

Mushroom Cultivation and Marketing Strategies of Small-Scale Farmers in Bansalan, Davao Del Sur: A Multiple Case Study

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Abstract: Mushroom cultivation presents an enticing opportunity for small-scale farmers to diversify their operations and boost income with minimal capital and space requirements. In fact, it can be grown in relatively small spaces, including indoors or in controlled environments, which may provide a practical alternative for farmers. This qualitative multiple-case study aims to explore the mushroom cultivation and marketing strategies as well as the perceived opportunities in improving the cultivation and marketing strategies of small-scale farmers in Bansalan, Davao del Sur. This study collected data from three (3) small-scale mushroom farmers through in-depth interviews. Through within-case and cross-case analysis, the data gathered revealed that the cultivation practices of small-scale mushroom farmers include meticulous farming, temperature management, specific cultivation techniques, and maintaining a holistic environment. The marketing strategies consist of competitive pricing, marketing channel optimization, establishing transparent communication, achieving the best deals, and utilization of social media. Furthermore, the perceived opportunities for improvement comprise continuous learning, perception of technology, partnership and collaboration, government support, and market viability. The implications of the study suggest that mushroom cultivation offers small-scale farmers a pathway to diversify their operations and enhance income while emphasizing the importance of rigorous cultivation practices, continuous learning, effective marketing, and collaboration. Furthermore, the study underscores the importance of government intervention in addressing various barriers to mushroom cultivation, such as access to resources and infrastructure, while also emphasizing the necessity of establishing supportive facilities and regulatory frameworks conducive to the growth of the industry. Additionally, it encourages stakeholders' active involvement in supporting small-scale farmers through equitable practices, fostering partnerships between different actors in the agricultural value chain, and investing in research and development initiatives aimed at enhancing the sustainability and productivity of mushroom cultivation practices. Keywords: mushroom farming, small-scale farmers, cultivation practices, marketing strategies, opportunities, multiple-case study.

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I. Introduction

Mushroom cultivation provides small-scale farmers a profitable opportunity to diversify operations and generate additional income with only a minimal capital and space needed (Carroll, 2022). Small-scale mushroom farmers may offer high-quality or locally-grown mushrooms that can differentiate the products in the market (Finmodelslab, 2023). However, the small-scale farmers face unique challenges and opportunities in growing and marketing mushrooms due to limited resources and information access (Beyer, 2022). Therefore, it is important to understand the strategies and considerations that small-scale farmers use in cultivating and marketing efforts (Beyer, 2022). For instance, the use of technology and contract agreements attract more customers and boost the capacity in selling and production (Febrianda and Tokuda, 2017; Nurjati and Wiryawan, 2023).

Mushroom cultivation is a growing industry worldwide, driven by increasing demand for healthy, sustainable, and flavorful food (Chang, 2018; FAO, 2020). According to a report by the Food and Agriculture Organization of the United Nations (FAO), the global mushroom market was valued at USD 38.8 billion in 2020 and is expected to reach USD 54.3 billion by 2025 (FAO, 2020). This growth is attributed to several factors, including the rising health consciousness and the growing popularity of functional foods (Chang, 2018). Mushrooms are a good source of vitamins, minerals, and dietary fiber, and some varieties are known to have medicinal properties (Chang, 2018). Increasing demand for sustainable food production practices. Mushroom cultivation requires less land and water than many other forms of agriculture, and it can help to reduce food waste by using organic materials such as agricultural waste as substrate (Schippers et al., 2018). The growing popularity of ethnic cuisines that prominently feature mushrooms, such as Chinese and Japanese cuisine (Chang, 2018). Mushroom cultivation has also expanded in Brazil due to its medicinal and culinary value. However, production is still recent and poorly organized, resulting in not meeting the demands and having the need to import (Cabrera et al., 2020).

In Asia, mushroom production is increasing due to the high domestic and export demand (Ferdousi et al., 2020). In India, mushroom cultivation is the most fruitful and lucrative industry, and is considered as the country's secondary source of income for many people (Sawant, 2022). The best mushroom cultivation practices in India involve the use of locally available agricultural waste as raw materials, making it ecofriendly and low-cost (Rautela et al., 2019). In Bangladesh, despite the successful harvest, problems such as lack of cultivation houses, unavailability of good spawn, capital shortage, lack of equipment and storage, and lack of available market and promotion at the local level are still faced, which led in the early and frequent exit of mushroom growers in the industry (Ferdousi et al., 2020).

The Philippines is a Southeast Asian country with a growing mushroom industry. According to the Philippine Statistics Authority (PSA), the production of mushrooms in the Philippines increased from 10,250 metric tons in 2018 to 12,500 metric tons in 2021 (PSA, 2023). The government has identified mushroom production as a priority sector for agricultural development, and it has launched several initiatives to support the industry, such as providing training programs and financial assistance to farmers (Department of Agriculture, 2020). Cultivation of mushrooms in the Philippines is economically feasible because of the low production cost and abundance of cheap substrates for agro wastes, which will be profitable for mushroom growers (Devilla, 2022). Philippines has ten varieties of edible mushrooms, namely: paddy straw, oyster, shiitake, button, ear fungi, milky, yellowish oyster, reishi, lion's mane, and king tuber oyster (Taculao, 2021). Some mushroom growers started mushroom cultivation in their own backyards using materials such as rice husk, kusot, and sawdust that are greatly found in different areas of the Philippines (Braganza, 2023). However, despite of almost having the materials needed for free, most Filipino farmers still do not venture into mushroom farming. Moreover, mushroom farming is a profitable business but the Philippines can only meet 10% of its local mushroom demand and this opportunity is miss out due to lack of awareness among Filipinos (Medenilla, 2020).

The province of Davao del Sur, in the southern Philippines, is a leading producer of mushrooms in the country. It is known for its mushroom production, with many small-scale farmers cultivating mushrooms as a source of income (Eagle Star, 2023). These farmers face unique challenges, such as limited access to resources, knowledge, and markets. However, they also have opportunities to tap into the growing demand for locally grown and highquality mushrooms. This study of mushroom cultivation and marketing strategies in Bansalan, Davao Del Sur is crucial for several reasons. It provides a comprehensive understanding of small-scale farmers' practices, identifies areas for improvement, and sheds light on opportunities for optimization. The study also bridges the knowledge gap, informs the development of tailored training programs, and provides valuable insights into the similarities and differences among farmers. This enables targeted interventions to address their specific needs and challenges.

The research on mushroom cultivation and marketing strategies is deeply rooted in Everett Rogers' 1962 Diffusion of Innovation (DOI) theory. It serves as the foundation for understanding how small-scale mushroom farmers adopt innovative cultivation techniques and marketing strategies. This theory sheds light on the process of adopting and spreading new ideas, technologies, or practices within a society. Through the application of the DOI theory, researchers gain insights into how farmers embrace new practices and strategies to gain a competitive advantage. Furthermore, the study conducted by Mardiana and Kembauw (2021), entitled "*The Role of Diffusion of Innovation in Agricultural to Compete in ASEAN Community*," emphasizes the importance of Diffusion of Innovation in agribusiness farming. Based on the study, lots of farmers face income difficulties and hindrances that even the national agribusiness development sector finds difficult to address. Therefore, innovation remains crucial for the growth and welfare of agribusiness. Understanding and addressing challenges helps small-scale mushroom farmers adopt innovative practices that boost productivity and income.

This paper aimed to explore the mushroom cultivation and marketing strategies of small-scale farmers in Bansalan, Davao del Sur. Many studies have concluded that there were different ways of improving and preparing the mushroom and how to market it. However, there was no further research on how to cultivate mushrooms and the marketing strategies of small-scale farmers in Mindanao, specifically in Davao del Sur. As a result, a multiple case study was conducted to determine the current strategies used by farmers in the Municipality of Bansalan and the challenges they faced and suggested strategies to improve their productivity and profitability. This study filled the gap in the literature by providing a comprehensive and up-to-date assessment of the mushroom cultivation and marketing strategies of small-scale farmers in Bansalan and identifying the potential solutions to improve their livelihoods.

The study on mushroom cultivation practices and marketing strategies of small-scale farmers in Bansalan, Davao del Sur was of importance as it aimed to comprehend the factors that impacted the success of these operations and pinpoint areas for improvement. By answering the research questions, this study offered valuable perspectives on the difficulties and opportunities encountered by small-scale mushroom farmers. It also pinpointed strategies and techniques that enhanced the cultivation and sales of its products. Furthermore, this research contributed to the broader body of knowledge concerning small-scale mushroom farming and offered information that proved beneficial to fellow small-scale farmers, policymakers, and stakeholders invested in supporting and promoting this industry. Through the identification of similarities and distinctions among the study cases, insights were gained into the factors that affected the success of small-scale mushroom farming operations. This served as a foundation for potential future research in this field.

The main purpose of this qualitative multiple-case study was to explore on the mushroom cultivation and marketing strategies of small-scale farmers in Bansalan, Davao del Sur. It aimed to describe the mushroom cultivation practices, marketing strategies, and opportunities perceived to improve these aspects among small-scale mushroom farmers through in-depth interviews. Specifically, it sought to answer the following questions.

What are the cultivation practices of small-scale mushroom farmers?

What are the marketing strategies of small-scale mushroom farmers?

What are the opportunities perceived by the small-scale mushroom farmers in improving their cultivation and marketing strategies?

What explains the similarities and differences of each case?

Also, this study aimed to present actual documentation through pictures on the cultivation processes and actual product marketing activities of the small-scale mushroom farms in Bansalan, Davao del Sur. This gave a clear farm and marketing picture of the mushroom industry in Davao del Sur.

II. Method

Presented in this section were the discussions on the research design, the research participants, the research instrument, the data collection process, the data analysis, role of the researchers, trustworthiness and authenticity, and ethical considerations.

Research Design. The study about mushroom cultivation practices and marketing strategies of small-scale farmers used a multiple case study research design. This research design involved the systematic and in-depth investigation of a set of multiple cases in order to understand a particular phenomenon or issue (Yin, 2013). It was often used in fields such as sociology, education, and business, where researchers were interested in understanding complex social or organizational phenomena that could not be adequately studied using a single case (Stake, 1995).

The researchers used a multiple case study design to understand the complex and nuanced factors that impacted the success of small-scale mushroom farming operations in that specific area. By studying multiple cases, researchers considered the unique context, characteristics, and experiences of each case in order to identify patterns and themes that might not have been apparent when studying a single case. This allowed a more in-depth and comprehensive understanding of the mushroom cultivation and marketing strategies used by small-scale farmers in Bansalan, Davao del Sur, and the challenges and opportunities they faced in those endeavors.

Research Participants. The study was conducted in the entire area of Bansalan, Davao del Sur. A first-class municipality in the province of Davao del Sur with a population of 62,737 people living on it (Consensus, 2020). This municipality was divided into 25 barangays with a limited number of mushroom farmers who were actively engaging in mushroom production. The researchers selected their participant case through purposive sampling which involved choosing cases based on their relevance to the research questions and their potential to contribute to the understanding of the phenomenon under study. In this case, the researchers selected these small-scale mushroom farming operations that were representative of different cultivation practices, marketing strategies, and opportunities for improvement, in order to understand the factors that influenced the success of these operations.

Research Instrument. The researchers gathered the desired data through the use of In-depth Interview (IDI) where an extensive series of one-on-one interviews were used to explore participants' perspectives or ideas. These involved conducting semi-structured conversations with individuals who had first-hand knowledge or experience with the phenomenon or issue being studied. These interviews were conducted in person, and typically involved the researcher asking open-ended questions and encouraging the interviewees to elaborate on their responses. In-depth interviews proved to be useful research instrument in multiple case studies because they allowed researchers to gather rich, detailed data from individuals with firsthand knowledge of the phenomenon being studied. They also allowed the exploration of complex and nuanced issues in depth, and provided insight into the subjective experiences and perspectives of small-scale mushroom farmers. Additionally, the researchers documented the findings through pictures, enhancing the richness and validity of the data.

Data Collection. In the data collection process of this study, the researchers requested permission from the Director of College and Dean of UM Bansalan College to conduct the study. Upon approval, researchers obtained consent from the participants involved, provided them with a proper orientation as to the purpose of the study, and described the sincere desire to pursue the particular research issue. The researchers respectfully asked the participants to willingly participate in the conduct of the study. Following the informed consent, researchers began collecting data, including question-and-answer session and actual visitation on the farm sites.

After having the data, the researchers secured informed consent from the concerned participants as proof that the researchers religiously conducted the data collection process. Lastly, results were drawn for which discussions, conclusions, and implications were made.

Data Analysis. The data gathered from the study was analyzed through the use of within-case analysis and cross-case analysis since it is a qualitative multiple case research (Rashid et. al, 2019). Application of within-case analysis in the context of case study involves a thorough examination of an individual case as self-contained entity aiming for comprehensive understanding and description of the phenomenon (Mills, Duperos and Wiebe, 2010). In order to examine the common themes, similarities, and differences across cases, the researcher utilized cross-case analysis (Pare, 2019).

The researchers also utilized thematic analysis to analyze in-depth responses to look for patterns, core ideas, and themes drawn from the transcribed in-depth interviews (Kiger and Varpio, 2020). These patterns generated codes that emphasized the mushroom cultivation practices and marketing strategies of small-scale mushroom growers in Bansalan, Davao del Sur.

Role of Researchers. In our capacity as researchers in this study, we assumed the role of inquirers, interviewers, transcribers, and analysts. According to Creswell (2013), the role of a researcher involves selecting the informants for the study. To fulfill this role, we ensured that all necessary steps were taken, including obtaining approval from the adviser, program coordinator, Dean, and School Director, to conduct the study. Additionally, as inquirers, it was our responsibility to choose the participants for the study and to inform them about the primary focus of the research.

