhaizan, 2020). Several studies showed that rice bran have health-beneficial components, making it suitable for food (Manzoor et al., 2023; Christ-Ribeiro et al., 2021; Prahbu et al., 2017), and pharmaceutical and nutraceutical applications (Kumar et al., 2023; Manzor et al., 2023; Misawa et al., 2018). Rice bran, whether as protein concentrates, full-fat rice bran, rice bran oil, and defatted rice bran

contain bioactive compounds that could be functional ingredients in the production of food (Tan and Norhaizan, 2020).

Many research studies in food innovations from different countries examined the use of rice bran as a supplemental ingredient for the development of functional foods. Rice bran has been widely used in Japan as ingredient in making in pickles (Sugiuara et al., 2024). In Thailand, Chayawat and Rumpagaporn (2020) investigated the use of defatted rice bran (DRB) to reduce oil content of chicken nuggets. The study found out that incorporating rice bran reduced the oil content of chicken nuggets and increased its moisture and fiber levels, making them more suitable for consumption.

Similarly, the study of Pandolsook and Kupongsak, (2017) revealed that rice bran can be used as a replacement for margarine in cookies while Loyppimai, et al. (2017) suggest that black rice bran could partially replace nitrite in the fermented Thai pork sausage. Da Rocha Lemos Mendes, et al (2021) in Brazil examined the potential of defatted rice bran to increased nutritional contents of cakes. The results showed that defatted rice bran is a cheap way to improve nutritional quality of bakery products.

In the USA, studies reported that rice bran can be used as a pork fat replacement in ground products (Wolfer et al, 2018) or as peanut butter stabilizers (Winkler-Moser et al, 2019). Conversely, the study of Wang et al (2018) in China showed that using rice bran enhances the quality of rice pasta. Interestingly, in Indonesia, Sirajuddin et al (2021) developed an instant rice bran milk that that received high acceptability among sensory evaluation panelists. In the Philippines, the use of rice bran for food innovations has been initiated by the Philippine Research Institute (PhilRice) and Philippine Carabao Center (PCC) with the development of the buffalo milk-based yogurt (BMBY) enriched with stabilized pigmented rice bran (SRB). BMBY is a scoop-type yogurt made from buffalo milk supplemented with stabilized pigmented rice bran. Rice bran is rich in fiber and antioxidants while buffalo's milk is rich in vitamin A, making BMBY a nutritious choice to support a healthy diet among consumers.

Buffaloes or carabaos (*Bubalus bubalis*) are commonly raised by smallholder farmers in the Philippines used as draft animals in cultivating agricultural land. However, water buffaloes are also a good source of milk. Raising water buffaloes for dairy purposes is a growing industry in the Philippines. Carabao's milk is considered as a complete food because it is low in cholesterol and high in calcium and Vitamin A (Ramos, 2019). According to Abesinghe et al. (2020), buffalo milk-based dairy products provide various health benefits to humans since buffalo milk is a rich source of protein, lactose, calcium, iron, phosphorus, vitamin A, and natural antioxidants. In addition, buffalo milk contains gangliosides, compounds known for their antioxidant and neuronal protective properties that improve bone, heart, and gastrointestinal health in humans. Buffalo milk can be

processed into different products such as cheese, ice cream, yogurt, clarified fat (ghee), cream, and butter (Emakpor et al., 2024; Philippine Carabao Center, n.d).

When it comes to consumption of buffalo milk and buffalo milk products, consumers who are knowledgeable about the health benefits of buffalo milk demonstrated a higher tendency to purchase buffalo milk and buffalo milk products (Rosiman et al, 2024). Consumers preferred buffalo milk because of its superior nutritional value (Emakpor et al., 2024). Cairano et al (2021) investigated consumers' liking of buffalo stracchino (BS) and cow stracchino (CS) cheese. The study indicated that consumers preferred BS cheese over CS cheese due to its good eating quality. Similarly, Cazacu et al (2014) examined the purchase intention of Greek consumers toward water buffalo milk products and found out that consumers' purchase intention is influenced by product knowledge, nutritional benefits, attitudes and social contacts. Furthermore, a study conducted in the Philippines revealed that consumers of choco-carabao milk are dominantly females. In addition, it showed that price, taste, smell, packaging, and health benefits were the influential factors affecting purchase decision toward this buffalo milk-based product (Preciados and Catchero, 2020) Understanding the factors affecting consumers' willingness to buy a novel product like the BMBY enriched with stabilized rice bran can aid in developing nutrition policies that will increase consumption of this functional product, hence this study.

