

Development of Freshwater Fish Cultivation Business and Its Derivative Products In Kajar Hamlet

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Abstract—Batu City is well-known as one of the cities based on agribusiness and tourism in Indonesia. Agribusiness that is widely developed in Batu City are vegetables and fruits. Kajar Hamlet which is located in Pandanrejo Village, Bumiaji District, Batu City certainly has great agribusiness potential as well. Kajar Hamlet also owns various forms of agribusiness with vegetable and fruit products as well as decorative flowers. But the potential that is no less interesting is the large demand for fresh freshwater fish products that come from many restaurants. Kelompok Peternak Ikan Nila is trying to develop a tilapia cultivation business. Starting from assistance from ITS-Surabaya (as university) to cultivate tilapia using cages in waterways in Kajar Hamlet and evaluation of failures due to the risk of flash floods that have occurred, tilapia cultivation was made using fish ponds by utilizing the residents' unproductive land and the adequacy of water from existing waterways without changing the main function of the waterways as irrigation for agricultural areas. This paper attempts to present the process of developing a freshwater fish farming business in Kajar Hamlet along with an analysis of the business and potential of derivative products that can be further developed.

Keywords—Business Development, Derivative Products, Freshwater Fish Cultivation, Kajar Hamlet.

I. INTRODUCTION

BATU City is located in the southwest of Surabaya City with a distance of about 90 km. Prior to its status as a municipality, Batu was known as one of the sub-districts within Malang Regency with administrative city status since 1993. In 2001, Batu was administratively separated from Malang Regency and designated as a municipality.

Batu City is known as an agribusiness and tourism city. This is supported by the geographical location of Batu City which is at an average altitude of 800 meters above sea level and most of it is hilly and in the form of forest and is still quite natural. With a fairly high location, the average air temperature is 11-19°C. This natural climatic condition supports Batu City to develop an agrarian-based economy with agricultural products in the form of various major fruits and vegetables. In addition to these agricultural products, because the natural conditions of Batu City are very beautiful, the economy based on nature tourism is also developing. And the latest one has also begun to develop an artificial tourism model in the form of game rides and others. Kajar Hamlet as one of the hamlets in Pandanredjo Village, Kec. Bumiaji, Batu City has quite good natural potential in the field of agribusiness. Agribusiness activities that develop in Kajar

Hamlet include the cultivation of various oranges, roses, various major vegetables and strawberries. Currently, Kajar Hamlet is trying to develop freshwater fish farming. This idea started because of the high demand for freshwater fish for consumption in Batu City. The types of freshwater fish that are in great demand for consumption include tilapia, mujahir fish, catfish to tombro fish. Another positive aspect is that in the Kajar Hamlet area there are waterways that have the potential to be developed as a means of freshwater fish cultivation.

The high market potential of fresh freshwater fish for consumption comes from the many food stalls and restaurants in Pandanrejo Village and its surroundings. The bloom of food stalls and restaurants in Pandanrejo Village and its surroundings cannot be separated from the emergence of tourist destinations in Pandanrejo Village and its surroundings. In addition, because the Pandanrejo Village is one of the entrances to the center of Batu City from the direction of Surabaya, so many vehicles pass by and sometimes stop at existing food stalls and restaurants to get food.

This article tries to provide an overview of how potential for freshwater fish farming (especially tilapia) has begun to be developed and plans for product derivatives to be developed further. This freshwater fish farming business development activity is one form of community service activity from the Institut Teknologi Sepuluh Nopember – Surabaya with the title “Redesain Sistem Pengolahan Produk Berbasis Ikan (Mesin, Storage, Pemberdayaan Bisnis, dan Industri)”. This community service activity is one of the tasks of the tridharma of higher education in Indonesia [1].

II. METHOD

The method of implementing community service activities is described in the following steps (1) In-depth interviews with several stakeholders in Kajar Hamlet regarding market potential and the business development implementation process that has been carried out; (2) Analysis of business problems and potential solutions to existing problems, (3) In-depth interviews with several stakeholders in Kajar Hamlet regarding problem solving that has occurred; (4) In-depth interviews with several stakeholders in Kajar Hamlet regarding the next product development plan; (5) Implementation of community empowerment activities resulting from analysis and discussion with stakeholders in Kajar Hamlet.

