

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY: APPLIED BUSINESS AND EDUCATION RESEARCH

2026, Vol. 7, No. 3, 1249 – 1263

<http://dx.doi.org/10.11594/ijmaber.07.03.21>

Research Article

Herbal Candy Innovation from Oregano, Lemon, and Lemongrass: A School-Based Nutrition and Entrepreneurship Initiative for Health and Well-Being

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Article history:

Submission 28 February 2026

Revised 16 March 2026

Accepted 23 March 2026

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ABSTRACT

The study aims to develop and evaluate the acceptability and commercial viability of herbal candy made from oregano leaves (*Origanum vulgare*), lemon (*Citrus limon*), and lemongrass (*Cymbopogon citratus*), and explore its integration into school-based nutrition and entrepreneurship initiatives in Nueva Vizcaya. These ingredients are recognized for their therapeutic properties, oregano for its antimicrobial and antioxidant capacity, lemon for its vitamin C content and immune support, and lemongrass for its anti-inflammatory and digestive benefits. The study used descriptive quantitative research designed. The study was conducted in the municipality of Aritao, Nueva Vizcaya consisted of residents aged 17-60 years old respondents. The data were gathered using a survey questionnaire and sensory evaluation tools. The nutritional values of the herbal candy were focused on the sugar content, calories, and vitamin compositions developed from the main ingredients such as oregano, lemon, lemongrass, and combined with the white sugar. The findings of the study are highly acceptable in terms of appearance, odor, flavor, sweetness, texture, and packaging. Most of the respondent are willing to pay the product at the price between ₱30 and ₱40, and constant buying habits mostly once or twice a week. The willingness to purchase one to two at a time, the projected total sales amounting to ₱17,320.00. The cost of ₱26.56 per pack, the selling price of ₱40.00, and a break-even point at only 31 packs. These results validate that the product is marketable and financially sustainable and thus appropriate for integration into school-based nutrition and entrepreneurship programs.

Keywords: *Acceptability and commercial viability, Entrepreneurship programs, Herbal candy, School-based nutrition, Sensory evaluation*

How to cite:

Sumaling, D. A., Balaweg, C. B., Caasi, M. L., Pineda, A. F. W., & Valenzuela, R. V. (2026). Herbal Candy Innovation from Oregano, Lemon, and Lemongrass: A School-Based Nutrition and Entrepreneurship Initiative for Health and Well-Being. *International Journal of Multidisciplinary: Applied Business and Education Research*. 7(3), 1249 – 1263. doi: 10.11594/ijmaber.07.03.21

Introduction

Creating an initiative focusing on health and well-being to our target customer is one of the most important factors to consider. The initiative is the development of herbal candy that is traditionally used and valued for their medicinal and nutritional properties these ingredients are oregano, lemon, and lemongrass. By combining these ingredients into a palatable, feasible, learners learn to connect science, health, and business that have an impact in the community. In addition, nutrition and entrepreneurship are increasingly recognized as important factors of educational system. Now a days schools are not only centers of academic subjects or learning but also training grounds for innovations, where learners can perform and get involved in a school activity that advocates health, sustainability, and economic empowerment.

Moreover, this product development initiative was significant because this is not just a candy that gives health benefits, but it plays a huge part in every childhood. All celebration sweets have a symbolic meaning in a Filipino tradition such as love, care, and sharing a good memory that makes this a sentimental treat. In connection to this tradition and our culture, this study is aligned with the Sustainable Development Goals 3: Good Health and Well-Being that promotes healthier products in terms of confectionary sweets. This study also advocates Sustainable Development Goals 4: Quality Education by integrating entrepreneurship subjects to create product innovations. In addition, this study also promotes the Sustainable Development Goals 8: Decent Work and Economic Growth by allowing the learners experienced an business operation simulation to acquire entrepreneurial skills, and finally, the study also connected with the Sustainable Development Goals 12: Responsible Consumption and Production by promoting and utilizing the local products that available in the municipality of Aritao, Nueva Vizcaya.

Theoretical Framework

This study was guided by several theories such as Schumpeter's Innovation Theory (1943) highlights the development of the product to maintaining profitability and to achieve

competitive advantage in the market. In addition, the New Product Development (NDP) Framework, according to Booz et al. (1982) discussed the seven steps process for product development innovations starting with conceptualizing the product idea, screening of resources available, followed by product testing or experimentations, checking the potential of the product or business analysis, then product modification for improvement, then conduct marketing testing to its target customers, the final step was the commercialization of the herbal candy.

Furthermore, the study also used the cost and return analysis to calculate the cost of the production and the projected profits. This analysis involves the break-even point analysis, profitability analysis and pricing strategy to maximize the available resources effectively and to maintain sustainability in the market according to (Navier, 19th century; cited by Jiang & Marggraf, 2021). These theories provide a foundation for the development of herbal candy up to commercialization that guides the learners to create their own innovative products that promotes nutritious and sustainability.

