

BUILDING OYSTER MUSHROOM FARMING IN BULACAN: A NEW BUSINESS MODEL

*Angelyn C. Dy Tioco

**Lizette Ang

***Anavrin Fhey M. Dela Pena

****Crisza Diane B. Clemente

*****Erika Mae R. Resureccion

*****Joanadell D. Bergania

*****Mary Rose Ivy C. Rocabo

*****Princess Angelica S. Ignacio

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Corresponding Author: Angelyn C. Dy Tioco; doi:10.46360/ cosmos.mgt.420241009

Abstract

The principles delineated within agricultural development theory offer a comprehensive framework for guiding sustainable and socially responsible agricultural practices. By adhering to these principles, businesses can cultivate a resilient agricultural landscape that nurtures both the prosperity of individuals and the vitality of communities. Agriculture, commonly known as farming, is the harvesting of plants and animals to produce food, fiber, animal feed, and other items. Agriculture is currently practiced all across the world and is an important aspect of human civilization, with a history dating back thousands of years. Farming has played a significant part in daily living for thousands of years. Before agriculture, mankind survived by hunting and gathering. Humans did not begin to thrive until they adapted to established agricultural sowing and harvesting. Humans created tools and techniques to increase agricultural productivity and provide more efficient means of survival. The modern age resulted from breakthroughs that generated industries.

Keywords: Agriculture, Farming, Mushroom, Bulacan, Business Model.

Introduction

Agriculture, commonly known as farming, is the harvesting of plants and animals to produce food, fiber, animal feed, and other items. Agriculture is currently practiced all across the world and is an important aspect of human civilization, with a history dating back thousands of years (Marcin, 2019). Farming has played a significant part in daily living for thousands of years. Before agriculture, mankind survived by hunting and gathering. Humans did not begin to thrive until they adapted to established agricultural sowing and harvesting. Humans created tools and techniques to increase agricultural productivity and provide more efficient means of survival. The modern age resulted from breakthroughs that generated industries. According to Maryville University, the food and agricultural sector's relationship to other sectors, such as water and wastewater systems, transportation systems, energy, and chemicals, makes it an essential engine for economic activity. In accordance with this, mushroom cultivation is a rapidly expanding business. Mushroom production has expanded over the previous decade, with an estimated worldwide

yearly production of roughly 9 million tons (Moshtaghian et al., 2022).

The right resources and environmental conditions are needed to grow oyster mushrooms which may be challenging for small business owners to sustain reliable and high-quality production of oyster mushrooms. The growth of the oyster mushroom business suffers from inconsistent supply and its effects on customer relationships.

Moreover, one of the main factors that contribute to mushroom farming's development as a backyard business in the Philippines is that it is exactly as simple to do as cultivating a small vegetable garden. Smallholder farmers and their families can benefit from oyster mushroom cultivation. In addition to providing an alternate source of revenue, it also provides food. Usually, oyster mushrooms vary in color from off-white to grayish-brown. Oyster mushrooms often develop quickly in dark, gloomy areas that have high levels of moisture or humidity (Isip, et al., 2019). It has the potential to have a substantial influence on food business by providing

*-*****College of International Tourism and Hospitality Management, La Consolacion University, Philippines.

customers with innovative foods and reducing food waste.

On the other hand, despite having a variety of agro-climates and a large amount of agricultural and industrial waste, one of the struggles in India's mushroom industry is growing more slowly than other mushroom-growing countries. It is due to several factors, including the prevalence of various insect pests and diseases that have a significant negative impact on production and growers' interest in the future of their businesses. In these farms, hygienic and sanitary precautions are rarely followed, which allows a large number of insect pests like phorids, sciarids, springtails, and mites to gain easy access to the cropping area and take a heavy toll on the crop each year (Limbule et al., 2021).

In line with this, the primary objective of this research is to determine the aspect for building oyster mushroom farming in Bulacan in order to identify the challenges encountered by the mushroom farm owner. There is a significant impact as it helps consumers to have an idea about the new business model of oyster mushrooms as an opportunity to build a farm business as well as raise the awareness and knowledge of business owners about its current condition in Bulacan.

Theoretical Framework

The essence of agricultural development theory, as articulated by Udemezue and Osegbue (2018), revolves around the overarching goal of improving the financial and social welfare of individuals within a society. This objective encompasses a multifaceted approach aimed at fostering a harmonious relationship between agricultural growth and societal well-being.

Fundamentally, a theory of agricultural development should offer insights into the mechanisms driving agricultural growth across diverse economies, ranging from those experiencing modest growth rates to those with robust expansion. Key to this theory is the notion of sustainability, which underscores the imperative of maintaining and enhancing production levels while mitigating adverse environmental impacts and preserving natural resources.

At its core, sustainable agricultural development endeavors to elevate the standard of living in rural areas, ensure food security for present and future

generations, and bolster farmers' economic prosperity. This holistic vision necessitates a delicate balance between economic advancement and ecological stewardship, thereby promoting a resilient and equitable agricultural landscape.

Applying these theoretical underpinnings to the context of oyster mushroom farming entails several strategic considerations. Firstly, any business model must prioritize the socio-economic well-being of farmers, fostering an environment conducive to their prosperity and self-sufficiency. Concurrently, a steadfast commitment to sustainability is paramount, encompassing practices that safeguard ecological integrity while optimizing productivity.

Moreover, the cultivation of oyster mushrooms presents an opportunity to bolster food security by diversifying agricultural production and providing a nutritious food source. By embracing innovation and community engagement, such endeavors can catalyze positive socio-economic transformations, thereby aligning with the broader objectives of agricultural development theory.

In summation, the principles delineated within agricultural development theory offer a comprehensive framework for guiding sustainable and socially responsible agricultural practices. By adhering to these principles, businesses can cultivate a resilient agricultural landscape that nurtures both the prosperity of individuals and the vitality of communities.

Conceptual Framework

The system approach (Input-Process-Output system) was utilized to describe the study's conceptual framework. As shown in Figure 1, it depicts the profile of the respondents, aspects of establishing an oyster mushroom farm, what is the current condition of oyster mushroom farms and what are the challenges encountered by the mushroom farm owners. The input will be collected and analyzed through related literature, interviews, and survey questions in order to develop an output which is the proposed business model about oyster mushrooms. The given input will be served as a basis to determine whether this could be a new business model by assessing the current condition and challenges pertaining to the oyster mushroom farming. To process the variables, surveys, interviews, and relevant literature will be employed, which will then be analyzed to provide the intended result.

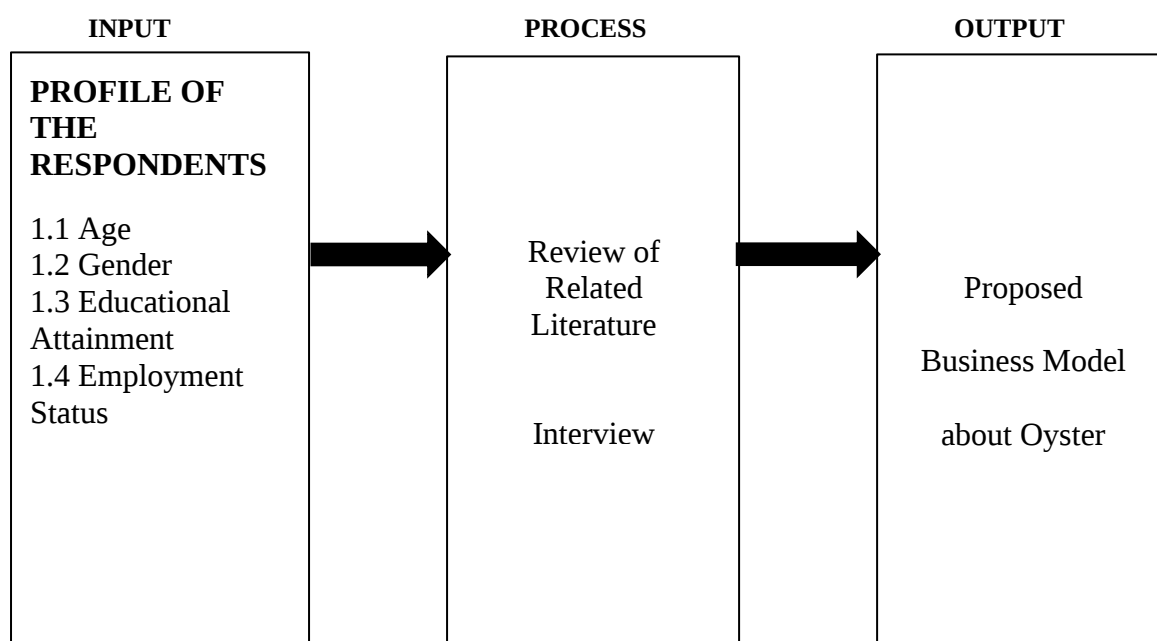


Figure 1: Conceptual Model of the Study

Statement of the Problem

The primary focus of the study is to explore and answer the general question: How building oyster mushroom farming in Bulacan can be a new business model?