## 2. METHODOLOGY

### *Study Area*

The study was conducted in the five principal cities (based on population) in Negros Occidental namely Sagay, Cadiz, Bacolod, Bago and Kabankalan. The respondents were individuals belonging to the age range 15-64 years old because they have the capability to buy their preferred product (Ballesteros and Ramos, 2018 as cited by Dalin-as et al 2023).

### *Sampling and Data Collection Procedure*

Primary data were gathered through a face-to-face survey using a structured questionnaire. An important consideration of the study was that the respondents should belong to the age range 15-64 years old, hence, prior to the start of the interview they were asked if they fell within this age range. If not, then the individual is disregarded as a study participant. Moreover, they were asked if they have lactose intolerance and those who

answered yes were also not included in the study. The market survey was conducted outside the grocery stores and supermarket where most individuals buy yogurt products and in crowded areas of the cities where shoppers converged such as in public plazas and transportation terminals.

The total number of respondents was determined using the Cochran formula,  $n = \frac{Z^2pq}{e^2}$ , where  $e$  is the desired level of precision or the margin of error,  $p$  is the estimated proportion of the population that has the attributes of question,  $q$  is  $1-p$ ,  $Z$  is the value from the standard normal distribution reflecting the confidence level that will be used and  $e$  is the margin of error. Using a 95% confidence level, 50% estimated proportion and a 7% margin of error which are within the acceptable range for social science research based on the National Institutes of Health (n.d.), the computed minimum sample size was 196 respondents. A 5% nonresponse rate was added to the sample size in case of missing data hence the computed sample size totaled 206 respondents. However, a sample size of 198 was considered as the final number of respondents due to missing data of the eight (8) questionnaires. These total number of respondents were proportionately distributed to study locations as shown in Table 1. The population data per city was obtained from The PhilAtlas (2020). Proportional stratified sampling was used to select the respondents of the study.

**Table 1.** Distribution of respondents

| Location        | Population per city (15-64 years old) | Proportional percentage | Number of respondents per city |
|-----------------|---------------------------------------|-------------------------|--------------------------------|
| Bacolod City    | 376,090.16                            | 46.2%                   | 92                             |
| Kabankalan City | 125,323.95                            | 15.4%                   | 30                             |
| Bago City       | 119,697.46                            | 14.7%                   | 29                             |
| Cadiz City      | 99,248.54                             | 12.1%                   | 24                             |
| Sagay City      | 93,207.64                             | 11.4%                   | 23                             |
| Total           | 813,567.75                            | 100%                    | 198                            |

### *Data Analysis*

Descriptive statistics was used to analyze the respondents' demographic characteristics, purchase and consumption of yogurt product, awareness for stabilized rice bran and its health benefits, product attributes, price willingness to pay and willingness to buy BMBY enriched with SRB. Table 2 shows the product attributes rating of the BMBY and their corresponding interpretation. This data on product attributes

rating which is part of the marketing stimuli is presented to better understand consumers' purchase intention toward the product. The range was calculated by highest minus lowest range values (e.g.,  $9-1 = 8$ ) then divided by the highest value ( $8 \div 9 = 0.89$ ). The resulting value is 0.89 which is used as the range interval. The interpretation of the Likert scale results follows Nee and Yunus (2020) interpretation.

