Correlation between socio-demographic characteristics and adoption rate of good aquaculture practices in traditional technology-based fishpond in Pinrang Regency

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Abstract. Fishpond farmers in Pinrang Regency, South Sulawesi Province, have adopted Good Aquaculture Practices - GAqP (CBIB in Indonesian), yet the adoption rate of CBIB by traditional fish farmers still fell under the moderate adoption criteria. Therefore, a study aimed at analyzing the correlation between socio-demographic factors and adoption rate in hopes that the adoption of CBIB can be increased that will have implication for the sustainability of aquaculture besides improving the quantity and quality of products, including food safety. The research method applied was a survey method to obtain primary data collected by structurally distributing questionnaires to respondents. Primary data in the form of socio-demographic characteristics of CBIB adopters and other data, namely the adoption rate of CBIB, were sourced from data reported by Mustafa et al. (2019). To measure the closeness of the relationship between socio-demographic characteristics and adoption rate, a statistical test of Spearman’s Rank correlation coefficient was used. The CBIB adoption rate by fish farmers in Lanrisang and Mattiro Sompe Subdistricts of Pinrang Regency was found to be in the moderate adoption category (adoption rate of 33.34-66.66%). CBIB adopters were all-male, 48.68% aged between 40 and 49 years, 56.58% graduated from high school, 36.84% adopted CBIB less than two years, and 53.95% managed ponds in an area of 1.0 - 1.9 ha. Moreover, results also showed that five socio-demographic characteristics of CBIB adopters, namely gender, age, education level, length of adoption, and pond area, did not have a significant correlation with the CBIB adoption rate in the ponds of Pinrang Regency. It is recommended to conduct further research by examining other variables of socio-demographic characteristics in addition to the economic aspects of traditional fish farmers to determine their effects on the adoption rate of CBIB.

1. Introduction
Good Aquaculture Practices (GAqP, CBIB in Indonesian) is the adoption of practices to maintain or raise fish to finally harvest the output in a controlled environment to guarantee food security from aquaculture by considering sanitation, feed, fish medicine, chemical, and biological products, also the balance of ecosystem and environment (Kepmen KP Nomor KEP.02/MEN/2007). CBIB is a concept in aquaculture to ensure the high quality of fish produced as well as product competitiveness, i.e., free from chemical and biological contamination as well as safe for consumption. Moreover, the concept of CBIB also facilitates a more effective and efficient process of aquaculture besides reducing failure.
risk, increasing customer trust, allowing export opportunities, and being environmentally-friendly. Those criteria are in accordance with the Decree of the Minister of Marine Affairs and Fisheries No.02/MEN/2007 about CBIB. This program was established to encourage aquaculturists to adopt CBIB since adopting CBIB reflects a concrete action made by a fish farmer to increase product quality and improve aquaculture sustainability. CBIB in Indonesia was established in 2004 with an initial concept that focused on the basic requirement (prerequisite) of shrimp farming. Later, this concept was developed to CBIB in 2007 with a focus on food safety.

Aquaculture is defined as a business that produces aquatic animals and plants in a controlled, unnatural aquatic ecosystem to gain profit [1]. There are five types of aquaculture in Indonesia; those are tambak or fishpond (coastal aquaculture), pond farming (freshwater aquaculture), mariculture, open-water aquaculture, and minapadi or paddy field culture [2]. Major aquaculture species in Indonesia includes giant tiger shrimp (Penaeus monodon), white leg shrimp (Litopenaeus vannamei), seaweed (Kappaphycus alvarezii and Gracilaria verrucosa), barramundi (Lates calcarifer), grouper (Chromileptes spp.), milkfish (Chanos chanos), tilapia (Tilapia niloticus), pangasius (Pangasianodon hypophthalmus), catfish (Clarias geriepenus), common carp (Cyprinus carpio), and gourami (Osphronemus gourame) [3].

