

Identifying marketing problems and strategies for the development of superior rice seed breeding business in Ogan Komering Ilir regency

Winnie Andhini ¹, Muhammad Yazid ² and Riswani ^{2,*}

¹ Department of Agribusiness, Faculty of Agriculture, Sriwijaya University, Palembang City, Indonesia.

² Department of Agricultural Social Economics, Faculty of Agriculture, Sriwijaya University, Palembang City, Indonesia

World Journal of Advanced Research and Reviews, 2025, 27(02), 1338-1347

Publication history: Received on 10 July 2025; revised on 16 August 2025; accepted on 18 August 2025

Article DOI: <https://doi.org/10.30574/wjarr.2025.27.2.2896>

Abstract

Superior seed breeding is one of the food products that has the opportunity to be developed in an agribusiness system. The agribusiness system concerns all activities in the agricultural sector from procurement to marketing of products produced by farming businesses that are interrelated with each other, in other words starting from the upstream industry, farming, downstream industry to distribution to consumers. This research aims to identify the problems faced in the production and distribution of rice seeds in OKI Regency and formulate a strategy for the development of breeding superior rice seeds in Ogan Komering Ilir Regency. The selection of the research location used the purposive sampling method, while the sample withdrawal used non-probability sampling by taking samples of breeder farmers in Bumi Agung Village, Lempuing District, OKI Regency. There are 60 rice seed breeders in this village who were purposively selected as a sample of this study. Primary data in this study was collected by means of a survey using a questionnaire and analyzed using data reduction and SWOT. The results of the study show that the production and distribution of superior rice seeds in OKI Regency is constrained by limited access, uneven distribution, and lack of coordination between related parties, so that the use of superior seeds is not optimal. The business development strategy of superior rice seed breeding is in quadrant I, namely having a position (S-O) of the seed breeding business can utilize internal strengths to seize external opportunities. An alternative strategy that can be applied is to optimize internal strengths, namely farmer experience, effective management, and distribution networks that have been established, in order to take advantage of external opportunities, such as increasing market demand and potential cooperation with third parties

Keywords: Agribusiness system; Development; Production and distribution; Superior rice seeds; SWOT

1. Introduction

Seeds are one of the main elements in agricultural cultivation. The selection of seeds will determine the production and quality of agricultural commodities. With such a strategic role of seeds, the government includes seeds as one of the main elements in realizing food sovereignty. There are three main components needed in efforts to build seed independence in Indonesia, namely the development of new superior varieties, the development of seed quality, and aspects of their use, both in terms of dissemination and supervision and control (1). One of the increases in rice production is influenced by the use of seeds. The biggest contribution in rice production is the use of superior seeds compared to the application of other technologies. This is because the marketing cost of certified seeds is relatively cheaper compared to the cost of producing fertilizers and others. Seed problems can be carried out through breeding source seeds on farmers' land.

The situation in the field shows that the use of superior seeds is still relatively limited. More than 60 percent of the use of rice seeds among the community comes from the informal sector, namely in the form of grain set aside from part of

* Corresponding author: Riswani

the previous season's harvest which is carried out repeatedly (2). One of the sacred food commodities in solving food problems in Indonesia is rice. The number of people in Indonesia tends to increase from year to year. Therefore, the demand for rice is getting bigger along with the increase in the population in Indonesia. For this reason, serious efforts are needed to maintain national and household food security. Efforts to increase rice production to maintain rice self-sufficiency face various problems. These problems are in the form of physical, biological and socioeconomic obstacles. To overcome these problems, the government needs to take policies in rice development in order to achieve better results (3).

South Sumatra has started fostering and developing seed breeding in every district that has the potential to develop seed breeders, either from farmers/breeders or seed producers in the form of individuals or legal entities and government agencies. To ensure the purity of the quality produced, it is necessary to carry out certification. Seed certification is the process of making quality and certified seeds, from application to label installation. The purpose of seed certification is to ensure physiological, physical and genetic quality and provide quality seeds on a continuous basis supervised by the Seed Supervision and Certification Center for Food Crops and Horticulture (4)

Ogan Komering Ilir Regency is one of the rice seed producers in South Sumatra after Ogan Komering Ulu Timur. The role of rice seed producers is important in the provision of certified seeds in the Ogan Komering Ilir Regency area. The certification process in maintaining seed quality is not easy, so production is still constrained in meeting seed production targets in Ogan Komering Ilir Regency (OKI). The use of superior seeds at the farmer level is still low, this is due to several factors, including the limited availability of source seeds, limited source seeds, limited number of seed producers or breeders, farmers' access to superior seeds is very limited, and lack of application of superior seeds.

