

**“FEASIBILITY STUDY OF A TECHNOLOGICALLY ADVANCED GRAIN
DRYING SOLUTION FOR A RICEMILL AND GRAIN DRYER BUSINESS
IN CALAPAN CITY, ORIENTAL MINDORO”**

A Feasibility Study
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Chapter I INTRODUCTION

Agriculture plays an important role in the Philippine economy, which is ranked third among all sectors in 2022. Many Filipinos residing in rural areas sustain themselves through agricultural pursuits. The rice industry continues to be a mainstay of Philippine agriculture, with the country maintaining its standing as the 8th largest global rice producer over the years, witnessing a steady rise in production. From 1.2 million metric tons in 2019 to 0.2 million metric tons in 2022, rice imports decreased dramatically, suggesting greater self-sufficiency. The Department of Agriculture's Secretary William Dar reported that farmers are now reaping greater benefits from hybrid and inbred rice, and that achieving 100% rice self-sufficiency is now "within reach." (Department of Agriculture, 2022). Though there are still certain obstacles, the future of Philippine agriculture is still bright, with 2.5% growth predicted in the industry by 2023. It is believed that important crops including rice, corn, coconuts, sugar, and bananas will continue to influence agricultural performance as a whole.

The Philippines is an agrarian nation whose primary agricultural products include rice, coconuts, corn, sugarcane, bananas, pineapples, and mangoes. Guimba, Nueva Ecija, has been named the "Rice Capital of the

Philippines." The region produced 772,855 metric tons of palay, which is 17% of the country's total output, maintaining Central Luzon's position as the leading palay-producing region in the Philippines. While Nueva Ecija is known as the "Rice Granary of the Philippines" for its large rice production, Oriental Mindoro has also become a significant rice producer, although on a smaller scale. Calapan City, recognized as the most successful rice-producing area, showcases the province's agricultural strength. Only Calapan City received the prestigious Rice Achiever Award within MIMAROPA which highlights the its best rice farming practices. Initiatives like AKAP program, spearheaded by Mayor Panaligan, support organic fertilizers, irrigation, farm mechanization, and rice subsidies demonstrates the kind of assistance required to optimize the potential of Oriental Mindoro to boost rice production ("Calapan is Mimaropa's most outstanding city in rice production," 2019).

Farmers are important to agriculture; without their labor and output, there would be issues with food access. According to a survey released by the Philippine Statistics Authority (PSA) last year, as cited in an article titled *"Filipino farmers' profits disappear, and hunger looms. 'Farmers are poorer than ever.'"*, the two poorest worker groups were farmers and fishers, with over one in three of them living below the poverty line, as opposed to the

roughly one in five of all workers nationwide. In the Philippines, farmers faced a number of difficulties in terms of production, including high input costs, a lack of post-harvest facilities, market forces, demographic shifts, and climate change. Despite the fact that El Niño poses a serious threat to the Philippines' rice crop, according to the most recent news as of February 2024, the government is increasing rice output to reach its goal of self-sufficiency by 2028 ("Gov't ramps up rice production, imports in El Niño year," 2024).

Although Oriental Mindoro has great potential to be a rice-producing region, a number of obstacles have prevented it from realizing this potential. Despite Oriental Mindoro's rich and fertile land, ideal for agriculture, farmers face several key challenges. These include poor pricing for their commodities at sale, restricted access to new technologies, and facilities for storing produced grains and rice. Additionally, the manufacturing expenses of materials like fertilizer and gasoline for machines are high. Furthermore, there are insufficient facilities for properly drying palay, which frequently forces farmers to dry their crops by the sides of the road and they also have to deal with problems with irrigation and unpredictable weather.

To address the challenges hindering the potential of Oriental Mindoro as a significant rice-producing region, the installation of rice dryers could be

one of the viable solution. With the use of this technology, the rice grains can be dried quickly while maintaining the quality. In addition, this dryer uses 20% less energy and emits fewer greenhouse gases. This will also be helpful in unexpected bad weather conditions, as the grains can be dry without the use of traditional sun-drying methods.

With this, the proponents came up with an innovative solution aimed at enhancing the features and processes of existing rice with the use of technology. This includes automating the temperature, moisture and timer control, implementing remote monitoring and controlled systems that will allow farmers to check and control the dryer from the distance, and incorporating safety features such as automatic shut-off mechanism in case of overheating or some sort of emergencies. The business, a ricemill and grain dryer, is located at Calapan City, Oriental Mindoro, because the proponents believed that the farmers in this area would greatly benefit from this advanced technology especially to improve their rice production.