As the interviewer during the research process, we utilized an interview guide questionnaire that contained written questions for our informants. In order to ensure that they were able to fully express themselves, we translated the questions for them. Our role was to facilitate the In-Depth Interviews (IDI) among the study participants. To delve deeper into the conversation, we were mindful of both spoken and nonverbal communication, paying attention to the informants' gestures and carefully documenting the process.

Additionally, as transcribers, we collected and recorded all the responses of the informants. To ensure the confidentiality of the data, we thoroughly processed and transcribed the information that was gathered. Our aim was to identify and examine recurring patterns or themes, which we achieved by categorizing and analyzing the data. The final result was a presentation of the major themes in relation to the research questions.

Additionally, we took measures to ensure the validity and reliability of the participants' responses. We promptly addressed any corrections that arose from the data and thoroughly reviewed the data to ensure that it met an acceptable standard. Upon finalizing the data, it was our duty to analyze the results, provide recommendations for future research, discuss the implications of the study, and provide final remarks.

Trustworthiness and Authenticity. To attain validity and reliability of the qualitative multiple case study, the researchers employed credibility, transferability, dependability, and confirmability, which were techniques introduced by Lincoln and Guba (1985). The following sections describe how each of these techniques was applied in the study.

Credibility. To enhance the credibility of the research, the researchers employed in-depth Interviews (IDIs). Additionally, to ensure all relevant responses from the participants were captured, the entire interview was recorded and notes were taken with the help of recording devices.

Transferability. To ensure transferability, the researchers made sure to provide enough contextual information to the readers so they could understand how the findings could apply to their own situations. The information included the steps to take to collect, transcribe, and present the language data, as well as descriptions of each informant and participant. The study was thorough and included detailed accounts of each individual. As a result, future researchers will be able to build upon this study and make new discoveries related to it.

Dependability. To ensure reliability, the researchers provided the informants and participants full copies of the transcripts from the IDIs. They were assured by the researchers that they could review the transcripts and make any necessary changes. By doing so, the researchers upheld three key principles in research ethics: respect for persons, beneficence, and justice (Mack, et al., 2005). The participants were informed that confidentiality would be maintained throughout the analysis and presentation of the findings. To maintain confidentiality, pseudonyms with their informant and participant IDs were used in the study.

Confirmability. The process of auditing of the collected data was accomplished by utilizing an audit trail to ensure its credibility. The transcriptions of the informants and participants were assigned codes for ease of access during review. These codes were indicated for every single response from each informant and participant. The researchers then presented the coded responses as prototypes in the Results and Discussion Chapter. The full transcriptions were securely stored in the researchers' personal files for future reference in case an audit is needed.

To sum up, the researchers utilized the IDIs in collecting the data for their study. A detailed explanation of the process of data collection, analysis, presentation, and discussion was given. Additionally, the transcripts were shared with the informants and participants for review and feedback. Furthermore, a record was kept to ensure the validity and reliability of the study.

Ethical Considerations. In this study, prior to collecting data, ethical considerations were addressed. The researchers were subject to evaluation by the panel members serving as the ethics review committee.

Voluntary Participations. The participants had the option to participate voluntarily and anonymously to ensure the protection of their personal information. Information was provided to those who were unsure before they made a decision to participate in the research.

Privacy and Confidentiality. The findings of this research were kept confidential in accordance with the law. Any personally identifiable information obtained in the course of the study was protected and not disclosed, unless necessary to safeguard the participants' rights and well-being. The researchers refused to share information about their involvement in the study with anyone who was not associated with it. When presenting or discussing the study results in public forums, no personally identifiable information be utilized. This research complied with the Data Privacy Act of 2012, ensuring that participants' private information could not be processed without their consent, and ensuring that their responses were kept anonymous to protect their identity.

Additionally, the identities of the participants remained anonymous and were not publicly disclosed. The researchers were the only one who had knowledge of their specific responses. To maintain confidentiality, the researchers assigned numerical codes to the responses, with only the researchers having access to the key linking the numbers to the participants. The aim was to safeguard the privacy rights of the study participants, and all data collected during the study were kept confidential.

Informed Consent Process. The researchers obtained the consent of all participants in the study through a detailed and thorough explanation of the purpose of the study. The researchers emphasized that participation in the study was entirely voluntary and that

the participants must have a complete understanding of the research and its implications. The signed consent form, bearing the signature of the participant, confirmed their voluntary participation in the study. The researchers also ensured that all personal information obtained from the participants was treated with the utmost care and confidentiality, in accordance with the Data Privacy Act of 2012.

Risks. The research project did not expose the participants to any significant physical, psychological, or socioeconomic hazards. Their rights were safeguarded and protected throughout the study.

Benefits. Likewise, with the result of this study, the researchers gained valuable insight into the cultivation practices and marketing strategies of small-scale mushroom farmers. This information provided the participants with new knowledge about the research topic. Additionally, during the course of the research, the participants received tangible benefits, such as a token of appreciation from the researchers.

Safety. Additionally, the anonymity of the participants was maintained through the use of pseudonyms during the research process to safeguard their personal information. The collected survey data was also kept private and only used to support the findings of the study. The researchers adhered to health protocols related to the COVID-19 pandemic when administering the interview questionnaires. To maintain the health and safety of all parties involved, the researchers and participants observed social distancing and the wearing of face masks. Therefore, the researchers strictly abided the COVID-19 guidelines set by the IATF and local regulations.

Plagiarism. The researchers took measures to prevent plagiarism by using the turn-it-in software to ensure that there was no evidence of misrepresentation of someone else's work. The researchers adhered to proper citation techniques to properly credit any ideas from other writers and scholars. To ensure the accuracy and grammatical correctness of the paper, the researchers also used the Grammarly software. The research was based on various existing studies, so the researchers made sure that the information was accurately written and cited. All sources used in this study came from reputable journals and scholarly works and followed the Harvard citation format. The aim was to ensure that there was no misrepresentation of work or alteration of any data collected in the study.

Fabrication. The obtained data and information were presented in a precise writing style, with no fabrication of data or results or intentional presentation of inaccurate conclusions. No conflicting information with existing literature was incorporated into the manuscript.

Falsification. Similarly, the consideration of falsification was also taken into account, ensuring that there was no indication of intentionally altering the work to conform to a particular model or theoretical expectation. It was also free of any signs of overstating or excessive exaggeration.

Conflict of Interest. The researchers took steps to eliminate conflicts of interest, such as avoiding conducting surveys among their peers and colleagues. Additionally, there were no circumstances where primary interests, such as the welfare of the participants or the validity of the research, may be impacted by secondary interests, such as financial gains or recognitions, affecting professional judgment.

Deceit. The contents of this paper did not employ any false statements that could harm the well-being of the participants. All the written information was verified and confirmed by a team of experts, and any efforts to deceive the participants were avoided if it is determined that the benefits of misleading them do not outweigh the potential harm caused

Authorship. The study examined the credentials of the authors involved in its conduct. The primary researchers, with the support and direction of the research advisor, played significant role in the creation and design of the study, the collection and analysis of data, and the interpretation of the results. They worked together to write and revise the final article, ensuring it had important and meaningful content. Their joint efforts culminated in the publication of the research.

Results and Discussion

This section presents the data that was collected from each of the three participants. The answers to the research questions provide insight into the different cultivation practices and marketing strategies of small-scale mushroom farmers and the opportunities they perceive as well. To provide readers with an accurate understanding of the participants' genuine verbatim statements, the crucial statements were written in italics.

Profile of the Participants

Table 1 displayed the participant profiles, which demonstrated that each of them is a small-scale mushroom farmer in Bansalan, Davao del Sur, who satisfies the established selection criteria. There were three (3) participants in this study. During the interview, every participant spoke to the other in their native "Visayan" dialect. To protect the privacy of their identities, the researchers assign each other codenames.

Case 1 (Volva 1.0): The assigned code for case 1 is Volva 1.0 since he is the one who pioneered mushroom cultivation in Bansalan area. At 63 years old, he remains actively engaged in his business, personally overseeing marketing initiatives and supervising employees throughout the production process. He has been cultivating mushrooms since 1993, accumulating 31 years of experience

in the industry. Some of personnel from the municipal agriculture office seek him out to purchase his high-quality spawns to be use during their demonstrations. Throughout the extensive years he spent in mushroom cultivation industry, he has lots of opportunities seen coming from the government, technology, and the market itself.

Table 1

Profile of the Participants

Participant Cases	Age	Civil Status	Occupation	Educational Attainment
Volva 1.0	63	Married	Farmer	High School Graduate
Volva 2.0	39	Married	Farmer	High School Graduate
Only Oyster	50	Married	Farmer	College Graduate

Cultivation Practices of Small-Scale Mushroom Farmers

Meticulous Farming. He gave emphasis on how tedious it is to cultivate mushroom, specifically volva variety of mushroom. This type of mushroom requires a substantial amount of effort from the preparations up to harvesting. Due to its sensitivity to bacteria and any forms of contaminations, tools used in propagation need to be sterilized all the time. Mushrooms sensitivity to bacteria is commonly observed during the creation (termed as Potato Dextrose Agar) and transfer of spawns. The time span starting from cultivation up to harvesting is not so lengthy. It takes approximately 17 days for your mushrooms to be ready for market.

"Dugay-dugay nako mahuman ug explain unsa na katrabahoso. Sensitive lage kaayo sa bacteria. 17 days gikan pagsugod jud nimo." (Volva 1.0)

It will take me a long time to finish explaining how tedious it is. It's very sensitive to bacteria. It takes 17 days from the start.

"Kung mag PDA, kaldero ra gyud unya palit ko ug gulaman bar, dextrose powder, botelya sa lapad na tanduay unya hugasan na dili pinaagi sa sabon paugahon jud siya. Copoun bond itakip sa baba sa botelya ug rubber band nga dili kaayo siya hugot tama tama nga naay hangin makasulod dili ra pud siya masudlan ug bacteria. Unya magkuha dayon ka atong sa nature nga tubo nga volva mushroom dili ng cultured kay dili man kaayo na siya muhatag ug semilya. imong puniton nga direkta mag gwantes ka ug cellophane kay kini atong kuan (palad) parat man ni." (Volva 1.0)

I use casserole in conducting PDA then I buy gulaman bar, dextrose powder, and glass bottle and wash it plainly with clean water. I also use papers and rubber bands as cover, ensuring enough passage of air. Then I collect nature grown vola mushroom to start the process of PDA using plastic cellophanes or gloves.

"dapat sterilized kaning atoang kutsilyo bago nimo e-hiwa diri kay sensitive lage kaayo sa bacteria ning magkuan ka ug mushroom. Imo na siya cuttingan ana. Nya katong botilya ganina dapat walo tu siya kabouk sa isa ka ingon ani (volva specimen). Cuttingon nimo isa, nahimo nang duha. Imo na pud siyang cuttingon napud ug tunga, nahimo siyang upat." (Volva 1.0)

Knives used must be completely sterilized as this process is highly sensitive to bacteria. Cut the specimen into 8 parts, just enough for the 8 bottles prepared.

"Dapat inig mag cutting ka ani kinahanglan naka-kuan ka ug coupon bond imohang lamesa ba run para limpyo gyud siya kay sensitive kaayo ni siya sa bacteria unya naka gwantes ka dili pwede imong kinamuton. "(Volva 1.0)

When cutting (the specimen) a sheet of clean paper must be spread and gloves must be used to ensure cleanliness.

"magpabukal ka ug tubig nga half liter butangan nimo ug duha ka kutsarita sa dextrose powder. Ug mahimo pabukalon nimo sulod sa mga kinse (15) minutos. Katong gulaman... kung mahimo ang tubig tin-aw na jud siya wala na siyay color. Pugaon jud nimo siya mga kalima ka beses hangtud sa kung unsay color sa tubig mao na gyud siya ang color. Mao tu imong e-lunod nya dayon imoha nag butangan ug duha ka kutsarita na dextrose powder nya dayon haunon nimo nya katong botelya na walo dapat andam na." (Volva 1.0)

Boil half liter of water then add two (2) teaspoon of dextrose powder. Let it boil for fifteen (15) minutes. The Gulaman water should be crystal clear before adding dextrose powder.

“Katu imong giluto na gulaman bar na gilunod nimo sa pinakulo sa tubig, bahinon nimo ni sa walo ka botelya nga dapat pantay gyud iyang kahabugon. Pagkamapantay na, imong e-higda dili e-tindog.” (Volva 1.0)

The boiled water with gulaman bar and dextrose powder should be equally divided in to eight (8) glass bottles prepared. Place the bottle in a resting position.

“Maabtan ug mga 10 minutes imo na siyang ibutang (hiniwa nga mushroom from nature) gamit ang bakal nga nipis basta naka sterilize lang nga masigo sa baba sa botelya. Ipasulod nimo siya diha kinahanglan naa siya sa centro. Pag masudlan na nimo ang walo, na apud na. Bago nimo takpan ug bond paper unya katong lastiko mao imong e kuan na dili kaayo siya hugot. Basta dili lang siya matanggal tama-tama lang na maipit.” (Volva 1.0)

After 10 minutes, put the specimen inside the bottle using sterilized thin metal, ensuring its position at the center part of the bottle. Then cover the hole with paper and lock it with rubber bands.

Temperature Management. He underscored that the lowland climate temperature of Bansalan best suits for cultivation of volva mushrooms. He pointed out that the specific environmental conditions of the lowlands play a significant role in maintaining the growth and quality of the mushrooms. He also stressed the importance of the balance between sunlight and shade. It is not advisable to setup the plot under direct sunlight nor too much shade because it will not grow properly and will produce limited harvest. Temperature management influence the color of the volva mushroom. When the plot is put on a place with much sunlight, the mushroom produces brown color. Conversely, when put in a shady area, it produces white fruit. In cultivating volva mushroom, temperature needs to be considered all the time.