Research by (1) identified various problems in the production and distribution of rice seeds in South Sumatra, including OKI Regency. The study noted that the main obstacles include limited access to superior seeds, lack of coordination between government agencies and breeders, and challenges in timely distribution. In addition, erratic weather factors also affect seed production. In addition, there is a lack of proper coordination between the government, producers, markets, and consumers that make it difficult to obtain seeds of superior varieties.

Superior seed breeding is one of the food products that has the opportunity to be developed in an agribusiness system. The agribusiness system concerns all activities in the agricultural sector from procurement to marketing of products produced by farming businesses that are interrelated with each other, in other words starting from the upstream industry, farming, downstream industry to distribution to consumers. In other words, an agribusiness system is a complex network that involves various interrelated subsystems to produce, process, and distribute agricultural products. Thus, from the production subsystem to the consumer subsystem, each part has an important role in ensuring the smooth and efficient of the entire agribusiness process (5).

Referring to the above explanation, the problem that can be seen is that the scarcity of superior seed products that trigger superior seed breeding must be developed, the correct implementation of an agribusiness system is a stimulus to develop this seed breeding agribusiness system. How to implement the agribusiness system of rice plant breeders in Ogan Komering Ilir Regency, so that this rice seed breeder can continue to run and can even develop and make Ogan Komering Ilir Regency a superior seed provider that is able to provide superior seeds for the Ogan Komering Ilir Regency area and even supply other districts.

2. Material and methods

This research was conducted in Bumi Agung Village, Lempuing District, Ogan Komering Ilir Regency, South Sumatra Province from December 2024 to February 2025. The location of the research was chosen *purposively* with the consideration that Bumi Agung Village has breeder farmers who collaborate with CV seed production companies. UPB Berkah Tani. This company is the largest producer of certified rice seeds in Ogan Komering Ilir Regency. To trace the marketing process of the seeds produced, this research will also be carried out at the location where the seeds are traded and used. This research will be carried out using a survey method. The survey method is a research method that uses samples taken from populations that have the same characteristics as the characteristics of the population. This survey method is carried out by conducting direct observations at the research location. The sample withdrawal in this study used a *non-probability sampling method* by taking breeder farmers in Bumi Agung Village, Lempuing District, OKI Regency as sample farmers. There are 60 rice seed breeders in this village who were deliberately *purposively* selected as a sample for this study.

The analysis method used is data reduction to sharpen, classify, direct, discard the unnecessary, and organize the data in such a way that the conclusions of conclusions can finally be drawn and verified. Data reduction in this activity was

carried out to select the necessary data and documents related to the activities and problems of seed breeders and the impact they caused. Furthermore, these problems will be included in a SWOT analysis to assess strengths, weaknesses, opportunities, and threats in an effort to overcome existing problems. The SWOT matrix can produce four sets of possible strategic alternatives. The steps in compiling a SWOT matrix diagram to get 4 alternative strategies are as follows:

- Identify relevant factors for *Strengths, Weaknesses, Opportunities, and Threats*.
- Create a questionnaire question that asks respondents to choose the factors they consider most relevant.
- Calculate the percentage of each choice for each question.
- Choose the factors with the highest percentage in each category (*Strengths, Weaknesses, Opportunities, Threats*) to be included in the SWOT Matrix.
- Enter the factor with the highest percentage into the corresponding column in the SWOT matrix. Each factor will be supplemented with its percentage to show its relative significance according to respondents.
- Using the SWOT Matrix that has been compiled to develop SO (*Strengths-Opportunities*), WO (*Weaknesses-Opportunities*), ST (*Strengths-Threats*), and WT (*Weaknesses-Threats*) strategies.

3. Results and discussion

3.1. Identification of Problems in the Production and Distribution of Rice Seed Breeder Farmers in OKI regency

Rice seed production is an activity that involves rice cultivation with the aim of producing high-quality rice seeds to be used in the next rice planting. This process requires special attention in the selection of superior rice varieties, land management, fertilization, pest and disease control, and regular plant maintenance in order to produce healthy seed candidates that are free from disease contamination.

In the early stages, farmers prepare the land by clearing the area to be planted and tillage, such as plowing or hoeing. After that, the superior seeds that have been selected are sown, and the land is planted by planting rice directly or using rice seeds that have been sown before. Plant maintenance includes watering, fertilizing, and pest and disease control using pesticides or natural ingredients.