Pinrang Regency is known as a fishpond farming center in South Sulawesi Province. Fishpond area in Pinrang Regency covers 15,026 ha or 13.67% of the total fishpond area in South Sulawesi, becoming the largest fishpond in the province [4]. Most fishponds in Pinrang Regency are still managed using traditional or simple technology, termed extensive culture by applying a polyculture system, particularly between giant tiger shrimp and milkfish [5]. As one of the regencies with the largest fishpond farming industry in South Sulawesi, many programs have been applied in Pinrang Regency, among others is CBIB that has been implemented since 2007. Some fish farming groups (pokdakan) in Lanrisang and Mattiro Sompe Subdistrict, Pinrang Regency, have adopted CBIB in the traditional fishpond. It is also reported [6] that the adoption rate of CBIB by fishpond farmers in both subdistricts ranged from 40.58 to 67.01%, with an average of 42.80% and categorized as moderate adoption. Hence, it is necessary to investigate factors that affect the adoption rate of CBIB in order to increase the adoption rate. One of the problems faced in an effort to increase aquaculture production is the low adoption rate of aquaculture technology [7].

In Indonesia, information about factors related to the adoption rate of technology, including the adoption of CBIB by fishpond farmers, is still limited. The factor affecting the adoption rate of technology, in general, is the socio-demographic characteristic of adopters [8]. Variables of socio-demographic characteristics include gender, age, education level, job status, profession, marital status, number of dependents, pond/farm area, livelihood pattern, religion, and income [9–12]. It was found that factors influencing the adoption rate of CBIB in semi-intensive vannamei shrimp farming located in the coastal area of the Special Region of Yogyakarta were intensity of CBIB socialization and knowledge level of fishpond farmers [13].

In the Northern Peninsula of Malaysia, the relationship between socio-demographic factors such as age, education level, experience, and knowledge level and aquaculture activity was examined [14] to obtain information about its effect on the adoption rate of Good Aquaculture Practices or GAqP (CBIB in Indonesian) in the fishpond. A strong commercial orientation, positive perception about profitability, frequent contact with extension officers, high education level, and masculine gender (male) were the main determinants that affected the increasing adoption rate of aquaculture technology in Cameroon [15]. [16] mentioned several important factors that influenced the adoption of technology, such as age, education, courage as a risk taker, relationship pattern, attitude towards changes, motivation to work, aspiration, fatalism, certain belief system, and psychological characteristic. Based on those statements, study to investigate the correlation between socio-demographic characteristics of CBIB adopters and adoption rate of CBIB by traditional fishpond farmers in Pinrang Regency was conducted in the hope that adoption rate of CBIB can be increased that will have implication for the sustainability of aquaculture besides improving the quantity and quality of products, including food safety.
2. Materials and Methods

2.1. Location and Time of Study
In a preliminary survey conducted in February 2019, information about an informant in this study were collected. An informant is a person who provides information about the situation and condition of the research background [17]. The main survey was carried out in fishpond cluster of Pokdakan SalopokkoE and CempaE in Wae Tuwoe Village and Pokdakan Pottotau in Lanrisang Administrative Village, Lanrisang Subdistrict and Pokdakan Rawa Subur Lapolo Balena in Patobong Village, Mattiro Sompe Subdistrict, Pinrang Regency, South Sulawesi Province in March, September, and October 2019. The location and time of the main survey were the same as reported [6].

2.2. Data Collection
Descriptive research was applied in this study with a research instrument or data collection tool in the form of a questionnaire. A descriptive study is applied to describe the characteristics of a population or phenomenon examined [18]. In this descriptive study, the survey method was conducted in primary data collection through interviews and structured observation to obtain detailed information about the object assessed.

An informant in this study included all parties related to this research, such as the Head of Fisheries Office, the Head of Aquaculture Division of Fisheries Office, the Chairperson of Pokdakan (fish farming group), and Fisheries Extension Officer of Pinrang Regency. Data collection to determine the CBIB adoption rate was done through census method, namely all respondents that have already adopted or obtain a CBIB certificate. The population of respondents consisted of 16 people from Pokdakan SalopokkoE; 14 people from Pokdakan CempaE; 12 people from Pokdakan Pottotau; and 34 people from Pokdakan Rawa Subur Lapolo Balena as reported [6].

Interview and structured observation to obtain information on socio-demographic characteristics were done with 76 population of respondents. The dependent variable or response variable in this research was the adoption rate of CBIB by fishpond farmers, as previously reported [6]. The variable of socio-demographic characteristics examined in this study included gender, age, education level, length of adoption, and pond area managed by CBIB adopters. Dummy variables in this research were gender and education level.

2.3. Data Analysis
The data collected, including those from [6] were further tabulated. After data were read, learned, and examined, they were pre-analyzed by performing data reduction, data categorization, data validation, and finally, data interpretation, according to [17]. The data collected were categorized based on the condition of data to obtain such a description of respondents in each variable group. Descriptive statistics were applied to attain the general overview (minimum, maximum, mean, standard deviation) of data.