III. RESULT AND DISCUSSION

In early 2022, precisely on Sunday, January 23, 2022, in collaboration with ITS and the Purwodadi Botanical Gardens and support from the Batu City Government, Kajar Hamlet tried to innovate to develop freshwater fish cultivation using cages in existing waterways. With experts from ITS and the Purwodadi Botanical Gardens, 50 cages were made to start this activity. Mrs. Dra. Dewanti Rumpoko, M.Si., as Mayor of Batu and several leaders from the Directorate of Research and Community Service (DRPM) – ITS inaugurated and distributed tilapia seeds in the development of tilapia cultivation using cages in Kajar Hamlet. With the enthusiasm of the volunteers and community activists in Kajar Hamlet, the Pusat Kajian Kebijakan Publik, Bisnis dan Industri (PKKPBI) under the DRPM-ITS inaugurated this Kajar Hamlet as the 4th teaching industry that was assisted (Figure 1).

After the launching process as well as the distribution of tilapia seeds in cages, it is hoped that after 4 months the tilapia that have been distributed have entered the harvest period. At the beginning of June 2022, tilapia farmers had planned to carry out the main harvest at the end of June 2022.

But apparently this could not go smoothly because before the main harvest, Batu City was hit by flash floods. This flash flood affected the waterways in Kajar Hamlet. The floodgates that are upstream of the waterways installed by fish cages are not able to block such a large water discharge. The impact was that most of the tilapia cages that were installed were badly damaged and the tilapia that were thought to be ready for harvest were swept away by the water.

This incident provided a valuable lesson for the tilapia farmer group. Cage model fish farming for Kajar Hamlet is deemed to be incompatible with its geographical conditions. This is because several things apart from flash floods that occurred include 1) the water discharge from the existing waterways is considered less than optimal because it is often erratic which results in the inhibition of the growth process of tilapia, 2) the water flowing in the waterways often carries garbage both foliage waste and domestic waste originating from the upstream village of waterways which results in the destruction of cages and 3) the water flowing in the waterways often contains detergent originating from the washing process from the people in the water upstream village which results in inhibition of the growth process tilapia fish.

After the failure of the cage model fish farming, the members of the tilapia farmer group tried to discuss together to solve the problems they were facing. One of the potentials to keep running a fish farming business is to use the method of artificial fish ponds. Then an inventory of unproductive land in Kajar Hamlet is planned to be used for artificial fish ponds. This discussion culminated in the determination of a land area of approximately 200 m² belonging to Mr. Warnan which had been less productive so far to be used for artificial fish ponds. The location of this land is quite strategic because it is adjacent to a water channel that can provide water supply to these artificial fish ponds.



Figure 1. Handing over assistance for community service activities to community leaders.

The next step is the process of constructing artificial fish ponds on the agreed land (Figure 2). In this development process, all group members contribute to it by working together. Some of the supporting equipment for the construction of artificial fish ponds is supported by the ITS community service fund. The pattern of construction of artificial fish ponds is designed to try to reduce risks such as carrying garbage into the pond with a filter pattern upstream of the water channel to the pond, planting detergent-degrading plants upstream of the pond and using sustainable water flow so that the pond water is always fresh so that the seeds can grow. Diseases and microscopic dirt will not settle in the pond and be carried away by the flow out of the pond.

Until this article was written, fish seeds had been distributed to the artificial ponds. It is hoped that within 4 months the fish that are distributed can be harvested for the first time. The market that has been waiting for fresh tilapia products is around 100 kg per week which is expected to be served by fish farming activities in Kajar Hamlet.

The potential for business development that has been considered by the tilapia cultivation group includes fish chips, fish floss and fish crackers. The new product plan still requires a long period of time for the research process to be ready for the market. But with the potential for community empowerment in Kajar Hamlet, it is very possible that these products will exist in the future [2–3].

IV. CONCLUSION

Kajar Hamlet has the potential for developing agribusiness-based businesses apart from vegetables, fruits and ornamental flowers. Several residents of Kajar Hamlet saw a large market potential for fresh tilapia products to form a group of tilapia farmers. Kajar Hamlet with the support of the Batu City Government and ITS in early 2022 received assistance and became the 4th teaching industry through the Pusat Kajian Kebijakan Publik, Bisnis dan Industri (PKKPBI) under the DRPM-ITS [4]. The concrete form of ITS support is to get 50 cages for tilapia cultivation along with tilapia seeds. Just before the fish harvest season, a flash flood hit Batu City and destroyed the fish cages in Kajar Hamlet.

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Figure 2. Development of Tilapia Fish Ponds.

This incident gave a lesson that the cage method was not in accordance with the geography of Kajar Hamlet for tilapia cultivation. Another method based on artificial fish ponds was developed for cultivating tilapia. With the help of community service activities and collaboration between stakeholders in Kajar Hamlet, the procurement of artificial fish ponds and tilapia seeds can be realized [5–6]. It is expected that in the next 4 months tilapia can be harvested to meet the needs of the fresh fish market. It is also planned to develop several derivative products from tilapia products that can provide even higher added value.