Acceptability of Lemon

Lemon (*Citrus limon*) is a commonly grown citrus fruit in Southeast Asia that is greatly valued for its unique taste, fragrant properties, and medicinal applications. It has a varied function in different industries such as food, drinks, cosmetics, and traditional medicine. Especially its high content of vitamin C, antioxidants, flavonoids, and pectin is responsible for many health benefits. These encompass immunological and digestive functionality support, along with antibacterial, antifungal, anti-inflammatory, and anti-cancer activities. Interestingly, current research has emphasized lemon's ability to counteract oxidative stress and enhance physiological health indicators (Ali, 2020; Ullah & Hassan, 2022; Singh et al., 2021).

Apart from its nutritional content, lemon juice is also seen as a green, eco-friendly biocatalyst and solvent. This makes it a future-proof substitute for man-made chemicals in chemical as well as medicinal uses (Shaik et al., 2022). Moreover, the study conducted by Dimopoulou et al., (2019) highlighted that lemon contains

features like high molecular weights and pseudoplasticity, because of this characteristic lemon was used in cooking, cosmetics, and even in medicines. Lemon has also essential oil contents that uses in different products, but the acidity of the lemon requires careful handling especially with the sensitive person like pregnant or breastfeeding woman.

Market Potential of Lemon

In economic aspect, lemon was known as one of the profitable products because it used in different ways. According to (Giannakas & Fulton, 2020) highlighted that in agriculture business there is a good or bad quality of the product that exist in the market but that's not the problem, if the consumer is willing to pay, if they are satisfied with it, and if they are keeping buying in the long run. In short, whether the lemon is good or bad there is still an income to it. However, it has the potential to generate stable revenues, particularly through support from strategic interventions and value-chain enhancements (Quijano et al., 2020).

Moreover, the market potential of lemon is highly commendable because it was used in ways such as in food preparations, preservations and in medicine purposed. According to Chauhan & Saxena (2019) discussed that lemon peels possess antioxidant, antibacterial, antifungal, and anticancer that's why lemon has attracted much interest for its medicinal components potential.

Concurrently, herbal counterparts like lemongrass and citronella have shown immense profitability and competitive gains in the international essential oil market. Notably, locally produced oils have been more affordable compared to imported substitutes, adding substance to their potential for local agribusiness promotion (Catelo & Jimenez, 2017).

Together, these results highlight the double importance of lemon and its plant analogs, both for their medicinal/pharmaceutical value and for their economic importance to national and global markets. Therefore, incorporating these facts into product development and policymaking may improve the sustainability and competitiveness of herbal-oriented innovations.

Acceptability of Lemongrass

Lemongrass (*Cymbopogon citratus*) is widely used in the food, cosmetics, pharmaceutical, and traditional medicine industries due to its characteristic citrus scent and wide range of health benefits. Recent publications report that it is rich in a profile of bioactive compounds like phenolics, flavonoids, essential oils, and minerals like zinc, magnesium, selenium, and vitamins A, B, and C, which in combination give rise to its antioxidant, anti-inflammatory, antibacterial, antifungal, and anti-obesity activities (Nutritional and Nutraceutical Potentials of Lemongrass, n.d.).

This is based on the fact that, as Azlan and Zidan (2022) point out, lemongrass has anxiolytic, anti-hypertensive, and gut-promoting effects, whereas Fathima Thasrin and Anitha (2023) emphasize its intestinal protection against damage through mechanisms that inhibit apoptosis and oxidation. Furthermore, research by Kiani et al. (2022) and The Effectiveness of Lemongrass Aromatherapy on Labor Pain (n.d.) shows how it can act as a natural painkiller, especially in childbirth.

From a functional food point of view, Ansari et al. (2023) highlight lemongrass's content of high phenols (1607.545 mg GAE/100 g) and its ability to scavenge free radicals, augmenting its potential in nutraceutical development. Lemongrass used as digestive and insect repellent traditionally. Because of the continuous study the lemongrass found out that had a medicinal component such as citral and geraniol that are shown that lemongrass as acceptable in the market. However, the findings required more scientific test or clinical examinations to support these claims. Lemongrass presents itself as a diversified botanical asset with great promise for both food innovation and natural medical uses, deserving further investigation in product formulation and integrative wellness approaches

Market Potential of Lemongrass

Lemongrass, which is widely consumed as a herbal tea in Benguet, is under-commercialized because of its light or light-yellow color and absence of locally made packages. Research proposed adding berry flavor from locally cultured strawberries and mulberries and using tea

bags for packaging to enhance market competitiveness. The most acceptable berry-flavored lemongrass herbal tea was established through a study based on sensory attributes, formulation, return on cash expense, and nutrient profile. Sensory analysis and ANOVA were employed to analyze the findings. The berry-flavored lemongrass tea found to be most acceptable was further analyzed for return on cash cost and nutrient composition. Results indicated the marketability potential of the berry-flavored lemongrass tea. Pilot commercialization of berry-flavored lemongrass herbal tea, with 50% dried lemongrass leaves, 25% freeze-dried strawberry, and 25% freeze-dried mulberry, is suggested (Aragon and Somyden 2023).