Specifically, this study will uncover the following questions:

- 1 What is the profile of the respondents:
 - 1.1 Age
 - 1.2 Gender
 - 1.3 Educational Attainment
 - 1.4 Employment Status
- 2 What is the current condition of the oyster mushroom farm in Bulacan in terms of?
 - 2.1 Profitability
 - 2.2 Government Support
 - 2.3 Production
 - 2.4 Owners Initiative
- 3 How do farm owners establish oyster mushroom farms in terms of?
 - 3.1 Legal Aspect
 - 3.2 Marketing Aspect
 - 3.3 Financial Aspect
 - 3.4 Technical and Technology Aspect
 - 3.5 Human Resource Aspect; and
- 4 What are the challenges encountered by the oyster mushroom farm owners in managing the farm?
- 5 What oyster mushroom business model may be derived based on the findings of the study?

Scope and Delimitation

The primary goal of this study is to determine whether oyster mushrooms could be used as a new

business model and whether it has a potential to build an oyster mushroom farm business. Since this research focuses on Bulacan, this study only includes five business owners of oyster mushroom farms due to the short time frame and limited respondents. The research instrument that was used in this study to collect data is a two-part questionnaire including a semi-structured interview. The researchers examined the respondent's level of awareness and their source of information to verify the current condition of the mushroom farm and the challenges encountered by these owners. Moreover, the respondent's knowledge of starting an oyster mushroom farm would determine. We, the researchers, then evaluated the provided data, which served as a basis for developing and proposing a new business model as one of the potential of building a farm business and one of the sources of income in the community.

Methodology

Research Design

The study employed a mixed-methods research design, specifically a "sequential explanatory" approach. This methodological choice reflects a deliberate strategy to comprehensively explore the multifaceted aspects of oyster mushroom farming in Bulacan. By integrating both quantitative and qualitative methodologies, the researchers aimed to provide a well-rounded understanding of the subject matter. The quantitative phase, conducted through a survey-questionnaire, allowed for the systematic collection and analysis of numerical data regarding various facets of oyster mushroom farming. Subsequently, the qualitative phase, involving

interviews with selected participants, offered deeper insights into the challenges faced by mushroom farm owners, enriching the study with nuanced perspectives and experiences. This sequential approach facilitates triangulation of findings, enhancing the validity and reliability of the research outcomes. Such a methodological approach acknowledges the complexity of agricultural practices and ensures a holistic examination of the topic, ultimately contributing to more informed decision-making and practical interventions in the field.

Participants/Respondents of the Study

Researchers gathered essential data from selected oyster mushroom farm owner respondents in the Province of Bulacan. The five (5) selected oyster mushroom farm owners answered the survey questionnaire and interviews coming from the researchers.

Instrument/s of the Study

The researchers use survey questionnaires and interviews to gather all of the quantitative and qualitative data required for the study. The researchers created their own questionnaire in the form of a multiple choice and open-ended question to answer all of the particular issues provided in the problem statement. Some of the statements were also formed based on the readings of published and unpublished thesis that were relevant to the study.

In the first part, the researchers created a tool profile, which determined the name (optional), age, gender, educational attainment, and employment status. Determine the current condition of the oyster mushroom farm in Bulacan and how do farm owners establish oyster mushroom farms.

The second part of the research instrument is a semi-structured interview with the oyster mushroom farms which the interview focused on the challenges encountered by the mushroom farm owners in managing the farm.

Third part is building an oyster mushroom business model with the support of the data gathered in the first part. Furthermore, to make sure that the complete set of questions is precise and objective enough to be utilized as a tool for data collecting, the researchers asked professionals in research and some professors for validation.

The reliability and validity of the research instrument used in this study on oyster mushroom farming in Bulacan are underscored by meticulous design, rigorous data collection methods, and validation from experts. The questionnaire and

interview protocols were carefully crafted to address specific issues outlined in the problem statement, drawing from a synthesis of existing literature. By incorporating both quantitative and qualitative methods, the study ensured a comprehensive understanding of the subject matter while mitigating the risk of bias. The inclusion of a demographic section further enriched the data collected. Moreover, the validation process involving consultation with research professionals and academics bolstered the instrument's precision and objectivity, affirming its suitability for the study's objectives. This approach enhances the credibility and trustworthiness of the study's findings, ensuring that they accurately reflect the realities of oyster mushroom farming in Bulacan.

Ethical Considerations

In accordance with identity and data privacy, researchers keep the respondents' personal information such as their names, ages, gender, educational attainment, and income confidential during the survey and interview. Researchers gave a letter of purpose to each respondent, implying that all information gathered used purely for academic purposes and will not be used for any other purpose. The only information pertaining to the data and findings will be collected.

Results and Discussion

Demographic Profile

SOP 1: What is the profile of the respondents in terms of age, gender, educational attainment and employment status?

Table presents the profile of the respondents in terms of age. This study had a total of five participants. Based on their responses, one (1) or twenty (20%) percent belongs to the 20-30 age bracket, while there are two (2) or forty (40%) percent of the respondents aged 31-40 years old; and two (2) or forty (40%) percent for the age bracket of 41-50 years old.

According to the table, the majority of oyster mushroom owners are between 31-50 years old. The majority of the mushroom farmers were at the peak of their careers. As a result, even if they engage in other agricultural activities, they will still have the energy needed to produce mushrooms. This age group could profit from marketing and packaging requirements that are necessary for sales, and they are typically willing to explore technology. (Odediran, et al. 2020).

1.1 Demographic Profile by Age

Table 1: Frequency and Percentage of Age

Age	Frequency	Percentage
20-30 years old	1	20
31 - 40 years old	2	40
41 - 50 years old	2	40
TOTAL	5	100

As shown in Table 2, most of the respondents were male which got three (3) out of five (5) participants or sixty percent (60%), while the female got two (2) with the equivalent of forty percent (40%). Hence, it can be seen that more male respondents participated in the survey as compared to females.

According to the Food and Fertilizer Technology Center for the Asian and Pacific Region (FFTC-AP),

Philippine agriculture has been dominated by men for the longest time. In addition, sex-disaggregated data on major industries showed that the majority of women are employed in the wholesale and retail industry, while agriculture, hunting, forestry, fishing, mining, and quarrying continue to be the largest employers for males.

1.2 Demographic Profile by Gender

Table 2: Frequency and Percentage of Gender

Gender	Frequency	Percentage
Male	3	60
Female	2	40
TOTAL	5	100

Table 3 reveals the frequency and percentage distribution of the respondents according to their highest educational attainment. Based on their responses, three (3) had technical vocational education with sixty percent (60%), followed by two (2) college and bachelor's degree holders with forty percent (40%).

Education allows a person to gain information and boost their self-esteem. It can help you grow in your work as well as in your personal development. The contemporary, industrialized, and industrialized world revolves around education. To be able to thrive in today's competitive environment, we all need knowledge to light the path (Edu, 2022).

1.3 Demographic Profile by Educational Attainment

Table 3: Frequency and Percentage of Educational Attainment

Educational Attainment	Frequency	Percentage
Technical Vocational Education	3	60
College and Bachelor's Degree	2	40
TOTAL	5	100

Table below shows the frequency and percentage distribution of the participants according to their status of employment. Self-employed got the highest frequency of three (3) and the percentage of sixty (60%). Whereas, employed and retired have the same frequency of one (1) and twenty (20%)

percent. This shows that most of the respondents are self-employed. Oyster mushrooms might be at the top of the list because they are simple to grow, yield an acceptable profit, and have a great potential for self-employment.

According to Roser 2023, approximately 25% of the global workforce is employed in the agricultural sector. Most people who work in farming in low- to middle-income nations do it as their main source of income. The percentage of persons employed in agriculture tends to decrease as nations get wealthier as more people seek jobs in industry and services.

Even among farmers, there are very large differences in incomes and productivity levels. The value added per worker can vary as much as ten-fold between countries

1.4 Demographic Profile by Employment Status

Table 4: Frequency and Percentage of Employment Status

Employment Status	Frequency	Percentage
Employed	1	20
Self-employed	3	60
Retired	1	20
TOTAL	5	100

SOP 2: What is the current condition of the oyster mushroom farm in Bulacan in terms of profitability, government support, production, and owners initiative?