**Table 2.** Product attributes rating

| Range     | Interpretation          |
|-----------|-------------------------|
| 1.00-1.89 | Dislike extremely       |
| 1.90-2.78 | Dislike very much       |
| 2.79-3.67 | Dislike moderately      |
| 3.68-4.56 | Dislike slightly        |
| 4.57-5.45 | Neither Like or Dislike |
| 5.46-6.34 | Like slightly           |
| 6.35-7.23 | Like moderately         |
| 7.24-8.12 | Like very much          |
| 8.13-9.00 | Like extremely          |

Furthermore, binary logistic regression analysis was employed in the study to assess the effect of independent variables on their purchase intention towards BMBY. Understanding consumers' behavior is essential because, by understanding how consumers decide on a product, marketers can recognize what influences consumers' purchasing choices. Previous studies reported that personal characteristics of consumers like age, sex and income affect consumers' intention to buy a particular product (Moscovici et al., 2024; Teo et al., 2024; Lao et al., 2022; Liang, 2022). When comparing frequenters of grocery stores, Mortimer (2011) suggests that women, who often serve as primary shoppers, prioritize health needs.

The study of Lao et al (2022) revealed that mothers as the purchase decision-maker in the family positively affect consumers' willingness to buy native delicacies incorporated with fermented rice bran if made available in the market. Similarly, Karmakar (2024) underscores the crucial role of wives in the purchasing process. Fatula & Sagan (2015) also support this by stating that women play a significant role in decision making for purchases, showing increased involvement in competitive decision-making and as initiators for convenience items. When considering family factors, the number of family members, as emphasized by Chang et al., (2022), plays a crucial role. Household size affects opportunities for acquiring goods and services, influencing spending patterns across various categories. Consumers are more inclined to purchase yogurt with health

benefits because of its high primary essential nutritional value, like probiotics (Adigüzela and Kocatürk (2021; Chang et al., 2022).

Furthermore, in buying food products, consumers usually look at product attributes that provide them satisfaction. Taste is the top attribute look for by consumers (Lao et al.,2022; Bocog et al., 2023; Dalin-as et al.,2023). Similarly, flavor is another primary consideration among consumers in buying foods (Wang et al., 2022; Sirajuddin et al., 2021). Price negatively affects consumers’ intention to buy a particular product (Teo et al., 2024; Lao et al., 2022). However, consumers’ willingness to pay increases with the health benefits that they can derived from consuming the product (Dalin-as et al, 2023; Ali and Ali 2020). Product brand awareness or knowledge is also crucial in consumers’ purchase intent (Dalin-as et al., 2023; Ling et al.,2023).

In this study, the independent variables included personal characteristics (e.g., age, sex, income, household size), family purchase- decision-maker, product attributes (e.g., taste, flavor, price) and consumers’ awareness toward the health benefits of stabilized rice bran. On the other hand, the dependent variable is the consumers’ purchase intention toward BMBY. The binary logistic regression model is specified as:

*Purchase intent (probability is 1) =  $\beta_0 + \beta_1age + \beta_2Sex + \beta_3HHsize + \beta_4Income + \beta_5Decisionmaker + \beta_6Taste + \beta_7Flavor + \beta_8Price + \beta_9Awareness$*

Where:

|                 |  |
|-----------------|--|
| Purchase Intent | A dummy variable for purchase intention 1 = willing, 0 = not willing   |
| Age             | Age of the respondents measured in years   |
| Sex             | Sex classification of the respondent<br>1 = male, 0 = female   |
| Income          | An ordinal variable referring to the net monthly household income of the respondents measured in Philippine peso |
| HHsize          | A ratio variable referring to the number of household members  |
| Decisionmaker   | A nominal variable indicating the household purchase decision-maker  |

|           |  |
|-----------|--|
| Taste     | Indicates the degree to which the respondents like the taste of the yogurt   |
| Flavor    | Indicates the degree to which the respondents like the flavor of the yogurt  |
| Price     | A variable indicating the price of a 100-g cup of the buffalo milk-based yogurt enriched with stabilized rice bran |
| Awareness | Awareness of the health benefits of stabilized rice bran   |