During the growth process, the quality of prospective rice seeds must be maintained so that they are not contaminated by pests or diseases that can damage the quality of the prospective seeds. In addition, at the ripening stage, farmers must pay attention to the right harvest time to ensure that the resulting rice seeds have high growth potential. After the rice is harvested, the prospective seeds must be separated from the manure, then dried and sorted to ensure only quality prospective seeds are used. The production process of breeding prospective rice seeds is very important because the good quality of seeds will affect agricultural yields in the future. This activity requires good technical knowledge and careful maintenance so that the production of prospective rice seeds can run efficiently and produce quality seeds. The average production of rice seed candidates by rice seed breeders in OKI Regency is 15.63 tons per year.

The price of rice seeds in this study refers to the selling value of rice seed production which is calculated based on units per kilogram. Rice seed breeders usually sell their produce to middlemen or intermediary traders who buy the seeds to be resold to other farmers or retailers. Before buying seeds, middlemen will assess the quality of the rice seeds offered, and this quality will affect the price offered. Factors that determine the quality of rice seeds include growth ability, seed size, seed cleanliness, and moisture content contained in the seeds. High-quality rice seeds are usually priced more expensive because they have better growth potential and provide more optimal yields for the farmers who grow them.

On the other hand, low-quality rice seeds, such as seeds that are contaminated or have low growing power, will be priced cheaper. The price of rice seeds can also be influenced by other external factors, such as the availability of seeds in the market, demand from farmers, and government policies that support the availability and distribution of quality rice seeds. The average selling price of prospective rice seeds per kilogram in OKI Regency was recorded at around Rp6,150, which reflects the local market price that applies to prospective rice seeds that are of good quality and ready to be planted. This price can vary depending on the growing season, the availability of seeds, and the general conditions of the agricultural market.

In this study, problems in rice seed production experienced several obstacles such as limited access for farmers to superior seeds. Superior seeds have an important role in increasing productivity and crop quality. However, in Ogan Komering Ilir Regency (OKI), access to superior seeds is still very limited. This is due to several factors, such as the relatively high price of seeds, the lack of adequate information for farmers regarding the existence and benefits of

superior seeds, and limited distribution that reaches remote areas. Research shows that this limitation causes farmers to still use a lot of local seeds with lower productivity, resulting in less than optimal crop yields (6). This is in line with previous research that shows that high seed prices are a significant barrier to the adoption of superior seeds (7). Research by *Characterization of rice farming systems, production constraints and adoption of improved varieties* (Nature) confirms that education and extension are key in increasing the adoption of superior varieties (8).

In a certified rice seed marketing, there is a marketing channel that aims to deliver products until they reach the end consumer. In this study, CV. UPB Berkah Tani buys grain harvested by farmers for Rp6,300/Kg and processes it into rice seeds that have passed the certification process by UPTD BPSBTPH South Sumatra Province. For traders in the marketing channel, this research was obtained by *snowball sampling technique*.

The certified seeds are then distributed to retailers, namely agricultural stalls around OKI Regency. In addition, there are also seeds that are distributed to wholesalers first before reaching retailers and finally reaching consumers. Seed sales are also carried out directly from producers to consumers.

CV. UPB Berkah Tani also has an e-catalog used by the government to distribute certified rice seed assistance to farmers. Based on the results of interviews with the company's admin, the government that provided assistance was from the Ministry of Agriculture, the provincial agriculture office, and also the district agriculture office. The districts that have received assistance from the government are Ogan Ilir, Muara Enim, Prabumulih, and Ogan Komering Ulu Timur. For farmer groups that receive certified rice seed assistance, namely farmer groups proposed by local agricultural extension officers.

Marketing certified rice seeds is very important because quality seeds are a key factor in increasing agricultural productivity. Certified seeds have gone through quality testing by authorized institutions, so they have high growth power, resistance to pests, and other superior properties. One of the main problems in the marketing of certified rice seeds in OKI Regency is the low interest of farmers, which is caused by a lack of understanding of the benefits of certified seeds. Most farmers still rely on previously harvested seeds because they are considered cheaper, easy to get, and are used to using. Farmers have not realized that certified seeds have better qualities, such as high growth power, resistance to pests, and maximum yield potential. In addition, the relatively high price of certified seeds is a major obstacle, especially for smallholders with limited capital, so farmers are reluctant to switch to certified seeds even though the long-term benefits are more favorable.