2.1 Current condition of the oyster mushroom farm in Bulacan in terms of Profitability.

Table 5 shows the respondents' answers on how much is the initial capital to set up oyster mushroom farms. Out of five (5) respondents, most of the answers are from two (2) respondents who answered ₱101,000 to ₱250,000 garnering forty (40%) percent. The next initial capital is less than ₱50,000 with a frequency of one (1) garnering twenty (20%)

percent, followed by a frequency of one (1) garnering twenty (20%) percent with an initial capital of more than ₱500,000. The remaining 20% of respondents had an initial capital of ₱51,000 to ₱100,000.

According to Sheykin (2023), starting and expanding a profitable oyster farming operation requires finance. It makes starting capital investments and continuing costs easier, and it makes it possible to implement sustainable practices. Capital is essential to maximizing the potential of the mushroom farm sector because of the expanding market for fresh and organic products as well as the prospects presented by mushrooms.

Table 5: Frequency and Percentage of Profitability

How much is your initial capital to set up your oyster mushroom farm?	Frequency	Percentage
Less than ₱50,000	1	20
₱51,000 to ₱100,000	1	20
₱101,000 to ₱250,000	2	40
More than ₱500,000	1	20
TOTAL	5	100

As shown in Table 6, the majority of the respondents with a frequency of four (4) answered less than ₱100 as their average selling price per oyster mushroom bag and the other one answered ₱101 - ₱200 as their average selling price per oyster mushroom bag.

The average selling price (ASP) is the price at which a certain type of item or service is normally sold.

The established ASP for a certain good can serve as a benchmark price, helping other manufacturers, producers, or merchants in pricing their products. When attempting to determine the pricing for a product, marketers must also consider where they want their product to be positioned (Grant, 2021).

Table 6: Frequency and Percentage of Profitability

What is your average selling price per oyster mushroom bag?	Frequency	Percentage
Less than ₱100	4	80
₱101 - ₱200	1	20
TOTAL	5	100

Table 7 reveals the results from the participants based on their estimated total monthly revenue from the sale of oyster mushroom bags. Based on their responses, ₱10,000-₱20,000 in total monthly income received a frequency of one (1) and a percentage of twenty (20), while ₱41,000-₱50,000 and more than ₱51,000 received two (2) frequencies each with a percentage of forty (40).

According to Rodrigue (2022), if your business were a plant, overall revenue would be the water it needs to flourish. Total revenue, also known as gross revenue, is the amount of money earned by your company from the sale of its products or services during a specific period. "The higher your total revenue, the more revenue your company generates from its core operations and, ultimately, the faster your company grows.

Table 7: Frequency and Percentage of Profitability

What is your estimated total monthly revenue from the sale of oyster mushroom bags?	Frequency	Percentage
₱10,000 - ₱20,000	1	20
₱41,000 - ₱50,000	2	40
More than ₱51,000	2	40
TOTAL	5	100

As shown in Table 8, the majority of the respondents had less than ₱30,000 initial monthly expenses for the following: spawn, substrate, bags, utilities, labor, and other expenses with a frequency of three (3) and a percentage of sixty (60%). Thus, for the ₱31,000 - ₱60,000 it has a frequency of one (1) and percentage of twenty (20%); ₱91,000 - ₱120,000 has a frequency of one (1) and a percentage of twenty (20%).

According to Warrick 2023, mushroom cultivation has become a growing amount of a profitable business. It's a business that can yield large profits with minimal starting engagement. In line with this, this table shows that with minimal initial monthly expenses owners of mushroom farms can continue their labor.

Table 8: Frequency and Percentage of Profitability

What are your initial monthly expenses for the following: spawn, substrate, bags, utilities, labor, and other expenses?	Frequency	Percentage
Less than ₱30,000	3	60
₱31,000 - ₱60,000	1	20
₱91,000 - ₱120,000	1	20
TOTAL	5	100

2.2 Current condition of the oyster mushroom farm in Bulacan in terms of Government Support.

As shown in Table 9, it appears that the frequency of three (3) respondents with a percentage of sixty (60%) answered “no”, then twenty percent (20%) of the respondent answered “yes” and one respondent preferred not to answer with a percentage of twenty (20%).

According to Alkahtani et al. (2020), the government plays an important role in helping small and medium-sized businesses improve their performance and economic growth. It generates job opportunities, poverty reduction, and economic development.

Table 9: Frequency and Percentage of Government Support

Have you received any government assistance for your oyster mushroom farm?	Frequency	Percentage
Yes	1	20
No	3	60
Prefer not to answer	1	20
TOTAL	5	100

Table 10 shows the frequency and percentage of what type of assistance the owner receives from the government. In continuation to the guide question no. 1, some of the respondents answer “yes” and some do not. It is understandable because it is from their own experience. The financial assistance, technical assistance, and marketing support has the same value which has a frequency of one (1) and a

percentage of twenty (20). Total of one hundred percent.

According to Edwards 2018, farmers are protected by the government from changes in yields, prices, and revenue. It provides funding for their research, marketing, export sales, insurance coverage, conservation initiatives, and other endeavors. Farmers who grow crops receive extensive and comprehensive government support.

Table 10: Frequency and Percentage of Government Support

If your answer in GS#1 is Yes, what type of assistance did you receive?	Frequency	Percentage
Financial assistance (e.g., grants, loans, subsidies)	1	20
Technical assistance (e.g., training, advisory services, access to technology)	1	20
Marketing support (e.g., access to markets)	1	20
No	2	40
TOTAL	5	100

Table 11 presents the frequency and percentage of respondents on how helpful the government assistance they receive in their oyster mushroom farm business. The majority of respondents answered not very helpful which has a frequency of three (3) covering a percentage of sixty (60%), followed by the answers extremely helpful and very

helpful that both have the same frequency of one (1) with a percentage of twenty (20%).

According to Crismundo (2022), in order to improve farmer productivity and enhance the production of agricultural goods, Gilbert Teodoro suggested that the government should assist or support the development of smart agriculture in addition to

research and development. In line with this, this table shows that the government assistance for oyster mushroom farm owners is not very helpful.

Table 11: Frequency and Percentage of Government Support

How helpful was the government assistance you received?	Frequency	Percentage
Extremely helpful	1	20
Very helpful	1	20
Not very helpful	3	60
TOTAL	5	100

Table 12 reveals the result from the respondent based on the frequency and percentage on their answer in what are their biggest challenges in accessing government support for their oyster mushroom farm. The majority of the respondents answered others which specified their answers which are one (1) respondent as a process system, two (2) respondents as no government involved, and one (1) respondent as not applicable in their answer. Followed by lack of information about government assistance which has a frequency of one (1) with a percentage of twenty (20%).

The purpose of government support is to assist startup businesses in overcoming some of the many challenges that they experience in their early phases of development, as well as to build an atmosphere suitable for innovation and growth. It is important to understand what kinds of government support are available and how they might assist their business in succeeding (Team & Team, 2023). In line with this, this table shows that the majority of the respondents did not face challenges in accessing government support since their oyster mushroom farm business is not involved in any government support.

Table 12: Frequency and Percentage of Government Support

What are your biggest challenges in accessing government support for your oyster mushroom farm?	Frequency	Percentage
Lack of information about government assistance	1	20
Others:		
• Process system	1	20
• No Government involved	2	40
• Not Applicable	1	20
TOTAL	5	100

2.3 Current condition of the oyster mushroom farm in Bulacan in terms of Production.

As shown in Table 13, the majority of the respondents with a frequency of four (4), and a percentage of eighty (80%), answered pearl oysters as the type of oyster mushroom they grow. On the other hand, one of the respondents with a percentage of twenty (20%) answered others which specified its

answer by putting a white oyster as the type of oyster mushroom they grow.

According to Anamosa (2022), within the oyster family, the pearl oyster mushroom is the most widely available and well-liked variety. It is the first mushroom to be utilized for small-scale commercial mushroom farming as well as household cultivation. It is currently grown for food all over the world and

is readily available in grocery stores and supermarkets.

Table 13: Frequency and Percentage of Production

What type of oyster mushrooms do you grow?	Frequency	Percentage
Pearl oyster (Pleurotus Ostreatus)	4	80
Others:		
• White Oyster	1	20
TOTAL	5	100

Table 14 indicates the frequency and percentage of the respondents who answered what oyster mushroom that farm owners usually sell. Based on their answers, two (2) respondents answered fresh oyster mushroom with a percentage of forty (40%), one (1) gave a twenty percent (20%) as a processed oyster mushroom in their answer, and two (2) gave a twenty percent (20%) as all of the above in their answer.

Processed oyster mushrooms are any type of mushrooms that have been preserved or transformed from their natural state which includes procedures such as drying, canning, pickling, and others. While fresh oyster mushrooms are mostly utilized in cooking, their delicate flavor and texture make them suitable for both vegetarian and non-vegetarian recipes (Maximize Market Research Pvt Ltd, 2023). In line with this, this table shows that both fresh and processed oyster mushrooms are usually sold by the respondents.