The technique of nonparametric statistics was applied to analyze data in this study. The nonparametric test only examines the distribution, ignoring many classic assumptions. To determine the closeness of the correlation between adoption rate and socio-demographic characteristics, the statistics test of Spearman’s Rank correlation coefficient was applied. The result of the existence and non-existence of correlation between each variable of socio-demographic characteristics will further identify the characteristic of correlation with the CBIB adoption rate in the fishpond. The strength of correlation was determined based on the value of the correlation coefficient, as listed in Table 1. All data were analyzed using the Program IBM® SPSS® Statistics version 25.

| Coefficient of Correlation | Strength of Correlation |
|----------------------------|-------------------------|
| 0.00                       | None                    |
| 0.01 – 0.09                | Trivial                 |

Table 1. Strength of association according to the value of the coefficient of correlation.
3. Results and Discussion

3.1. Adoption Rate and Socio-Demographic Characteristics of CBIB Adoption

A total of 76 respondents in this study were fishpond farmers of Lanrisang Administrative Village and Wae Tuwoe Village, Lanrisang Subdistrict, and Patobong Village, Mattiro Sompe Subdistrict who have adopted and/or obtained CBIB certificate in fishpond farming. Socio-demographic characteristics of CBIB adopters in fishpond that will be informed in this study included gender, age, education level, length of adoption, and fishpond area cultivated by adopters.

It was found that gender did not directly affect the quality of work during the fishpond farming process. Male fish farmers tended to do hard physical work than female farmers. Respondents of CBIB adopters (100%) that amounted to 76 people were all male (Table 2). Fishpond farming requires physical work; thus, women or the wives of fish farmers usually help their husbands only during fish harvest. Women also normally work in other sectors or other places. However, there was one phenomenon showing that the number of people within the age group of 15-39 years old, particularly women, was less than the other age group in Lanrisang and Mattiro Sompe Subdistricts [19,20]. This finding was in line with a large number of female villagers in Lanrisang and Mattiro Sompe Subdistricts who migrated away. As they belonged to the group of productive age, this situation resulted in no woman cultivated fishpond in Lanrisang and Mattiro Sompe Subdistricts.

A person’s age is an important factor in the internal characteristic of an individual that influences the biological and psychological function of that individual [21]. Based on Table 2, about 95% of respondents aged between 20 and 60 years old. The working-age limit in Indonesia is between 15 and 64 years old. This indicates that the age of the respondent belonged to the group of working-age or productive age. The working-age population in Lanrisang and Mattiro Sompe Subdistricts reached 64.64% (BPS, 2016) and 64.15% [19], respectively, of the total population in each subdistrict. Farmers within the group of working age are considered to have good ability in managing fishpond farming, such as adopting CBIB.

[22] Classified age into three age groups, namely: 1) non-productive age (< 25 years and > 65 years), 2) productive age (> 45 years to 65 years), and 3) highly productive age (25-45 years); hence CBIB adopters in Pinrang Regency were included in the productive and highly productive age group. Those age groups are characterized by having good physical strength and high motivation to work; thus, they could manage fishpond business properly, starting from preparation, fish culture, and also harvest postharvest handling. The age of fishpond farmers was found to be the most influential variable included in factors of fishpond farmer status or the third most influential variable of all variables that affected fishpond productivity in Pinrang Regency [5]. An increase in fishpond farmer’s age could increase fishpond productivity due to increasing fish farming experience applied in fishpond management.

Table 2. Adoption level and socio-demographic characteristics of CBIB adopters in ponds of Lanrisang and Mattiro Sompe Subdistricts, Pinrang Regency, South Sulawesi Province