“Oo, haum. Ang gikinahanglan lang ana niya, dili sad siya kaayo landong, dili sad siya kaayo init kayo. Kung ibutang sa landong jud siya makaingon ka nga brown ang color ug landong jud siya kayo pero kung medyo na hayag hayagan na siya puti jud na siya.” (Volva 1.0)

Yes, it fits. That's all he needs, not too shady, not too hot. If you put it in the shade, you can say that it is brown in color if it is in the shade, but if it is a bit bright, it will be white.

Cultivation Practices. He mentioned that in cultivating volva mushroom, soil is unnecessary because of their unique growth requirements. Instead, he explained that volva mushrooms can be successfully cultivated using compose of dry banana leaves. In consideration to the delicate environment of the volva mushroom, it is advisable not to use water from the faucets to rinse tools during the cultivation process, as it often contains chlorine. Instead, utilize running waters like rivers especially in soaking the dry banana leaves to maintain optimal cultivation conditions. To ensure good harvest, it is important not to confine your plot to a single location. After harvesting, relocating to a different area is essential, as replanting in the same spot can affect the growth of the mushrooms. This practice maximizes productivity and harvest. He also asserted the cultivating volva mushrooms requires the application of fertilizer to uphold their optimal growth and ensure a bountiful harvest. When harvesting, there is no requirement for segregating and classifying the harvested mushrooms. All the mushrooms intended for the market are packed altogether.

“Ah walay yuta. Kung mahimo ayaw na kay naa man na siyay chlorine. Sapa, lining ba run. Dili pwede nga balikan nimo dayon. Abunohan kayn aron managko. All in gyud na siya walay ingon nga standard.” (Volva 1.0)

Ah there is no soil. If possible, don't because it already has chlorine. River, or irrigation. You can't go back right away. Fertilize it to grow. It is really all in. There is no such standard.

Holistic Growth Environment. He highlighted the significance of maintaining cleanliness within the mushroom growth environment. The area where the plot is established serves as the only place to clean. Due to the mushrooms' susceptibility to bacterial contamination, meticulous sanitation of materials and tools used in cultivation is most important. Furthermore, ensuring that the water used is free from any contamination, including chlorine, is crucial. In terms of getting rid or controlling the pests and rodents, there are no special tools and equipment used. Instead, the attention is directed towards preventing infestations, particularly in cases where the plot is put directly above termite-prone areas.

“Kung asa mi mag plot mao ratoy hinloan. Unya kana pung tubig na imong ginabasa ug mahimo dili ka o kuan atong mga kontaminadong tubig. Wala na siyay ingon ana mga naa na siyay mga equipment o gamit nga ikuan iconrol sa peste. Matunong na kana imong gi plot matunong sa balay sa anay.” (Volva 1.0)

Wherever we put the plot that is the only place we clean. Then, the water being used in watering, if possible, is not contaminated water. It does not have such equipment or tools to control the pest. There are instances your plot is directly above termites' house.

Marketing Strategies of Small-Scale Mushroom Farmers

Competitive Pricing. He believes that competitive pricing is important. However, going far beyond the reasonable price is an act of taking advantage. As a result, he sets his prices at Php110.00, which remains constant overtime. He added that if mushroom prices need to be raised due to rising cost of labor, gasoline, chemicals, and other materials needed, he informs his buyer and wholesaler ahead of time and ensures that they understand the situation.

“Kanang naay muhangyo isa ka kilo, duha ka kilo, mao ra oy sa wholesale ra gihapon na. karon 110 ang kilo. Wala na siyay ingon nga naay mubo, naay taas. Pag-ingon namo nga among hatag run 110, 110 jud na.” (Volva 1.0)

Prices are just the same for those who order just a kilo or two. It is Php110.00 per kilo now. There is no high and low in setting prices. When we say we give it for Php110.00, it is what it is.

“Labor, nagtaas ang gasolina, nagtaas ang abuno, ang dextrose powder na gigamit, nagtaas ang cellophane mao usa sa rason.” (Volva 1.0)

Cost of labor, gasoline, fertilizers, even dextrose powders that are used, and plastic cellophanes. That is the reason.

“Wala, dili. Mag demand na siya ah dili jud ingon na mag-taas among presyo. Pangpaghimulos man na, diba? Pahimulos man sad ka abi kay demand imo dayon patas-an. Ug magpresyo mi, permanenti gyud na siya. Ug kinahanglan gyud mutaas, muhangyo lang gyud mi, e-agi gyud namo na ug pasabot sa ilaha dili pud ingon kay biglaon namo sila. Sabuton gyud namo aron buyer ug ikaw dili magkahiubsanay ba.” (Volva 1.0)

No, no. If buyer is going to make a demand, it is not like that we set a higher price. It is exploitation, right? You take advantage of it because it is in demand. When we set prices, it will be permanent. When there is a need to set our prices high, we go through informing them, making the understand so that there will be no misunderstandings.

Marketing Channel Optimization. Volva 1.0 does not use dicer as his marketing channels. Instead, he markets his mushrooms directly to retailers and wholesalers. Although he desires to fulfill the requested quantity of mushrooms in kilograms for potential buyers, he has become more cautious due to past experiences of being scammed for employing “*angkat method*” to some areas in Cotabato. As a result, he instilled the face-to-face transaction, still in “*angkat method*” but with added precautions.

“Wala ko anang dicer. Kanang mahitabo gyud ani sakoa naay manawag nga mokuha ug mushroom pero sagad lage mao na nga angkat.” (Volva 1.0)

I do not use dicers. There are buyers who call me but it is always in a buying-selling method.

“Ako paman gani mubalibad sa kanang daghan manawag sa akoka. Di ko mupasalig nga musupply sa ilaha sagad sa lage kanang padala ba. “Ah bahala ka dili gyud ko” mubalibad jud ko kay natagam nako. “Kung mahimo, mu-ari gyud ka sa Bansalan. Dili gyud ko anang padala. Dili nako mousab. Ug mokuha ka ug mushroom sakoa, maunhi jud ka ug Bansalan. Bahalag dili ka mokuha sakong mushroom, basta dili najud ko anang padala sa bus kay daghan nako experience ana nga dili maayo.” (Volva 1.0)

I even sometimes refuse potential buyers’ orders. I do not promise to supply them with mushrooms as it is not a cash-to-cash basis. “I don’t want to.” I refuse as I was scammed before. “If possible, you should definitely come to Bansalan. I am not going to send you mushroom. If you want to purchase mushroom from me, you must come here in Bansalan. Even though you will not buy from me, I will not be sending them via bus shipping because I have had many bad experiences.”

“Ang advantage ana kaysa mag retail ka, naay mo-order ug tag 80 kilos naay 60 kilos. Pero ang deperensya lang lage ana usahay mangita ug pamaagi nga unsaon ka mapanglupigan ka nila usahay kana bang makadeduct sila sa bayad sa imoha. Unya kanang mao unta nay advantage sa mag retail ka kay mag retail ka, dili naman ka makamanage sa imohang pagpatanom kay tua naman nag retail naman ka. May man tung kuan (direct wholesaler) kay buntag pa lang wala na kay trabaho kay wholesale man. Daghan ka ug mahimo, maplano nimo ang pagpatanom kaysa anang ikaw mag retail. Naa ra sa buyer ang deperensya usahay maapil ug minarama ang trabaho.” (Volva 1.0)

The advantage is that if you do retail, someone will order 80 kilos, there will be 60 kilos. But the only difference is that sometimes buyers find ways to take advantage on your goodness where they can pay smaller amount to what is negotiated. That is the advantage because when you do retailing, you cannot manage other chores because you are retailing your mushrooms. It is better to do (direct wholesaler) because you can plan your next cropping as you do not have to work hard marketing your mushrooms to retailer.

Transparent Communication. It seems that Volva 1.0 has become more vigilant in his approach to marketing cultivated mushrooms, particularly in his way of communicating with buyers. Therefore, he communicate primarily through phone calls, aiming a more direct and personal connection with potential buyers.

“naay manawag nga mokuha ug mushroom pero sagad lage mao na nga angkat.” (Volva 1.0)

Buyers will call me however it is still in “angkat-method”.

Achieving Best Deals. Volva 1.0 ensures that his buyers experience his loyalty during every transactions. When he encounters interested buyers, it is unlikely for him to seek out another purchaser offering a better price. This commitment to maintaining a consistent and loyal relationship with buyers speaks to The Original's dedication to fair and reliable business practices.

“Kay basta naa nakoy buyer, dili na man gyud ko mangita pa ug lain pa nga buyer nga mangita ko ug mas taas pa na presyo...” (Volva 1.0)

If ever I found buyers, I will not find another buyer who is willing to purchase mushrooms at a higher price.

“Gawas ug mubalibad ka nga dili ka mokuha, malipay ko nga mayrapud dili ka mokuha kay naay mokuha ug syento-baynte dadto (laughing...) Pero dili gyud pwede byaan tika kay naay namalit lain.” (Volva 1.0)

If you are the one declining my offer, I will be glad as I am able to give it to other buyer who wants to purchase mushroom at Php120.00 (laughing). But it is not reasonable to leave you hanging just for another buyer.

“Ako wa man gyud ko nagproblema ug buyer ako pa gani mubalibad kay naa na man gud koy buyer niya lisod byaan nako ni, louy.” (Volva 1.0)

I do not have problems in finding buyers. I even sometimes refuse other potential buyers just because I already have a buyer.

Coping with Market Demands. Given the demand for mushrooms both within and outside Bansalan, Volva 1.0 only offers what he can consistently supply. In fact, he has not experienced a major increase in the demand for volva mushrooms. He added that he is simply maintaining the regular quantity he harvests, ensuring an effective strategy in meeting the market demand for cultivated volva mushroom without compromising the quality of his mushroom cultivation.

“gusto sila modala ug daghan pero akoy mubalibad kay gamay ra akoang harvest. Magdepende ra sa akoang masupply. Naa jud untay demand pero wala man koy masupply.” (Volva 1.0)

Buyers want to buy more than the usual amount of mushroom but I tend to refuse because I only harvested few mushrooms. It always depends on what I can only supply. There are demands but I do not have enough supply.

“...wala man kaayo ko kasinati anang motaas ang demand. Kuang lang gyud, maintain lang gyud. Kay akong buyer ug muingon siya'g 80, mao rasad iyang madala.” (Volva 1.0)

I have not experienced an intensive increase in demands. it is stagnant. If my buyer would say he would bring 80 (kilos), that is the only amount he could bring.

Utilization of Social Media. Volva 1.0 is not acquainted with other social media platforms and is limited to using Facebook. Despite being aware that some of his past employees have ventured into mushroom and are using social media as a major tool for marketing, he is still hesitant in adopting this method. As a result, Volva 1.0 is more inclined towards traditional way of marketing for his volva mushrooms.

“Ambot mo click ba kaha na. Daghan naman gahimo ana. Kana laging mga taohan nako makita nila. Ako di man ko kamao ana nga mga cellphone kay ako keypad raman ni raman ning akao di kamao ana. Sa akong mga anak maoy mostorya, "si kuan lage pa oh! Taohan nimo sauna nag post lage oh!". Ambot ug ni click ba.” (Volva 1.0)

I do not know it will be successful. Many have tried using it (social media). I have seen some of my laborers before posting their cultivated mushroom on facebook. I am not knowledgeable in using smartphones as I am only using a keypad. My children would say that, “pa, your laborer before posted his cultivated mushroom.” I do not think it will click.

Opportunities Perceived by the Small-Scale Mushroom Farmers in Improving Their Cultivation and Marketing Strategies

Continuous Learning. He is not interested in learning more about mushroom cultivation because he believes that he already know enough and has mastered the necessary skills and techniques. Over many years working with mushrooms, he firmly said that he knows a lot about growing them. He emphasized possessing the necessary knowledge, skills, and techniques for cultivating volva mushrooms. Furthermore, he pointed out that individuals from the municipal agriculture office often seek his guidance for seminars, indicating his mastery of the subject.

“Paminaw nako wala naman, sakto naman. Wa naman siguroy makatudlo sa amoa kay nanobra naman gani ni akong mga technique.” (Volva 1.0)

In my perspective, there is nothing more, it is enough. I think there is not one who can teach me because the techniques I have are too much.

Perception on Technological Advancement. In this era of rapid technological advancement, he visualized harnessing technology to enhance mushroom cultivation. He wants to use technology to make growing mushrooms easier. He hopes for the development of a machine capable of efficiently cutting soaked dry banana leaves into precise sizes, making the preparation of the plot a lot faster. Additionally, he also asserted that he wants no special equipment to be used for the volva mushrooms to grow. Only for cutting and grinding the banana leaves need to have machineries.

“Unta naay mukaon ra...mapino siya nga dili na pinaagi ug tadtad. Unya ikaduha, kung tagaan ko makakuha ug sakyanan bisag elf na lang. Unya kaning kuan gabas nga de mano naa man siguroy gabas nga de battery kanang e-charge lang. Katong murag chainsaw ba. Ah, wala. Wala gyud gamit ang makinaryas sa pagpatubo murag walay gamit. Kana lang sa pagputol sa unas, pag galing, kinahanglan naay makinaryas ug pwede.” (Volva 1.0)

I wish there is someone that would eat it...it would be refined and not by chopping it. Then secondly, if I will be given a truck, even if it's just an elf. Then this hand-held saw that is battery-powered chainsaw. The one that look like a chainsaw? Ah, no. There is no

use of machinery to make it grow. It's just for cutting the dry banana leaves, when grinding, there must be machinery and it can be done.

Partnership and Collaboration. He has no plans for any collaborations and partnership from organizations such as food establishments, grocery stores, and food distributors. He also does not plan on joining forces with other farmers to collectively market their produce. He believes such collaborations could lead to misunderstandings or disagreements among the farmers. By choosing not to engage in these partnerships, he wants to keep things simple and avoid potential conflicts, preferring to manage his operations independently.