Marketing channel for certified rice seeds in OKI Regency, Lempuing District, Ogan Komering Ilir Regency produced by CV. UPB Berkah Tani has four marketing channels as follows.

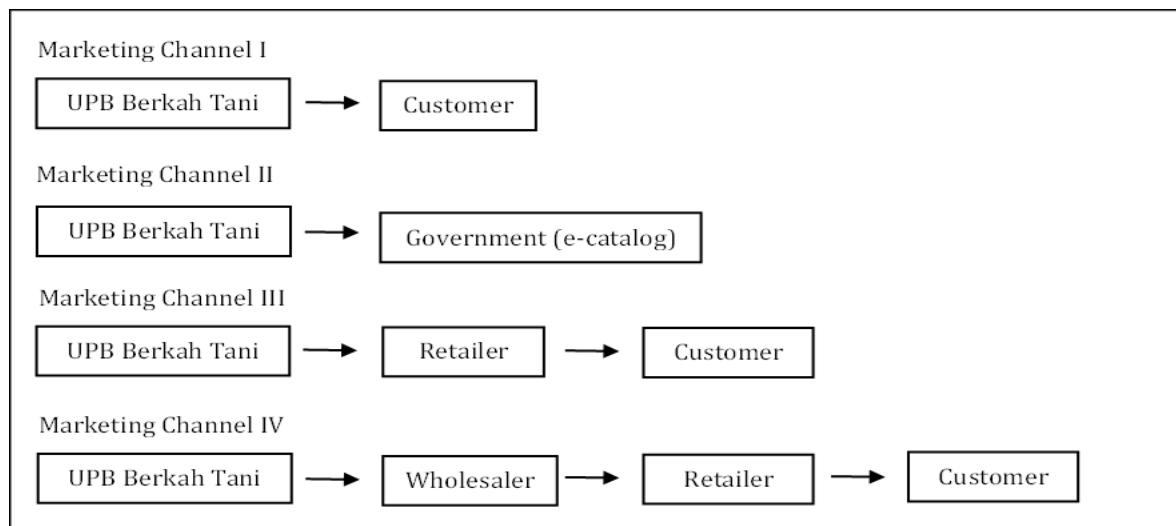


Figure 1 CV Marketing Channel Patterns. UPB Berkah Tani

Based on Figure 4.1. indicates that the first marketing channel (I) describes direct distribution from producers to consumers without involving intermediaries so that producers have full control over prices and customer experience, as well as higher profit margins due to no profit sharing with distributors. The rice seeds produced by the manufacturer

are staple seeds with a purple label color packaged at 5 Kg/Sack. Producers sell certified rice seeds to consumers for Rp17,000/Kg or Rp85,000/Sak.

The second marketing channel (II) describes the mechanism for distributing rice seeds from producers directly to farmers through e-catalogs ordered by the government as aid seeds from the government for farmers. In this system, the government buys quality rice seeds from registered producers through the official e-catalog platform, then distributes them as assistance to beneficiary farmers. This scheme allows transactions to take place transparently and monitored, avoiding the practice of price *mark-up* by intermediaries. The e-catalog also makes it easier for the government to control the quality, quantity, and distribution of seeds, while ensuring that assistance is on target. In the e-catalog, producers sell seeds for IDR 14,000/Kg or IDR 70,000/Sak.

The third marketing channel (III) describes the distribution of certified rice seed products from producers through retailers, namely agricultural stalls before finally reaching farmers. These retailers act as intermediaries who sell the products to the end consumer, namely farmers. Producers sell seeds to retailers for IDR 15,000/Kg or IDR 75,000/Sak. Then the end consumer buys it at a price of IDR 18,000/Kg or IDR 90,000/sak. That way, the price of certified rice seeds is getting higher because of the profit margin of retailers.

The marketing channel (IV) is a distribution chain involving three layers of business actors, namely certified rice seed producers, wholesalers with a seed purchase price of IDR 14,000/Kg or IDR 70,000/Sak, and retail traders with a seed purchase price of IDR 16,400/Kg or IDR 82,000/Sak, before finally the product reaches consumers at IDR 19,000/Kg or IDR 95,000/Sak. On this channel, producers first sell seeds in large volumes to wholesalers, who then distribute them to retail traders in smaller volumes. Retail traders eventually sell the seeds at retail to the end consumer. This pattern is common in the seed market because it allows for a wider spread of the product. However, each stage of distribution adds to the marketing margin, so the price at the consumer level is usually higher than the manufacturer's price.