### 3. RESULTS AND DISCUSSION

As shown in table 3, the average age of the respondents is 33 years old. This showed that individuals who consume yogurt fall within the economically active category of prime working stage indicating that they are earning income (IndexMundi, n.d.). The majority of the respondents are females (60.1%) while 39.9% of them were males. This supported the findings of Crane et al., (2018), Flagg et al., (2013) and Mortimer (2011) stating that women are more likely to shop for groceries and prioritize health-related needs than men. More than half (55.6%) of them is single while 38.4% are married. Single shoppers exhibit more pronounced differences in shopping habits than couples (Tariq et al., 2016),

Descriptive statistics further showed that many of the respondents had college education (47%) closely followed by those who had attained high school level (44.9%). According to Lawrence (2017), individuals with advanced education generally have heightened health consciousness and made more informed decisions, particularly in the context of acquiring new food products. In terms of occupation, many of the respondents were employed either in public or private establishments (32.3%) and students (32.3%). Some of them were unemployed (15.2%) and retired (6.6%).

Several of the respondents who were students had a monthly living allowance between PhP1,001 to 2,000 (29.7%), followed PhP1000 and below (26.6%), indicating a significant number of students with limited financial resources. Only a smaller percentage of students has higher allowances receiving above PhP5,000 per month. This implies that marketers of functional product like the BMBY should make strategies allowing students to afford the product (i.e., using a smaller packaging for the product that command lower price). Conversely, many of the respondents who were employed had a monthly household income between PhP10,001-20,000 (30.4%) followed by PhP5,001-10,000



bracket (29.6%) and Php5,000 and below (26.7%). Furthermore, a smaller proportion of them earned income above Php20,000. This showed that the respondents are low-income but not poor, as per the income classification defined by PIDS (2022).

The respondents had an average household size of 5 family members. According to Adiguzela and Kocatürk (2021), household size affects the family purchase decision because as the household population increases, the expenses of basic needs also increase which implies that less portion of the budget will be spent to non-basic goods. The major purchase decision-maker of the family with (49.5%) are the mothers/wives. This finding emphasizes the vital role that women played in household purchasing decision. Lao et al (2022) and Karmakar (2024) supported the findings, stating that the wife played a crucial role in the purchasing process. Additionally, women were noted to participate more actively in the decision-making process when it comes to purchases, with a higher influence from competitive decision-making and initiator roles for convenience items, as well as a stronger correlation between decision-maker roles and altruistic decision-making (Fatula & Sagan, 2015).

**Table 3.** Socio-demographic characteristics of the respondents

| Variable               | Frequency    | Percent (%) |
|------------------------|--------------|-------------|
| Age                    | 33 years old |             |
| Sex                    |              |             |
| Male                   | 79           | 39.9        |
| Female                 | 119          | 60.1        |
| Total                  | 198          | 100         |
| Civil status           |              |             |
| Single                 | 110          | 55.6        |
| Married                | 76           | 38.4        |
| Separated              | 5            | 2.5         |
| Widow/er               | 7            | 3.5         |
| Total                  | 198          | 100         |
| Educational Attainment |              |             |
| Elementary level       | 14           | 7.1         |
| High school level      | 89           | 44.9        |
| College level          | 93           | 47.0        |
| Master's degree        | 1            | .5          |
| Doctorate              | 1            | .5          |
| Total                  | 198          | 100         |
| Occupation             |              |             |

|                            |     |      |
|----------------------------|-----|------|
| Employed                   | 64  | 32.3 |
| Self-employed              | 27  | 13.6 |
| Not employed               | 30  | 15.2 |
| Students                   | 64  | 32.3 |
| Retired                    | 13  | 6.6  |
| Total                      | 198 | 100  |
| Students Monthly Allowance |     |      |
| PhP1,000 and below         | 17  | 26.6 |
| PhP1,001-2,000             | 19  | 29.6 |
| PhP2,001-3,000             | 10  | 15.6 |
| PhP3,001-4,000             | 5   | 7.8  |
| PhP4,001-5,000             | 9   | 14.1 |
| PhP5,001-6,000             | 1   | 1.6  |
| PhP7,001-8,000             | 1   | 1.6  |
| PhP9,001-10,000            | 1   | 1.6  |
| Above PhP10,000            | 1   | 1.6  |
| Total                      | 64  | 100  |
| Household Monthly Income   |     |      |
| PhP5,000 and below         | 36  | 26.7 |
| PhP5,001 - 10,000          | 39  | 29.6 |
| PhP10,001 - 20,000         | 41  | 30.4 |
| PhP20,001 - 30,000         | 10  | 7.4  |
| PhP30,001 - 40,000         | 3   | 2.2  |
| 40,000 - 50,000            | 3   | 2.2  |
| Above PhP50,000            | 2   | 1.5  |
| Total                      | 134 | 100  |