“Ah, wala. Murag wala siguro kay mao lage na kadugayan magkabangi mi.” (Volva 1.0)

Ah, nothing. It's like nothing because it will result to conflict eventually.

Government Support. He wants to work with the local government to improve mushroom production in his town, but he's not sure which government agency to ask for help. Unfortunately, there isn't any financial or technological support available from the government. He believes the best way the local government can assist small-scale mushroom farmers in Bansalan is by setting up a mushroom canning facility. With a canning facility in town, farmers can easily sell their mushrooms because they'll supply the facility. However, it's hard for him to grow a lot of mushrooms if he doesn't have enough tools and equipment.

“Oo naka huna huna unta ko ana pero ang problema asa?. Bahin sa mushroom, wala. Unta mupatukod sila ug canning nga mushroom mas labing maayo nga supplier na lang jud ko nga mao mao na qoutahan na lang. Dili man nako makaya na ingon ana ug kulang sa equipment.” (Volva 1.0)

Yes, I thought about that, but the problem is where? About the mushroom, nothing. I wish they would build a canning mushroom; it would be better for me to just be a supplier. I can't even afford it like that because of lack of equipment.

Market Viability. He highlighted the advantage of cultivating the volva variety of mushrooms. Unlike some ventures that demand significant startup funds, growing this type of mushroom doesn't need a big initial investment. It's feasible even if you have limited capital to begin with. In other words, you can start small and still have a good chance of success.

“Ang nakabintaha lang aning sa volva, bisan ug gamay raka ug capital kuan mahimo nimo.” (Volva 1.0)

The only advantage in volva, even if you have a little capital, you can do it.

Case 2 (Volva 2.0)

The assigned code name for Case 1 is Volva 2.0 since he was an apprentice of Volva 1.0 and now becoming a prominent small-scale volva mushroom farmer. He is a 39-years-old individual with a high school education. In 2003, he began his journey and started working for Volva 1.0 (in case number 1), wherein he gained 15 years of experience in mushroom cultivation. After he become proficient in the art of cultivating volva mushrooms, he decided to embark on his entrepreneurial venture and set up his own mushroom farm. With just Php 20,000 as capital, he had to perform all the work by himself until he was able to expand his venture and managed to hire his own people. Additionally, The Emerging encouraged his brother to also enter mushroom farming. He guided him and currently they become associates in marketing their cultivated mushrooms.

Cultivation Practices of Small-Scale Mushroom Farmers

Meticulous Farming. He stressed the demanding nature of cultivating volva mushrooms, highlighting the extensive effort needed from preparation up to marketing, as shown in Figure 1. The risk of contamination adds complexity to the process. For instance, cleaning materials near rivers necessitates patience to avoid soap contamination from others washing clothes. Moreover, meticulous handwashing after meals is essential to prevent contamination of the mushrooms from the food you eat. Adverse weather conditions, such as heavy rain, pose further challenges, making it tough to gather raw materials in cultivation process like dry banana leaves. Furthermore, from preparing plots to harvesting, the entire process spans approximately eleven (11) days.

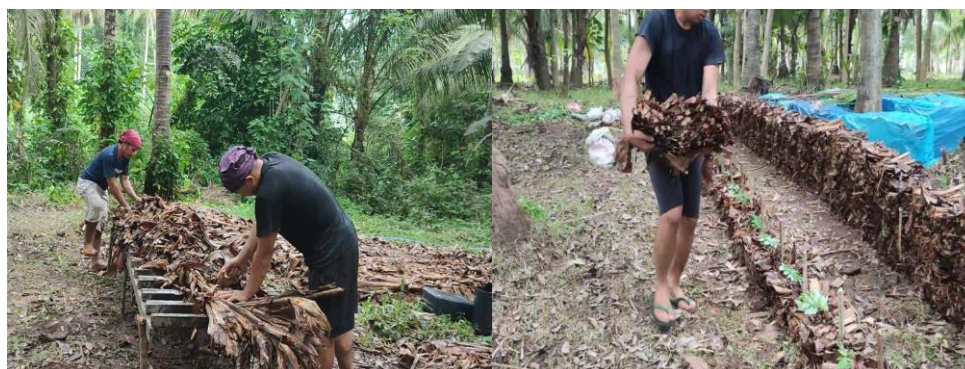


Figure 1. Mushroom Plot Preparation

“Oh, trabahoso jud kaayu. Manglaba gani na ang cellophane amoa gyud ng labhan nya pananglitan sapa amoang gilabhan nya naay nanglaba sa ibabaw nga manglaba ba nga naay sabon aw paaboton namo hantud sa mahuman na silag panglaba. Imong kamot pananglitan maniudto nya manghinaw ka kinahanglan manghinaw jud kag tarong. Kana lang kuan lagi magsigeg uwan. Magtanom mi ron pagkaugma magsugod namig ihap ana 11 days.” (Volva 2.0)

Yes, it is really tiresome. When we wash the cellophane, and for instance, if someone's already washing in the area where we usually do our laundry, and there's soap, we will jjust have to wait until they finish before we can use it for washing. Your hands will get cold when it is time for lunch, and you really need to wash properly. It's always raining here. We'll start planting tomorrow; It will take us 11 days.

“manguha pag unas nya ang proseso man gud ana kay bas-on pa ba, human gani ana e humol pa gani sa sapa na siya e babad siya ug 3 ka oras pero katong saamoa wala na kay nagagamit man kog water pump, e waterpump lang nako kay hago man gud sauna gud e babad” (Volva 2.0)

We get dried banana leaves and soak it wet in rivers for approximately 3 hours. But for us, we use water pumps as soaking it to rivers is tedious.

“naa mi cutting board didto namo ipatong amoang gabson ug mga stick, stickan namo kay e pile.” (Volva 2.0)

We have cutting boards where we cut dried banana leaves then pile it with sticks.

Temperature Management. He explained that the volva mushroom grows best in Bansalan's climate, particularly in lowland areas. Figure 2 shows the need for a balanced temperature, emphasizing the importance of finding the right mix of shade and sunlight. Putting the plot directly under the sun or in excessively shady area is not advisable. Additionally, he pointed out that the mushroom's color is affected by the temperature of its surroundings. In shady areas, it will be a tiger-like color, while in direct sunlight, it appears to be white. This highlights the delicate balance required for optimal growth and coloration of the volva mushroom.



Figure 2. Balancing Sunlight and Shade

“Uyon ra sa klima diri, diri rapod dapita sa patag. Di pod na siya ibutang ug kining sobra ka init, di pod siya pwede ibutang sobra ka landing. Magdependi mana sa kuan gud sa klima kanang ma landong imong butangan ang color saimong mushroom.” (Volva 2.0)

Yes, it is suitable for the climate here in lowlands. It is necessary for it to have a moderate moisture level and be placed in both moderate sunlight and shade.

“kanang cellophane nga kanang blue bitaw dako oh ginatabas mana sya nya mao ng itabon.” (Volva 2.0)

We use blue plastic cellophanes, big ones, we cut it and use it as covers.

“kinahanglan ana ang imong pagtabon sa lukay dili pod ingon bagaon gyud nimo tama tama lang pod nga malusotan ug adlaw gamay nya mahanginan pod gamay” (Volva 2.0)

In putting palm leaves, it must not be too thick so sunlight and air can still pass through.

Cultivation Practices. He emphasized that growing volva mushrooms doesn't involve the use of soil. Instead, dry banana leaves are soaked in water, either directly in a river or using a water pump. Changing the plot's location from time to time is essential to maximize harvest, as staying in one place has negative effect on mushroom's growth. Additionally, he stressed the importance of using fertilizers to ensure healthy mushroom growth. During harvesting, there's no need to sort the mushrooms; all are sold except for fully bloomed ones.



Figure 3. Utilizing Natural Enhancers for Accelerated Material Decomposition

“Wala mi nagagamit ug soil. Uban gani ana e humol pa gani sa sapa na siya. Balhin-balhin ba dili ingon nga perminti mi anang areaha. Gina-abonohan mana namo gud na. Dritso ra gyud na sya, oh all in jud na sya ang mabilin lang ana kato lang bukad.” (Volva 2.0)

We don't use soil. Some even soak it in water from the river. We keep changing it, not like it's permanent in that area. We also fertilize it. It's really straightforward; all that's left are the mature mushrooms.

Holistic Growth Environment. He mentioned that creating the best conditions for volva mushrooms to grow involves keeping their environment clean and free from things that might compete for nutrients, like grass, as shown in Figure 4. Even though animals like rats and millipedes sometimes nibble on the mushrooms, they're not seen as pests because they don't eat much of the crop. On the other hand, molds can be a problem as they can spread to healthy mushrooms. To prevent this, it is important to remove immediately any moldy mushrooms. Additionally, maintaining balance between shade and sunlight can help promote healthy growth of volva mushroom.



Figure 4. Cleaning and Maintaining the Area of Cultivation

“Ginahinloan namo. Ginalampasan lang namo nya kinahanglan ginabutang sa landong. Ay naa gani natural ilaga ug kining labod. Pasagdan lang namo.” (Volva 2.0)

We just clean it and then place it in a shady area. If there are natural insects and other organisms, we just let them be.

Marketing Strategies of Small-Scale Mushroom Farmers

Meticulous Farming. According to Volva 2.0, it is the mushroom cultivators who determine the prices. Faced with the ongoing rise in expenses like gasoline, he finds himself compelled to adjust the price of the volva mushroom he markets. Currently, he is selling it for PHP 110.00. He also mentioned that there is a collective agreement among him and his fellow small-scale mushroom farmers regarding the pricing strategy, emphasizing a unified approach to setting their prices.

“presyo mao lagi 110” (Volva 2.0)

It is at Php 110.00.

“nimahal pong abono mopataas mi mag agad mis kuan gud kay ug mo parehas anang momahal ang gasoline. Kami raman gud magbuot sa presyo ana gud ug kami magkasinabot mi mga planters na atong patuboan ug 5 ana mapugos jud siyag patubo” (Volva 2.0)

If the price for fertilizers increases, we also increase our prices. We depend on the increase of prices like gasoline. However, we set our prices, we decide for it. We farmers decide in unison, either we increase by Php 5.00.

Marketing Channel Optimization. Volva 2.0 connects with middlemen, his chosen method for marketing his cultivated volva mushrooms. Drawing from his experiences in the mushroom market, he has validated the effectiveness of utilizing middlemen. In fact, prior to harvesting, middlemen are already waiting for the harvested mushroom. However, it's essential to note that mushroom harvesting demands significant time and effort. As a result, Volva 2.0 must wake up early to ensure timely harvesting and be able

to supply it to his selected middlemen. Additionally, he highlighted that his transactions with middlemen are conducted on a cash-to-cash basis

“Middlemen... Epektibo kaayu ,oh kay sila may mo kuan.....kami harvest timbang dritso cash man amoa diman utang cash man.....hapon ana bayran mi ana ugma lahi napod di gyud ing ana utang na” (Volva 2.0)

Middlemen... It's effective because they are the ones who sell, and we will only harvest. We harvest in the morning and in the afternoon, we will be paid in cash.

“Iamang siya kay dali ra kaayu ang pangwarta lagi, sure naman jud siya na naay buyer ingon nga booking nimo ugma mga 50kls ah sige ihatud na diri mga ing anang orasa mao ng kinahanglan ing anang orasa moabot jud ka didto kung mahimo pa gani di pa kaabot didto ing anang orasa inyung sabot kay daghan man” (Volva 2.0)

The advantage of this is that you can easily generate income because there is already a sure buyer. Some would promise a kilo of fifty (50).

“ang naka apan ana kay mao lagi ni ipasayu kinahanglan , ug moingon siya ug alas 4 abot jud ug alas 4 kay malapas ni di naman dawaton biyaan man matagbaw kog dyambol. Kanang kuan parehas anang kani laging ma biyaan ka sa buyer mapusog ihatag nimog barato pababa nimo aron dawaton lang gyud. Labi nag pila kag gi harvest nya hunahuna nimo kapoya pod ug akoy mamaligya ani uy lami ikatug....ihatag nimog barato 110...ah kwaa nalang kuan oh 100 nalang mao ng pugsan nag kuha” (Volva 2.0)

The only disadvantage is that it must be sent early, at 4 a.m. and if it exceeds, it will not be accepted because the buyer will leave it. In the event that the buyer departs, you'll need to sell your goods at a lower price of 100 instead of 110 to make a profit.

Transparent Communication. Volva 2.0 communicates with his buyers through phone calls. However, during the COVID-19 pandemic, a time characterized by travel restrictions, he ventured into using social media specifically for marketing his cultivated mushrooms. Due to the constraints imposed by the travel ban, Volva 2.0 and his buyers would meet only at their agreed-upon transaction location.

“magtawagay rami naa ramag Bonifacio akong buyer” (Volva 2.0)

We can simply communicate through calls since my buyer is only from Bonifacio.

“sauna kato paglockdown covid covid diman maka travel ug kuan giing ana nako gina online. Ihatud lang kung aha dapit mag abot” (Volva 2.0)

During lockdown, during covid. We cannot travel so we did use online platforms in communicating. We just deliver it to our agreed place.

Achieving Best Deals. In achieving successful deals with his buyers, Volva 2.0 ensures the quality of his harvested mushrooms, especially focusing on the sizes and its growth. He has also added that his buyers are vying over well-grown cultivated mushrooms, as it serves as a standard for a good quality of volva mushroom.