Based on the results of the interview with CV. UPB Berkah Tani said that the variety of seeds produced depends on the demand of farmers. The seeds produced by CV. UPB Berkah Tani in 2024, namely rice seeds of Mekongga, Ciherang, Ciliwung, Inpari 32, Inpari 42, Inpari 47, IR Nutri Zinc, and PB-42 varieties with the same selling price.

Timely distribution of rice seeds is another challenge faced in OKI Regency. Extensive geographical conditions and uneven infrastructure make the distribution of seeds to remote areas difficult and time-consuming. Poorly organized distribution systems and lack of logistical support are also major inhibiting factors. Research shows that delays in seed distribution can disrupt farmers' planting schedules, resulting in decreased productivity and crop yields (South Sumatra Center for the Assessment of Agricultural Technology and Development, 2022). Therefore, improvements in distribution systems, including the use of information technology and increased logistics capacity, are indispensable to ensure that superior seeds can reach farmers on time.

In addition to limited access and timeliness, the lack of coordination between government agencies responsible for seed production and breeder farmers is also a significant obstacle. Previous research has revealed that weak coordination causes inefficiencies in the seed production process, ranging from variety selection, quality control, to technical assistance (South Sumatra Institute for the Assessment of Agricultural Technology and Development, 2022). In OKI Regency, this can be seen from the lack of communication and synergy between the agriculture office, the seed center, and breeder farmer groups. As a result, superior seed production cannot run optimally and often does not meet the needs of farmers in the field. Good coordination is needed so that the seed production program can run effectively and sustainably. Research by Sari et al. (2024) highlights that inadequate distribution infrastructure and coordination between stakeholders are the main factors that hinder the equitable distribution of superior seeds. This is also reinforced by the findings of Petersen et al. (2019) which show that market distance and limited distribution networks reduce farmers' access to quality seeds.

3.2. Strategies to Alleviate Distribution and Production Problems in Seed Breeding

SWOT analysis is used to develop the most relevant solutions to the problems faced in seed distribution and production in OKI district. This analysis will identify internal and external factors that can affect the distribution and production of seed breeding. The internal and external factors are as follows:

3.2.1. Strength

The strength of seed breeding is that effective management allows the entire production and distribution process to run in a structured and efficient manner. In addition, the involvement of experienced farmers is an added value because they have a good understanding of seed cultivation techniques and are able to overcome various technical obstacles in

the field. Another strength lies in the distribution network that has been established, so that the distribution of seeds can reach a wider area and on time, which in turn helps strengthen the business position in the seed market.

3.2.2. Weaknesses

The weaknesses of seed breeding are limited resources including labor, capital, and inadequate production technology facilities. These limitations can slow down the production process and reduce operational efficiency. In addition, the high dependence on one source, be it in terms of parent seeds, business partners, or marketing, makes the breeding system prone to disruption if there is a problem with the source, so it is necessary to diversify resources and strategic partners.

3.2.3. Opportunities

Opportunities in seed breeding are potential collaborations with other companies that can support aspects of funding, distribution, or production technology. Market demand for superior seeds also continues to increase, both for local and regional needs, providing promising market prospects. In addition, the special demand for disease-resistant rice seeds is a potential niche market that can be worked on, especially if breeders have the ability to provide these varieties on an ongoing basis.

3.2.4. Threats

The threat to seed breeding is pest and disease attack, which is one of the main risks that can damage the quality and quantity of seeds produced. In addition, strict quality control from regulatory agencies requires breeders to always maintain high quality standards, which if not met can hinder the circulation of seeds in the market. Equally important, changes in policy or political conditions, such as shifts in government regulations or programs, can also affect the sustainability and stability of seed breeding activities.

3.2.5. Internal Factor Evaluation (IFE) Analysis

The matrix is used to summarize and evaluate what are the main strengths and weaknesses in seed breeding, and provides a basis for identifying and evaluating the relationships between these functions (Dewi et al., 2022). The results of the IFE matrix analysis are presented in table 1.

Table 1 IFE Matrix Analysis

Internal Strategy Factors	Weight	Rating	Score
Strength			
1 Effective Management	0.20	3	0.61
2 Farmer Experience	0.19	4	0.78
3 Distribution Network	0.17	4	0.70
Strength Score			2.08
Weaknesses			
1 Lack of Resources	0.15	1	0.15
2 Technology is still simple	0.13	2	0.13
3 Dependence on a Single Source	0.15	2	0.15
Weaknesses Score			0.43
Difference			1.65

Based on the IFE Matrix Analysis, the results of the IFE matrix analysis show that the main strength factor for seed breeding is the experience of farmers in seeding superior seeds with a weighted score of 0.78. The main weakness factor for seed breeding is the lack of resources which includes the amount of labor and capital which results in a weighted score of 0.15.