Table 14: Frequency and Percentage of Production

Do you sell your oyster mushrooms fresh or processed?	Frequency	Percentage
Fresh	2	40
Processed	1	20
All of the above	2	40
TOTAL	5	100

Table 15 shows that all of the respondents use sawdust as the type of growing medium for their mushroom farm. Based on their responses, the frequency is five (5), and the percentage is one hundred (100%).

According to Latif, et al. 2023, sawdust is a byproduct of the wood and lumber industries and is frequently utilized as a medium platform for growing oyster mushrooms. In line with this study, most oyster mushroom owners use sawdust as a type of growing medium in their farm business.

Table 15: Frequency and Percentage of Production

What type of growing medium do you use?	Frequency	Percentage
Sawdust	5	100
TOTAL	5	100

Table 16 presents the type of irrigation system used by the farm owner, with which all of the respondents answered; Manual irrigation (hand watering) with a

frequency of five (5) and a percentage of one hundred (100%). Based on the table most of the

oyster mushroom farm owners are using manual irrigation or a hand watering system.

Manual irrigation systems are basic but effective techniques for providing water to crops. Irrigation

systems that are operated manually require little technical expertise and are simple to use. However, proper construction is crucial to prevent crop shortages and water loss. (Stauffer, 2019)

Table 16: Frequency and Percentage of Production

What type of irrigation system do you use?	Frequency	Percentage
Manual irrigation (hand watering)	5	100
TOTAL	5	100

As indicated in Table 17, most of the respondents answered weekly in terms of how long an oyster mushroom can be harvested; with a frequency of three (3) and a percentage of sixty (60%). Whereas, a day has a frequency of one (1) and a percentage of twenty (20%); monthly has a frequency of one (1) and a percentage of twenty (20%).

According to Finley 2021, mushroom cultivation can be simple and rewarding especially when using mushroom growing kits. With special attention to the right growing medium and temperature, beginners can go from mushroom spawn to a delicious mushroom crop in a few weeks. This study shows that some of the respondents can have weekly harvested crops.

Table 17: Frequency and Percentage of Production

How long can the oyster mushroom be harvested?	Frequency	Percentage
In a day	1	20
Weekly	3	60
Monthly	1	20
TOTAL	5	100

Table 18 shows the best season for mushroom farming. All of the respondents (5) with a percentage of one hundred (100%) answered that the rainy season is the best season for mushroom farming.

According to Folnović (2021), the growing or farming season is the time of year when growth

conditions, such as temperature and moisture, are most favorable for crop production. Understanding when these times of growth occur allows farmers to better manage their farm productivity and understand how climatic variability impacts farmers' capacity to sow, cultivate, and harvest various crops.

Table 18: Frequency and Percentage of Production

What is the best season for mushroom farming?	Frequency	Percentage
Rainy	5	100
TOTAL	5	100

As shown in Table 19 indicates the frequency and percentage of the respondents who answered the kilos of mushrooms that are expected to be harvested in a month. Based on their answers, two (2) respondents gave a forty percent (40%) as a 10 kilos in their answer, one (1) gave a twenty percent (20%) as a 30 kilos in their answer, and two (2) gave

a forty percent (40%) as others in their answer which one (1) respondent specified 100 kilos in his/her answer and the other one is 3 kilos in his/her answer.

According to Anamosa (2021), during a 7–10 day cropping cycle, oyster mushrooms should be harvested 3–5 days after the first mushroom appears.

The following flush of mature mushrooms will soon be ready for harvesting once the first flush has been picked. In line with this, some oyster mushrooms are only capable of producing one flush, while others

may be able to produce two or three flushes under ideal conditions which is the reason why some respondents have answered different kilos of oyster mushrooms harvested in a month

Table 19: Frequency and Percentage of Production

How many kilos of mushrooms are expected to be harvested in a month?	Frequency	Percentage
10 kilos	2	40
30 kilos	1	20
Others:		
• 100 kilos	1	20
• 3 kilos	1	20
TOTAL	5	100

As shown in the table below, all of the five (5) respondents with a percentage of 100 (100%) have employees on their oyster mushroom farm.

In every field, a company is only as successful as its people. Although committed entrepreneurs and

strong leadership teams are important, your company's employees are the lifeblood of its success. Employees are critical to the success of any firm. In other words, they are regarded as the backbone of a company's overall performance (Ally, 2021).

Table 20: Frequency and Percentage of Production

Do you have employees for your oyster mushroom farm	Frequency	Percentage
Yes	5	10
TOTAL	5	100

Table 21 presents the number of employees that the respondents have in their oyster mushroom farming business. Based on the table, the two (2) respondents with a percentage of forty (40%) have six (6) employees, followed by one (1) respondent that has 5 employees, one (1) respondent that has 3 employees, and one (1) respondent that has 2 employees with a same percentage of twenty (20%).

Productivity and manpower are related. A business can take on more tasks or finish them faster if there are more employees available to work (The Importance of Company Manpower, 2020). In line with this, table 21 shows that the majority of farm owners have more than two employees running their oyster mushroom farming business.

Table 21: Frequency and Percentage of Production

If Yes, How many employees do you have?	Frequency	Percentage
2	1	20
3	1	20
5	1	20
6	2	40
TOTAL	5	100

2.4 Current condition of the oyster mushroom farm in Bulacan in terms of the Owners Initiative.

Table 22 shows that the most common reason for choosing oyster mushroom farming is family business, and Good earning. Additionally, one respondent answered family business with a frequency of two (2) garnering 40% of the total respondents. The second most common reason is good earning with a frequency of two (2) garnering 40% of the total respondents, Lastly, one respondent

answered influence by a friend, with a frequency of one (1) garnering 20% of the total respondents.

A daughter or son's engagement in the business may be encouraged by family involvement. Ferrando-Latorre et al. (2019) investigated the dynamics between Spanish households to find out if the progeny of business owners had a higher chance of becoming business owners themselves. In line with this, the table shows that the main reason for choosing oyster mushroom farming is coming from the family business and good earning.

Table 22: Frequency and Percentage of Owners Initiative

What would be your main reason for choosing oyster mushroom farming?	Frequency	Percentage
Family Business	2	40
Influence by a friend	1	20
Good earning	2	40
TOTAL	5	100

Table 23 presents the type of ownership that the farm owner currently has in their oyster mushroom farming business which all of the respondents answered; Sole proprietorship with a frequency of five (5) and a percentage of one-hundred (100%). Based on the table, most of the farm owners currently have a sole proprietorship oyster mushroom business.

According to Lip (2023), an unincorporated business that is managed and controlled by one person is known as a sole proprietorship. In line with this, this table shows that most of the oyster mushroom farm owners are sole proprietorships, which means they manage their farm businesses under their own control.

Table 23: Frequency and Percentage of Owners Initiative

What type of ownership do you currently have in your oyster mushroom farming business?	Frequency	Percentage
Sole Proprietorship	5	100
TOTAL	5	100

As shown in Table 24, the most common difficulty encountered by oyster mushroom farmers is a lack of knowledge about growing oyster mushrooms with a frequency of three (3) with a percentage(%) of sixty (60).Whereas, the next most common difficulty with the frequency of two (2) is lack of connection to marketplaces with a frequency of two (2) and a percentage of forty (40).

According to Islam (2022), even though mushroom output has increased, there are still some problems that mushroom growers need to resolve if they want to see this business grow. Lack of area for cultivation, a lack of high-quality spawn, a lack of funding, a lack of personnel, a lack of direct markets and promotional possibilities, infrastructural limitations, and other problems are some of these problems.

Table 24: Frequency and Percentage of Owners Initiative

What are the main difficulties you have encountered in starting and managing your oyster mushroom farm business?	Frequency	Percentage
Lack of knowledge about growing oyster mushroom	3	60
Lack of connection to marketplaces	2	40
TOTAL	5	100

Table 25 shows the respondents' answers on how they handled difficulties in starting and managing the oyster mushroom farm business. The most common answer with the frequency of four (4) is that they looked for a seminar or someone knowledgeable about growing oyster mushrooms, garnering 80% of the total respondents. Thus, some respondents answered for workshops or seminars to learn about how to use technological equipment in farming, with the percentage of 20% and frequency of 1.

According to Narender et.al (2022), training programs on quality spawn production in village conditions, specific mushroom bag preparation methods, harvesting techniques, grading and packaging of mushrooms in small pouches, preservation techniques, and value addition through oyster mushroom product preparation improved the knowledge level of farm/rural youth. In line with this, the table shows that seminar is a way of handling difficulties encountered by oyster mushroom farms.