### ***Purchase and Consumption of Yogurt Products***

Results showed that 70.1% of the surveyed individuals bought or consumed yogurt while 29.9% do not buy or consume yogurt products. These findings suggest a greater number of potential buyers for the BMBY. Those who bought and consumed yogurt were primarily influenced by their family (31.8%). followed by store displays (20.8%), curiosity (19.5%), advertising (12.3%), friends (9.1%), workmates/classmates (4.5%) and online stores (1.9%). Aligned with the results, Kuncharia (2019) stated that family influences, including father, mother and other family members, play a reciprocal role in shaping consumers behavior, including buying yogurt.

Regarding consumers' reasons for buying yogurt, the results indicate that a majority (62.1%) purchased yogurt for personal consumption or refreshments, while 38% cited dietary reasons. Fernandez and Marette (2017) support these findings, noting that yogurt is a versatile product catering to various consumer needs, from a snack to a meal replacement. In contrast, Coskun & Dirican (2019) argue that yogurt is consumed for its health benefits, emphasizing its high nutritional value and positive impact on human health.

Regarding the market outlets where the consumers usually bought yogurt, the most (87.9%) of the respondents bought the product from grocery stores. The preference for buying yogurt in grocery stores can be attributed to the accessibility of these stores. Kwak et al. (2015) support these findings, highlighting that consumers often buy bundles of products, including yogurt, in grocery retailing stores. Contrary to the findings, a different perspective was presented by Pinto et al. (2016), who asserted that many potential consumers prefer purchasing yogurt from supermarkets.

Concerning the attributes that the consumers look for in buying yogurt, taste is the primary consideration (43.0%) followed by nutritional value (40.9%). Some respondents look for the price which should be affordable (11.3%), product packaging (3.8%), and brand (1.1%). This is consistent with the findings of Lao et al. (2022) and Dalinas et al. (2023) who stated that taste is the most important sensory characteristic affecting consumers to buy functional foods. Moreover, due to the high nutritional value closely tied to the most factors influencing yogurt consumers, Chang et al. (2022) stated that consumers usually buy yogurt products with health food labels and a significant number of probiotics.

The respondents who did not buy and consume yogurt products cited that they lacked information about the product (40%). This suggests that these consumers can also be potential buyers of yogurt like the BMBY, but they should be informed about the product. This further indicates the need to advertise the BMBY to raise awareness among consumers. Other respondents cited that they do not buy or consume yogurt because they don't like its taste (31.7%) while some found the product expensive (25%). Aligned with the findings, Rui (2015) reported awareness and knowledge as one of the factors that increase consumers' purchasing decisions (Table 4).