3.2.6. External Factor Evaluation (EFE) Analysis

The EFE matrix is a process of evaluating external factors by identifying various opportunities and threats that can affect the business in the future Ramdani & Supriyat, (2018) . The results of the EFE matrix analysis will be presented in Table 2.

Table 2 EFE Matrix Analysis

External Strategy Factors	Weight	Rating	Score
<i>Opportunities</i>			
1 Cooperation with Other Companies	0.16	3	0.48
2 Market Demand	0.16	4	0.64
3 Disease Resistant Rice Seeds	0.10	3	0.31
Opportunities			1.43
<i>Threat</i>			
1 Pests and diseases	0.21	1	0.21
2 Quality Control	0.18	2	0.36
3 Political Change	0.19	2	0.38
Threat			0.95
Difference			0.48

Based on the EFE Matrix Analysis, the results of the EFE matrix analysis show that the main opportunity factor for seed breeding is market demand with a weighted score of 1.43. Meanwhile, the main threat factor for seed breeding is political change which results in a weighted score of 0.30.

3.2.7. Matching Stages of IFE Environment and EFE Environment Analysis Results IE (Internal-External) Matrix

The results of data processing giving weight values to the IFE matrix and EFE matrix, obtained a total IFE score of 1.65 which is the value on the x-axis and a total EFE score of 0.48 which is the value on the y-axis. From the two axis points, the midpoint of the meeting is found in quadrant II.

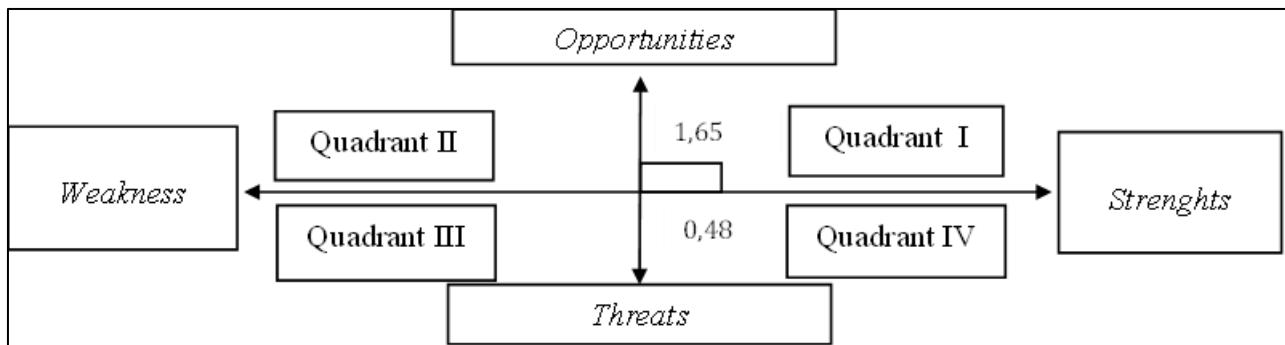


Figure 2 Diagram SWOT

3.2.8. Matrix of Alternative Strategies to Alleviate Problems in Seed Breeding

In determining alternative strategies to alleviate problems in seed breeding, it is necessary to pay attention to internal and external factors in the form of strengths, weaknesses, opportunities and threats which are outlined in the form of a SWOT matrix. The SWOT matrix resulted in 8 alternative strategies. The preparation of strategies is adjusted to the results of the external internal matrix which shows that seed breeding is in quadrant I, which has a position (S-O) seed breeding businesses can utilize internal strengths to seize external opportunities. The alternative strategy matrix is formulated as follows:

Table 3 Alternative Strategy Matrix

	IFA S	Strength	Weakness
EFAS		Effective Management The Farmer's Experience Distribution Network	Lack of Resources Technology is still simple Dependence on a single source
Peluang /Opportunity		S - O Strategy Optimize distribution networks by strengthening cooperation with other companies and expanding markets through partnerships.	W-O Strategy Reduce dependence on one source by establishing cooperation to diversify business partners
Cooperation with Other Companies		Developing disease-resistant rice seeds by utilizing the experience of farmers.	Increase resources through training and funding from government coaching to meet increasing market demand.
Market Demand			
Rice Seeds Resistant to Disease			
Threat	S – T Strategy	W-T Strategy	
Pests and diseases	Strengthening distribution and production operational management to face political changes and reduce the impact of strict quality control.	Develop internal resources so that they do not depend on one party to deal with new political or regulatory changes.	
Quality Supervision	Superior seed innovation by utilizing farmers' experience for the implementation of integrated agricultural practices to prevent pest and disease attacks.	Diversify sources and strengthen production quality so that it is not too exposed to the risk of quality control and pest/disease attacks.	
Political Change			

Based on the calculation of the Internal-External (IE) matrix, the strategy to overcome the problem of seed breeding is in quadrant I, which utilizes internal strengths to seize external opportunities (S-O). So the alternative strategy that can be applied is to optimize internal strengths, namely farmer experience, effective management, and established distribution networks, to take advantage of external opportunities, such as increased market demand and potential cooperation with third parties.

Effective management is crucial in improving production and distribution efficiency, as supported by research from (9) which shows that good management can significantly increase agricultural productivity. In addition, farmers' experience is also an important asset in managing the production of disease- resistant rice seeds, in accordance with the findings from a study by (10) which emphasizes the importance of farmers' practical experience in the application of new agricultural technologies. A strong distribution network is also a competitive advantage, as it facilitates market access and accelerates product dissemination, as described in a study by (11) on the role of distribution networks in the successful marketing of agricultural products.

This strategy is realized through strengthening cooperation with other companies and business partners in order to expand market access and accelerate seed distribution. In addition, farmers' experience and proven management systems are utilized to increase the capacity and quality of seed production, especially disease-resistant rice seed varieties, to meet evolving market specifications and needs.

Weaknesses identified include limited technological resources that are still simple and dependence on one seed source in the partnership. This is in line with research by (12) which shows that technological limitations can hinder innovation and production efficiency.

Opportunities include cooperation with other companies, increased market demand, and the growing need for disease-resistant rice seeds. Cooperation with other companies can expand the distribution network and strengthen market position, in accordance with the results of research by (13) which emphasizes the importance of collaboration in the agribusiness sector. In addition, disease-resistant rice seeds are a much-needed innovation to improve food security, as shown in the study by (14) which examined the effectiveness of disease-resistant seeds in increasing crop yields.

The main threats faced are pests and diseases, strict quality control, and political changes that can affect regulations, especially from the government. Pests and diseases are classic threats in agriculture that can drastically reduce crop yields, as explained by research conducted by (15) in the impact of pests and diseases on agricultural yields. Strict quality control can also be a challenge if not followed by improved production standards, as found by (16) who prioritizes the importance of compliance with quality regulations. And unstable political changes can affect agricultural policies and funding, as revealed by (17) in his study on the impact of politics on the agricultural sector.

4. Conclusion

The main obstacles faced in the production and distribution of breeding rice seeds in OKI Regency are limited access for farmers to superior seeds caused by several factors, such as relatively high seed prices, lack of adequate information for farmers regarding the existence and benefits of superior seeds, and limited distribution that reaches remote areas. Research shows that this limitation causes farmers to still use a lot of local seeds with lower productivity, resulting in less than optimal crop yields. Then another problem is the timeliness of rice seed distribution faced in OKI Regency. Extensive geographical conditions and uneven infrastructure make the distribution of seeds to remote areas difficult and time-consuming. Poorly organized distribution systems and lack of logistical support are also major inhibiting factors. In addition to limited access and timeliness, the lack of coordination between government agencies responsible for seed production and breeder farmers is also a significant obstacle. In OKI Regency, this can be seen from the lack of communication and synergy between the agriculture office, the seed center, and breeder farmer groups. As a result, superior seed production cannot run optimally and often does not meet the needs of farmers in the field.

The seed breeding business is in quadrant I, which is having a position (S-O), the seed breeding business can take advantage of internal strength to seize external opportunities. An alternative strategy that can be applied is to optimize internal strengths, namely farmer experience, effective management, and distribution networks that have been established, in order to take advantage of external opportunities, such as increasing market demand and potential cooperation with third parties. In order to support the development of superior rice seed breeding owned by farmers, it is hoped that the local government and related institutions can increase institutional support through technical training, access to capital, and ease of seed certification so that breeder farmers are more professional and independent.