Table 25: Frequency and Percentage of Owners Initiative

How have you handled these difficulties?	Frequency	Percentage
I looked for seminar or someone knowledgeable about growing oyster mushroom	4	80
I looked for workshops or seminars to learn about how to use technological equipment in farming	1	20
TOTAL	5	100

Table 26 shows the respondent's answer on how they imagine the future of their oyster mushroom farm after 10 years. With the frequency of two (2) which are they will continue the business, garnering a 40% of the total respondents. Some respondents answered they will continue and expand the farming business with a frequency of two (2), garnering a 40%. Lastly, one respondent answered they will allow family member's to manage the farm, with a frequency of one (1), garnering a 20%.

According to Avais (2022), adaptability alone won't be enough for businesses in the future. Learning new skills and adjusting to a new company model are also important. You will succeed if you can accomplish that. Therefore, the table below shows that oyster mushroom farms can be a continuing and expanding business in the future.

Table 26: Frequency and Percentage of Owners Initiative

How do you imagine the future of your oyster mushroom farm after 10 years...	Frequency	Percentage
You will continue business	2	40

You will continue and expand the farming business	2	40
You will allow family member(s) to manage the farm	1	20
TOTAL	5	100

SOP 3: How do farm owners establish oyster mushroom farms in terms of legal aspect, marketing aspect, financial aspect, technical and technology aspect, and human resource aspect?

Table 27 shows the frequency and percentage distribution of the participants according to their responses: yes got one (1) and no got the highest response of four (4). This shows that most of the

respondents do not apply any laws or regulations to their farms.

According to Williams, M. (n.d.) Having formal work rules, even if they are not necessary, formal work rules are a good idea for your company, as they can shield it from responsibility and ensure that your employees have a positive work environment.

3.1 How do farm owners establish oyster mushroom farms in terms of Legal Aspect?

Table 27: Frequency and Percentage of Legal Aspect

Are you aware of any laws or regulations that apply to oyster mushroom farming in Bulacan?	Frequency	Percentage
Yes	1	20
No	4	80
TOTAL	5	100

As shown in Table 28, the majority of respondents answered “no”, that they do not comply with applicable laws and regulations with a frequency of three (3) and with a percentage of 60%. Some respondents answered “yes” that they comply with all applicable laws and regulations with a frequency of two (2) and with a percentage of 40%.

Regardless of the specific reporting lines within an organization, legal and compliance must be seen as equal partners in the development of an effective organizational compliance structure Ortwine, B. A. (n.d.). Compliance and legal must acknowledge their responsibilities as equal partners.

Table 28: Frequency and Percentage of Legal Aspect

Do you comply with all applicable laws and regulations?	Frequency	Percentage
Yes	2	40
No	3	60
TOTAL	5	100

As shown in the table below, the majority of five (5) respondents answered no to having problems with legal compliance, and this resulted in a percentage of 100%.

According to Cole, B. (n.d.) Regulatory compliance acknowledged by an organization to the rules, laws, policies, and specifications that are relevant to its operations. Violation fines are a particular form of legal punishment for regulatory compliance offenses.

Table 29: Frequency and Percentage of Legal Aspect

Have you ever had any problems with legal compliance?	Frequency	Percentage
No	5	100
TOTAL	5	100

Table 30 shows the frequency and percentage distribution of the participants according to their responses: the answer “yes” got three (3) that they received legal support for their farm, with a percentage of 60%. And two (2) who have not received legal support, with a percentage of 40%. This resulted in many of their responses receiving legal support for their oyster mushroom farm.

According to Kaushal, R. (2023) Legal services are necessary for your business to run smoothly. You can feel confident and certain that you are doing things correctly when you engage legal professionals. You know that in the case of an issue, you will receive appropriate advice. Legal professionals on your side also prevent you from engaging in any illegal activity that can endanger the livelihood of your business.

Table 30: Frequency and Percentage of Legal Aspect

Have you ever received any legal support for your oyster mushroom farm?	Frequency	Percentage
Yes	3	60
No	2	40
TOTAL	5	100

Table 31 presents the type of support they received, and some of their response was assistance with obtaining permits and licenses, which got two (2) responses. With the percentage of 40% and frequency of two (2). And one (1) answer supports legal advice on business formation and structuring, frequency of one (1) and percentage of 20%. Other responses indicated that they had not received any

support. And this reveals that many of the respondents received support.

According to Griffis, H. (2022) Having a strong support network is vital for entrepreneurs because starting and running a business can be very stressful. Creating a community around oneself with other founders who share your experiences and struggles is another approach to obtaining support.

Table 31: Frequency and Percentage of Legal Aspect

If Yes, what type of support did you receive?	Frequency	Percentage
Legal advice on business formation and structuring	1	20
Assistance with obtaining permits and licenses	2	40
No	2	40
TOTAL	5	100

3.2 How do farm owners establish oyster mushroom farms in terms of Marketing Aspect?

Table 32 presents how they advertise and sell their product, and the majority of the respondents answered social media, which resulted in a

frequency of four (4) with a percentage (%) of 80, and other answers were acquaintances and common friends with a frequency of one (1) and a percentage (%) of twenty (20). This shows that social media platforms are the means of their communication with consumers.

Platforms allow businesses to grow massively by connecting them with new partners, audiences, and markets. According to MJV (2023) Through bringing together various stakeholders, platforms promote collaborative problem-solving and creativity.

Table 32: Frequency and Percentage of Marketing Aspect

How do you sell/advertise the product?	Frequency	Percentage
Social Media	4	80
Others: • Acquaintances and common friend	1	20
TOTAL	5	100

Table 33 indicates what makes their product unique from other competitors; some answered taste with one (1) response, and packaging also has two (2) responses and one (1) response for packaging and one (1) response for quality. This stated that every owner has their own uniqueness in terms of their product; they have their own differences in making their products.

According to Steidl, N. (n.d.). Being unique is supremely important in business and why carving out your distinctive path may be a game-changer. Embracing your distinctiveness sets your business apart from the crowd and attracts customers, partners, and opportunities resonating with your unique vision and values.

Table 33: Frequency and Percentage of Marketing Aspect

What makes your product unique from other competitors?	Frequency	Percentage
Taste	1	20
Packaging	2	40
Price	1	20
Quality	1	20
TOTAL	5	100

3.3 How do farm owners establish oyster mushroom farms in terms of Financial Aspect?

In Table 34 the frequency and percentage of participants who stated if they have the financial resources to grow the business. Based on their responses, four (4) respondents answered “yes” with eighty percent (80%) and one (1) answered “no” with twenty percent (20%)

Each agricultural operation or agribusiness ought to be seen as an investment. A purchase from which you hope to get growth and increased profits. Similar to other business ventures, agribusiness entails a certain level of risk, particularly given its related risks (Ketty, 2023). An essential component of starting and operating a profitable oyster mushroom farming business is financial management.

Table 34: Frequency and Percentage of Financial Aspect

Do you have the financial resources to grow your business?	Frequency	Percentage
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Yes	4	80
No	1	20
TOTAL	5	100

As shown in Table 35 indicates the frequency and percentage of the respondents who answered if oyster mushroom farming is their main occupation. According to their answers, two (2) respondents gave a forty percent (40%) "yes" response, two (2) gave a forty percent (40%) "no" response, and one (1) gave a twenty percent (20%) "can't say" response.

According to Staff (2022) in certain Southeast Asian nations, oyster mushroom farming is a popular commercial business idea. In these nations, it is a widely consumed food item. In fact, *Pleurotus ostreatus*, or oyster mushroom, is a common edible mushroom. Farmers can make money from oyster mushrooms because they are a valuable and in-demand culinary ingredient. The increasing demand is a factor in oyster mushroom farming's profitability.

Table 35: Frequency and Percentage of Financial Aspect

Is oyster mushroom farming your main occupation?	Frequency	Percentage
Yes	2	40
No	2	40
Can't say	1	20
TOTAL	5	100

Table 36 illustrates the frequency and proportion of respondents that answered regarding the type of land ownership for oyster mushroom farms. Three (3) respondents said that they owned private land with sixty percent (60%), and two (2) indicated that they leased land with forty percent (40), based on their responses.

A modern economy must have strong property rights and effective land registration institutions as a

foundation. The owners create assurance in both individuals and businesses to make land investments (Tuck & Zakout, 2019). A firm that grows oyster mushrooms depends significantly on land ownership. Farmers who own land have a number of benefits, such as increased equity and control over the land. When trying to lower upfront expenses, increase flexibility, and lower risk, oyster mushroom farmers may find that leasing land is a suitable alternative.