**Table 4.** Purchase and consumption of yogurt product

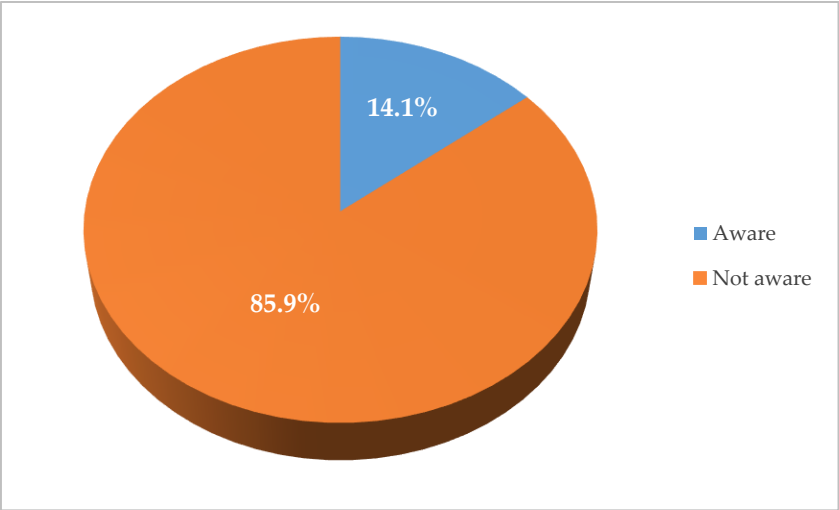
| <i>Consumption of yogurt</i> | <b>Frequency</b> | <b>Percent (%)</b> |
|------------------------------|------------------|--------------------|
| Consume                      | 138              | 70.1               |
| Not consume                  | 60               | 29.9               |
| Total                        | 198              | 100                |

|   |     |      |
|---|-----|------|
| <i>Influencer/s in buying or consuming yogurt</i>   |     |      |
| Friends   | 14  | 9.1  |
| Family/relatives                                    | 49  | 31.8 |
| Store display                                       | 32  | 20.8 |
| Workmates/classmates                                | 7   | 4.5  |
| Advertisement                                       | 19  | 12.3 |
| Online store  | 3   | 1.9  |
| Curiosity   | 30  | 19.5 |
| Total   | 154 | 100  |
| <i>Reason for buying yogurt (multiple response)</i> |     |      |
| Refreshment   | 90  | 62   |
| Support healthy diet                                | 56  | 38   |
| Total   | 145 | 100  |
| <i>Place where yogurt is usually bought</i>         |     |      |
| Grocery/convenience store                           | 124 | 87.9 |
| Online store  | 2   | 1.4  |
| School canteen                                      | 6   | 4.3  |
| Cooperative store                                   | 6   | 4.3  |
| Street vendors                                      | 2   | 1.4  |
| Supermarket   | 1   | 0.7  |
| Total   | 141 | 100  |
| <i>Attributes look for in buying yogurt</i>         |     |      |
| Low/affordable price                                | 21  | 11.3 |
| Good taste  | 80  | 43.0 |
| High nutritional value                              | 76  | 40.9 |
| Packaging   | 7   | 3.8  |
| Brand   | 2   | 1.1  |
| Total   | 186 | 100  |
| <i>Reason for not consuming yogurt</i>              |     |      |
| Don't like the taste                                | 19  | 31.7 |
| Unawareness   | 24  | 40.0 |
| Expensive   | 15  | 25.0 |
| Organically-made                                    | 1   | 1.7  |
| Not interested                                      | 1   | 1.7  |
| Total   | 60  | 100  |

\*multiple response

**Awareness on Stabilized Rice Bran and Its Health Benefits**

As seen in Figure 1, most (85.9%) of the respondents were not aware of stabilized rice bran and its health benefits. This implies the need for extensive information dissemination to educate consumers that rice bran is edible and fit for human consumption, and that it is a health-beneficial adjunct food ingredient.



**Figure 1.** Awareness of the respondents towards stabilized rice bran and its health benefits

**Acceptability of Buffalo Milk-Based Yogurt Enriched with Stabilized Rice Bran**

Table 5 shows the respondents’ evaluation rating attributes of BMBY. On average, the aroma has a rating of 7.01, indicating that most respondents have a favorable opinion of the product's aroma, falling within the "like moderately" category on the rating scale. The color of the product has a 6.93 rating indicating that the respondents moderately like its color. This further means that the respondents have a favorable view of the product's color, although there is room for improvement to potentially make it more appealing to the consumers.

The mouthfeel, which was rated at 6.87, suggests a moderate level of liking among respondents implying room for potential improvements to enhance overall satisfaction. In terms of taste, the rating was 6.24 which falls under “like slightly” category suggesting that the respondents generally found the level of taste in the yogurt to be

acceptable although not extremely so. This means that possible improvement in the taste of the product can be done to better satisfy the consumers. The product flavor received an average rating of 6.88 from respondents with an adjectival rating of "like moderately". This suggests that the majority of respondents view the product flavor favorably, but improvement can also be done like adding flavors for better customer satisfaction.