The research of Malinao (2023) analyzes the existing situations and external conditions of entrepreneurs in Lagawe, Ifugao, with a focus on the One Town One Product Criteria. It will recommend having a sustainable herb tea industry in the area. The research employed qualitative and quantitative approaches, such as a researcher-constructed questionnaire of eight entrepreneurs and key informant interviews of local government unit representatives and agency personnel.

The results indicated that local tea herb products are in good condition, with good product quality, design, packaging, marketing strategy, branding, production, delivery, financial ability, innovations, good customer service, and incorporation of cultural value. Entrepreneurs enjoy different kinds of governmental infrastructure support, including commercial, social, and technical. They also enjoy access to finance offered by government agencies. This has resulted in entrepreneurs creating products to suit consumer and agency requirements, to access a wider market. The research offers government agencies and entrepreneurs recommendations on how to improve the tea industry for sustainable rural development.

Acceptability of Oregano Leaves

Oregano (*Origanum vulgare*), also known as Spanish thyme or wild marjoram, is well recognized for its antibacterial, antioxidant, anti-inflammatory, and antifungal activity. Because of these features, it is of great importance both

in culinary and medicinal applications. Its medicinal properties are mostly based on major bioactive compounds like thymol, carvacrol, p-cymene, γ -terpinene, and rosmarinic acid, which are mainly responsible for its characteristic flavor.

Historically, oregano has been employed for treating colds, digestive ailments, and respiratory diseases. In recent times, scientific evidence has corroborated these applications, establishing their effectiveness against bacterial and fungal pathogens and against oxidative stress. Here, oregano is displayed with a dual role, as a food preservative and an agent for health promotion, with both in vitro and in vivo research displaying favorable implications for gut and immune system support.

In addition, Sharifi-Rad et al. (2021) highlight oregano's pharmacological promise, such as anti-tumor activity. Nevertheless, they also call for restraint, mentioning that additional study of appropriate dosage, preparation, and parameters of safety must be conducted. As a result, whereas oregano extract can be added to foods to add flavor and nutritional content, or taken medicinally to treat inflammation and infection, its complete therapeutic potential is pending clinical confirmation.

In general, oregano appears to be a very versatile plant with great potential for inclusion in functional foods and natural health remedies. Combining it with lemon and lemongrass may be especially useful in product development projects that seek to encourage well-being with locally available herbal components.

Market Potential of Oregano Leaves

Oregano (*Origanum vulgare*) is widely known for its antioxidant, antibacterial, anti-inflammatory, and therapeutic activities, and hence it finds utility in culinary and medicinal applications. Specifically, Veenstra and Johnson (2019) highlighted its utility as a natural food preservative, based on in vitro and in vivo research that has proven its efficacy in inhibiting inflammation and enhancing gut health. It resulted that the oregano continuous to be a favorite spice in international cuisines particularly in the country Mexico and Italy because it adds flavors, aroma, and texture of every dish created.

Furthermore, oregano was used as herbal medicine traditionally and it used to treat certain conditions such as neurological, cardiovascular, and gastrointestinal that in our modern science confirms these health benefits proving its medicinal importance. But even though there is a claim on the health benefits of oregano, the study conducted by Marquez et al., (2020) highlighted that oregano remain underutilized in the National Capital Region, with only 14% of the participants reported, using oregano as part of their healthcare routines. This finding s of the study needed to conduct a public educations and greater integration of using herbal medicine to be part of our healthcare system to maximize the health benefits for the community.

Outside of human uses, oregano has also demonstrated potential in animal nutrition. Ansari et al. (2022) reported that oregano leaf powder enhanced growth performance and alleviated disease in dairy calves, indicating its potential for use on a larger scale in the health management of livestock. Based on this study oregano shows that it can not only used in food preparations that add flavors in every dish but also proves that it has a medicinal component to combat such conditions, not just for human but also for animal health as well. By combing this ingredient with lemon, and lemongrass can provide collaborative advantage to create an herbal candy for all.

Despite all the literatures and studies available, still there are limited studies created these initiatives because most of the research are focused only on herbal remedies and students' entrepreneurship separately studied. To address the research gap, the study focused on the product development on school-based activity that promotes herbal nutrition innovations with entrepreneurial skills training. This research gap proved that the need for studies to explore educational curriculum can advocate health and economic empowerment through utilizing local product development.

In addition to that, the study was used a descriptive quantitative research design, focusing on the development of herbal candy recipe using oregano, lemon, lemongrass, and white sugar. The data will be gathered from 17-60 years old residents in the municipality of

Aritao to evaluate the acceptability and commercial viability of the herbal candy. Survey questionnaires are used to capture the acceptability and feasibility of the product.