Table 36: Frequency and Percentage of Financial Aspect

What type of land ownership do you have for your oyster mushroom farm?	Frequency	Percentage
Private land Ownership	3	60
Leased land	2	40
TOTAL	5	100

In Table 37 the frequency and percentage of respondents who responded to the question how much did they spend on initial equipment for their oyster mushroom farm. Out of five (5) respondents, most of the answers are from three (3) respondents who answered Less than ₱30,000 with the sixty

(60%) percent of the total respondents. One responder who answered with ₱61,000 to ₱90,000 received twenty (20%) percent of the total, and another who answered with More than ₱121,000 received twenty (20%) percent.

According to Isaacson, (2021) accurate records are necessary to track equipment costs by product. Understanding your expenses and price demanded for a profit is important. Understanding the initial equipment costs for the oyster mushroom farm will enable it to make accurate choices that will help with the start-up and successful operation of the business.

Estimating your equipment costs will help you figure out how much capital you'll need to invest or loan in order to launch your business. You'll be less likely to make costly mistakes or impulsive purchases if you're aware of how much you will be able to spend on equipment.

Table 37: Frequency and Percentage of Financial Aspect

How much did you spend on initial equipment for your oyster mushroom farm?	Frequency	Percentage
Less than ₱30,000	3	60
₱61,000 - ₱90,000	1	20
More than ₱121,000	1	20
TOTAL	5	100

As shown in Table 38 the frequency and percentage of respondents who responded to the question how much did they spend on initial supplies for their oyster mushroom farm. Totaling the five responders, two (2) provide the majority of the responses, which represents forty percent (40%) of the total respondents with a response of ₱51,000 or more. One responder who answered with less than ₱5,000 received twenty percent (20%) of the total. And another one who answered with ₱6,000 to ₱30,000 received twenty percent (20%). Finally, one (1)

respondent provided a response over ₱31,000 to 50,000 with twenty percent (20%).

Purchasing agricultural inputs requires a thorough understanding of the market. Many factors, including supply chains and commodity pricing, have an impact on markets (LaPorte, 2023). Owners can develop a thorough financial plan and budget for their business by accurately assessing the first supply investment. Owners are able to minimize waste and improve their spending patterns.

Table 38: Frequency and Percentage of Financial Aspect

How much did you spend on initial supplies for your oyster mushroom farm?	Frequency	Percentage
Less than ₱5,000	1	20
₱6,000 - ₱30,000	1	20
₱31,000 - ₱50,000	1	20
₱51,000 or more	2	40
TOTAL	5	100

3.4 How do farm owners establish oyster mushroom farms in terms of Technical and Technology Aspects?

Table 39 illustrates the frequency and percentage of respondents that answered regarding the type of technology that they use to manage their oyster mushroom farm. Based on their responses, two (2) respondents answered "Software: (e.g. inventory management software)" with forty percent (40%) and three (3) respondents answered their specific answer "Improvised Oven, Mixers and Improve

Ovens, Mixers and Improve Ovens" with sixty (60%).

The modern agricultural industry, according to Sergieieva (2023), is simultaneously changing in various directions. Modern agricultural technology supports farmers' success in the agribusiness by encouraging more productive and sustainable farming practices. Agriculture's adoption of artificial intelligence (AI) and big data analytics is

another illustration of how the farming industry is adopting technological advancement.

Table 39: Frequency and Percentage of Technical and Technology Aspects

What technology do you use to manage your oyster mushroom farm?	Frequency	Percentage
Software: (e.g. inventory management software)	2	40
Others:		60
• Improvised Oven	1	
• Mixers and Improve Ovens.	1	
• Mixers and Improve Ovens.	1	
TOTAL	5	100

Table 40 presents the frequency of each category and their percentage; in this table respondents have a capacity to choose one or more answers resulting in a total of five (5) frequency and a percentage of one-hundred (100%). Most respondents learn about technologies using training with the frequency of three (3) and a percentage (%)of sixty (60). Whereas, others learn technologies from extension services with a percentage (%) of twenty (20). It shows that oyster mushroom owners have proper

training in terms of technology they use in their farm.

According to Liu et al., (2022), increasing one's ability to comprehend new concepts can be achieved through training. More precisely, training on the technical, logical, legal, and economic aspects of pesticides could improve smallholder farmers' technical perspective. This proves that having proper knowledge and training can also have benefits in terms of farm business.

Table 40: Frequency and Percentage of Technical and Technology Aspects

How did you learn about these technologies?	Frequency	Percentage
Training	3	60
Extension Services	2	20
TOTAL	5	100

Table 41 shows the frequency and percentage of participants who stated how helpful has the technology been in improving their oyster mushroom farm. The majority of the respondents answered "Very Helpful" with a percentage of one hundred (100%).

Iba and Lilavanichakul (2023) identify "smart agriculture" as a modern farming technique that takes advantage of automation and information and

communications technology (ICT) to enhance labor efficiency, reliability, and the quality of crop yields. Drones for chemical spraying, GPS-guided tractors and planters, and other tools can improve agricultural productivity. Technological developments in agriculture have greatly enhanced the social and economic lives of every person living in the entire world today. As it is not only a sector of the economy, but an essential component of our society.

Table 41: Frequency and Percentage of Technical and Technology Aspects

How helpful has the technology been in improving your oyster mushroom farm?	Frequency	Percentage
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Very Helpful	5	100
TOTAL	5	100

Table 42 reveals the frequency and percentage of the respondents who answered whether it is true that technological advancements in farming have improved product sales potential. Based on their responses, five (5) respondents with one hundred percent (100%) answered “yes”. It means that all of the respondents believe that technological advancements in farming have improved product sales potential.

According to Juillet (2022), to attain their full potential on the Internet, both large and small businesses must embrace technology. Technology provides several benefits to every business, and there are several methods for implementing and developing it in order to enhance sales.

Table 42: Frequency and Percentage of Technical and Technology Aspects

Is it true that technological advancements in farming have improved product sales potential?	Frequency	Percentage
Yes	5	100
TOTAL	5	100

3.5 How do farm owners establish oyster mushroom farms in terms of Human Resource Aspect?

Table 43 presents the frequency and percentage of respondents on how they would rate the overall condition of the farmers in this country. Based on the table, respondents answered very helpful which has a frequency of two (2) covering a percentage of forty (40%), followed by the answers somewhat helpful which has a frequency of two (2) with a percentage of forty (40%), and not very helpful that has a frequency of one (1) with a percentage of twenty (20%).

According to Medenilla (2020), mushroom cultivation can provide a continuous source of income. For mushrooms, the market isn't an issue because they're becoming more and more popular across the nation. There are no educational requirements for mushroom farming, but farm owners can be successful by growing and selling them with hard work and dedication. In line with this, this table shows that the rate of overall condition of the farmers in this country are very or somewhat helpful.

Table 43: Frequency and Percentage of Human Resource Aspect

How would you rate the overall condition of the farmers in this country?	Frequency	Percentage
Very Helpful	2	40
Somewhat Helpful	2	40
Not Very Helpful	1	20
TOTAL	5	100

Table 44 shows the respondents' answers on what knowledge and abilities are most important for employees or business owners to have when establishing an oyster mushroom farm. The most important ability is the business skills with a

frequency of three (3) garnering sixty (60%) percent of the total respondents. Whereas, abilities with technical skills is the second most important with a frequency of two (2) garnering forty (40%) percent.

According to Reynolds (2019), Maintaining the seamless operation of a company requires business skills. These abilities aid professionals in comprehending the internal and external elements that affect an organization's performance as well as

the procedures necessary to achieve organizational objectives. Therefore, business skills are the most important when establishing an oyster mushroom business as shown in the table.

Table 44: Frequency and Percentage of Human Resource Aspect

What knowledge and abilities are most important for employees or business owners to have when establishing an oyster mushroom farm?	Frequency	Percentage
Business Skills	3	60
Technical Skills	2	40
TOTAL	10	100

Table 45 shows the respondents' answers on what are the main human resources difficulties faced by the owners of oyster mushroom farms. With a frequency of three (3), the most common is having trouble finding and keeping farmers with a percentage of sixty (60%). The lack of abilities and experience of the farmers has a frequency of two (2) with a percentage of forty (40%) of the total respondents.

According to Hussainy (2019), the capacity of the company to keep its personnel on board is known as employee retention. For the majority of organizations, retaining employees is becoming a major concern. In line with this, keeping farmers is the most difficult facing the oyster mushroom farms according to the respondents.

Table 45: Frequency and Percentage of Human Resource Aspect

What are the main human resources difficulties faced by the owners of oyster mushroom farms?	Frequency	Percentage
Lack of abilities and experience of the farmers	2	40
Having trouble finding and keeping farmers	3	60
TOTAL	5	100

Table 46 shows the respondents' answers on what are some solutions that owners may employ to overcome these human resources difficulties. The most common solution is by providing a positive and supportive farming environment that has a frequency of three (3) garnering sixty (60%) percent of the total respondents. Whereas, providing farmers an opportunity to train and develop their abilities with a frequency of two (2) garnering forty percent (40%).