“kuan kanang labi nagdagko ang kuan dagko syag turok gwapa syag dagway kana mag ilog ang buyer ana kay naa man gud usahay labi na tig uwan basa sya ba mabasa kay ang cellophane ana mabasa sa ulan kay kanang kuan namo suyopon ba mosuyop syag tubig kanang moist sa yuta gani alisngaw suyopon mana mabasa ang buyer ana magubang nawong kay basa man pero wa namo na tuyoa namo ng ingon nga gibasa namog tubig wala uy kinaiyahan jud na niya mobasanya malata” (Volva 2.0)

When the sprout is big and the fruit is good, buyers are vying for it in the mushroom market. Sometimes, when there is rain, cellophanes are wet and the ground moisture will enter the inside of the cellophane resulting to an unappealing fruit, due to natural wilting and softening, but we didn't intend for that outcome.

Coping with Market Demands. He pointed out that in times of high demand for volva mushrooms, he and his team will double up the work. Currently, he has five (5) major buyers and during holiday seasons, there is a major competition between different volva mushroom farmers. However, despite the seasonal demand for mushroom, he emphasized that they can only provide the quantity of mushroom they are able to harvest.

“ah kanang kusog ang mushroom ah kana moduot mi anag trabaho kay kusog man.....mao man nag abot among buyer diha ron lima na sila kabook naga kompra saamoa mao lagi na mag-iloganay....oh mag unhanay pero parehas karon nga simanaha nag abot man gyud mi tanan ron kay amoa man gi gikuan gud na kay nabalanse na daan ba gibalanse daan ang adlaw ba naay ilhanan sa pasko sa 25 wanay harvest kay kinsa may mamaligya ugkarong simanaha nagdungan gyud mi tanan perting daghana gyug mushroom mag-abot sa among buyer mao lagi na paunhanay kay moingon ugma sayuha ninyo ha alas 3 naa namo diri kay aron maapas mo sa permirong byahe sa bus, alas 3 adto nami didto” (Volva 2.0)

We will put in more effort when mushroom sales are strong and in demand. We have five buyers who are competing. However, this week, we are balancing the days because there will a decrease in sales during Christmas day. All planters this week are competing over buyers (to dispose harvested mushrooms). Usually buyers instruct us to arrive at exactly 3 a.m. to be able to include our harvest on the first bus trip.

"oh kutob rajud saakong makaya diman gud ko makaboylo gud kay naga area area man mi diri gud sa sagingan dili mi mopataka ug dasmag ba ug sagingan kay naa nay naga kuha diha, masuko mana sila ug ilogan." (Volva 2.0)

I'm able to do as much as I can, but there is a limit because we have to travel to different areas of the banana plants. We can't get them right away because someone has already taken them and they might get angry.

Utilization of Social Media. Amidst the chaos caused by the Covid-19 pandemic, various rules and regulations, including travel bans, were imposed. In order to sustain his business during this challenging period, Volva 2.0 exclusively depended on social media for marketing cultivated mushrooms and communicating with buyers.

"sauna kato paglockdown covid covid diman maka travel ug kuan giing ana nako gina online. Ihatud lang kung aha dapit mag abot" (Volva 2.0)

During lockdown, during covid, we cannot travel so we did use online platforms in communicating. We just deliver it to our agreed place.

Opportunities Perceived by the Small-scale Mushroom Farmers in Improving Their Cultivation and Marketing Strategies

Continuous Learning. He expressed his desire to learn how to cultivate Oyster mushroom because he sees an opportunity in learning to cultivate this variety because it is more profitable compared to volva mushroom which he cultivates. He also see that continuous learning is essential for growth. Exploring advanced techniques and practices to optimize his mushroom cultivation endeavors.

"Gusto man gud ko makabalo anang kuan oyster ba mahal man syag kilo gud kaysa ana amoa. Mahinungdanon jud kaayu para saakoa kay para mapanindot nako ang dagan sa mushroom mapatubo." (Volva 2.0)

I really want to learn about oysters because it's more expensive per kilo compared to volva. It's very important for me because I want to improve the growth of the mushrooms that I cultivate.

Perception on Technological Advancement. He thinks that the key to growing volva mushrooms is hands-on experience. By knowing how to cultivate mushrooms and having enough experience, you can grow the volva mushroom. Instead of using sophisticated tools, he likes to stick to traditional ones, from preparing the plot to harvesting the mushrooms. He do not take technology much for pest control because his mushrooms are not bothered by pests. Overall, he prefers the old-fashioned way of farming, using traditional methods throughout the cultivation process.

"Ah wala experience lang kinahanglan jud na sakto ka sa experience kay wakay. Wala nakoy gamit lain mao rana gabas, onas ,ang gitamnan, mga kuhag kahoy stick, cellophane pangtabon mao ra. Wala may mga insekto ang kuan wala man. Aw wala man mi kuan ana." (Volva 2.0)

Ah, it's just a matter of experience; you really need to be precise with your experience because it's essential. I don't use anything else besides that: saw, dried banana leaves, the substrate, some wooden sticks, and cellophane for covering, that's all. There aren't any insects or anything. Oh, we don't have anything like that.

Partnership and Collaboration. He has no plans of collaborating with other organizations like grocery stores, restaurants, and other food distributors because he focuses on supplying his buyer. Another reason is that he needs to oversee his workers tending to the mushrooms that are not ready for harvest yet. He believes that seeking partnerships is the responsibility of the traders, not his. He also emphasized that if he is the one doing the work of finding partners to collaborate with, he will sacrifice his time instead of focusing on the remaining work. However, he is currently collaborating with other local farmers to sell their mushrooms in bulk, but he's the one in control of how much they produce.

"Wala, kay gikan paman sauna naa naman gud buyer amo. Parehas nako nga naa koy tao gidala lisod pod ma biyaan kinahanglan nig magtrabaho. Kana diay among mag uuma 3 may maghatud ana sa buyer kay ingon among buyer. Wala, kanang mga buyer namo mao mana ilang mga trabaho. Kung ing anaon nako kuan man gud mahug ug kanang wakoy trabaho mabiyaan nya mahinay akong transaction sa mushroom." (Volva 2.0)

No, because since then we've always had a buyer. Just like me, I have people who rely on me, and it's hard to leave when you have to work. That's how it is for us farmers; we have three people who deliver to the buyer as per their request. Our buyers, those are their jobs. If I change something and I end up without work, my mushroom transactions will slow down.

Government Support. He said that small-scale mushroom farmers do not get enough help from the government, especially in money and technology. He thinks it would be really helpful if prices of fertilizers went down because that would save them money. Also, he thinks the government should give them gasoline to help with transportation costs for gathering raw materials. He thinks it would be a big help if the government set up a place where they could sell their mushrooms directly, specifically a Bagsakan Center. Moreover, he wants also that the government will provide machinery to make growing mushrooms easier than doing it in traditional way. Overall, he wants more support from the government to make mushroom farming easier and more profitable for small farmers in Bansalan.

"Wala. Mubaba unta ang abono. Akong gusto ihatag sa gobyerno saakoa kanang abono rajud. Gasolina untay e hatag. Oh bagsakanan ba ing ana nya di na kinahanglan nga e agi pa nimog diser diser kana moy mas gwapo. Ah kanang makinaryas ba na aron mapadali ang pagkuan sa kuan." (Volva 2.0)

Oh, I wish the fertilizer prices would decrease. What I want from the government is just subsidized fertilizer. It would be great if they could provide gasoline too. Or maybe a direct supply, so we wouldn't have to go through middlemen; that would be more convenient. Oh, and machinery to make the process easier.

Market Viability. He saw that cultivating volva mushroom has advantage to offer. They are easy to market because there's always demand for them.

"Lamang siya kay dali ra kaayu ang pangwarta lagi, sure naman jud siya na naay buyer" (Volva 2.0)

It's advantageous because earning money becomes much easier, and you're assured that there will always be buyers.

Case 3 (Only Oyster)

The code name for Case 3 is Only Oyster since he stands out in this study due to his unique focus on cultivating oyster mushrooms, a practice distinct from other respondents interviewed for this study. At the age of 29, he earned a Bachelor of Science in Agroforestry and amassed over 15 years of experience as an Agriculture Officer at Bafaventra Incorporated. The turning point occurred when a training on mushroom cultivation by Davao Region Central Experiment Station, a facility under the Department of Agriculture BAR XI, was held to where he was working. In such coincidence, his wife's familiarity with the heads of the public research facility played a crucial role, encouraging him to apply the knowledge gained during the training into real-life farming set ups. Following the successful experiment with the research facility, The Uncommon found himself overwhelmed by the positive results and the income generated. Motivated by this success, he made the decisive choice to turn oyster mushroom farming into a serious and profitable business venture.

Cultivation Practices of Small-Scale Mushroom Farmers

Meticulous Farming. He emphasized the laborious nature of growing Oyster Mushrooms. It demands considerable effort due to its vulnerability to bacterial contamination. Part of the requirements in cultivating Oyster mushroom include personal hygiene such as taking a bath, disinfection, wearing of Personal Protective Equipment (PPE) like face masks. Furthermore, all tools and materials must undergo sterilization beforehand. He mentioned, that disease in mushroom arises when the cultivator is not careful. One of the challenges of cultivating Oyster mushrooms happens during the preparation of spawn and conducting the process of Potato Dextrose Agar (PDA), where laboratories are highly needed. He discussed a step-by-step process on how spawn are transferred from the laboratory to its prepared fruiting bags. In addition, inclement weather, especially rain, complicates the process since wet conditions hinder the effective use of fire for sterilization. Moreover, the presence of sharp objects poses difficulties during the bagging process, potentially damaging the fruiting bags and incurring additional expenses. Typically, Oyster mushroom cultivation takes approximately twenty-two days before they are ready for harvest.

"Ang pagpadako niya is trabahoso jud. Kanang sensitive siya sa mga bacteria. Dili na sya mabuhì kung may bacteria. Kinahanglan kung before ka nga mo kuan muhimo ana niya, dapat bag-o kang ligo, mag-alcohol. Mag PPE ka, mag. Unya ang kadtong atong mga kuan, kuan jud sya. Dapat jud sya i-atoang sterilize tanan ang mga gamit. Naay sakit ang mushroom kung dili ka careful. Nig mag ulan grabe nga challenge na. Nig bagging nimo nga naa gyuy murag hait mubuto. Gikan sa karon mag mag mag tanom ta karon, after 22 days mamunga na sya" (Only Oyster)

Cultivating mushrooms is too complicated. It is sensitive to bacteria. That can't live if it has bacteria. It is necessary that, before you do it you must take a bath and apply alcohol. Wear PPE. All tools must be sterilized. Mushrooms can be sick if you are not careful. When it rains, it's a severe challenge. When you bagging it and when there's something sharp, it explodes. If we plant now, after 22 days it will bear fruit.

"magkuha sa ta ug isa ka mushroom, unya before pajud ato naa tay ginatawag na kuan kanig am.. Potato Agar ahh.. PDA (Potato Dextrose Agar) ug kana sya ang pagprocess man gud ana is kuan dili sayon" (Only Oyster)

We get mushroom and before that we have a process called Potato Dextrose Agar which is quite not easy.

"Panitan nimo ang potato, i-cut nimo ug by cubes, ibutang nimo ang.. didto sa casserole, butangan nimo ug tubig, pabukalan nimo to sya. Ug kadto napong tubig, pabukalan with agar ug dextrose powder 200g." (Only Oyster)

Peel the potatoes and cut it into cubes then boil it in the casserole. The broth then mixed with agar and 200g of dextrose powder then bring to boil again.

"...ika-isa raman nang PDA. Ang akong ginagamit man gud is usually is sorghum, dayon cotton waste, clean sheet of scratch paper, rubber band, casserole. Dayon ana ang sorghum ato na syang isulod sa gamay na cellophane i-seal paghuman atoa syang i-kuan ug 45 minutes, lat-an dayon ibulad sa init. Dayon pwede nana sya isulod atong kuang sa bottle or sa kadtong cellophane. Unya paghuman a.. i-sterilize napud to sya ug mga.. kung autoclave kuan 45 minutes..." (Only Oyster)

PDA is only done once. What I use are sorghum, cotton waste, clean sheet of paper, rubber band, and casserole. Thenafter, sorghum is put inside a small plastic cellophane and seal it then boil it for 45 minutes before drying it with direct sunlight. Then we can put it in the bottle or in that cellophane. Then when it's done... sterilize it for about 45 minutes in the autoclave.

“paghuman ato pabugnawon, paghuman ug bugnaw butangan to sya atong gikan sa PDA ibutang didto. So karon, pag-abot ug.. ma-colonized nato sya, then ready na imong fruiting bag, mao napud to ang ibutang nato...” (Only Oyster)

Afterwards, we let it cool the put what is from the PDA. So now, when it spreads, ready your fruiting bag as we will put it in.

“...naa nakay sawdust, naa nakay kaning tahop sa humay, unya naa naman tay limestone, naa naman tay molasses... so sa isa ka sako butangan nimo ug limestone nga isa ka kumkum, molasses pud nga isa ka baso then butang na nimo ug tubig (when asked about creating fruiting bags).” (Only Oyster)

You already have sawdust, rice bran, limestone, and molasses. So you put a fist full of limestone, a cup of molasses, then you add water.

Temperature Management. He stated that both Oyster and volva mushrooms are well-suited to the climate of Bansalan because of its diverse geographical features, including lowland and upland areas. However, Oyster mushrooms specifically flourish in colder temperatures, which enhance their fruiting and harvesting capabilities. The fruiting house of Oyster mushroom must be kept cold all the time.

“A... para sa akua, kung kuan Oyster mushroom or kadtong volva. Kay ang atoa man gung Bansalan area is duha, nay lowland ug upland. Ang atoaang oyster mushroom man gud is dili na sya pwede ug taas kayo ang temperature kay ang atoaang oyster mushroom is kuan sya bugnaw ang kinahanglan. Unya kung mas bugnaw, mas daghan sya ug mutubo nga mga kuan kadtong iyang fruit or kanang sa oyster niya. (Only Oyster)

A... for me, oyster mushrooms or those volvas. Because in Bansalan area is both lowland and upland. Even our oyster mushrooms can't be in high temperatures because oyster mushrooms should be in cold places. Then if it's colder, it will grow more of those fruits or oysters.