| Variables | Respondent | People | % |
|-----------|------------|--------|---|
| Category of Adoption Rate* (%) | | | |
| Low adoption | 0 | 0 |
|                          | Moderate adoption | High adoption |
|--------------------------|-------------------|---------------|
|                          | (adoption rate of 33.34-66.66) | (adoption rate of 66.67-100) |
| Gender: Male             | 75                | 1             |
| Gender: Female           | 76                | 0             |
| Age (years): 20 – 29     | 2                 | 2.63          |
| Age (years): 30 – 39     | 16                | 21.05         |
| Age (years): 40 – 49     | 37                | 48.68         |
| Age (years): 50 – 59     | 17                | 22.37         |
| Age (years): ≥ 60        | 4                 | 5.26          |
| Education Level:         |                   |               |
| Elementary School (SD)   | 9                 | 11.84         |
| Junior High School (SLTP)| 21                | 27.63         |
| Senior High School (SLTA)| 43                | 56.58         |
| Higher Education         | 3                 | 3.95          |
| Length of Adoption (years):|                   |               |
| < 2.0                    | 28                | 36.84         |
| 2.0 – 3.9                | 22                | 28.95         |
| 4.0 – 5.9                | 22                | 28.95         |
| ≥ 6.0                    | 4                 | 5.26          |
| Pond Area (ha):          |                   |               |
| < 1.0                    | 2                 | 2.63          |
| 1.0 – 1.9                | 41                | 53.95         |
| 2.0 – 3.9                | 16                | 21.05         |
| ≥ 4.0                    | 17                | 22.37         |

Description: * = Analyzed [6]

Education level is one of the factors that play an important role in the adoption of technology. The detailed education level of respondents is presented in Table 2, where the education level of CBIB adopters in Lanrisang and Mattiro Sompe Subdistricts was dominated by senior high school (SLTA) graduate, which amounted to 43 people or 56.58%. According to the result data of Survei Sosek Perikanan DJPB (Socio-Economic Survey of Fisheries Sector) in 2005, the composition of fish farmers by education level is as follows: uneducated of 3.2%, elementary graduate of 43.6%, and higher education graduate of only 7.7% (DJPB, 2005 in [23]). Thus, the education level of CBIB adopters in the Pinrang Regency was relatively similar to the education level of most fish farmers in Indonesia. To conclude, the education level of fishpond farmers in Lanrisang and Mattiro Sompe Subdistricts was at the level considered to be able to receive and adopt various information about fishpond farming, including the adoption of CBIB.
Table 3. Descriptive statistic of the adoption level and socio-demographic characteristics of CBIB adopters in ponds of Lanrisang and Mattiro Sompe Subdistricts, Pinrang Regency, South Sulawesi Province

| Variables                  | Minimum | Maximum | Average | Standard Deviation |
|----------------------------|---------|---------|---------|--------------------|
| Adoption rate (%)          | 40.58   | 67.01   | 42.797  | 4.021              |
| Gender**                   | 2       | 2       | 2.00    | 0.00               |
| Age (years)                | 28      | 63      | 44.88   | 7.98               |
| Education level***         | 1       | 4       | 2.53    | 0.76               |
| Length of adoption (years) | 1       | 12      | 2.59    | 1.95               |
| Pond area (ha)             | 0.8     | 15.0    | 2.96    | 3.23               |

Description:
* = Analyzed by Mustafa et al. (2019)
** = 1: Female, 2: Male
*** = 1: Completed Elementary School, 2: Completed Junior High School, 3: Completed Senior High School, 4: Completed Higher Education

The length of time required by fishpond farmers to adopt CBIB will indirectly influence the mindset of fishpond farmers. Farmers with longer fish farming experience are better in business planning for their knowledge in various aspects of fishpond farming business. More experience results in more opportunity to adopt CBIB more properly, thus fishpond productivity and product quality are expected to increase. Most fish farmers in Lanrisang and Mattiro Sompe Subdistrict, namely 28 people or 36.84% of 76 respondents in this study (Table 2), have adopted CBIB for < 2.0 years with an average length of CBIB adoption of 2.59 years (Table 3). If this finding is compared with the total length of fish farming business they have done, the adoption of CBIB in Pinrang Regency was still relatively short in implementation. As reported [5], fishpond farmers in Pinrang Regency have performed fishpond farming for 1-40 years with an average of 17 years.

Fishpond area cultivated by farmers determines the decision made by farmers in an effort to apply such innovation, including the adoption of CBIB. The size of the fishpond area positively related to adoption. Fishpond farmers in Pinrang Regency managed quite a vast area of the pond, namely more than 1 ha, either the pond is owned or rented [24]. In Pinrang Regency, number of farm household (RTP, Rumah Tangga Petani in Indonesia) that cultivated fishpond area of < 1 ha; 1-2 ha; 2-5 ha; 5-10 ha; and > 10 ha was 5,989; 3,403; 70; 30; and 10 RTP, respectively [4]. As listed in Table 2, about 97.63% of fishponds in Lanrisang and Mattiro Sompe Subdistricts were managed in an area of > 1.0 ha since the research site was fishpond that still applied traditional technology with a land area of > 1.0 ha in general.