According to Coker (2022), the seamless execution of commercial operations is greatly dependent on human resource management. They have a significant impact on worker performance and address these contemporary HRM difficulties when they are equipped with the appropriate tools and tactics.

Table 46 Frequency and Percentage of Human Resource Aspect

What are some solutions that owners may employ to overcome these human resources difficulties?	Frequency	Percentage
Provide farmers an opportunity to train and develop their abilities and experience in farming	2	40
Provide a positive and supportive farming environment	3	60
TOTAL	5	100

SOP4: Challenges encountered by the oyster mushroom farm owners in managing the farm

This table presents the statements made by the respondents in relation to the semi-structured interview questions tailored for this research.

Statements of Respondents in the challenges they've encountered in managing the oyster mushroom farm

Respondent	Difficulties They've Encountered
R1	<i>During summer season, mahirap mag pabuhay ng binhi dahil mainit.</i>
R2	<i>Management shempre ang ano niyan ay pest control, and how to maintain the temperature and humidity requirement for the mushroom. At the same time, yung pinaka una is yung adaptation sa area. Ang difference niya ay magkakaiba ng area, magkakaiba ng adaptation, so from the start mngangapa pa yung mga grower, para paano niya makuha yung tamang temperatura sa pag grow. Secondly, is yung sa Pest Control, kasi sa biodiversity ang nangyayari hindi na propolong yung buhay ng mushroom kasi na iinfect siya ng insect ng mga iba-ibang flies and bugs, kasi hindi pa mashadong naituturo or nalalaman, how to manage yung pag prevent ng mga pest.</i>
R3	<i>Difficulties, siguro pagka yung panahon na malamig biglang iinit mahirap makabunga yung mushroom kasi nga ang pagtatanim ng mushroom most likely maganda yan kapag malamig ang klima mas marami ang naibubunga nya. Ngayon kapag sa mga summer pahirapan talaga sa bunga ng mushroom minsan yung kita sakto lang dun sa naipuhunan.</i>
R4	<i>Most challenging problem in mushroom business is its hard to determined the supply & demand in the market it's always unpredictable.</i>
R5	<i>Maraming difficulties or challenges na kinakaharap kapag magka manage ka ng oyster mushroom farm, unang una ang pagaalaga ng mushroom ay kailangan ng knowledge and skills para mabuhay mo ito, ganun din ang mga taong tutulong sayo o magtatrabaho para sayo para imanage yung farm kailangan iquip sila ng knowledge and skills, so kung di sila equip yan ang magiging challenge kung paano mo ihahandle or gagawing mas efficient yung pagmamanage ng mushroom farm. Pangalawa, ang mushroom farming ay seasonal, so every rainy season maganda ang tubo ng mga mushroom pero during summer medyo mahirap para sa mga mushroom na makapag produce ng mga bunga, so kailangan ng knowledge talaga na kahit summer sya gagawin mo ng paraan kung paano magiging malamig yung area kasi gustong gusto ng mushroom ang malamig at malilim na area, kailangan meron din syang proper ventilation, so maraming bagay na kailangan iconsider sa pagmamanage ng mushroom. Unang una na doon ayon nga yung knowledge and skills, pangalawa kailangan yung timing mo sa season para makapag produce ka ng magandang ani ng mga mushroom.</i>

Statements of Respondents on how they handle the challenges they've encountered in managing the oyster mushroom farm

Respondent	How They Handle These Challenges
R1	<i>Patient, try and error</i>
R2	<i>Start, shempre magtatanong-tanong sa mga friends, common friends na may experience na sa ganung problema. At the same time consulting yung mga, may mga farm na, na establish na, how they manage large production, how they manage kung paano ma prevent yung mga pest, and then after that applying to my farm, and then observe parin, kasi hindi lahat ng application nila applicable samin, sating farm. But mostly ang pinaka sagot niya is matuto mag tanong.</i>
R3	<i>Kumukunsulta sa mga kaibigan, sa mga kasamahan sa oyster mushroom farm, syempre may mga advice silang sinasabi at pwede mo iyong gamitin; yung mga technique. Meron din sa online makakahanap ka ng technique kung paano mas mapapalamig yung area mo.</i>
R4	<i>Through planning ahead, formulating possible solution and working out for everyday ups and down in every details in each phases of it.</i>
R5	<i>So once na, na experience ko yung mga challenges na yon of course kailangan ako mismo nagre research, naga acquire ako ng mga additional knowledge and skills kung paano kopa mas mapalago ang mushroom farm, ganun din ang mga taong tumutulong saakin mag grow yung farm kailangan equip din sila ng knowledge and skills, at kapag dumating yung summer konti na lang yung nagma mushroom so ang ginagawa naming paraan gumagawa kami ng mga improvise like yung continues na mis think sa paligid at ganon din sa mushroom para ma maintain yung temperature. So, isa pang challenge and difficulties yung contamination so kailangan perfect yung process na paggawa ng mushroom, yun yung isang challenge eh. So kailangan sa process pa lang tama yung binhi, tama yung mixture, Tama yung Pasteurization or pagluluto para maiwasan natin ang contamination hanggang sa maitanim natin yung mycelium doon sa substrate. So lahat yan ay kailangan may knowledge ka talaga para maiwasan mo yung mga challenges na yon.</i>

Three primary themes emerged in relation to the respondents' insights: Uncertainty Theme, Seeking Advice Theme, and Management Theme. Additionally, the responses from the five interviewees complement these themes and subthemes that were derived from their statements about the real insights they had gained. The owners of the oyster mushroom farm explained that they faced challenges in running the business, but they also overcome those obstacles. Those challenges are the key to learn more from this field of business. All things considered, farming oyster mushrooms is a demanding yet profitable venture. Aspiring and seasoned oyster mushroom farmers can create plans to reduce risks and improve their chances of success by knowing the opportunities and challenges. This qualitative data improves the quantitative information gathered for the study and offers a broader perspective of the oyster mushroom farming industry.

Overall, the five respondents' responses offer insightful information that supports the themes and created from their statements of the actual insights they had obtained. These findings contribute to a deeper comprehension of the oyster mushroom farm

industry and enhance the validity of the study's results.

Discussion

To conclude this, a thematic analysis was conducted on the qualitative data gathered during the interview. Thematic analysis is an effective method for discovering patterns and themes in qualitative data, providing insights into participants' experiences, perceptions, and beliefs. The researcher was able to go deeper into the interview context because of thematic analysis, which also helped to identify underlying themes that could have gone unnoticed otherwise. This process of discovering and analyzing themes adds to a greater knowledge of the study subject and might inform future research initiatives. Moreover, researchers gathered information from the respondents with the consent and also acknowledgement of their privacy and safety.

The integration of quantitative and qualitative methods in this study facilitated a multifaceted exploration of the research topic. Through thematic analysis of qualitative data, patterns and themes within participants' experiences, perceptions, and

beliefs were identified, providing rich insights into the underlying complexities of the phenomenon under study. This qualitative approach was complemented by the inclusion of quantitative data, which offered numerical context and supported the qualitative findings. By triangulating insights from both approaches, the study achieved a more comprehensive understanding of the research topic, capturing both the breadth and depth of participants' experiences.

Furthermore, the integration of quantitative and qualitative methods enabled researchers to explore the research topic from multiple perspectives, enriching the analysis and enhancing the validity of the findings. Quantitative data provided breadth and generalizability, while qualitative data offered depth and richness of understanding. This integrated approach not only strengthened the current study but also laid a solid foundation for future research initiatives, offering valuable insights that could inform subsequent investigations in the field.

SOP5: Derived Business Model from the Findings of the Study

The business model contains the current condition of oyster mushroom farms in the province of Bulacan which has four essential sectors such as; profitability includes the initial capital, total monthly revenue and initial monthly expenses. Mushroom cultivators are also part of the main resources of a farm, as well as the capital; it is essential for them to have an idea about the initial capital when establishing a business as well as having the financial resources to grow your business. Initial capital refers to the funds invested in a business or project to cover startup expenses and establish an oyster mushroom farm business. The total revenue from all sources, including sales, fees, and interest, is added up to determine it. Government support is through numerous initiatives and programs, the government has provided major support to Bulacan's oyster mushroom sector.