Cultivation Practices. He emphasized that in growing Oyster mushrooms, soil is not used. Instead, a sawdust mixture is utilized. Maintaining a consistently cold environment is crucial for optimal growth. One method is to mist the surroundings with fresh water regularly. He firmly stated that the cultivation method for Oyster mushroom farming remains unchanged regardless of circumstances. While injecting fertilizer can accelerate growth, it compromises organic integrity of the Oyster mushroom. During harvesting, there are no set standards for sorting the mushrooms, except for removing damaged ones.

“Wala mi nagagamit ug soil, mixture lang sa bagaso. Imoha jung sprayhan pero kato lang mist gani.... oh fresh water. Dili jud mausab ang style sa pagpananom. Pwede raman nato ni injectan ug kuan, fertilizer. Muburot o mubunga naman pud ni, pero dili na sya organic. Actually, wala jud syay standard.” (Only Oyster)

We don't use any soil, just a mixture of bagasse. You really need to spray it, but just a mist.... Yes, fresh water. The style of planting will not change. We can just inject the fertilizer. It also swells or bears fruit, but it is no longer organic. Actually, it doesn't have a standard.

Holistic Growth Environment. He highlighted the importance of keeping the environment of the Oyster mushroom cold by misting it using fresh water. One thing to have an optimal growth environment for Oyster mushrooms is to keep them clean all the time. All of the tools, equipment, and materials to be used must undergo a sterilization process. Personal hygiene is highly observed when dealing the Oyster mushrooms such as bathing, wearing Personal Protective Equipment, and disinfection. On the other hand, rats pose the biggest threat to Oyster mushrooms, and to combat them, he employs poison. Moreover, dirt and polluted air are the primary causes of contamination in Oyster mushrooms.

“Kailangan bas-on ang kilid kilid. Iyang kahinlo e maintain lang nimo. Dapat jud sya i-atoang sterilize tanan ang mga gamit. Kinahanglan kung before ka nga mo kuan muhimo ana niya, dapat bag-o kang ligo, mag-alcohol ug naa pay unsa na a... PPE bana? So mag PPE ka. Ang ilaga kusog kaayu mokaon. Butangan napod nako sila pero naa nay hilo. Hugaw ug sa hangin.” (Only Oyster)

Each sides must be wet. You just maintain its cleanliness. All the tools must be sterilized. It is necessary that before you do that, you must take a bath, apply alcohol, and have something else. Is it PPE? So wear PPE. The rat eats fast. I can put them on, but there is already poison. Dirt and air.

Marketing Strategies of Small-Scale Mushroom Farmers

Competitive Pricing. Only Oyster establishes a pricing range of Php200.00 to Php400.00 for his oyster mushrooms. His pricing methodology is influenced by the costs associated with marketing and delivering the products. In locations such as Davao City, he sets the price at Php400.00, taking into account the expenses like gasoline for traveling over 70 kilometers. However, the pricing is flexible depending on the mode of transaction. Consequently, he provides oyster mushrooms at a lower price for pick-ups and walk-in customers.

“usahay kato gani 250 or 400, so diri saatoa 200 lang akoang baligya diri dapit kung maabot ta ug digos, sa digos nagabaligya ko ug 400. Actually man gud, imoha pong iapil imong mga kuan, expense nimo. Kung ihatud, o 400 pero kung kuahon niya o pickup, 300 ana. Ana lang, depende sa kalayo. Pero sa Davao jud, 400 jud sya.” (Only Oyster)

Sometimes it's even 250 or 400, so I only sell 200 here, but if we reach Digos, in Digos I sell it for 400. Actually you really need to include your expenses. When delivered, the fee is 400 but when they pick-up it will only cost 300. It depends on how far but when in Davao it is always 400.

“Ang mushroom? ah dili (seasonal ang presyo). Murag fixed naman jud ang price jug ug sa pagkaingon ana pud wala ko kaexperience pud ug mga ingon ana pud na kuan. Cash-to-cash man pud.” (Only Oyster)

The mushrooms? No, it is not (seasonal pricing). It seems like the price is fixed and I have no experience with things like that. It's really a cash-to-cash basis.

Marketing Channel Optimization. Only Oyster employs diverse marketing channels, including online platforms, direct selling, and accommodating walk-in customers. Up to this day, he continues to find his current marketing strategy, especially for delivery orders, effective and efficient. Only Oyster also highlighted a price difference between distant buyers and local neighbors. Furthermore, he emphasizes that marketing oyster mushrooms is not challenging, as they can be easily disposed of.

“kuan lang diri ah walk-in ang uban akong e post usahay delivery. Wala koy contract agreement kay ngano diri man gud saatoa is louy pod kaayu atong mga silingan ug dili kakaon naa bayay mokuan diri no kanang papalita ko ug kuan balig 50 lang akong hatag diris ilaha 200 ang kilo.” (Only Oyster)

Here it is usually walk-in, others are either posted or delivered. My decision to not have a contract agreement is due to my empathy for our neighbors who may not be able to afford (the Php 400.00 price.) and only purchase an amount of Php 50.00. with that, I sell it for Php. 200.00 per kilo.

“Epektibo oy kay naa may muingon nga dala-i ko bi. Dala-i dayon didto. John dala-i dayon didto John. Pag-uli usahay suroy, kanang daghan najud nga wala dili maabot ang Davao o.. i-kuan didto ah ang mabilin amo nalang pud sud-anon. (Only Oyster)

It is effective. Other says “bring me some” then I would say, “take some to them, John.” Unsold are brought home for direct selling or personal consumption.

“ah dili kaayu ta makaingon ug advantage kaayu ang kuan kay ginagmay raman” (Only Oyster)

I cannot say it is a great advantage because it's limited to small amounts only.

“(delivery) oh kana sureball jud kayna kay kuan nya ang atoa lang pod diri dili man gud consistent ang mushroom ug ing ani maka produce kag ing ani kadaghanon saimong kuan kay naa man guy panahon na di sya mobunga mokunhod sya” (Only Oyster)

Yes, that's really a sure thing, but the only thing is that the mushroom is not consistent enough to produce this much. However, there is also a point in time when it fails to produce fruit and dwindles in size.

“ay wala raman, mga challenge kay kuan raman mahalina raman pud sya dayon.” (Only Oyster)

There are no challenges because it can be sold immediately.

Transparent Communication. Only Oyster employs a dual approach to market oyster mushrooms, utilizing both traditional and online channels. This involves leveraging social media platforms and making phone calls to engage with potential buyers. He mentioned that phone calls and direct text messages are particularly effective when dealing with acquaintances.

“O gamit ta ug social media” (Only Oyster)

Yes, we use social media.

“Ah sige na syag text akoang kuan ya...” (Only Oyster)

Ah, he always send me text messages.

Achieving Best Deals. After a period of 22 days, oyster mushrooms begin to yield fruits. The farmer suggests that to achieve a larger harvest, it is essential to increase the number of fruiting bags. Despite the fact that oyster mushrooms mature over a span of 7 months, they do not consistently produce the desired size and color of fruits on a daily basis; instead, the fruiting occurs alternately. Consequently, he highlights that the quantity of mushrooms yielded by his cultivation represents the only amount available for offering to buyers.

“Ug unsa rajud ang imong ma produce. Kung gusto jud ka na daghan ug demand, daghan kag himoon na fruiting bag kay 0.9 kilos raman ang makuha sa kuan. Gikan sa karon mag mag mag tanom ta karon, after 22 days mamunga na sya so.. gikan ato sa pagpamunga niya hantud napud na sya sa 7 months ang iyang duration nga sige syag pamunga. Pero dili sya taga-adlaw jud nga perminte jud sya kuan ah.. kuan. Naa syay mulaktaw sya mga napulo ka adlaw mamunga napud sya basta pabugnaw lang jud bugnaw. Mas nindot jud nga daghan daghan kay dili man gud sya basin nag kuan naghimo ka ana karon imong bitayon ang is aka

ana, so dili jud na sya tanan diri maoy mamunga kini napud mamunga, laktaw-laktaw na sya. Kita ninyo na sa picture laktaw-laktaw na sya.” (Only Oyster)

It is up to what I can only provide. To obtain a large amount to produce, it's recommended to create a large number of fruiting bags since each one weighs only 0.9 kilograms. After 22 days of planting, it will bear fruit. After that, it will take 7 months of duration to bear fruit. But it's not every day. Sometimes it skip for 10 days before it bears fruit, it must be really cold. It should really make a lot of fruiting bags for more chance to grow because sometimes the growth of oyster mushroom alternates.

Utilization of Social Media. In order to expand the target market for oyster mushrooms, he utilizes social media as a marketing tool for promoting his cultivated mushrooms. This method is proven by The uncommon to be efficient and effective.

“O gamit ta ug social media.” (Only Oyster)

Yes, we use social media.

“Wala na, social media lang. O ako lang mismo ga kuan. akong e post usahay...” (Only Oyster)

No, just social media. Yes, I am the one who sometimes post it on social media.

Opportunities Perceived by the Small-Scale Mushroom Farmers in Improving Their Cultivation and Marketing Strategies

Continous Learning. He emphasized the role of his experience working at the Davao Region Central Experiment Station (DARCES), which contributed to the knowledge he has today in cultivating oyster mushrooms. He also highlighted the utilization of social media platforms, specifically YouTube, in the development and accumulation of new insights in mushroom farming. He stressed the importance of conducting research and engaging in persistent learning on mushroom cultivation and marketing. Oyster mushroom cultivation requires a substantial amount of knowledge and experience to succeed. Additionally, he emphasized that knowledge must be accompanied by proper training.

“Kadtong didto lang jud sa DARCES patudlo ko didto, naka kuan kog kuan nagatan.aw sa youtube. Mas maayu man gud madungagan ang kahibalo pero kung ordinaryo lang pod ka nga farmer tapos wala gyud kay knowledge about sa mga ing ana nga kuan dili gihapon kahimo. Mas maayu man gud ng naa gyud kay kahibalo, naa kay training.” (Only Oyster)

I actually taught there at Darces and I was able to watch it on YouTube. It is better to expand your knowledge, but if you are just an ordinary farmer, then you don't have any knowledge about these things you still can't do. It's better if you have knowledge, and training.

Perception on Technological Advances. He asserted that to produce in mass volumes, there is a need for high-end technology, which includes machinery and equipment, especially during the production process. Additionally, the fruiting house must be durable and well-constructed to avoid pest infestations. He also suggested the use of freezers to prolong the shelf life of the harvested mushrooms. With the use of freezers, the mushrooms can last up to four days.

“Dapat jud naa kay mga gamit na high-tech para makaproduce ka ug daghan. Dapat naa kay mga machinery. Dapat jud ang imong building, ayohon nimo ug maayo. Kanang durabli jud kaayo imong building aron wala juy mananap. O... dili ay dayun ma...lugas. Pinaka pinakakuan is upat ka adlaw.” (Only Oyster)

You must have high-tech equipment so that you can produce more. You must have machinery. Your building should be repaired well. Your building must be durable, so there are no animals. Yes... not dry up easily. The longest is four days.

Partnership and Collaboration. He articulated his experience regarding a potential partnership with one of the malls in Mindanao, the NCCC. However, their partnership was not successful because NCCC's demands exceeded his capacity. One of the reasons cited was the lack of facilities and materials to produce large volumes of harvest. He also mentioned plans to collaborate with other farmers to pool their harvests for joint marketing. However, the challenge lay in the other farmers' reluctance to collaborate. Currently, he has no partnerships with other organizations, but he harbors ambitions of securing partners in the future, particularly restaurants and food distributors.

“Mao na gyud ta na amoang target sa NCCC ang problema saamoang lagi kulang gyud mi ug kuan facilities ug materyales. Daghan kaayu kog mga huna huna about ana ang problema lang sila lang, sila ang dili. Wala papod, pero kung maabot ang panahon makaloy-an ta mo tap gyud tag mga ing ana labi nag mga restaurant labi na sa Chinese restaurant ug sa Korean restaurant.” (Only Oyster)

Our target used to be NCCC, the problem is that we always lack of facilities and materials. I have a lot of thoughts about that, but the problem is that they are not cooperating. Nothing yet, but when the time comes, we will be able to tap those restaurants, especially the Chinese restaurant and the Korean restaurant.

Government Support. He articulated the importance of government support for small-scale mushroom farmers. As they belong to the agriculture sector, they should be provided with modern facilities such as heaters and autoclaves. He added that the government is the only entity capable of assisting them since there are no private organizations that will provide facilities. He also emphasized the need for the government to provide subsidies to small-scale mushroom farmers. Currently, there is no financial or technological

assistance given to them by the government. He also expressed his desire to have a "Bagsakan" center in Bansalan for faster marketing of the mushrooms. He reiterated that the government is the key supporter of small-scale mushroom farmers.

"Dapat gyud motabang ang government, parehas saamoa kulang mi ug facility dapat tagaan mi nila ug kuan mga facility. Parehas ana karon nga naay mga bag-ong pangheater so ihatag nila saamoa unya dayun naay mga bag-ong o muhatag sila ug katong mga autoclave. Ang government gyud ang maka kuan ana kay wala man gyuy private sector nga mohatag gud sa mga farmers. Ang sa gobyerno kung sila na dapat naay subsidy. Sa pagkakaran walay ikatabang (financial) ang gobyerno. Bagsakan. Dapat mo kuan gyud ang gobyerno mo tabang." (Only Oyster)

The government should really help; like us were lack of facilities, they should give us more facilities. Just like now that there are new heaters, they should give us the same, or they also give us those autoclaves. The government is the one who can take care of that because there is no private sector that will give to the farmers. The government should provide a subsidy. At the moment, the government has nothing to offer (financially). Bagsakan. The government should help us.

