



Social Mapping of the Fisheries Community in Bojongsoang, Bandung Regency

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJFAR/2023/v24i5643

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/104231>

Original Research Article

Received: 02/07/2023

Accepted: 03/08/2023

Published: 17/08/2023

ABSTRACT

Social mapping or social mapping is a comprehensive and systematic approach used to gather data and information about the various aspects of a specific area. It involves understanding the social, cultural, and environmental characteristics of the community residing in that area. The process of social mapping was carried out in the Bojongsoang District, encompassing the sub-districts of Tegalluar, Lengkong, Cipagalo, Buahbatu, Bojongsoang, and Bojongsari, situated in the Bandung Regency. This comprehensive study was conducted over a period spanning from December 2022 to June 2023. The research methodology employed in this study involves a qualitative descriptive analysis conducted through a survey. The survey includes direct field observations and interviews with randomly selected respondents who are engaged in tilapia aquaculture. The study involved a total of 45 tilapia farmers and 7 policy stakeholders from each village. The characteristics of respondents who are fish farmers in the Bojongsoang District can be differentiated based on social and economic factors. Approximately 96% of the respondents chose

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tilapia farming as their main livelihood. Men play a primary role in running the tilapia farming business, while women are also involved in some aspects. The majority of the population adheres to the Islamic religion and belongs to the Sundanese ethnic group. There are kinship ties between the local community and the owners of tilapia farming land. Social stratification exists with the highest positions held by the district head (Camat), members of the regional legislative council (DPRD), and religious scholars (ulama). Meanwhile, community leaders and elders occupy the middle position, while the general population holds the lowest position. Based on the research, the author's recommendations include the need for land use management for tilapia farming practitioners in Bojongsong and the importance of policy evaluation for stakeholders in the area.

Keywords: Aquaculture; bandung regency; mapping; qualitative descriptive; social mapping; tilapia.

1. INTRODUCTION

Along with technological developments and economic progress accompanied by increasing public desire, it is necessary to have social mapping to find out information about the social and economic conditions of the fishing community as well as other conditions including community institutional techniques in certain areas and geographical conditions. Bahrudin et al. [1] state that social mapping can provide a comprehensive picture of the mapped location, including actors who play a role in the process of social relations, social networks, strengths and interests of each actor in people's lives, especially in improving people's living conditions. Humans, apart from being social creatures, are also economic creatures who always try to fulfill their satisfaction and act rationally, in researching social conditions through mapping, It can be seen that the situation includes social conditions that occur in fishing communities in certain areas to institutional conditions and relationships between fisheries institutions in that area. The process of social mapping in the economic field can find out what activities are carried out by the community to generate profits through the fisheries sector to who is involved in it [2].

Social mapping or social mapping is a systematic approach to collecting data and information regarding understanding the characteristics of an area, potentials and problems in an area, and efforts to overcome problems in detail [3]. The principle of the social mapping process is to collect as much information as possible with the hope that social mapping can be carried out in detail with complete and accurate data so that the problem-identification and problem-solving process can be carried out optimally. According to Bahrudin et al. [1], social mapping can provide a comprehensive explanation of an area including stakeholders who play a role in regional

development, Bandung Regency is located in West Java Province, Indonesia. Fish production in Bandung Regency as of 2019 showed a figure of 18,000 tons, this number increased by 24% from 2018 which was worth approximately 14,543 tons. Bandung Regency is known as the center of superior fishery production, especially in the "Golden Triangle" fishery area, including the Ciparay, Banjaran, and Bojongsong areas [4]. Bojongsong District is located at an altitude of 630 m above sea level with a flat to wavy topography with an average rainfall of 2000 - 4000 mm per year, has an area of 2,622,192 hectares with a population of 126,045 people from 6 villages including Bojongsong (Cikoneng), Bojongsari, Buahbatu, Cipagalo, Lengkong and Tegalluar villages. Geographically, Bojongsong District is the gateway to the border with Bandung City.

Bojongsong is one of the areas in Bandung Regency with promising fishery potential and a lot of people focus on social and economic life in the fishery sector. Based on this information, the Bojongsong area, is known to have fishery community activities including hatcheries to processing fishery products especially in tilapia hatcheries. Mapping is an essential process aimed at developing and empowering fishing communities because it provides foundational information for recognizing and understanding the social, cultural, and economic potential of a specific region. Additionally, mapping is often utilized to assess the opportunities that can be harnessed by local community groups in a particular area [5]. Social mapping of fishing communities can be described as an activity aimed at identifying the conditions of various aspects, including the social, economic, and cultural dimensions of these communities, as well as their potentials and issues. This activity is conducted using social mapping techniques with selected variables derived from sociological theories [6].

Indonesia has a wide range of marine resources that can be utilized to boost its economy if managed well and following the appropriate processes. In 2015, the Food and Agriculture Organization (FAO) recognized Indonesia as the leading global producer of seaweed and tuna. Fisheries Community can be simply described as a group of individuals who depend on fisheries resources for their livelihoods, including the processes of processing, utilization, and marketing of these resources. The social and cultural aspects of fishing communities are crucial elements that can serve as references in development endeavors. Aquaculture communities are groups or individuals involved in aquaculture activities, including freshwater fish farming [7]. Collectively or individually, they engage in cultivation practices to meet the essential needs of human beings, such as producing a vital source of protein from fish farming [8].