The scope of the study was limited to the product development and the sensory evaluation of the herbal candy. It will not cover the large production or advanced biochemical testing beyond basic nutritional profiling. The study focused solely on student learning outcomes, municipality acceptability, and the feasibility of small size entrepreneurship initiatives.

The contribution of this study in the community was to offer a healthier version of candies that advocates awareness of the health benefits of local herbs and developing and cultivating the entrepreneurial skills of the learners. The study was to strengthen the school community partnership by linking education to a daily life situation to help the learners how to provide their needs and to create a sustainable development.

Objectives of the Study

Generally, this study aims to develop and evaluate the acceptability and commercial viability of herbal candy made from oregano, lemon, and lemongrass, and explore its integration into school-based nutrition and entrepreneurship initiatives in Nueva Vizcaya.

Specifically, it aims to:

1. Develop a herbal candy recipe using oregano, lemon, lemongrass, and white sugar.
2. Perform sensory evaluation in terms of
 - 2.1. texture,
 - 2.2. taste,
 - 2.3. scent, and
 - 2.4. aesthetic;
3. Develop packaging and branding of herbal candy;
4. Perform a market acceptability test in terms of
 - 4.1. brand,
 - 4.2. packaging,
 - 4.3. price
 - 4.4. willingness to buy,
 - 4.5. the volume of purchase, and
 - 4.6. frequency;
5. Evaluate the profitability in terms of
 - 5.1. forecasted sales, and

5.2. Cost and return analysis.

6. To train students in the development and marketing of innovative products or services through entrepreneurship classes, promoting creativity, healthy consumer choices, and practical business skills.

Methodology

The study used descriptive quantitative research designed that combining product development, sensory evaluation, and educational integrations through the entrepreneurship subjects. The product development phase involved formulating the herbal candy form oregano, lemon, and lemongrass, and designing the product packaging and branding. While the descriptive phase of the study assessed the sensory evaluation such as texture, taste, scent, aesthetic; marketing acceptability was also assessed such as the brand, packaging, price, willingness to buy, purchase volume, frequency; and the profitability of the herbal candy assessed through forecasted sales and cost-return analysis. The data were gathered using a survey questionnaire and sensory evaluation tools, and analyzed through descriptive statistics such as mean, frequency, and percentage to determine customers willing to buy and the feasibility of the herbal candy.

Settings and Participants

The study was conducted in the municipality of Aritao, Nueva Vizcaya, where the survey questionnaire was randomly distributed to community members outside the school. Instead of limiting the study in the school premises, the study was conducted in the broader municipal settings because its more realistic environment for assessing consumer preferences and market acceptability. The respondents of the study consisted of residents aged 17-60 years old shows a diverse range of potential consumers in terms of age, occupation, and purchasing behavior. The research setting was chosen because it captures the community responses, ensuring that the sensory evaluation of the herbal candy matches in the actual condition in the market. In addition to that, while the local resident of Aritao are the respondents of the study, the initiative of this is study was to anchor in the school activity which

is the “Entrepreneurship Bazaar” which requires each section to innovate their one own product and present them in product pitch competition. By situating the study in the wider community, students were able to connect classroom learning with life applications, gaining hands on experience in product development, marketing, and consumer engagement. This integration highlights the significant of values-based education, as students not only practiced creativity and business skills but also promoted healthier consumer choices through their innovative product.

Candy-making Process

The product development of the herbal candy involved several steps to ensure nutritional value, safety, and market readiness. The first step was the ingredient selection choosing the local available products such as oregano, lemon, lemongrass, and white sugar. This ensures that accessibility and affordability but still promoting health benefits. The second step was the preparation, and cooking followed the step-by-step procedures including proper washing the raw materials, controlled heating, and standard mixing to achieve the desired consistency and taste. The third step was the packaging and branding, was designed to be safe, appealing, and market ready to attract consumers interested in the product. Finally, the last step was the evaluation conducted through sensory evaluation testing, where respondents assessed the candy’s texture, taste, scent, and aesthetic qualities, and survey questionnaire also measured the market acceptability in terms of brand, packaging, price, willingness to buy, purchase volume, and frequency. This process ensured that the herbal candy was not only innovative and health-oriented but also feasible and educationally important.

Nutrition Framework

The nutritional values of the herbal candy were determined based on the standard food composition tables and references. The analysis was focused on the sugar content, calories, and vitamin compositions developed from the main ingredients such as oregano, lemon, lemongrass, and combined with the white sugar. These values then compared with the

recommended dietary guidelines of the Department of Health (DOH) and the World Health Organization (WHO). The product was designed to promote healthier alternatives to conventional candies, offering consumers a new version of candy that also support and promote well-being. This framework provided the basis for evaluating the herbal candy's potential contribution to health awareness and health consumer choices within the municipality of Aritao, Nueva Vizcaya.