Regarding the texture of the product, survey participants rated the product's texture an average of 6.92, meaning that they liked it moderately. Although the rating is positive, this finding could mean that there is a chance to optimize the product by keeping or improving the texture to satisfy consumer preferences. Lastly, the product's overall acceptability has a rating of 7.25, which suggests that they had a moderate inclination to like the majority of its features. This suggests that consumers, in general, positively perceived the BMBY as acceptable, placing it in the "like moderately" category on the rating scale.

**Table 5.** Respondents' evaluation rating on the attributes of BMBY enriched with SRB

| Product attributes    | Minimum | Maximum | Mean |
|-----------------------|---------|---------|------|
| Aroma                 | 1       | 9       | 7.01 |
| Color                 | 3       | 9       | 6.93 |
| Mouthfeel             | 1       | 9       | 6.87 |
| Taste                 | 1       | 9       | 6.24 |
| Flavour               | 1       | 9       | 6.88 |
| Texture               | 1       | 9       | 6.92 |
| General acceptability | 1       | 9       | 7.25 |

### *Willingness to Buy Buffalo Milk-Based Yogurt Enriched with Stabilized Rice Bran*

The survey results revealed a strong willingness among respondents to purchase the BMBY (88.4%). On the other hand, the remaining 11.6% expressed unwillingness to make a purchase. The high percentage of willingness to buy suggest a good number of potential buyers for the yogurt product (Table 6). Furthermore, the average price respondents were willing to pay (WTP) for the 100g-size BMBY enriched with SRB is PHP 33.13 with a minimum and maximum WTP of PHP10.00 and PHP50.00, respectively. Marketers can leverage this information to strategically set prices that align with consumer preferences and expectations.

**Table 6.** Willingness to buy FRB-enriched buffalo milk-based yogurt

| Variable                      | Frequency   | Percent (%) |
|-------------------------------|---|-------------|
| Willingness to buy            | 175   | 88.4        |
| Willing                       |   |             |
| Not willing                   | 23  | 11.6        |
| Total                         | 198   | 100.0       |
| Willingness to pay (100g cup) | Average: PhP33.13<br>Minimum: PhP10.00<br>Maximum: PhP50.00 |             |

***Reasons for Willingness to Buy Buffalo Milk-Based Yogurt Enriched with Stabilized Rice Bran***

Shown in table 7 are the reasons for the consumers' willingness to buy the BMBY if made available in the market. The findings indicated that 54.2% of the study participants were persuaded to buy the product due to its health benefits. Several of them expressed willingness to buy it out curiosity (23.6%) while 20.8% said that because they liked its taste.

**Table 7.** Reason for buying BMBY enriched with pigmented

| Reasons         | Frequency | Percent (%) |
|-----------------|-----------|-------------|
| Good taste      | 45        | 20.8%       |
| Curiosity       | 51        | 23.6%       |
| Health benefits | 117       | 54.2%       |
| Affordability   | 3         | 1.4%        |
| Total           | 216       | 100.0       |

*\*multiple response*

***Factors Affecting Consumers Purchase Intention Toward Buffalo Milk-Based Yogurt Enriched with Stabilized Rice Bran***

Results of the binary regression analysis indicate that the size of the household plays a notable role in affecting consumers' inclination to buy the product. The statistical analysis shows a negative predictive value ( $\beta = -.245$ , odd ratio = .783, p-value = .091), suggesting that as the number of family members grows, there is a .783 times lower likelihood of them purchasing the product. This could be due to increased financial responsibilities and the need to allocate resources among family members. Interestingly,

these findings opposed Yekta and Akbay (2015) claimed that larger families tend to consume more yogurt than smaller ones.