The process of social mapping is based on the principle of gathering as much information as possible with the hope that social mapping can be conducted in a detailed manner with complete and accurate data [9]. This allows for the identification and resolution of issues to be carried out to the fullest extent. The purpose of social mapping of fishing communities is to identify the social, economic, and cultural conditions, as well as the potentials and issues within the community [10]. Social mapping is essential to be conducted before community empowerment activities as it provides accurate information about the community, which can be used to plan development programs [5,6]. Stratification consists of the base word 'strata,' which is interpreted as 'levels.' Conceptually, social stratification is the differentiation of members of society in a vertical or hierarchical manner. Social stratification is a sociological concept that examines how members of society are differentiated and grouped based on their social status. This social status can be acquired through two ways: through individual efforts, known as achievement status, and status that is automatically given without individual efforts, known as ascribed status [11].

This research focuses on the tilapia aquaculture community in the Bojongsoang District, Bandung Regency. Through a designed conceptual framework, this study aims to identify and analyze the social and economic conditions, encompassing various factors that influence the lives of the tilapia aquaculture community in the

area. The social conditions' identification will involve mapping factors such as age structure, education level, religion, ethnicity, language, culture, local wisdom, livelihoods, gender roles, kinship, and social stratification of the community. A comprehensive understanding of these factors will help provide a complete overview of the social characteristics of the tilapia aquaculture community in the Bojongsoang District. This research provides an output in the form of a social map that contains the characteristics of the area, various documentation (resources, facilities, technology, biota, transportation), ongoing issues in the region, and solutions to address existing problems. The research on social mapping of the tilapia aquaculture community in the Bojongsoang District, Bandung Regency, has not been previously conducted. Therefore, this study can serve as the first reference in mapping the conditions and potentials of the tilapia aquaculture community in that area.

2. MATERIALS AND METHODS

2.1 Location and Time

The social mapping was conducted in the Bojongsoang District, covering the Tegalluar, Lengkong, Cipagalo, Buahbatu, Bojongsoang, and Bojongsoang sub-districts, Bandung Regency, from December 2022 to June 2023. Data collection took place from February to April 2023, while data processing occurred between May and June 2023. The selection of this location was made because social mapping had not been previously carried out in the area, and it is crucial to conduct social mapping in the Bojongsoang District to understand the potentials and issues surrounding the aquaculture community, especially those involved in tilapia aquaculture.

2.2 Methods

The method used in this research is a survey through qualitative descriptive analysis, which involves direct field observations and interviews with randomly selected respondents who focused on tilapia aquaculture. Questionnaires were used to collect primary and secondary data, while additional data was obtained from relevant village government agencies and direct field observations [12]. Overall, qualitative descriptive analysis was employed to describe and understand social phenomena in-depth, reveal complexities, and provide a rich understanding of the social context studied through the survey

method [13]. This research used purposive sampling technique, which is a sampling method based on specific considerations. These specific considerations may include selecting individuals who are deemed to have the most knowledge about the subject of interest or perhaps they hold a position of authority, which facilitates the researcher in the sampling process [14].

The data analysis used in this research is qualitative descriptive analysis. The type of data utilized in this study is qualitative data, which includes both primary and secondary data. Data analysis is the process of searching and organizing data after data collection, with the result being a clear understanding that is easily comprehensible by both the writer and the readers [14]. Primary data is obtained directly from the respondents who meet the criteria through recording, observation, and documentation. Documentation of primary data includes infrastructure buildings, transportation, accessibility, technology, facilities, resources, and other related aspects. The techniques used to collect primary data involve filling out questionnaires, conducting interviews, making observations, and documenting the findings.

On the other hand, secondary data refers to data and documents obtained indirectly. The collection of secondary data is obtained from local government institutions and fisheries management in the Bojongsang District. The

relevant institutions for this research include the Bandung Regency Central Bureau of Statistics (BPS), related technical departments (Fisheries and Food Security Agency of Bandung Regency, Animal Husbandry and Fisheries Agency of Bandung Regency), and the Sub-district or Village offices.

2.3 Operational Variables

The social aspects sought in this research are essential to achieve the desired output, which is the social mapping of the fishing community in the Bojongsang District. These social aspects include:

- (1) **Age:** The time or duration of a person's life in years, counted from their birth. Age can describe a person's perspective; the older a person becomes, the wiser they tend to be in dealing with various aspects of life [15].
- (2) **Education level:** Education level aims to shape a person's character and qualities in adapting and achieving goals. According to Article 14 of Chapter VI of the 2003 Constitution, formal education levels include basic education, secondary education, and higher education. This social aspect is relevant to cultivators as it influences the adoption of technology, and it can be challenging to apply technology in aquaculture with low educational attainment [16].