Entrepreneurship Framework

The study was designed to develop and to evaluate the commercial viability of the herbal candy and to integrate the product innovation in student learning outcomes that in line with the learning competencies of the entrepreneurship subjects. The costing and pricing of the herbal candy were calculated based on the raw materials used, direct labor, and the desired

profit margin to ensure the customer can afford the product but still the herbal candy can maintain profit. In marketing aspect, the herbal candy was developed a marketing strategy through branding, identification of target customers, and product promotions that aimed to increase the product acceptability and feasibility. Moreover, the study emphasized sustainability by utilizing local raw materials and exploring the full potential of the herbal candy as a livelihood project within the municipality of Aritao, Nueva Vizcaya. Thus, the framework was connected to the learning competencies of the senior high school students and come up with learning outcomes by developing the process of product innovation and pitching that allowed the learners to practice creativity, apply values, build confidence, and to acquire practical business skills that is vital for entrepreneurship education.

Action Research Cycle

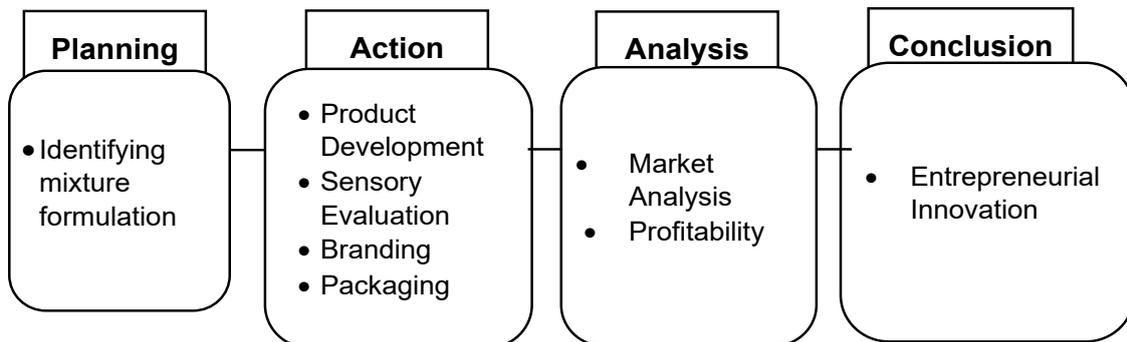


Figure 1: Cycle of Action Research of Herbal Candy

The figure above shows that the study followed the four stages of action research cycle to make it sure to integrate the health awareness and entrepreneurship learning competencies into the product innovation of herbal candy. The first box is planning stage that contains the identification of mixture formulation which focuses on the development of the herbal candy. The second box is action that contains the product development followed by the sensory evaluation and packaging and branding. The third box is the analysis that focused on

market analysis and profitability. Finally, the fourth box is the conclusion which is the outcome of the study is to integrate this initiative into the entrepreneurship subjects to train the learners to have an entrepreneurial skill.

Data Collection Procedure

The figure below discussed the process on how the identification of the sources of ingredients up to how to integrate this in an entrepreneurial initiative. Below is shown the data gathering procedure of the study.

Step 1	IDENTIFICATION OF SOURCES INGREDIENTS
	<ul style="list-style-type: none"> To identify how many times to purchase the raw materials and where to find the supplies for the formulation of the herbal candy. Collecting the types and preferred variant of herbs. To use frequency analysis and descriptive statistics to calculate the sources and how much times to take to purchase in every production.



Step 2	PRODUCT DEVELOPMENT
	<ul style="list-style-type: none"> Establishing an experimental setup Creating various mixtures using lemon, onion, and lemongrass Recording observations and measurements Analyzing results to identify the optimal recipe



Step 3	SENSORY EVALUATION																				
	<ul style="list-style-type: none"> Conducting sensory evaluation with teens, young adults, and adults. <p>Table 1. 4-point Likert Scale</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Scale</th> <th style="text-align: center;">Range-Value</th> <th style="text-align: center;">Interpretation</th> <th style="text-align: center;">Qualitative Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">3.25-4.00</td> <td style="text-align: center;">Like a Lot</td> <td style="text-align: center;">Extremely Positive</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2.50-3.24</td> <td style="text-align: center;">Like a Little</td> <td style="text-align: center;">Positive but not overwhelming</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">1.75-2.49</td> <td style="text-align: center;">Dislike a little</td> <td style="text-align: center;">Negative but Moderate</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">1.00-1.74</td> <td style="text-align: center;">Dislike a lot</td> <td style="text-align: center;">Extremely Negative</td> </tr> </tbody> </table> <p>Using a 4-point Likert Scale to assess texture, taste, scent, and aesthetic appeal. The following table presents the criteria and scale for this sensory evaluation</p> <ul style="list-style-type: none"> Summarizing data using mean scores and frequency distributions 	Scale	Range-Value	Interpretation	Qualitative Description	4	3.25-4.00	Like a Lot	Extremely Positive	3	2.50-3.24	Like a Little	Positive but not overwhelming	2	1.75-2.49	Dislike a little	Negative but Moderate	1	1.00-1.74	Dislike a lot	Extremely Negative
Scale	Range-Value	Interpretation	Qualitative Description																		
4	3.25-4.00	Like a Lot	Extremely Positive																		
3	2.50-3.24	Like a Little	Positive but not overwhelming																		
2	1.75-2.49	Dislike a little	Negative but Moderate																		
1	1.00-1.74	Dislike a lot	Extremely Negative																		