Market Viability. Due to its organic cultivation methods, the price of oyster mushrooms is more expensive than volva mushrooms. This is seen as an advantage of the Oyster mushroom cultivators.

"Compare nimo didto sa kang volva, tag pila ang kilo ana? 110 so samantala sa atoa diri is 400 per kilo." (Only Oyster)

Compare it with the volva; how much per kilo? 110, while ours here is 400 per kilo.

Cross-Case Analysis on the Cultivation Practices of Small-Scale Mushroom Farmers

The practices of small-scale mushroom farmers were uncovered through in-depth interviews. From the discussions, four (4) key themes emerged as presented in Table 2, including meticulous farming, temperature management, cultivation practices and holistic growth environment.

Table 2

Cross-Case Analysis on the Cultivation Practices of Small-Scale Mushroom Farmers

Themes	Case 1 (Volva 1.0)	Case 2 (Volva 2.0)	Case 3 (Only Oyster)
Meticulous Farming	/	/	/
Temperature Management	/	/	/
Cultivation Practices	/	/	/
Holistic Growth Environment	/	/	/

Meticulous Farming. Case 1, Case 2, and Case 3 emphasized the laborious nature of mushroom cultivation. This fits with the analysis of Benhaddou et al (2023), stating that growing premium edible mushrooms is a meticulous process that requires special tools and farming expertise. It is also supported by the exploration of Lim (2022), asserting that the laborious nature of mushroom cultivation requiring skilled manpower capable of understanding the specific needs of each mushroom species. The two varieties of mushrooms, volva and oyster, demands a substantial amount of work. Case 1 and 3 has emphasized how sensitive the process of creating spawns through Potato Dextrose Agar (PDA). Below is a short summary of the meticulous process of PDA.

Select a mushroom fruit that has not yet started blooming.

Sterilize cutting tools and wear gloves. Cut the bottom part of the fruit.

Slice the fruit lengthwise into 8 pieces. Use bond paper to maintain cleanliness.

Prepare 8 bottles.

In a thoroughly cleaned cauldron, boil 1 scoop of gulaman powder, 1 scoop of dextrose powder, and half a liter of water for 10-15 minutes.

Divide the boiled mixture equally into the 8 bottles.

During the cooling process, place the bottles sideways on a leveled surface.

After 10 minutes, place a cut piece of the fruit at the center of each bottle using a spatula.

Cover each bottle with a piece of paper and secure it with a rubber band.

Store the bottles in a box away from sunlight exposure.

After 12 days, roots will start to emerge and colonize the bottles, indicating the presence of spawns.

From the 8 bottles, select the best quality spawn to be your source for further cultivation.

Case 1, Case 2, and Case 3 also highlighted that the process of mushroom cultivation is highly sensitive to bacterial contamination. This aligns to the exploration of Cosky (2023), emphasizing that mushroom cultivation is a sensitive process due to the organism's vulnerability to contamination. The materials and equipment used in cultivating these mushrooms needs to be sterilized and disinfected. Due to sensitivity, proper hygiene is also observed. The average cultivation time of both varieties is not less than a week to be ready for harvest.

Temperature Management. The main parameters of that affect the growth of fungi are the temperature and humidity of the environment. Case 1, Case 2, and Case 3 highlighted the importance of controlling the appropriate temperature for the optimal growth of the mushrooms. Volva mushrooms require balance between shade and sunlight. On the other hand, oyster mushrooms demand a cold environment to produce good harvest, which coincides with the research of Hendinata and Fikri (2023). As Mariam et al. (2021) suggest, the most important factor that affects the output of mushroom productivity is temperature. In volva mushrooms, temperature affects its color. This supports with the study of Krah et al. (2019), suggesting that the color of mushrooms is influenced by temperature, with darker colors being more common in colder climates, supporting the thermal melanism theory.

Cultivation Techniques. There are several factors in mushroom cultivation that might affect their growth. Chung (2022) discussed that numerous techniques in the mycology community are commonly used to achieve the desired outcome in mushroom farming which was supported by Mahari et al. (2020), stating the to ensure a high mushroom yield, mushroom cultivators have to choose the appropriate parameters based on the strain of the mushrooms they are cultivating. Case 1, Case 2, and Case 3 highlighted the non-utilization of soil in cultivating the two species of mushrooms being studied. Cases 1 and 2 use banana leaves while Case 3 uses a specific mixture of sawdust and other components as a substrate. Cases 1, 2, and 3 shared the same requirements as the water used to avoid chlorine contamination. Rotation of cultivation plots emerged in Case 1 and Case 2 as a consistent strategy to maintain optimal growth conditions and maximize harvest yield. The use of fertilizers to support mushroom growth appeared in Case 1 and Case 2. However, variations were evident especially in Case 3, reflecting the unique requirements to maintain its organic profile. As to harvesting, both Case 1 and Case 2 include all the harvested mushrooms for the market except those fully-bloomed fruits. In Case 3, there is no segregation in the harvested mushrooms for marketing. Mastering all advanced mushroom cultivation techniques is not essential. Instead, understanding the appropriate technique for a specific type of mushroom one wants to grow is the key (Freak of Natural Staff, 2021).

Holistic Growth Environment. Cases 1 and 2, both focusing on volva mushroom, underscored the importance of cleanliness and creating a favorable growth environment for mushrooms. Case 1 emphasized meticulous sanitation to prevent bacterial contamination, ensuring chlorine-free water, and implementing measures to prevent infestations from pests and rodents. Similarly, Case 2 emphasized the need to maintain cleanliness and prevent competition from organisms like grass and molds. Both cases share a common practice of balancing shade and sunlight for optimal growth. On the other hand, Case 3 focused on the cultivation of Oyster mushrooms and highlighted the importance of keeping the environment cool and misted with fresh water. Sterilization of tools, equipment, and materials was emphasized to prevent contamination, along with personal hygiene practices. The primary threat to Oyster mushrooms was identified as rats, with measures taken to combat them, such as using poison. Overall, all cases underscore the importance of maintaining a clean and optimal growth environment for mushroom cultivation, tailored to the specific requirements of each mushroom species. Indeed, mushroom cultivation requires a suitable condition for the formation of fruiting bodies and yield. This was supported by Nguyen et al. (2023), stressing the importance of suitable environment. Additionally, it also aligns with the analysis of Hodijat and Nurlina (2023), emphasizing in their study the importance of optimizing the growth medium to enhance yield in mushroom farming.

Cross-Case Analysis on the Marketing Strategies of Small-Scale Mushroom Farmers

Through in-depth interviews, the marketing strategies of small-scale mushroom farmers were identified. This cross-case analysis revealed six (6) prominent themes: Competitive Pricing, Marketing Channel Optimization, Transparent Communication, Achieving Best Deals, Coping with Market Demands, and Utilization of Social Media.

Competitive Pricing.

In the face of increasing market competition, entrepreneurs are advised to implement a thoughtful and effective competitive pricing strategy. This was emphasized by Carillo (2019), stating that setting competitive market price involves a meticulous analysis of incurred costs and a thorough evaluation of competitors' pricing strategies. The respondents in the presented cases demonstrate unique approaches to competitive pricing, taking into account economic factors such as labor costs, gasoline expenses, and other related expenditures.

Table 3

Cross-Case Analysis on the Marketing Strategies of Small-Scale Mushroom Farmers

Themes	Case 1 (Volva 1.0)	Case 2 (Volva 2.0)	Case 3 (Only Oyster)
Competitive Pricing	/	/	/
Marketing Channel Optimization	/	/	/
Transparent Communication	/	/	/
Achieving Best Deals	/	/	/
Utilization of Social Media	/	/	/

In Case 1 and Case 2, the pricing strategy for Volva mushrooms is consistently set at Php 110.00. Conversely, Case 3 employs a more varied approach, establishing a pricing range of Php 200.00 to Php 400.00 for Oyster mushrooms. The variation in pricing reflects considerations attributed to the distinct characteristics of Oyster Mushrooms, which are recognized for their nutritional benefits. Oyster Mushrooms are known to complement gluten-free and low-calorie diets, aligning with the findings of Buba et al. (2022), which emphasized their medicinal properties and the consequent high appreciation. As a result, Oyster Mushrooms are often perceived as more valuable than other mushroom varieties, contributing to their comparatively higher prices.

Marketing Channel Optimization. In terms of marketing channels, Case 1, Case 2, and Case 3 exhibit distinct choices, opting for a specific approach. Case 1 specified the usage wholesaler, whereas Case 2 primarily relies on middlemen to market volva mushrooms. While there is a subtle difference between middlemen and wholesalers, they serve a similar purpose as intermediaries in ensuring the completion of the distribution channel between producers and consumers, which corresponds to the claims of Adams (2019) regarding the usage of Middlemen. Case 1's reliance on wholesalers indicates a choice for intermediaries who acquire goods in large quantities and then distribute them to retailers or consumers. In contrast, Case 2's utilization of middlemen extends to the payment method employed during transactions, which operates on a cash-to-cash basis. In addition, wholesalers incorporate an additional price, which functions as their income in the distribution process, which fits the exploration of Jayona (2020). Nonetheless, in the case of Case 1, there is consistently a delay in payment, as the cultivator awaits the sale of volva mushrooms by the buyers before receiving compensation. On the other hand, Case 3 uses more diverse marketing channels, including online platforms, direct selling, and accommodating walk-in customers. The cultivator underscores the efficiency and effectiveness of these channels, attributing it to the seamless disposal of oyster mushrooms and the assurance of successful marketing transactions.

Transparent Communication. Case 1, Case 2, and Case 3 have used phone calls in communicating with their potential buyers. With direct conversations with potential buyers, a real-time exchange of information enhances the ability to relate to buyers preferences and meet their needs effectively. This idea was supported by Iyanu (2023), highlighting that the prompt nature of phone calls offers a significant advantage to most entrepreneurs. However, only case 2 and Case 3 found social media as an effective tool for having a more clear connection with buyers, especially during pandemic where travel restrictions were imposed all over the world that limited the general local transmission of goods and services.

Achieving Best Deals. Case 1 and Case 2 have their own ways of securing market agreements with buyers. In Case 2, the emphasis of achieving the best deals is placed on meeting the standards set by buyers for the quality of cultivated volva mushrooms. Attention is given to aspects like size and color, as buyers compete over the appearance of a "good quality" mushroom. In contrast, Case 1 adopts a broader approach, considering both product quality and the establishment of customer loyalty. He ensures that he gets the trust and loyalty of his buyers, fostering longer-term supplier-buyer relationships. This was supported by Lane (2017), stating that customer satisfaction with products and services contributes directly to customer loyalty.

Coping with Market Demands. The demand for mushrooms in Davao del Sur is relatively modest. Despite the competitive advantage that Mindanao holds for mushroom farming, there is a notable lack of awareness among people regarding the profitability of this agribusiness. Case 1, Case 2, and Case 3 have not witnessed a significant surge in demand. This is attributed to the fact that the primary demand for mushrooms is concentrated in remote areas such as Cotabato, where there is a prevailing Muslim population. The distribution of demand in distant regions appears to be a factor influencing the overall demand patterns for mushrooms in the country. There are individuals who are unaware of the potential health benefits of mushrooms. This fits to the exploration of Bringye et al. (2021), stating that only those health-conscious consumers are most informed about the medicinal and functional properties. In fact, Case 1, Case 2, and Case 3 mentioned that the self life of mushrooms is relatively short. Therefore, mushroom must be consumed immediately as it cannot be transported to long distances without refrigerated transport facility, which coincides with the claims of Manjit et al. (2021).

However, with a little demand for mushroom in Bansalan and neighboring areas, the quantity of cultivated mushrooms still falls short of meeting the demand for both volva oyster mushrooms. This supports with the claims of Mahari (2020), emphasizing that the production rate of the present mushroom industry is inadequate to meet market demands. As a result, Case 1, Case 2, and Case 3 shared a practice of not inducing or forcing the fruiting of their cultivated mushrooms. They adopt an approach where they only supply the necessary conditions for the mushrooms to naturally reach their harvestable state, allowing the mushrooms to grow and mature at their own pace, ensuring a harvest that aligns with the optimal development of the cultivated mushrooms. Hence, they adhere to a practice of supplying only what their cultivated mushrooms can naturally produce.

Utilization of Social Media. Although the use of social media in marketing is an advantageous strategy, there are still individuals who are not well-versed in technology and may find it challenging to fully appreciate its significance and usefulness. Case 3, who is 63 years old, has been engaged in cultivating volva mushrooms since 1993. Throughout this period, he has traditionally relied on phone calls as his primary means of communication. Despite the prevalence of social media in modern marketing, Case 3 expresses skepticism about its effectiveness. He notes that, in his experience, he is only using traditional communication methods and there has not been a noticeable change in the marketing of mushrooms over the years. Consequently, he feels that there is no urgency to indulge to social media marketing, as his conventional approaches continue to serve the purpose effectively. Both Case 1 and Case 2 incorporated a mix of traditional and innovative marketing methods, particularly during the Covid-19 pandemic when direct selling was hindered. However, Case 2 highlighted that he specifically employed social media for marketing purposes only during the peak of the Covid-19 situation. This shows that Case 1 and Case 2 are resilient when faced with shocks to the foods system during pandemic, which fits on the exploration of Benedek et al. (2022) on survival strategies of mushroom producers.

Cross-Case Analysis on the Opportunities Perceived by Mushroom Farmers in Improving their Cultivation and Marketing Strategies

Through in-depth interviews, the perception towards opportunities in improving cultivation and marketing strategies of small-scale mushroom farmers were analyzed. This cross-case analysis revealed four (4) prominent themes which were shown in Table 3: continuous learning, perception on technological advancement, partnership and collaboration, government support, and market viability.