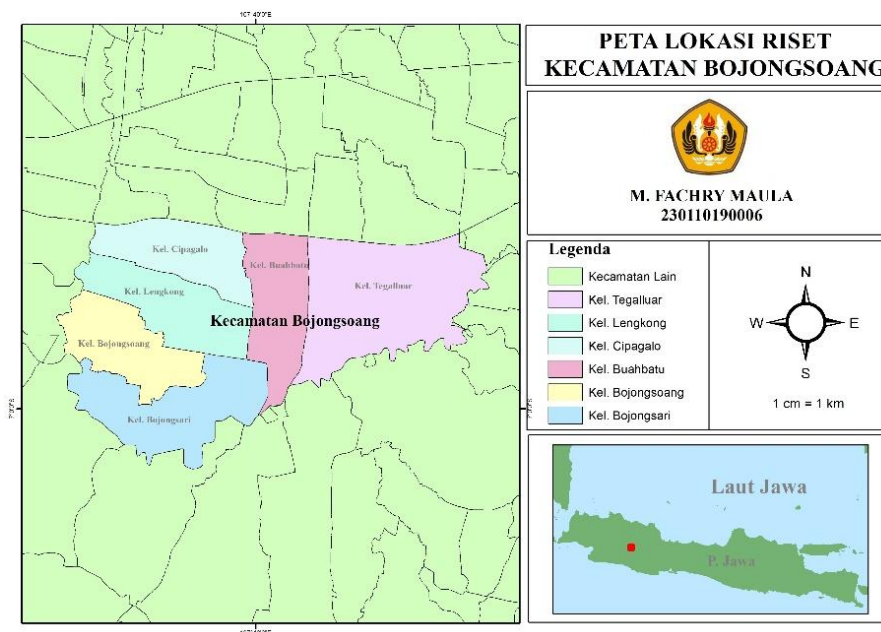


Fig. 1. Bojongsang district map (personal documentation)

- (3) **Gender role:** Gender role is an activity or role performed by men and women based on their different genders. Cultivators will assign tasks between men and women in aquaculture activities [17].
- (4) **Religion:** Religion is a belief system and set of teachings that governs one's faith and religious practices towards God, as well as interactions between individuals and their environment.
- (5) **Health:** This aspect covers mental, physical, and social well-being and not just the presence of diseases or weaknesses in the community.
- (6) **Social organization:** A social group manifested by a community, whether legal or not, that functions as a means of community participation in achieving a common goal (Fajarani, 2014).
- (7) **Art:** Part of culture that possesses its own uniqueness and is preserved or protected by the community. Art is used to express the beauty within oneself with various functions (c, 2017).
- (8) **Local wisdom:** Continuous and evolving ideas or concepts within a community, encompassing customs, rules or norms, culture, language, and daily practices carried out by the community in their area.

By examining and understanding these social aspects, the researcher aims to obtain a comprehensive understanding of the fishing community in the Bojongsoang District and map their social characteristics effectively. In this research, the researcher will employ triangulation to ensure data validity. Triangulation is a technique used to examine data validity by utilizing multiple approaches or collecting data from various paradigms.

3. RESULTS AND DISCUSSION

3.1 Regional Characteristics

Bojongsoang District, Bandung Regency is a plain and is outside the forest area. While the altitude above sea level is at a position of 700 above sea level. While the area covers 395.5 ha. Geographical location, being outside the forest area, altitude above sea level and area are very supportive for the development of Bojongsoang Village as an area of economic growth, especially agriculture and trade. The Bojongsoang District underwent a local administrative expansion in 2018, resulting in the inclusion of Cangkuang Wetan Village into the territory of Bojongsoang District. Currently, the

Bojongsoang District comprises 781 Neighborhood Units (RT) and 152 Community Units (RW) from 6 villages within the area.. The boundaries of the Bojongsoang District are:

as follows:

- In the north, it is bordered by Bandung Kidul District, Bandung City
- In the south, it is bordered by Baleendah District, Bandung Regency
- In the west, it is bordered by Margahayu District, Bandung Regency
- In the east, it is bordered by Bojongsoang District, Bandung Regency

3.2 Population

The overall population percentage in the Bojongsoang District is quite varied. The highest population is in Bojongsari Village, accounting for 33% of the total population or approximately 57,077 people, followed by Buahbatu Village with 18% or 31,663 people, Bojongsoang Village with 16% or 27,844 people, Cipagalo Village with 14% or 23,730 people, Lengkong Village with 11% or 18,557 people, and the village with the smallest population percentage is Tegalluar Village with 8% or 14,721 people out of the total population of 173,589 people in the Bojongsoang District. The differences in population among each village can reflect the social, economic, cultural, and policy dynamics in each respective village. Understanding these factors can aid in development planning and population management at the village level, leading to well-being and sustainability for the local residents. You can see the population diagram in Fig. 2.

The population density percentage in the Bojongsoang District varies as shown in Fig. 3. Bojongsari Village has the highest population density with 19,631 people per square kilometer, followed by Cipagalo Village with 18,013 people per square kilometer, Bojongsoang Village with 9,761 people per square kilometer, Tegalluar Village with 9,416 people per square kilometer, Buahbatu Village with 9,324 people per square kilometer, and the village with the lowest population density is Lengkong Village with 7,113 people per square kilometer.

3.3 Demographic Data of Bojongsoang District

Based on the population data obtained from the relevant authorities, the composition of the

population in the Bojongsoang District consists of 65,378 males and 62,398 females, with the age group structure of 0-14 years comprising 34,757 individuals, 15-64 years consisting of 89,164 individuals, and 65 years and above with 3,855 individuals (BPS Kabupaten Bandung, 2022).