Step 4	BRANDING AND PACKAGING
	<ul style="list-style-type: none"> Developing branding and packaging for herbal candy Designing labels and selecting packaging materials Developing advertising campaigns that emphasize special qualities and advantages



Step 5	MARKET ACCEPTABILITY
	<ul style="list-style-type: none"> Distributing market surveys to the municipality of Aritao. Assessing interest, desire to buy, and overall perception Using descriptive statistics to summarize data



Step 6	PROFITABILITY
	<ul style="list-style-type: none"> Comparing production costs with expected revenues (cost-benefit analysis) Conducting break-even analysis to determine total cost and revenue equality



Step 7	<p>INTEGRATION AND SUSTAINABILITY</p> <ul style="list-style-type: none"> • To use the herbal candy as a model to create a partnership in school settings and community to create school-based livelihood that in line with the entrepreneurship learning competencies. • To train learners and teachers to create product innovations and sustainability development. • To build a partnership in secondary schools in the Municipality of Aritao, Nueva Vizcaya for the integration of this school-based programs and community collaborations to achieve the study's outcome entrepreneurial innovation. • Signing of memorandum of agreement with the secondary school in the Municipality of Aritao.
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Figure 2. Herbal Candy Gathering Data Procedure

The figure above shows the steps procedures how to achieve the study's outcome. The data gathering procedures were followed seven steps to create an impact in the community. The first step was to identify the sources of main ingredients such as oregano, lemon, lemongrass and white sugar and to determine how many times to purchase the raw materials. The second step was the product development focusing on the formulation of the herbal candy. The third step was the sensory evaluation to evaluate the acceptability of the herbal candy. The fourth step was the branding and packaging to make sure the product is safe and it adds appeal to the customers to buy it. The fifth step was the market acceptability that focuses on the willingness to buy the herbal candy. The six steps were the profitability to calculate the projected income of the herbal candy. Finally, the seven steps were the integration and sustainability of the herbal candy to create a partnership in school-based activity program for the senior high school that in line with their entrepreneurship subject.

Statistical Treatment of Data

The study was used descriptive statistics to calculate the data to provide comprehensive discussion and understanding of target customers preference, the market acceptability, and the commercial viability of the herbal candy. These statistical tools that were used in the study are frequency analysis to calculate the willingness to buy, total mean to calculate the average ratings and forecasted sales, cost and return analysis to determine the financial sustainability of the herbal candy.

Integration

The study was to integrate this school-based nutrition and Entrepreneurship initiative for health and well-being through the development and commercialization of oregano, lemon, and lemongrass as an herbal candy. The intervention of this study was to raise awareness, and to build partnership with secondary school to involve students in experimental learning, and to encourage the participation of the community of Aritao to use a local agricultural product.

The first step was to distribute the survey questionnaires to 17 to 60 years old that are potential customers to determine favorite herbs and the best buying schedules. This led to choosing oregano, lemon, and lemongrass due to their widespread availability, health advantages, and cultural significance in the local setting.

Second, an experimental station was created to formulate different candies. The researchers formulated and tested mixtures with the chosen herbs, observing and measuring consistency, taste, and smell. These experiments guided the choice of the most acceptable recipe for further analysis.

Third, sensory assessment among teenagers, young adults, and adults was carried out on a 4-point Likert scale to determine taste, texture, smell, and appearance. Mean scores and frequency distributions were used to analyze the results to establish the overall acceptability of the product by different age groups.

Fourth, researchers worked together to develop branding and packaging materials. The focused was placed on emphasizing the health

benefits of the product, local identity, and marketability. Advertising campaigns were planned to strengthen the specialties of the candy and to mimic actual marketing tactics.

Fifth, market questionnaires were administered in the Aritao municipality to measure consumer interest, purchasing intention, and overall perception of the herbal candy. Descriptive statistics were employed for the analysis of data and the determination of target markets for product launch in the future.

Sixth, profitability was tested via cost-return and break-even analysis. To calculate the product pricing, production cost, revenues, expenses to determine the viability of the expanding of the herbal candy.

Finally, the last step was to build partnership by signing a Memorandum of Agreement with the secondary schools in the municipality of Aritao to integrate this school-based

nutrition and Entrepreneurship initiative for health and well-being through the development and commercialization of oregano, lemon, and lemongrass as an herbal candy. This study was to advocate creativity, healthy product choices, and business skills.

Moreover, this study was in line with the learning competencies of entrepreneurship subjects such as the learners shall develop an innovative product, to create packaging and branding, to calculate projected income and expenses, and to conduct a business simulation. Therefore, this initiative is relevant to the educational institutions.

Results and Discussion

This chapter presents the results and discussion of the study. To evaluate the acceptability and commercial viability of the herbal candy.