3.2. Correlation Between Socio-Demographic Characteristics and Adoption Rate of CBIB

Adoption is the process of receiving new things (innovation) offered by others. Adoption will occur when individuals make full use of innovation into practices as their best choice [25]. Adoption of CBIB in fish farmer groups’ (pokdakan) fishpond in the Pinrang Regency started in 2007. This way, the adoption of CBIB in Pinrang Regency is considered fast; it is only three years after the establishment of CBIB in Indonesia in the year 2004. However, three fish farmer groups (pokdakan) in Lanrisang Subdistrict, namely SalopokkoE, CempaE, and Pottotau started to adopt CBIB in 2017, 2015, and 2014, respectively and obtained certificate in 2018, 2018, and 2015, respectively. Fish farmer group (pokdakan) Rawa Subur Lapolo Balena in Mattiro Sompe Subdistrict started to adopt CBIB in 2012 and obtained a certificate in 2014. After investigating 53 principles of CBIB, it was found that the adoption rate of CBIB in Lanrisang and Mattiro Sompe Subdistricts ranged from 40.58 to 67.01% with an average of 42.80% (Table 3). Following the category made [26], about 75 of the total 76 respondents (98.68%) were included in the moderate adoption category, with adoption rate ranged of 33.34-66.66% (Table 2). The relationship between socio-demographic characteristics of
CBIB adopters and the adoption rate of CBIB in fishponds in Lanrisang and Mattiro Sompe Subdistricts is showed in Table 4.

Table 4. The value of Spearman’s rank correlation coefficient and significance of the relationship between socio-demographic characteristics and adoption level of CBIB in ponds of Lanrisang and Mattiro Sompe Subdistricts, Pinrang Regency, South Sulawesi Province

| Socio-Demographic Characteristics | Spearman’s Rank Correlation Coefficient | Significance |
|-----------------------------------|-----------------------------------------|--------------|
| Age                               | -0.013                                  | 0.910        |
| Education Level                   | -0.013                                  | 0.911        |
| Length of Adoption                | 0.120                                   | 0.303        |
| Pond Area                         | 0.110                                   | 0.344        |

Socio-demographic characteristics examined that were aimed to find its correlation with the adoption rate of CBIB in a fishpond in Lanrisang, and Mattiro Sompe Subdistricts were gender, age, education level, length of adoption, and fishpond area. Yet, the analysis was only applied to the variable of age, education level, length of adoption, and fishpond area since CBIB adopters in this study were all male.

Table 4 shows that four variables of socio-demographic characteristics did not have a significant relationship ($P>0.10$) with the adoption rate of CBIB, indicating no significant correlation between socio-demographic characteristics and adoption rate of CBIB in fishponds in Lanrisang and Mattiro Sompe Subdistricts. To say, age, education level, length of adoption, and fishpond area did not correlate with the adoption rate of CBIB in the fishpond. It is expected to be caused by socio-demographic characteristics that were less varied; thus, the adoption rate of CBIB was also found to be relatively not varied. In terms of age, the majority of respondents belonged to the productive age group, as mentioned before, resulted in a relatively similar impact on the adoption rate.

Education level was dominated by high school (SLTA) graduates; thus, its effect on the adoption rate of CBIB was also relatively similar. Furthermore, the majority of respondents also obtained knowledge, not only from formal education but also from non-formal education, as found in Pinrang Regency. The same result was also found in the length of adoption since experience to adopt CBIB did not have a significant correlation with the adoption rate of technology, but there is a possibility that adoption rate of technology is also affected by information and knowledge about technology obtained and considered useful by fishpond farmers. According to [27], farmers who performed farming in the small farm area, with an average of below 0.5 ha, were more cautious and careful to prevent harvest failure. Therefore, it is assumed that fish farmers in Pinrang Regency were more carefree to adopt CBIB since most fishpond areas were larger than 1.0 ha.