Based on gender, the population in each village of the Bojongsoang District is as follows:

- 1 **Bojongsari Village:** The total population is 13,002, with 6,517 males and 6,485 females. This village has a relatively balanced gender distribution, with a slight majority of males.
- 2 **Bojongsoang Village:** The total population is 48,331, with 24,388 males and 23,943 females. The gender

distribution in this village is also relatively balanced.

- 3 **Lengkong Village:** The total population is 35,829, with 18,066 males and 17,763 females. This village also exhibits a relatively balanced gender distribution.
- 4 **Cipagalo Village:** The total population is 24,891, with 12,627 males and 12,264 females. Similarly, this village has a relatively balanced gender distribution.
- 5 **Buahbatu Village:** The total population is 32,658, with 16,648 males and 16,010 females. The gender distribution in this village is also relatively balanced.
- 6 **Tegalluar Village:** The total population is 18,878, with 9,544 males and 9,334 females. Once again, this village shows a relatively balanced gender distribution.

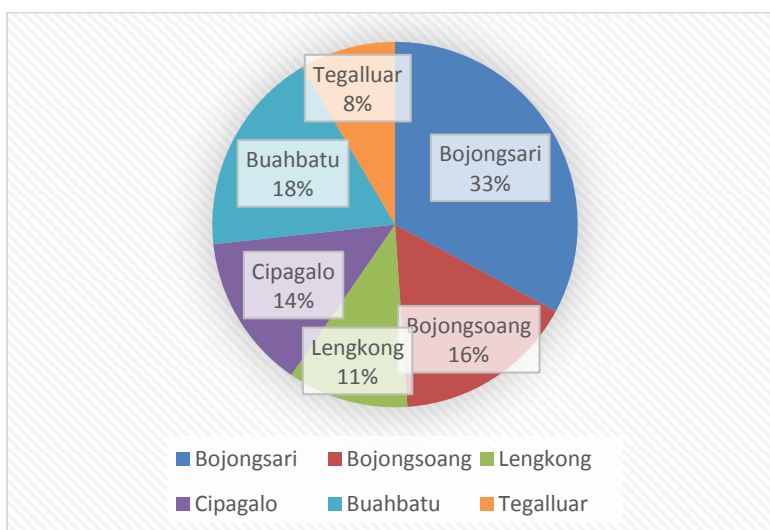


Fig. 2. Bojongsoang population

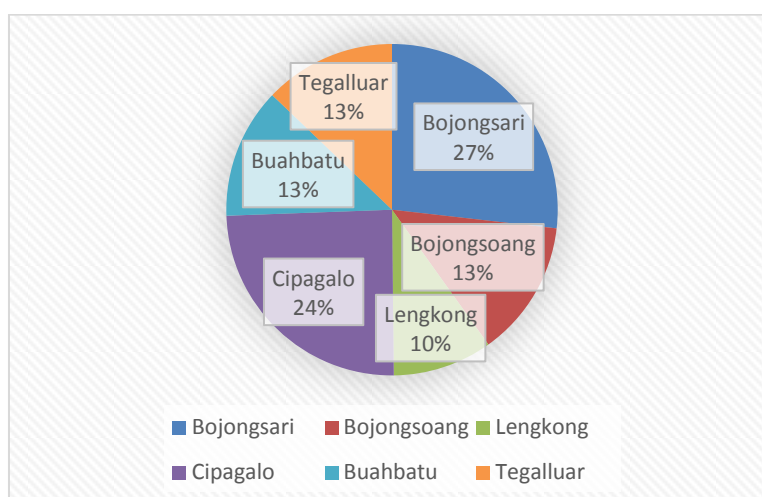


Fig. 3. Population density

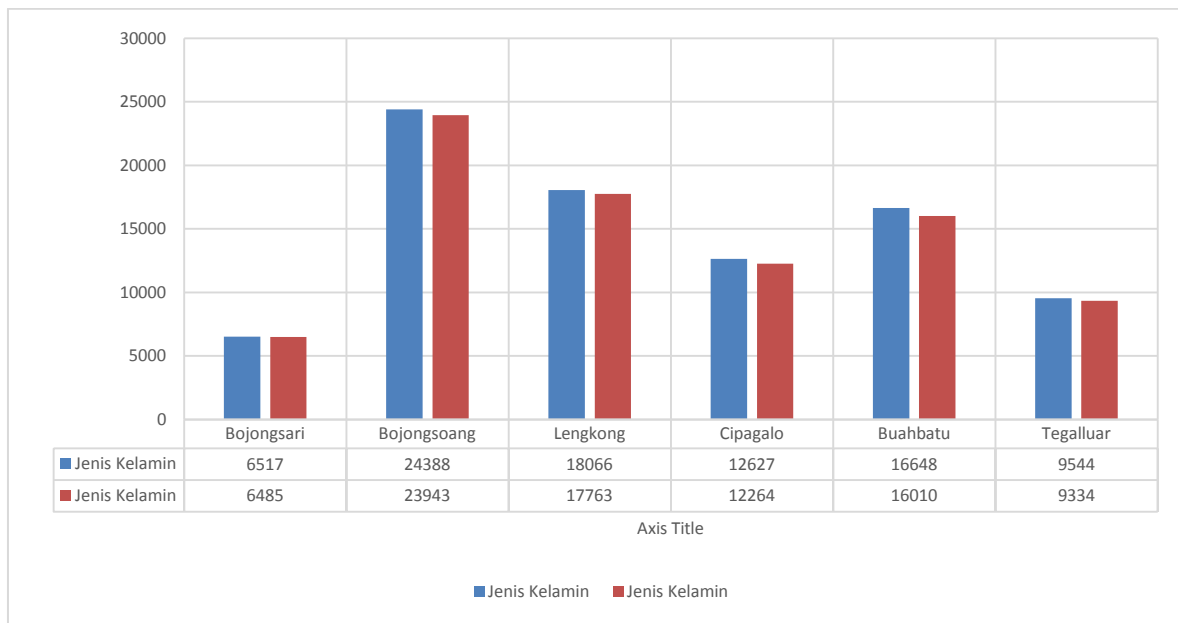


Fig. 4. Population based on gender in Bojongsang district

Overall, the data indicates that the gender distribution in each village of the Bojongsang District is quite balanced, with a slight majority of males in some villages and a slight majority of females in others. The gender balance in the population is essential for various aspects of social development and community well-being.

Table 1. Total population based on religion

No.	Religion	Total population
1	Islam	101.668
2	Christian	1840
3	Catholic	673
4	Hindu	26
5	Budha	65
6	Konghuchu	0
7	Another religion	38

Based on Table 1, it can be observed that the largest religious ratio is held by those who practice Islam, with a total of 101,668 individuals, while the lowest religious ratio is observed among Hindus, with only 26 individuals. Additionally, there are 38 individuals in the Bojongsang District who follow other beliefs or religions. From this, it can be concluded that the majority of the population in the Bojongsang District adheres to the Islamic faith. In the entire Java Island, the largest population of people following the Islamic faith is found in West Java, with 148,190 individuals or 96% of the population predominantly following Islam (Data on the Number of Islamic Faith Followers in Java Island, 2022).

3.4 Ethnicity and Language

The Bojongsang District is an area rich in diversity, encompassing various ethnicities, religions, and languages spoken by its inhabitants. Within it, there are numerous ethnic groups with diverse customs and ways of interaction. While the majority of the population in the Bojongsang District uses the Sundanese language as their primary language, there are also some residents proficient in using the Indonesian language correctly. The cultural diversity in the Bojongsang District provides a rich and fascinating atmosphere in their daily lives. Each ethnicity, religion, and language present there brings its own uniqueness and adds color to the social interactions of the community. The diverse customs also reflect the harmonious plurality