Regarding the product attributes of BMBY, the product flavor is a positive and significant factor ( $\beta = .536$ , odd ratio = 1.708, p-value = .015). This means that individuals were 1.708 times more likely to make a purchase the BMBY with added flavor. This could be attributed to the fact that flavor often plays a crucial role in enhancing the overall appeal and enjoyment of a product, influencing consumers positively. Wang et al., 2022 asserted that flavor is the most crucial factor for consumers when selecting a yogurt product. Hence, food product developers should consider adding another yogurt flavor so that consumers have a preference to satisfy their expectations. Furthermore, the taste of the product is a highly significant factor affecting consumers' purchase intent ( $\beta = .817$ , odd ratio = 2.263, p-value = .000). This means consumers were 2.263 times more likely to buy the product if it tastes good. Hence, it is crucial for product developers to prioritize enhancing the taste of the product to satisfy consumer preferences. The taste, or the anticipated taste, significantly impacts consumers' decisions regarding functional foods (Baker et al. 2022; Lao et al. 2022).

Results further showed that price is a negative significant factor of consumers' purchase intention ( $\beta = -.050$ , odd ratio = .952, p-value = .031). This suggests the higher the price set for the BMBY, the respondents become less willing to buy the product. The findings support the studies of Dalin-as et al (2023) and Lao et al (2022) showing negative associations between price and willingness to buy functional food products (Table 8).

**Table 8.** Binary logistics regression analysis on the factors affecting consumers to buy BMBY enriched with pigmented SRB

| Variable                       | B     | P-value | Odd ratio |
|--------------------------------|-------|---------|-----------|
| Age                            | .034  | .184    | 1.034     |
| Sex (1)                        | .230  | .707    | 1.258     |
| Income                         | .217  | .578    | .805      |
| <b>HH size</b>                 | -.245 | .091*   | .783      |
| HH Purchase decision-maker     |       | .538    |           |
| HH Purchase decision-maker (1) | .247  | .838    | 1.280     |
| HH Purchase decision-maker (2) | -.728 | .571    | .483      |
| HH Purchase decision-maker (3) | -.620 | .617    | .538      |



|   |        |         |       |
|---|--------|---------|-------|
| <b>Flavor</b>                           | .536   | .015**  | 1.708 |
| <b>Taste</b>                            | .817   | .000*** | 2.263 |
| <b>Price</b>                            | -.050  | .031**  | .952  |
| Awareness on the health benefits of SRB | .901   | .359    | 2.463 |
| Constant                                | -5.190 | .077    | .006  |

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

#### 4. CONCLUSION

The development of the buffalo milk-based yogurt (BMBY) enriched with stabilized rice bran is a pioneering advancement in the Philippine food industry. As a novel product concept, consumers were not aware about rice bran being used as ingredients in foods. Although unaware, most of them considered the product attributes acceptable and expressed willingness to buy BMBY if it becomes available in the market. The maximum price they are willing to pay for a 100-g cup BMBY is PhP33.13. Their purchase intention is driven by the perceived health benefits of consuming the product, the good taste of the BMBY, and their curiosity. Furthermore, the study findings aligned with Kotler and Keller's model of consumer behavior (2012), indicating that consumers' intention to purchase a particular product is affected by various factors. In this study, household size, taste, flavor and price significantly affect consumers' purchase intent to buy the buffalo milk-based yogurt enriched with stabilized rice bran.

#### 5. RECOMMENDATIONS

An educational campaign should be conducted to raise awareness about rice bran, highlighting the benefits that can be derived from consuming products incorporated with rice bran. In addition, product developers should focus on improving the BMBY mainly by adding different flavors, enhancing product taste, and offering various sizes of the BMBY to allow consumers tailor their purchase to fit their budget. Furthermore, marketers can set prices flexibly, considering different levels of consumers' willingness to pay. However, they should consider not setting them above the average WTP of PhP33.13 unless the product is offered to a niche market. Finally, policymakers should develop nutrition policies that encourage utilization of rice bran in the food industry to improve health among Filipinos and promote circular economy.

## 6. ACKNOWLEDGEMENT

The authors are grateful to the Philippine Rice Research Institute for funding this research.

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