Table 2. Sensory Evaluation

Sensory Evaluation	Frequency	Mean	Interpretation
Appearance	223	3.33	Extremely Positive
Aroma	220	3.28	Extremely Positive
Taste	237	3.54	Extremely Positive
Sweetness	225	3.36	Extremely Positive
Texture/ mouth feel,	220	3.28	Extremely Positive
Labeling and packaging	219	3.27	Extremely Positive
Total	1,344	3.34	Extremely Positive

Based on the table above the sensory evaluation results, the herbal candy product received consistently high ratings across all attributes such as appearance (3.33), aroma (3.28), taste (3.54), texture/mouth feel (3.28) and labeling and packaging (3.27), these indicates an extremely positive response from the participants. The overall mean score is 3.34 that indicates that the herbal candy product was extremely positive in all aspect. In connection to the findings the study conducted by Cerbito et al. (2022) highlighted that using

oregano and lemongrass had excellent ratings in taste, flavor, appearance and improve the overall impact of the health focuses candy. Moreover, the study of Gomes (2018) discussed that most of the consumers are demanding a product that have an herbal component while giving good taste. These cited literatures proved that the current study that obtained extremely positive in all aspect of the sensory evaluation was acceptable in product development and consumer acceptability.

Table 3. Market Acceptability in terms of Price

Price Range	Frequency	Percentage
30-40	37	55.20%
41-50	22	32.80%
51-60	7	10.40%
Others	1	1.50%
Total	67	100.00%

The table above shows market acceptability in terms of price. The result shows that the price range amounting to ₱30 - ₱40 was the highest percentage of 55.20%, which means these ranges were their preferred money to spend to buy the herbal candy from the target customers. While the others had the lowest percentage of 1.50%, which means the target customers are not willing to spend more money to purchase the herbal candy. The study

conducted by Cerbito et al. (2022) highlighted that the affordability of the herbal candy was a crucial factor in purchase intention. Moreover, the study conducted by Gozales (2018) discussed that the consumer is willing to pay if the quality and the price of the product had come together. Thus, the result of the study supports the price range to ₱30 - ₱40 because it shows the customers satisfactions demand and market feasibility.

Table 4. Market Acceptability in terms of Willingness to Buy

Willingness to Buy	Frequency	Percentage
Yes	66	98.51%
No	1	1.49%
Total	67	100.00%

The table above illustrates that the market acceptability in terms of willingness to buy. The results show that majority of the participants are willing to buy the herbal product, it has the total percentage of 98.51%. This shows that the product is appealing and meets the preferences of the target customers. The study conducted

by Cerbito et al. (2022) discussed that the willingness to buy was impacted by perceived health benefits, sensory evaluation, and product price. In addition to that the study conducted by Gonzales (2018) highlighted the balance of the nutrient content and taste that will attract the customer interest.

Table 5. Market Acceptability in terms of Willingness to Purchase

Times of Purchase	Frequency	Percentage
Once A Week	33	49.30%
Twice A Week	13	19.40%
Once A Month	17	25.40%
Others	4	5.97%
Total	67	100.00%

The table above discussed the willingness to purchase herbal candy. Majority of the results show that once a week they had the highest percentage of 49.30%, which means that the target customers are choosing these options to purchase the product. On the other hand, about 25.20% of the respondents prefer to buy it once a month, which indicates that some of the consumers use the product occasionally while 5.97% choose other responses. Generally, the results show that the product has consistent demand, particularly on weekly basis, making it possible for regular sales and restocking.

A significant study to consider by Cerbito et al. (2022) and Gonzales (2018) emphasizes the

importance of the frequency of purchase in the determination of market feasibility for herbal confectionery products. According to Cerbito's study, consumers' frequent interest in oregano and lemongrass candies was related to their beliefs on their health benefits and reasonable costs. Gonzales noted that frequent use, weekly purchase show that the product has become part of consumers' everyday activities. These findings support the results of the current study, where 49.30% of the respondents said that they would buy Herbal Bliss candy once a week, indicating the possibility for regular sales and continuous restocking.

Table 6. Market Acceptability in terms of Volume of Purchase

Volume of Purchase	Frequency	Percentage
1 pack	29	43.28%
2 packs	32	47.76%
3 packs	5	7.46%
Others	1	1.49%
Total	67	100%

The table shows the number of Herbal candy packs bought by respondents. Most respondents bought either 1 or 2 packs. Particularly, 47.76% bought 2 packs, while 43.28% purchased 1 pack, which makes the most common choices. 7.46% of the respondents' which shows only a few, bought 3 packs and 1.49% chose other quantities. This shows that most of the consumers prefer to buy in small amounts, usually in 1 or 2 packs. The result indicates that the product is affordable that can easily be bought at and offering a flexible pack sizes that possibly meet consumer preferences.