of the Bojongsang community in embracing their diversity. The Sundanese language, as the majority local language used by the population in the Bojongsang District, plays a vital role in their daily lives. This language serves as a means of communication used in various contexts, such as at home, school, workplace, and in other social interactions. Nevertheless, it is important to note that some residents are also proficient in using the Indonesian language correctly. This demonstrates a broader understanding and language proficiency, allowing them to communicate with people outside the Sundanese-speaking community.

3.5 Cultural Art and Local Wisdom of the Community

The wisdom and local traditions that are still preserved and upheld in the Bojongsoang area include the art of Wayang Golek and Pencak Silat. Wayang Golek and Pencak Silat are significant aspects of the cultural heritage in the Bojongsoang District, and several local figures play a crucial role in preserving and passing down these artistic traditions [18]. They establish studios or training centers in Bojongsoang Village and Bojongsari Village to maintain these traditions and pass them on to the younger generations. Furthermore, one of the local wisdom that is almost forgotten by the community, especially those involved in agriculture and fisheries sectors, is the tradition of "panen raya" or grand harvest. Panen raya is a collective tradition where the community comes together to harvest agricultural or fishery produce on a large scale. However, the practice of panen raya is rarely carried out, usually occurring only once every two to four years. This is due to the financial constraints required to organize such a grand harvest, which demands careful preparation and organization.

3.6 Social Organization

Local Social Organizations (LSO) play a vital and multifaceted role in the fabric of a community. These organizations serve as more than just platforms for social interaction; they act as catalysts for community cohesion, social empowerment, and overall well-being. Within the context of the fish farming community in the Bojongsoang District, LSO plays a pivotal role in shaping the local dynamics and fostering a sense of belonging among its members. One of the essential functions of LSO is to provide a space for individuals or groups with shared backgrounds and interests to come together and connect. In this nurturing environment, they can exchange valuable experiences, knowledge, and resources that enrich their lives. By sharing best practices and learnings related to fish farming techniques, market insights, and sustainable resource management, members can collectively uplift their livelihoods and economic prospects [19].

The Bojongsoang Sub-district Head, Mr. Adid Nurulloh, explained that social organizations in the Bojongsoang District serve as a means to strengthen solidarity and foster a sense of family among the community members. As a result,

programs within the sub-district that are related to community organizations are directly coordinated by stakeholders in their respective fields, from each village. One such program is the Village Creativity Program, held every three months, which is organized and managed by the local youth organization (Karang Taruna) and community organizations in each village within the Bojongsoang Sub-district.