References

- [1] Waluyo, Suparwoto, A. J, S NW. Development Of Production Of Sources Of New Upper Variety Of Seeds Of Rice Results In South Sumatera Province. *J KaliAgri*. 2022;3(2):51.
- [2] Afrizon, Yuniarti, Yahumri, A. D, Hidayat T, Ishak A, et al. Evaluasi Penggunaan Benih Padi Sawah Irigasi di Kecamatan SELuma Selatan Kabupaten SELuma. *Bul Agritek* [Internet]. 2022;3(1):53–8. Available from: <https://medium.com/@arifwicaksanaa/pengertian-use-case-a7e576e1b6bf>
- [3] Nafi'ah HH. Upaya Peningkatan Produksi Padi Dengan Aplikasi Pupuk Hayati Di Desa Kersamenak Kecamatan Tarogong Kaler Kapupaten Garut. *J Apl Ipteks untuk Masy* [Internet]. 2021;10(1):34–7. Available from: journldharmakarya/article/viewFile/11437/5233al.unpad.ac.id/
- [4] Suprayogi. Teknologi produksi dan sertifikasi benih padi. Kesatu. Purwanto, Yulianti UH, editors. Purwokerto: Universitas Jenderal Soedirman; 2023. 34 p.
- [5] Krisdiana R, Elisabeth D, Saeri M, Darsani Y, Burhansyah R, Kilmanun J, et al. Agribusiness analysis of seed producer supports increased soybean production in East Java production centre areas. *Int J Agric Sustain* [Internet]. 2024;22(1):1–17. Available from: <https://doi.org/10.1080/14735903.2024.2361581>
- [6] Myeni L, Moeletsi ME. Assessing the adoption of improved seeds as a coping strategy to climate variability under smallholder farming conditions in South Africa. *S Afr J Sci*. 2023;119(9–10).
- [7] Awotide BA, Karimov AA, Diagne A. Agricultural technology adoption, commercialization and smallholder rice farmers' welfare in rural Nigeria. *Agric Food Econ* [Internet]. 2016;4(1). Available from: <http://dx.doi.org/10.1186/s40100-016-0047-8>
- [8] Donkor E, Owusu V, Owusu-Sekyere E, Ogunlesi AA. The adoption of farm innovations among rice producers in Northern Ghana: Implications for sustainable rice supply. *Agric*. 2018;8(8).
- [9] Lehmann LM, Smith J, Westaway S, Pisanelli A, Russo G, Borek R, et al. Productivity and economic evaluation of agroforestry systems for sustainable production of food and non-food products. *Sustain*. 2020;12(13):1–9.

- [10] Rayhan SJ, Rahman MS, Lyu K. The Role of Rural Credit in Agricultural Technology Adoption: The Case of Boro Rice Farming in Bangladesh. *Agric*. 2023;13(12).
- [11] Cortes JD, Jackson JE, Cortes AF. Farmers' markets or the supermarket? Channel selection in small farming businesses. *New Engl J Entrep*. 2024;27(1):40–62.
- [12] Junaedi M, Daryanto HKS, Sinaga BM, Hartoyo S. Sawah di Pulau Jawa Efficiency And Technology Gap In Wetland Rice Farming. *J Apl Stat Komputasi Stat* [Internet]. 2016;8.2:1–19. Available from: <https://jurnal.stis.ac.id/index.php/jurnalasks/article/view/54/28>
- [13] Mishra V, Ishdorj A, Tabares Villarreal E, Norton R. Collaboration in agricultural value chains: a scoping review of the evidence from developing countries. *J Agribus Dev Emerg Econ*. 2024;
- [14] Cheng AP, Chen SY, Lai MH, Wu DH, Lin SS, Chen CY, et al. Transcriptome Analysis of Early Defenses in Rice against *Fusarium fujikuroi*. *Rice*. 2020;13(1).
- [15] Khokhar MK, Kumar R, Kumar A, Sehgal M, Singh SP, Meena PN, et al. Impact of IPM practices on microbial population and disease development in transplanted and direct-seeded rice. *Front Microbiol*. 2024;15(July).
- [16] Feye DA, Beyene AB, Kumar SK. Climate and political effects on agriculture: Empirical evidence from SSA. *Int Stud Econ*. 2024;(September).
- [17] Mulyo JH, Prasada IY, Nugroho AD. Impact of political and security stability on food security in developing countries: Case of Africa, Asia, Latin America and the Caribbean. *Agric Econ (Czech Republic)* [Internet]. 2023;69(9):375–84. Available from: <https://doi.org/10.17221/142/2023-AGRICECON>