Chapter II MARKET STUDY

Name and Description of the Service

The [Business Name] is a business that offers rice milling and grain drying services using a technologically advanced machineries. It will be located at Calapan City, Oriental Mindoro. Given the volume of annual rice production in Oriental Mindoro, there is an important need for better and improved post- harvest processing services to optimize the crop value and quality of rice grains in the area.

[Business name] offers more than just rice milling and grain drying services; it provides unique solutions that set it apart from other rice mills. Unlike other rice mill businesses that offers rice drying services using the traditional sun drying process, [business name] offers an alternative method of rice drying. [Business name] will employ grain drying machineries that utilize the latest automation technology to ensure the quality, efficiency and sustainability of rice drying process. These machineries features automated temperature, moisture and timer control that ensures precise and consistent drying results. Moreover, the implementation of remote monitoring and control systems will allow for efficient monitoring and control of the drying

process even from the distance. Not only this enhances efficiency but also improves convenience for the farmers.

[Business name] aims to achieve more consistent drying results, reduced energy consumption, and faster drying process. Additionally, the use of automated grain dryers will help minimize the extent manual labor required for the rice drying process, which traditionally involves spreading and gathering the rice grains in the afternoon. Also, it allows for the drying process to continue even during the rainy weather, without requiring an extensive space. With this flexibility, [Business name] hopes to provide its customers with dependable and constant service, guaranteeing that rice can be dried regardless of the weather.

Uses of the Service

User of the Service

Demand and Supply Analysis

In Calapan City, Oriental Mindoro, there is an evident demand for modern agricultural solutions, particularly among rice farmers seeking to enhance their production efficiency and overcome various challenges in the cultivation process. The target market primarily comprises rice farmers in the city and its vicinity, who are increasingly looking for innovative

technologies to modernize their operations and improve profits. These farmers prioritize efficiency, cost-effectiveness, and quality when considering investments in agricultural equipment and services. They value technological advancement that can not only optimize their farming process but also lessen risks associated with factors like El-niño and market instabilities.

Market Trends in Oriental Mindoro indicate a gradual shift towards mechanization and automation in agriculture, driven by the need to increase productivity and reduce reliance on manual labor. Farmers are increasingly embracing modern equipment like rice mills and grain dryers to modernize post-harvest operations and minimize losses.

In terms of competitions, while there may be existing suppliers of rice milling and drying equipment in the region, there is still room for new entrants to differentiate themselves by emphasizing the technological features and innovations incorporated into a rice mill and grain dryer equipment. Highlighting advantages such as energy efficiency, remote monitoring capabilities, and safety features will resonate with farmers who prioritize reliability and performance.

Marketing Program

In order to promote visibility and customer engagement for [Business name], this study puts forward strategic marketing recommendations including:

Educational Campaigns. Original content will be created through mediums like blogs, videos, and infographics that provides instructional resources for rice farmers to learn about the advanced grain drying solutions. This aims to establish familiarity and attract potential customers.

Partnerships. Strategic Partnerships will be pursued with agricultural authorities, cooperatives, and government extensions programs to establish connections and reach much wider swath of localized rice producers.

Customer Referral Program. This will be initiated to incentivize satisfied customers to actively promote [business name] among fellow rice producers.

Direct Marketing. Printed materials such as brochures and flyers showcasing the [business name] and its offered services, will be disseminated to rice producers within the local area. Additionally, these printed materials can be distributed on events and engage directly with potential customers.

Word-of-Mouth. This promotion works like gossip, spreading from person-to-person and building interest and trust along the way. This can be

a powerful tool for generating buzz and attracting new customers to the [business name] services.

Target Market

When it comes to rice mill and grain drying services, the target market is as diverse as the fields themselves. There are many different players in the market, ranging from individual rice farmers searching for cost-effective drying solutions to agricultural cooperatives trying to automate processes for their members. To successfully transform grain drying technology, [Business Name] must recognize first the specific needs of each market group.

While the business has the capability to cater all farmers seeking grain drying solution, the target market of [Business Name] are the small-scale to large-scale farmers around Calapan City. This focus allows [Business name] to tailor its services and technology to meet the specific needs and scale of operations in the local agricultural landscape, ensuring that farmers within the area have access to efficient and reliable rice mill and grain drying solutions.

Channel Distribution

In deciding on the market distribution strategy, entrepreneurs must undertake an investigation to determine how effective the business is if the

service is supplied directly rather than through merchants and other types, based on the profit generated.