Religious organizations play a crucial role in promoting tolerance and coordination during major religious events, as the majority of the community in the Bojongsoang Sub-district are Muslims. Local government programs mainly revolve around Islamic religious events such as the Prophet Muhammad's birthday celebration (Maulid Nabi Muhammad), monthly Tabligh Akbar, coordination for major Islamic holidays like Eid al-Fitr and Eid al-Adha, and incidental events like eclipse prayers. According to Mr. H. Ade Suherman, a prominent religious figure in the Bojongsoang Sub-district, religious organizations often serve as centers for social activities within the community. They provide spaces for social gatherings, community development, and social activities such as charity work, philanthropy, and assistance for those in need. Religious organizations also strengthen social ties among community members and foster a sense of care and solidarity.

In the field of agriculture, community social organizations are quite active, as every government assistance and program is channeled through these organizations [20]. However, it is unfortunate that despite being well-known for its fishing resources, the area lacks official fishing organizations or institutions. This is due to the lack of interest from the community in organizing and managing fishing activities, as they often believe that fishing activities do not require group coordination and can be carried out individually. Art and women's organizations in the Bojongsoang Sub-district often collaborate to promote a love for the arts and empower women in the area. This collaboration aims to preserve and strengthen the cultural and artistic heritage of the Bandung Regency. One example of their joint activities is the People's Festival, where both organizations work together to organize annual art performances and bazaars for the community in the Bojongsoang Sub-district.

Moreover, OSL serves as a mechanism for social identity reinforcement. As individuals engage

with their peers, they gain a deeper sense of belonging and cultural pride. The organization becomes a conduit for preserving local customs, traditions, and values, which are vital elements of the community's identity. This preservation of cultural heritage strengthens the social fabric and enhances the resilience of the community in the face of challenges and changes. Furthermore, the collaborative spirit fostered by OSL leads to the formation of bonds beyond the fish farming realm. These relationships extend into other spheres of life, such as education, health, and social support systems. As the members become more interconnected, they establish a support network that extends beyond the immediate family circle. This social safety net proves invaluable in times of need, creating a sense of security and belonging that fosters overall well-being and happiness. The significance of OSL in the development of social welfare cannot be understated. By actively engaging with the members and understanding their needs and aspirations, the organization can design targeted strategies and programs to uplift the fish farming community. These initiatives can focus on enhancing access to education, healthcare, and economic opportunities, thereby contributing to the improvement of overall living standards.

3.7 General Characteristics of Respondents

Data on the characteristics of the respondents in this study were obtained through interviews with freshwater fish farmers focusing on the fingerling production process of Nile tilapia in the Bojongsoang District. The interviewed respondents came from six villages, namely Bojongsoang Village, Bojongsari Village, Lengkong Village, Tegalluar Village, Buahbatu Village, and Cipagalo Village. The total number of respondents involved in this study was 45 Nile tilapia fish farmers specifically focusing on the

fingerling production process. Through the interview process, these fish farmers provided relevant information and characteristics related to Nile tilapia farming activities in the fingerling stage. The data obtained from these respondents will serve as a basis for analyzing and describing the Nile tilapia farming practices in the Bojongsoang District, as well as understanding the factors that influence the success of the fingerling production process. The characteristics of respondents who are fish farmers can be distinguished based on social and economic factors. Social factors encompass various social and cultural aspects that influence the lives of fish farmers.

The social factors include several variables such as the age structure of fish farmers, their level of education, religion, ethnicity, language used, as well as the presence of local wisdom and art that are part of the local community's culture [21]. Additionally, social factors also encompass gender roles in fish farming activities, kinship relationships among fish farmers, social organizations involved in the fisheries sector, and social stratification within the community.

A total of 42 respondents, or approximately 93% of the total number of tilapia fish cultivators surveyed in the Bojongsoang District, are males, while 3 respondents, or about 7% of the remaining, are females. The interview results with the respondents indicate that the role of males in tilapia fish cultivation activities is crucial. They are responsible for directly caring, nurturing, and managing the fish cultivation activities. On the other hand, the wives of the tilapia fish cultivators also play an important role in domestic activities and support the fish cultivation activities. Although not directly involved in the cultivation activities, they have a significant role in making household decisions and providing food for the family.

Table 2. Local social organization

Characteristics	Available	Not available	Activity frequency (/Year)
Karang Taruna	Y		12
PKK	Y		2
Religion Organization	Y		6
Community Organization	Y		10
Agricultural Community	Y		2
Fisheries Community		Y	-
Veterinary Community		Y	-
Art Community	Y		4
Women Community	Y		12

Table 3. Social factors in Bojongsoang district

Characteristics	Category	Total (person)	Percentage (%)
Gender	Man	42	93%
	Woman	3	60%
Total		45	100%
Age	Early Adulthood (26-35)	5	11%
	Late Adulthood (36-45)	14	31%
	Early Elderly (46-55)	15	33%
	Late Elderly (56-65)	8	18%
	>65	3	7%
Total		45	100%
Educational Level	Not Graduated	0	0%
	Elementary School	15	33%
	Midlle School	8	18%
	Senior Highschool	15	33%
	Bachelor	6	13%
	Master Degree	1	2%
Total		45	100%
Number of Respondents Family	1-3 Person	38	84%
	4-6 Person	6	13%
	>7 Person	1	2%
Total		45	100%
Number of Working Family Respondents	Not Working	26	58%
	1-3 Person	19	42%
	> 4 Person	0	0%
Total		45	100%
Religion	Islam	45	100%
	Catholic	0	0%
	Hindu	0	0%
Total		45	100%
Tribe	Sunda	45	100%
	Jawa	0	0%
	Batak	0	0%
Total		45	100%
Occupation as Tilapia Fish Farmers	Primary	43	96%
	Secondary	2	4%
Total		45	100%
Experience in Cultivating Tilapia Fish (Years)	5-15	16	36%
	16-25	19	42%
	>25	10	22%