Oyster Mushroom Farming - Business Model

Profitability  • Initial capital (to set up your oyster mushroom farm) • Total monthly revenue • Initial monthly expenses for the following: spawn, substrate, bags, utilities, labor, and others	Government Support  • Government Support: Financial assistance, Technical assistance, Marketing support 	Production  • Products - Fresh Oyster Mushroom - Processed Oyster Mushroom • Best Season: Rainy • Growing medium: sawdust • Type of irrigation system: Manual irrigation (hand watering)	Owners Initiative  • Identify your main reason for choosing oyster mushroom farming (Family Business, Influence by a friend, Good earnings, etc.) • Attend Seminars or Workshops • Asked someone knowledgeable • Identifying your farm management weaknesses: Lack of knowledge, lack of connection	
Legal Aspect  • Comply with all applicable laws and regulations • Legal support: Legal advice, obtaining permits and licenses	Marketing Aspect  • Sell/advertise the product: Social Media, Acquaintances, and common friends • The uniqueness of the Product: Quality, Price, and Taste	Financial Aspect  • Financial resources to grow your business • Initial Supplies and Equipment	Technical and Technology Aspect  • Managing oyster mushroom farm through the use of: Software, Mixers, and Improve Ovens. • Training, and Extension Services in learning these technologies • Using technological advancements in improving product sales potential	Human Resources  • Knowledge and abilities: Business Skills, and Technical Skills • Provide farmers an opportunity to train and develop their abilities and experience in farming • Provide a positive and supportive farming environment

Financial support to farmers of oyster mushrooms via a number of initiatives, including the Sustainable Agriculture Program (SAP). Through a number of initiatives, oyster mushroom growers can receive technical help. In order to assist oyster mushroom growers in connecting with purchasers and distributors, marketing support also offers market relationships. While in production, oyster mushroom has products such as; fresh oyster mushroom and processed oyster mushroom. The Pearl Oyster (*Pleurotus Ostreatus*) is the most common type of mushroom that farm owners grow in their oyster mushroom farm business. On the other hand, sawdust is the usual growing medium

that farm owners use together with the manual irrigation system or hand watering they also use in farming oyster mushrooms. With the findings of the study, farmers should be knowledgeable with the best season, the appropriate temperature, and humidity levels to be maintained when growing an oyster mushroom. Moreover, the process of growing oyster mushrooms involves a number of raw resources, particularly spawn (the mushroom seed), substrate (like sawdust), and packaging materials (such as containers or plastic bags). The raw materials, labor, infrastructure, equipment, and other costs are all included in the oyster mushroom production. Additionally, in terms of owner

initiatives, farm owners usually pursue their oyster mushroom farm business by the influence of friends and family businesses as well as because of the good earnings it has. As a result, farm owners usually start their oyster mushroom farm business as sole proprietorships, and most of them have experienced challenges due to a lack of knowledge and a lack of connection to the marketplace. Despite this, the owner's initiative in this business model may assist farmers in addressing these challenges by providing them with a seminar on how to use technological equipment in farming as well as the financial support they require to increase their production and market connection. On the other hand, the sectors on how farm owners establish oyster mushroom farms include: legal aspects, most of the farm owners are unaware of any laws or regulations in the production of oyster mushrooms, but they still follow them when they are applicable. Furthermore, farm owners have never experienced any problem with legal compliance; instead, they receive legal support or advice on the business formation and structuring of their oyster mushrooms. However, when it comes to legal aspects, farm owners should consult their business in a legal way to ensure that it is in compliance with all applicable laws and regulations. On the other hand, the marketing aspect is that selling the oyster mushrooms to customers directly can be accomplished through markets. Moreover, a number of platforms allow selling oyster mushrooms online. The business model's section on finance discusses how starting an oyster farm required both initial supplies and equipment as well as financial resources for expanding the enterprise.

The business model in technical and technology aspects is the management of oyster mushroom farms can be aided by several software tools. These systems can keep track of inventories and growth conditions. The material that oyster mushrooms grow on is called the substrate, and mixers are used to mix it. Similar to sawdust is the substrate. The oyster mushroom spawn can be incubated in improvised ovens. To assist farm owners in becoming knowledgeable about the newest technologies for operating oyster mushroom farms, several outreach and training programs will be offered. These services can include online materials, courses, and practical training for farmers. Farm owners can increase the oyster mushrooms' excellence, marketability, and sales potential by utilizing technology developments. Increased revenue and a more resilient company might result from this. Finally, the business model's human resources portion examines the value of knowledge and skills, including both technical and business capabilities. In addition, it offers farmers the chance to hone and expand their farming skills and expertise while also creating a happy and encouraging farming atmosphere.

With the help of this business model, they can know how they can handle the conditions and the aspects of establishing or building an oyster mushroom farm. According to Whitworth (2022), if you have considerable or specialized knowledge, you will have an advantage over the competitors. Knowledge is one of the unfair advantages. If you have a good foundation of knowledge, you are more likely to be aware of complicated aspects that might affect the growth of your business.

Conclusion

Most of the respondents are in their early middle age (31 to 40 years old) and more male respondents participated in the survey as compared to females. Furthermore, most of them had technical vocational education as their educational attainment, and the majority of them were self-employed.

Moreover, farm owners set up their oyster mushroom farm with an initial capital that starts at less than ₱101,000-₱250,000. Most of them sell pearl oyster mushrooms (fresh and processed) at a price of less than ₱100 and the estimated revenue for it starts from ₱41,000 up to more than ₱50,000. Some of the oyster mushroom owners receive government support including financial, technical, and marketing support. On the other hand, sawdust is the usual growing medium that farm owners use together with the manual irrigation system or hand watering they also use in farming oyster mushrooms. It was stated that the rainy season is the best season for oyster mushroom farming. Additionally, the owners are using software, mixers, and improvised oven technologies to manage their farms. All of the respondents agreed that technology is very helpful in improving their oyster mushroom farm and that technical advancements in farming have increased product sales potential. In addition, business skills got the highest answer as the most important knowledge and abilities for employees or business owners to have when establishing an oyster mushroom farm. The majority of them were having trouble finding and keeping farmers were the main human resources difficulties they faced, while the others answered the lack of abilities and experience of the farmers. All of them answered that providing farmers an opportunity to train and develop their abilities and experience in farming is a solution that owners may employ to overcome these human resources difficulties.

On the other hand, some respondents answered that the season was one of the challenges that they encountered. Due to this, it is hard for them to cultivate an oyster mushroom, and with that, there is an unstable supply and demand of the oyster mushroom since it is unpredictable. Because of this demand volatility, growers may find it difficult to properly forecast their output, which might result in

shortages or surpluses. Maintaining profitability and preventing losses requires balancing output with market demand. Most of the challenges include supply and demand, managing temperature and humidity, managing pests, and seasonal variations. Managing and overcoming these challenges prioritizes learning new information as well as sharpening the problem-solving abilities of the oyster mushroom growers.

With the findings of the study, the researchers were able to derive a business model including the following: profitability, government support, production, owners' initiative, and the different aspects of establishing an oyster mushroom farm such as legal aspect, marketing aspect, financial aspect, technical and technology aspect, and human resource aspect.

Recommendations

Based on the findings of the study and given conclusion, the following recommendations were developed:

1. The majority of respondents' age range indicates that middle-aged (36-40 years old) people have a higher probability of developing oyster mushrooms. The use of marketing materials is necessary to reach a larger audience and tell them about the nutritional advantages of oyster mushrooms to also reach young adults (20-30 years old) and older individuals, not just middle adults since anyone can create their own business at any age and gender. Print ads, television commercials, social media campaigns, and internet advertising may all be used for this.
2. Participating in workshops and seminars hosted by the Department of Agriculture and other pertinent organizations may provide oyster mushroom producers with the information and skills they need to run their businesses and acquire important business guidance. For instance, this local government may provide and work on seminars and workshops on topics like practical guides in growing oyster mushrooms, strategies for managing an oyster farm, and do's and don'ts while developing an oyster farm.
3. Complying with government laws and regulations on farming serves several important purposes, including preserving food safety, maintaining the environment, protecting farmers' well-being, and supporting the stability of the agricultural industry of oyster mushroom farming as a whole. In addition, maintaining a balance between environmental sustainability, public health, and social issues in farming requires government rules and regulations. They guarantee fair competition and support the agriculture industry's long-term existence.
4. Seeking expert and professional support. Experts can guide farmers in adopting modern agricultural technologies, such as precision farming and automated machinery, to improve efficiency and productivity. However, professionals can help farmers stay informed about market trends. When challenges arise, experts can help farmers troubleshoot issues related to crop diseases, pest infestations, or other agricultural problems. Their experience and knowledge can contribute to finding effective and timely solutions. The collaborative efforts of professionals and farmers facilitate the agriculture sector's overall growth and sustainability.

Conflicts of Interest

The authors declare that there is no conflict of interest in this manuscript.

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