The study by Cerbito et al. (2022) and Gonzales (2018) emphasizes that the affordable

and easy to access herbal confectionery products play a crucial role in the purchasing behavior on consumers. Cerbito's research showed that the availability of flexible pack sizes made the consumer convenient and that led to regular purchasing. Gonzales added that low-priced herbal gummies were more attractive when available in manageable options. These findings support the current study's conclusion, where 91.04% of the respondents purchased one or two packs of Herbal Bliss candy, justifying that affordable, small packaging is aligned with consumer preferences and supports steady demand.

Table 7. Evaluate the Profitability in terms of Forecasted Sales

Times of Purchase	Quantity	A Total of the Volume of Purchase in a Month	Price	Forecasted Sales
Once A Week	46	184	₱40.00	₱ 7,360.00
Twice A Week	27	216	₱40.00	8,640.00
Once A Month	27	27	₱40.00	1,080.00
Others	6	6	₱40.00	240.00
Total	106	433	₱40.00	₱ 17,320.00

The table above shows the anticipated sales of Herbal Candy. In the result, total of 106 packs of the product were ordered by the respondents. Most of them purchased either once or twice a week, which indicated a large number of orders. The highest volume of purchases was those who bought twice a week, followed by those who purchased one a week. Meanwhile, respondents fell under the "others" category were those who purchased once a month in very few packs. This shows that regular buyers are the main contributors to sales. The total sales reached P 17, 320.00 with the price per pack set at P40.00, proving that consistent buyers are important in generating revenue.

The study conducted by Cerbito et al. (2022) and Gonzales (2018) emphasizes that

repeat purchase is important in maintaining sales volume for herbal confectionery products. Cerbito's work on oregano and lemongrass candy pointed out that regular customers, specifically, weekly consumers, were the largest contributors to overall sales, and Gonzales determined that regular demand was highly associated with the affordability of the product and consumer satisfaction. All these findings validate the result of the current study, whereby 66 of the respondents earned ₱17,320.00 in projected sales, with the most volume amassed from those who bought once or twice a week, validating that frequent buyers propel income and market feasibility.

Table 8. Evaluate the Profitability in terms of Cost and Return Analysis

Category	Item/Detail	Quantity	Unit Price (₱)	Total Cost (₱)
Raw Materials	Lemon	1 kilogram	80.00	80.00
	Oregano Leaves	1 kilogram	50.00	50.00
	Lemongrass	¼ kilogram	61.25	61.25
	White Sugar	1 kilogram	90.00	90.00
	Water	4 cups	25.00	25.00
	Pectin	1 pack	100.00	100.00
	Total Raw Materials Cost			
Production Output	Total Candies Produced	250 pieces		
	Cost per Candy			₱ 1.63
	Candies per Pack	12 pieces		
	Candy Cost per Pack			₱ 19.56
Packaging	Packaging per Pack	1 pack	7.00	₱ 7.00
	Total Cost per Pack			₱ 26.56
Pricing & Profit	Selling Price per Pack			₱ 40.00
	Projected Income per Pack			₱ 13.44

The table shows a cost and profitability breakdown for Herbal Bliss candy, where each pack costs ₱26.56 to make in terms of raw materials and packaging and sells at ₱40.00, with an estimated income of ₱13.44 per pack. With 250 candies made and 12 per pack, the cost per candy is ₱1.63, which means that ingredients and materials are efficiently utilized.

This is supported by the study of Cerbito et al. (2022) and Gonzales (2018), who emphasized that herbal confectionery products are affordable and profitable when using local ingredients and simple product mixture. Their study validated affordable formulation and competitive pricing as factors for high market feasibility and market acceptance.

Table 9. Evaluate the Profitability in terms of Break-Even Point Analysis

Item	Value (₱)
Total Production Cost	406.25
Cost per Pack	26.56
Selling Price per Pack	40.00
Profit per Pack	13.44
Break-Even Packs Needed	31 packs

The table shows the profitability of Herbal Bliss candy. The total production cost at P 406.25 and selling price per pack at P 40.00. With the production cost per pack at P 26.56, the expected profit is P 13.44 per pack. After selling 31 packs, the break-even is reached, making the product low risk with high potential. Supporting this, Cerbito et al. (2022) and Gonzales (2018) found that using locally grown ingredients in herbal candy products can give high earnings per sale if properly priced.

Conclusion

Based on the significant findings of the study, Herbal Candy made with oregano, lemon

and lemongrass is highly acceptable. Consumers gave positive feedback on its appearance, odor, flavor, sweetness texture and packaging. Most of the participants were willing to purchase the product at a price between ₱30 and ₱40, and showed constant buying habits, mostly once or twice a week. Most of the buyers showed a tendency to purchase one to two packs at a time, thus helping to achieve a projected total volume of sales amounting to ₱17,320.00. Financial computations validated the profitability of the product, with a cost of ₱26.56 per pack, a selling price of ₱40.00, and a break-even point at only 31 packs. These results validate that the product is marketable

and financially sustainable and thus appropriate for integration into school-based nutrition and entrepreneurship programs.

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