The wives of tilapia fish cultivators are also responsible for taking care of the children and performing common household tasks. They contribute to maintaining family harmony and supporting the success of their husbands' fish cultivation business. The involvement of wives in domestic aspects provides a vital contribution to ensuring the smoothness and sustainability of the overall fish cultivation activities. Through their different yet complementary roles, both men and women tilapia fish cultivators in the Bojongsoang District can efficiently and successfully carry out their cultivation activities. In contrast, the three

female fish cultivators perform their cultivation activities with the assistance of their respective husbands, and all of them share the same background of engaging in fish cultivation, either as a family legacy or inheritance from their parents.

The majority of fish farming community members show characteristics based on their level of education they have achieved. A total of 33% of the respondents, or 15 individuals, have completed their basic education for 6 years or equivalent to primary school graduates (SD).

Meanwhile, an equal number, 33% or 15 individuals, have pursued education until completing their upper secondary level or equivalent to high school graduates (SMA). Furthermore, there are 8 respondents or 18% of the total who have completed their lower secondary education or equivalent to junior high school graduates (SMP). A total of 13% or 6 respondents chose to pursue higher education, obtaining a bachelor's degree (Strata 1). Only 1 respondent or 2% continued their education to the master's degree level (Strata 2).

This diverse level of education reflects the variation among the tilapia fish farming community [22]. The higher the education level attained by fish farmers, the greater their understanding and awareness of the importance of maintaining the sustainability and conservation of natural resources in utilizing fish farming areas, water quality, and effective marketing strategies. This is expected to increase their profits and sustain tilapia fish farming in the Bojongsong District.

The classification of the number of family members based on Elmanora et al. (2012) was conducted to analyze the family characteristics of the respondents. In this classification, the number of family members is divided into three categories: Small family (<4 people), medium family (4-6 people), and large family (≥ 7 people). In this study, a total of 38 respondents or about 84% of the total tilapia fish cultivators who were surveyed belonged to the small family group, which recorded the highest number of family members. Furthermore, there are 6 respondents or about 13% who fall into the category of medium-sized families with the number of family members ranging from 4 to 6 people. Only 1 respondent or about 2% belongs to the large family category with 7 or more family members.

Based on the characteristics of the experience in tilapia fish farming, the majority of tilapia fish farmers have had business experience for 16-25 years, comprising about 42% or 19 respondents out of the total. Furthermore, there are 36% or 16 respondents who have had business experience for 5-15 years. Additionally, there are 10 individuals or about 22% of the total respondents who have had business experience for more than 25 years, indicating a number of tilapia fish farmers with significant experience in fish farming. Almost all respondents, totaling 43 individuals or 96%, engage in tilapia farming as their main occupation, while 4% or 2 individuals

do it as a side job due to their other commitments, such as being a teacher or instructor at a high school. Sri Wahyuni (2012) suggests that the duration of business experience held by tilapia fish farmers plays a crucial role in enhancing their knowledge and skills in running their business effectively.

3.8 Gender Roles

Gender roles refer to the societal expectations and norms that define the behaviors, roles, and responsibilities of individuals based on their gender. In many cultures, traditional gender roles have assigned certain tasks, occupations, and behaviors to individuals based on their perceived gender. These roles often reflect deeply ingrained cultural and social beliefs about the roles of men and women in society. In recent years, there has been a growing recognition of the importance of challenging and redefining traditional gender roles to promote gender equality and empower individuals to pursue their interests and aspirations regardless of their gender. Efforts to break down gender stereotypes and promote equal opportunities for all genders have gained momentum in various parts of the world.

In the context of fish farming or aquaculture, gender roles can also play a significant role. Traditionally, certain tasks related to fish farming may have been assigned based on gender stereotypes. For example, men may be expected to take on more physically demanding tasks, such as pond preparation and fish harvesting, while women may be involved in activities such as fish feeding and processing. However, it is essential to recognize that gender roles in fish farming can vary depending on cultural, social, and economic contexts. Efforts to promote gender equality in this sector can include providing equal access to resources, training, and opportunities for both men and women, as well as challenging gender norms that limit individuals' potential based on their gender. By promoting gender equality in fish farming and related sectors, we can harness the full potential of all individuals, leading to more sustainable and inclusive practices.

Based on interviews with respondents, it can be observed that the majority of activities in tilapia fish farming are carried out by men or husbands. These activities include providing fish seeds, selecting seeds, spreading seeds, pest and disease control, harvesting, and fish sales.