Using the same data analysis method, [21] also found a relatively similar result to this study. It is mentioned that internal factor such as age, formal education level, non-formal education level, income, number of dependents in the family, number of workers in family, the reason of performing grouper farming business, cosmopolitan, interaction with fisheries extension officer, and type of decision making did not have a significant relationship with an adoption rate of grouper cage farming technology in the Province of West Nusa Tenggara. A study conducted [28] showed that socioeconomic characteristics included age, education, farm area, number of dependents in the family, and farming experience did not determine the adoption rate of technology, yet it affected farmers’ perception. Similarly, [29] also reported that farmer characteristics (age, education level, number of dependents in the family, and farm area) did not influence the adoption of innovation, but it affected farmers’ perception of innovation.

Based on Table 4, the coefficient of correlation ranged from -0.013 to +0.120. According [30], as shown in Table 1, the correlation between variables of age and education level of CBIB adopters and the adoption rate of CBIB was trivial, while the correlation between variables of the length of adoption
and fishpond area and the adoption rate of CBIB was categorized as low. Therefore, the correlation between socio-demographic characteristics and the adoption rate of CBIB was low.

Table 4 presents the correlation between socio-demographic characteristics and the adoption rate of CBIB. Table 4, there are two variables of socio-demographic characteristics that obtained a negative coefficient of correlation, namely age and education level, indicating a unidirectional correlation between age and education level and the adoption rate of CBIB, or increase in age and education level did not increase the adoption rate of CBIB. This result was in accordance with [28], who found that formal education did not have a significant relationship with the adoption rate of technology since farmers do not always have to obtain a high level of education to apply technology in farming. However, this result was different from finding reported [31,32] that higher education levels of shrimp/fish farmers could accelerate the adoption process of the latest technology in aquaculture.

The result of this study related to the correlation between age and adoption rate was different from previous research showing significance or a very strong correlation between the age of shrimp/fish farmers and adoption rate in fish production practices [14]. However, there is still an age limit of fishpond farmers that is able to increase the adoption rate. As mentioned [33], it is natural that a fish farmer’s age is responsible for the decision-making process since the relationship between managerial skill and age is assumed to be in the form of an inverted U-shape function. In other words, poor managerial skills at a younger age will increase with age and reach their peak at a certain age, and decrease with further age. It is also reported [31] that the factor of age has important implications for modernization of the aquaculture sector because it is hard for old people to accept changes; thus, they find that performing fish farming traditionally is more comfortable.

In contrast, there were two variables of socio-demographic characteristics that obtained a positive coefficient of correlation, namely length of adoption and fishpond area, depicting that increase in the length of adoption and fishpond area will further increase the adoption rate of CBIB. It is easier for fishpond farmers with large fishpond areas to apply recommendations about certain technology or adoption of innovation compared to those with small fishpond areas due to efficiency in the use of production facility in the fishpond. [34] mentioned that farmers who own larger areas would adopt technology fast because they have a better financial situation. Yet, there are also different opinions regarding the correlation between adoption rate and fishpond area. [35] explained that the adoption rate of technology by farmers with large farm areas is not always high since they are afraid of harvest failure possibility that will lead to disaster for them and their family. Thus, farmers with small, medium and large farm areas have the same opportunity to adopt the technology.

It is clearly shown that fishpond farmers in Lanrisang and Mattiro Sompe Subdistricts were in the group of productive age; thus, they are competent to develop fishpond farming by applying CBIB. Possibility to develop fishpond culture in Pinrang Regency is assured by productive human resources besides a vast fishpond area that is larger than 1.0 ha. The condition of productive age is also supported by adequate formal and non-formal educational background. Despite the fact that the length of CBIB adoption was still found to be relatively low, the experience of fishpond farmers in applying CBIB will be improved over time, along with assistance or guidance provided by various stakeholders.

4. Conclusion and Recommendation

The adoption rate of CBIB by fishpond farmers in Lanrisang and Mattiro Sompe Subdistricts, Pinrang Regency, was categorized as moderate adoption (adoption rate of 33.34-66.66%). CBIB adopters were all-male, 48.68% aged between 40 and 49 years, 56.58% graduated from high school, 36.84% adopted CBIB less than two years, and 53.95% managed ponds in an area of 1.0-1.9 ha. The adoption rate varied between 40.58 and 67.01%, with an average of 42.86%. The result of the study also showed that five socio-demographic characteristics of CBIB adopters, namely gender, age, education level, length of adoption, and pond area, did not have a significant correlation with the CBIB adoption rate in the ponds of Pinrang Regency. Therefore, it is recommended to conduct the further study by
investigating other variables of socio-demographic characteristics also the economic aspects of traditional fish farmers to determine their effects on the adoption rate of CBIB.

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