Continuous Learning. Case 2 and Case 3 acknowledge the significance of knowledge acquisition and skill development; however, they differ in their approaches and attitudes towards ongoing learning in the field. Case 2 shows a proactive stance towards continuous learning, with the individual expressing a keen interest in expanding their knowledge not just limiting on one mushroom variety and exploring advanced techniques for mushroom cultivation. This aligns with the claims of Hashemi-Pour (2024), stating that continuous learning within a particular area of expertise can enhance skill sets, improve retention of knowledge and skills, stimulate creativity and fresh perspectives, and enhance motivation leading to improved overall performance. On the other hand, Case 3 highlights a balance between the two extremes, valuing both hands-on experience and outside sources like social media and research. In contrast, Case 1 shows someone who feels he already know everything about mushroom cultivation and doesn't see the need to learn more. He believes he is an expert in this field because he has been doing it for a long time and have been praised by others.

Table 4

Cross-Case Analysis on the Opportunities Perceived by Mushroom Farmers in Improving Their Cultivation and Marketing Strategies

Themes	Case 1 (Volva 1.0)	Case 2 (Volva 2.0)	Case 3 (Only Oyster)
Continuous Learning	/		/
Perception on Technological Advancement	/	/	/
Partnership and Collaboration	/		/
Government Support	/	/	/
Market Viability	/	/	/

Continuous Learning. Case 2 and Case 3 acknowledge the significance of knowledge acquisition and skill development; however, they differ in their approaches and attitudes towards ongoing learning in the field. Case 2 shows a proactive stance towards continuous learning, with the individual expressing a keen interest in expanding their knowledge not just limiting on one mushroom variety and exploring advanced techniques for mushroom cultivation. This aligns with the claims of Hashemi-Pour (2024), stating that continuous learning within a particular area of expertise can enhance skill sets, improve retention of knowledge and skills, stimulate creativity and fresh perspectives, and enhance motivation leading to improved overall performance. On the other hand, Case 3 highlights a balance between the two extremes, valuing both hands-on experience and outside sources like social media and

research. In contrast, Case 1 shows someone who feels he already know everything about mushroom cultivation and doesn't see the need to learn more. He believes he is an expert in this field because he has been doing it for a long time and have been praised by others.

Perception on Technological Advancement. Case 1, Case 2, and Case 3 acknowledged the potential benefits of technology in enhancing cultivation practices. However, they differed in their attitudes towards adopting technological innovations. Case 2 demonstrated a preference for traditional farming methods, emphasizing the importance of hands-on experience and traditional tools in cultivating volva mushrooms. The individual expressed a belief that traditional techniques, from plot preparation to harvesting, are sufficient for successful cultivation. Additionally, pest control was managed without reliance on technology, as the mushrooms were not significantly affected by pests. Yet, he expressed minimal interest in integrating technology into their practices. In contrast, Case 1 exhibited a forward-thinking perspective, visualizing the use of technology to streamline and improve various aspects of mushroom cultivation. He expressed a desire for technological innovations that could simplify tasks such as cutting and grinding banana leaves, thereby accelerating the plot preparation process. This fits to the exploration of Li et al., (2021), emphasizing that mushroom industry has experienced significant technological advancements which encompass increased production capacities, innovative cultivation techniques, and enhanced final products which was also supported by Janapati and Ahmed (2023) stating that modern technologies outperform conventional methods enhancing productivity and efficiency within mushroom industry. Case 3 articulated the utilization of high-end technology to optimize production efficiency and quality. He recognized the importance of machinery and equipment, particularly in mass production scenarios, and emphasized the need for a well-constructed fruiting house to mitigate pest infestations. Additionally, he suggested the use of freezers to extend the shelf life of harvested mushrooms, thereby enhancing marketability and reducing waste.

Partnership and Collaboration. Partnership for small mushroom farmers is significant. Case 1 and Case 2 share the same attitude towards seeking out collaborations and partnerships in expanding market reach and enhancing distribution channels. Case 1 adopted a solitary stance, opting to manage his mushroom business operations without external collaborations. He also expressed concerns about potential conflicts or misunderstandings that could arise from partnerships with other farmers or organizations, preferring simplicity and autonomy in their business operations. Furthermore, Case 2 demonstrated a self-reliant strategy, focusing on selling directly to the traders and paying more focus on overseeing mushroom cultivation operations. He was hesitant to actively seek partnerships with outside organizations, believing it was the traders' responsibility. Although he collaborated with other small-scale farmers for bulk sales, however he controls over production volumes. In contrast, Case 3 had experiences with partnership initiatives, including an unsuccessful collaboration attempt with a mall. He also had plans for collaborating with other local mushroom farmers. His idea of collaborating with distributors helps farmer focus on production while potential partners handle marketing and distribution, which coincides with the claims of Rochaeni et al. (2023). In addition, this also aligns to the exploration of Febrianda and Tokuda (2018), emphasizing that partnership in mushroom farming can serve as a solution to address production problems and market challenges that the farmers may encounter. Despite these setbacks, he remained open to future collaboration opportunities, particularly with restaurants and food distributors, as a means of expanding market reach and increasing sales potential.

Government Support. Case 1, Case 2, and Case 3 suggest a consensus regarding the need for increased government support to address the challenges faced by small-scale mushroom farmers. All cases underscored the lack of available financial and technological support from the government for small-scale mushroom farmers. Case 1 highlighted the need for adequate tools and equipment to support increased mushroom production, suggesting that limited resources hindered their ability to scale up operations. Case 2 also emphasized the importance of reducing fertilizer prices and providing gasoline subsidies to alleviate transportation costs for raw materials. Case 3 emphasized the essential role of government support in providing modern facilities and subsidies to small-scale mushroom farmers. He highlighted the government's responsibility to assist farmers in accessing resources such as heaters and autoclaves. Furthermore, all 3 cases demand for the establishment of marketing centers such as "bagsakan" centers and canning facilities to streamline marketing efforts. All cases believe that there is a necessity for government support in agricultural development, and government intervention is crucial in addressing capital issues and promote financial inclusion for small-scale farmers, which corresponds to the idea of Sibuea et al. (2023). In addition, it is also in harmony with the study of Akkaya et al. (2020), stating that government support is essential for promoting agricultural innovation and encouraging farmers to adopt cutting-edge practices.

Market Viability. Mushroom farming presents a profitable opportunity for farmers. Case 1, Case 2, and Case 3 acknowledged the economic advantages of mushroom cultivation. This is due to its ease of cultivation, short planning duration, minimal land requirement, and the high prices fetched by post-harvest products, which supports the assertion of Citraresmi et al. (2021). However, they varied in their evaluations of the specific benefits associated with different mushroom varieties. Case 1 emphasized the low initial investment needed for growing volva mushrooms, making it a viable option even with limited capital. Similarly, Case 2 highlighted the consistent demand for volva mushrooms, indicating their ease of marketability and potential for profitability. In contrast, Case 3 underscored the economic advantage of oyster mushrooms, attributing their higher market prices to their organic cultivation methods.

Confirmation of the Theory

The study reaffirmed Everett Rogers' 1962 Diffusion of innovation (DOI) theory, as it demonstrates how small-scale mushroom farmers adopt innovative practices over time. The themes that emerged during discussions underscore the complex interplay of

factors influencing the adoption and diffusion of innovative practices among mushroom farmers which align with the principles of DOI theory. The themes of meticulous farming practices to the adaptation of marketing strategies based on consumer preferences demonstrate how small-scale mushroom farmers navigate the process of innovation adoption over time, confirming the importance of the DOI theory in understanding agricultural innovation. Furthermore, farmers' proactive attitudes toward learning and technology, as well as their advocacy for government assistance and market assessment, reflect DOI's emphasis on internal and external factors in innovation adoption.

Concluding Remarks

The mushroom business has been seen to have a promising future. Since many people are cooking at home and trying new recipes, there is good demand for mushrooms. As researchers, our realization came up from the data gathered through an in-depth interview of three (3) participants revealing the answers to the main objectives of this study. We uncovered that the cultivation practices of small-scale mushroom farmers were meticulous farming, temperature management, cultivation practices, and holistic growth environment. These four (4) themes identically emerged in all of the cases during our interview. Based on the discussions, we the researchers concluded that meticulous farming of edible mushrooms highlighted the laborious and sensitive nature of mushroom cultivation, requiring specialized knowledge and tools. Temperature management is crucial, with different mushroom varieties requiring specific conditions for optimal growth. Cultivation techniques vary but all emphasize the importance of the substrate being used, hygiene, and environmental control. Lastly, maintaining a holistic growth environment is essential for maximizing harvest and preventing contamination, fitted to the specific needs of each mushroom variety.

Based on the analysis of the marketing strategies of the small-scale mushroom farmers, six (6) themes emerged which include competitive pricing, evaluating optimized marketing channels, means of communication, achieving best deals, coping with market demands, and utilization of social media. The researchers underscore the significance of these strategies for the success of mushroom farmers. By meticulously analyzing costs, implementing competitive pricing, and utilizing diverse marketing channels farmers can reach wider customers and maximize sales opportunities. Transparent communication with buyers fosters strong relationships and allows farmers to meet market demands effectively while mastering negotiation skills is crucial for long-term success.

As to the opportunities perceived by the small-scale mushroom farmers in improving their cultivation and marketing strategies, we discussed them using four (4) themes which are continuous learning, perception of technological advancement, partnership and collaboration, and market viability. We concluded that there are several pivotal factors crucial for small-scale farmers aiming to enhance their cultivation and marketing strategies. Continuous learning emerged as a cornerstone for improvement, but farmers have varying attitudes toward ongoing education in connection to mushroom farming. Additionally, concerning technological advancement, farmers exhibited a differing inclination toward adopting such innovations. Partnerships and collaborations were recognized as essential ways to expand market reach, however, approaches varied among cases. The crucial role of government support was emphasized unanimously, particularly in addressing technological and financial barriers faced by small-scale mushroom farmers. Lastly, the viability of mushrooms in the market was highlighted, but the opinions varied.

In conclusion, our study illuminates the promising trajectory of the small-scale mushroom farming industry, revealing key insights from in-depth interviews with practitioners. The study emphasizes the meticulous nature of cultivation practices, highlighting the importance of techniques such as temperature management and maintenance of a holistic growth environment. Similarly, our analysis underscores the significance of strategic marketing approaches, including competitive pricing and diversified channels, in maximizing sales opportunities. Furthermore, we identify opportunities for improvement, such as continuous learning, technological integration, and partnerships, all underlining the need for ongoing support from governmental entities. Overall, our research shows that the industry is set for growth, but it relies on using smart strategies and embracing innovation.

Implications for Practice

With the rising demand, mushroom farming presents a lucrative opportunity for entrepreneurs seeking to capitalize on the growing market for fungi products. The shared ideas of small-scale mushroom farmers proved to be beneficial to fellow small-scale farmers, policymakers, and stakeholders. Small-scale mushroom farmers should focus on meticulous cultivation practices, such as careful temperature control and the creation of ideal growth conditions for different mushroom types. Continuous learning is key for improving skills, while effective marketing, like competitive pricing and clear communication, can help reach more customers. Collaboration with other farmers and partners can also boost market presence and overcome challenges.

The government needs to support small-scale mushroom farmers by addressing barriers like technology access and financial support. This includes offering resources for ongoing education, encouraging partnerships, and promoting the use of new technologies. The Local Government Unit (LGU) of Bansalan should establish facilities like laboratories for conducting Potato Dextrose Agar (PDA) procedures in growing mushroom spawns to encourage more people to engage in mushroom farming. This medium plays a critical role in the mushroom cultivation process, as it serves as the means by which mushroom farmers obtain spawns for their cultivation efforts. Despite the fact that small-scale farmers may not need to conduct Potato Dextrose Agar (PDA) procedures in every cropping, as they can still grow spawn from previously cultivated spawn, the absence of accessible laboratories for conducting PDA remains a significant limitation for them in Davao del Sur. The LGU should also consider the establishment of “bagsakan” centers and

canning facilities to help small-scale mushroom farmers market their harvest easily. Creating favorable regulations can also foster growth and innovation in the industry.

Stakeholders which include suppliers, buyers, and industry groups should support small-scale mushroom farmers through fair business practices and partnerships. Advocating for supportive government policies is crucial. Additionally, investing in research and development can improve farming techniques, marketing, and sustainability efforts.

Implications for Future Research

The study of cultivation practices and marketing strategies among small-scale mushroom farmers remain largely overlooked in various research fields, particularly in the Philippines. This is primarily due to the fact that mushroom cultivation is still considered an emerging agricultural practice in the country. An additional challenge is the absence of laboratories in Davao del Sur where small-scale farmers can perform Potato Dextrose Agar (PDA) procedures. This limitation has the potential to affect their capacity to participate in sophisticated and advanced mushroom cultivation practices, hindering their ability to explore innovative techniques and optimize their cultivation processes.

Given the relatively small scope of this study, the results are limited to the data collected during the in-depth interviews specifically focused only on oyster and volva mushroom cultivation and marketing strategies. However, there is potential for this study to be more impactful with an extended duration and broader scope. To enhance the significance of the study, participants possessing substantial knowledge about various edible mushroom varieties should be incorporated. This would broaden the insights into different cultivation and marketing practices associated with diverse mushroom species. Additionally, a wider range of topics could be considered, such as the environmental impacts of mushroom cultivation, the development of innovative mushroom products, and the exploration of medicinal properties inherent in various edible mushroom types. By incorporating these suggestions, the study has the potential to yield more comprehensive and diverse findings, contributing to a deeper understanding of mushroom cultivation practices and their broader implications.

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