The direct distribution channel will be used, with rice farmers delivering their harvested palay directly to the facility for drying and/or milling services. After the drying/milling process is completed, the farmers will pick up the finished rice output. This route offers full control and direct client feedback, but farmers must ship produce directly to the rice mill.

The entrepreneurs will set up a dedicated phone line where farmers can arrange appointments and make inquiries. This conveniently accessible channel enables farmers to approach the facility and obtain timely support. To improve accessibility and ease, the entrepreneurs intend to create a web app. This program will allow farmers to arrange appointments, monitor the drying process, and receive updates directly to their gadgets.

Marketing Strategies

Social Media marketing is a powerful tool for connecting with target consumers, building meaningful relationships and raising brand awareness. This well-thought-out approach seeks to strategically use digital channels, including Facebook, Instagram, and Twitter, to distribute engaging content, including infographics and brief videos that highlights key advantages provided by utilizing grain drying technology. Promoting using printed media,

such as distributing flyers or displaying tarpaulins can also be highly effective in reaching a diverse of customer. This offers a tangible and lasting impression that allows businesses to showcase their products/services in visually appealing format. Combining printing media with digital marketing efforts can create a comprehensive marketing strategy that engages customers online and offline.

Competition

Despite the presence of similar businesses in the area such as other rice mills that uses traditional methods of grain drying, such as sun drying processes, the [business name] is confident that their technologically advanced grain drying solutions will establish a unique identity.

Some advantages that set the business apart from each competitors includes, fast drying process, which eliminates the need for farmers to manually sun dry their grains of rice and continuously turn and monitor it, the ability to dry rice during rainy weather, and the assurance that the grains comes out dry once it exits the machinery. While the service may slightly more expensive, the benefits far outweigh those of manual rice drying businesses.

Pricing

Setting a competitive price for rice milling and rice drying services is essential to meeting customer expectations and ensuring the business succeeds. The price of the rice drying service is determined by several factors including drying capacity, duration, technology usage, labor costs, energy costs, transportation costs, maintenance and repair, and additional services.

The pricing per batch is based on important cost considerations rather than a fixed rate. The grain dryer machine has capacity to fit up-to 100 rice sacks per load. Even if a customer supplies less than a 100 sacks of rice, it uses the entire machine capacity during the drying process.

Through analysis of pricing from local competitors, average batch pricing is estimated at approximately 6,000 pesos. To accommodate customers with lower volumes, however, an adjustable pricing strategy will be used, which will still covering costs and achieving profits.

The cost of each batch is determined by factoring labor, electricity, time duration, and the desired profit margin. Batches with fewer sacks may warrant a higher per sack price to ensure viability. Even with reduced efficiency, earnings must be made in both small and large quantities in order to support sustainable business operations. Pricing will reflect the resource consumption and operating costs of that specific batch size, in contrast to

local competitors who consistently charge the same static rate. This balanced methodology serves customers fairly whether they supply 10 sacks or 100, while allowing profitable running of the technologically advanced drying system. By offering transparent and reasonable pricing that reflects costs, all customers can benefit from high-quality automated drying, even with varying levels of capacity utilization.

Packaging



To ensure product quality and customer satisfaction, the rice mill and dryer plant focuses on modern, efficient, and clean packaging processes. Packaging materials are usually made of sturdy woven polypropylene or high-quality Kraft paper bags, which protect against moisture, pests, and transportation breakage. These sacks are available in a variety of sizes, meeting the varying demands of farmers. Semi-automated machinery ensures that bags are properly sealed, while severe quality control

techniques such as material inspection, weight checks, and seal verification assure product integrity.

Furthermore, the facility is dedicated to sustainability by looking for ways to incorporate eco-friendly packaging materials and procedures, such as using recycled materials. As the business grows, ongoing evaluation and innovation in manufacturing processes will be critical to maintaining safety, cleanliness, and quality standards, while also emphasizing customer pleasure and environmental responsibility.

Terms of Sale

The term of sales for the rice drying services offered by [Business Name] are as follows. The price of the drying service will be determined based on the volume/quantity, specifically per sacks, with rates varying for different quantities. Invoices will be sent out once the drying process is finished, and payment conditions will be outlined in the sales agreement. The customer may arrange the delivery of the dried rice, and the business may offer transportation services for an extra fee. Quality standards for the dried rice will be maintained at all times. Negotiation between the parties will be used to settle any disagreements over the drying service. The sales agreement will contain specifics about these parameters, which are subject to alter based on needs of each individual customer.

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