However, there are differences in some stages of the process, such as providing fish seeds, selecting fish seeds, fish preparation, sales, and fish weighing, where some women farmers are also involved in performing these activities. Through these observations, it can be concluded that there are differences in the contributions of men and women in tilapia fish farming in the Bojongsong district. While most tasks are performed by men, women also play a role in some important stages of the fish farming process. This indicates diversity in the division of roles and responsibilities between men and women in fish farming. It is important to recognize their contributions and promote gender equality in the fisheries sector so that the potential and abilities of all individuals can be fully utilized.

3.9 Social Stratification in Bojongsong District

Classification in social stratification can be influenced by various factors [23]. One of them is social status, which includes factors such as occupation, education, and social prestige. Individuals with higher education and respected occupations tend to have higher social status compared to those with less respected occupations or lower education levels. This is in line with Aji's statement [11] that stratification within a society can occur based on the status and positions held by its members. The researchers divided social stratification into three levels: high, middle, and low levels, based on interviews with relevant stakeholders at the Bojongsong District Office, as shown in Table 4.

Table 4. Community stratification in Bojongsong

Community groups	Classification
Camat, Kepala Desa, Anggota DPRD, Ulama	High
Tokoh Masyarakat, Sesepeuh	Middle
General Community	Low

According to Yani Mariani, the head of the social and cultural section in the Bojongsong District, the social stratification in the Bojongsong community is rational and open, considering that individuals with certain positions are regarded as having higher status. Additionally, religious figures, including scholars (ulama), belong to the higher echelons of society due to the district's strong adherence to religious values. Hence,

many scholars from Bojongsong are considered to hold respected and esteemed positions within the community. The lower position in the social stratification is often occupied by ordinary people, comprising various professions such as fish farmers, farmers, livestock breeders, and traders. Despite not possessing comparable wealth as the social elites or significant political power, they play a vital role in problem-solving and maintaining stability within the society. Although their status in the social stratification may be perceived as lower or less prestigious, the role of ordinary people is crucial in maintaining the balance and sustainability of the community. They contribute to fulfilling the basic needs of the society, ensuring food availability, and creating job opportunities. Ordinary people also play a role in preserving the social, cultural, and local wisdom that defines the identity of a community. The importance of their role in addressing the challenges faced by the community should not be underestimated. They often have a deep understanding of the daily needs and challenges faced by the community. Therefore, their involvement in decision-making and development planning can be essential in finding solutions that cater to the real needs of the community.

4. CONCLUSION

In the Bojongsong District, the characteristics of respondents who are fish farmers exhibit a diverse and dynamic social and economic landscape. The majority of the fishing community engages in the cultivation of Nile tilapia of the Sultana variety. This particular strain of Nile tilapia, apart from possessing several advantages, also exhibits certain limitations, notably its susceptibility to *streptococcosis* infection in its fry stage [24,25]. The study revealed that a significant majority, approximately 96% of the respondents, have chosen tilapia farming as their primary source of livelihood. This indicates the pivotal role that fish farming plays in shaping the economic activities of the local community. Gender dynamics within the fish farming sector are also worth noting. While men are primarily involved in various aspects of running the tilapia farming business, it is noteworthy that women are not left behind. They actively participate in specific tasks within the farming process, signifying their crucial contribution to the overall success of the enterprise. This gender-inclusive approach to fish farming showcases a progressive and inclusive outlook among the community members. The

religious and ethnic composition of the population adds a vibrant cultural dimension to the social fabric of the Bojongsong District. With the majority of the population adhering to the Islamic faith and belonging to the Sundanese ethnic group, there is a rich tapestry of traditions, customs, and celebrations that define the community's identity. Moreover, kinship ties form an integral part of the social structure in the district, connecting the local community with the owners of tilapia farming land. This network of relationships fosters cooperation, mutual support, and a sense of belonging among the members of the community. The presence of social stratification in the Bojongsong District reflects a hierarchical arrangement of roles and positions within the society. At the top level, we find esteemed figures such as the district head (Camat), members of the regional legislative council (DPRD), and religious scholars (ulama). Their influence and authority guide the direction of the community and play a significant role in decision-making processes. In the middle position, we find community leaders and elders who act as pillars of wisdom and experience, providing valuable guidance and support to the local populace. Their respected status ensures continuity and stability in the community's affairs. At the bottom level, the general population, including fish farmers, forms the foundation of the social structure. Their dedication and hard work in tilapia farming contribute to the community's overall well-being. Despite holding the lowest position in the stratification, their collective efforts form the backbone of the district's prosperity and sustainability. In conclusion, the Bojongsong District embodies a diverse and interconnected society of fish farmers, where the interplay of social and economic factors shapes their livelihoods and community life. The inclusive participation of both men and women, the rich cultural and religious traditions, the bonds of kinship, and the social stratification all create a unique and dynamic environment in which tilapia farming thrives as a vital economic activity. Understanding these characteristics is essential for devising effective policies and strategies that promote the well-being of the community and ensure the sustainable growth of the tilapia farming sector in the district. Based on the research findings, there are recommendations for the future, including Sustainable land use management necessary: Conducting in-depth research on environmental management in tilapia farming in the Bojongsong District, including the use of water resources and waste management. Evaluation of

policies related to tilapia farming in Bojongsong is essential, including the distribution of assistance, types of assistance, and government support, in order to identify effective policies and provide recommendations for improvements in their implementation.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/104231>