



Main Dimensions Characteristics of Gillnet Fishing Vessel in Fish Landing Base of Karangsong, Indramayu Indonesian.

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KeyWords

Gillnet, Vessel, Main dimension, Ratio

ABSTRACT

Gillnet is classified as a static tool that requires high stability. The main dimension of the vessel is very important in the manufacture of fishing Vessels. The ratio of the vessel's main dimensions (L/B, L/D, B/D) greatly affects stability, strength, and speed. This study aims to determine the ratio of Main dimensions gillnet vessel with the method of operation in Indonesia. This research was conducted at Karangsong Fish Landing Base, Indramayu Regency in March 2018. Data obtained through measurement of the gillnet vessel directly in the field. The method used is survey method and analyzed by comparative descriptive. The results showed that the ratio of the main dimensions of the vessel has a range of length (L) 15.78-27.15 m, width (B) 4.60-6.74 m, and in (D) 1.72-2.96 m. The ratio of the main dimensions of the vessel has a range of L / B is 2.97-4.03, L / D is 6.91-10.27, and B / D is 2.00-2.79. This value has met the standard criteria of the vessel's main dimension ratios with operating methods in Indonesia.

INTRODUCTION

Fishing Landing Base (FLB) Karangsong is one of the largest fishing port and the highest activity in Indramayu District. FLB Karangsong located coastal Java, precisely at the mouth of the River Prajagumiwang Village Karangsong Indramayu District. Karangsong Fish Landing Base has the highest fish production compared to other fishing ports in Indramayu with total production reaching 15,685,854 tons and production value reach 336,261,186,000 (KPL Mina Sumitra 2017).

FLB Karangsong has the highest number of fishermen compared to other FLBs as many as 7,387 fishermen with the number of fleets of fishing vessels of 1110 units of vessels consisting of motor vessels with 10 to 30 GT as many as 162 units of vessels, 30 to 50 GT as many as 148 units of vessels, 50 GT as many as 19 units of vessels while the outboard motor 5 GT as many as 772 units of vessels (DKP Indramayu, 2015). The dominant fishing activity in FLB Karangsong is by gillnet fishing equipment, about 71.4% of total fishing units in FLB Karangsong (DKP Indramayu 2015).

Fishing vessel is one of the fishing units that have a very important role for the fishermen, either as a means of transportation from fishing base to fishing ground and vice versa or as a tool to accommodate the catch obtained. Fishing vessels in a fishing operation perform several activities, such as looking for fishing ground, fishing gear setting, chasing fish group. Indramayu is the largest fishery catch center in the north western part of Java so it is necessary to know the goodness of the vessel one of them by knowing the ratio of the main dimension of the vessel.

Gillnet vessels require a good level of stability because the operation of the fishing gear is done on one side of the vessel. To determine the stability of fishing vessels, it is important to know the ratio of main dimension of the vessel that is the length (L), breadth (B), depth (D). Measurements of the vessel's main dimensions are carried out to determine the ratio of the main dimensions of fishing vessels, where the values of the L/B, L/D, and B/D ratio are very important in making or designing the vessels as they affect the strength, speed and stability of fishing vessels (Tangke 2010).

The suitability of the ideal primary dimension ratio is very important in the process of catching operations so as to have the feasibility of vessels at sea during the capture process and support the successful capture of the expected catch. Vesselbuilding at the Karangsong Fish Landing Base has its own characteristics with a fatter Vessel body such as a bowl that causes the shape and design of a different fishing vessel to be different from other areas given that the water characteristics for each region are different.

Based on the above description, it is necessary to calculate the main dimensions of the vessel to determine the characteristics of the main dimensions of gillnet with standard operating methods in Indonesia. This study is expected to provide information as a reference of the main dimensions of gillnet vessels based on the ideal FLB Karangsong, in order to support the feasibility of operating in the successful capture with maximum catch.

MATERIALS AND METHODS

Time and Place of Research

The study was conducted in March 2018 at Fish Landing Base (FLB) Karangsong, Indramayu District, West Java, Indonesia.

Tools and Materials

The tools used in this research are meter roll, stationery, rope and pendulum, waterpass, MS excel, camera. The ingredients used in this research are 20 gillnet vessel.

Research Methods

Sampling of the object of research as many as 20 vessels from 10% of the total number of vessels over 20 GT. Data taken during this research are primary data and secondary data. Primary data is obtained by making direct measurements of the research objects needed, including the size of the dimensions of the gillnet vessel

which includes length (L), breadth (B), and depth (D). Secondary data is data obtained from the Office of Marine and Fisheries Indramayu District, FLB Karangsong and the results of literature studies, including the general condition of the study site, and data on the number and size of gross tonnage (GT) gillnet vessel in FLB Karangsong.

This study was conducted using case study method, Indramayu is the largest fishing center in the northwestern Java region so it is necessary to know the goodness of the vessel one of them by knowing the ratio of the main dimension of the vessel. This case study, then analyzes descriptively, describing systematically and accurately about the main dimension of a gillnet vessel in FLB Karangsong Indramayu. Furthermore, the calculation of the value of the main dimensions of the gallant vessel ratio is then compared with the standard operating methods in Indonesia (Iskandar dan Pujiati 1995). The value of the vessel's main dimension ratio based on the operating method in Indonesia can be seen in Table 1.

Table 1. Vessel Dimension Ratio Value Based on Method of Operation in Indonesia

Method of Operation	L/B	L/D	B/D
Static gear	2,83-11,12	4,58-17,28	0,96-4,68
Encircling gear	2,60-9,30	4,55-17,43	0,56-5,00
Towed/Dragged Gear	2,86-8,30	7,20-15,21	1,25-4,41
Multipurpose gear	2,88-9,42	8,69-17,15	0,53-6,09

Data Analysis

The result of research data is the main dimension of a Gillnet vessel in FLB Karangsong analyzed by comparative descriptive. The description form is to analyze the data by describing or characterizing the main dimension of a gillnet vessel in FLB Karangsong. This comparative analysis is used to compare the main dimensions of gillnet vessels with standard operating methods in Indonesia. Fyson (1985) in Palembang (2013) Data were obtained by computing the vessel's main dimensions. In the design of a vessel, this characteristic is an important thing to note. These include:

1. Comparison between length and Breadth (L/B)
2. Comparison between Breadth and Depth (B/D)
3. Comparison between length and Depth (L/D)

RESULTS AND DISCUSSION

Gillnet is classified as a static tool that requires high stability (Istiqomah 2014). The operation of gillnet in FLB Karangsong is done passively so that the vessel that operates it can be categorized as a static gear vessel. Gillnet fishing gear is also widely used outside of Indonesia one example, drift gillnet is very popular in Indian artisanal fisheries especially on the West Coast of India (Balasubramanian et al 2011). The size of the vessel under 20 GT is 20 vessels. The specifications of each of the gill net vessels studied can be seen in Table 2.

Table 2. Specifications of Gillnet Vessels Under Study

No	Vessel Name	Specification of Vessel's Main Dimension Ratio			Gross tonnage (GT)
		Length (m)	Breadth (m)	Depth (m)	
1.	KM. Teguh Jaya 24	18,53	5,47	2,40	25
2.	KM. Garuda Mas P	18,40	5,43	2,13	28
3.	KM. Lancar Subur	16,05	5,11	1,80	28
4.	KM. Mandala	15,78	5,10	1,90	29
5.	KM. Banda Rasa	16,46	5,23	1,98	29
6.	KM. Anugrah	16,60	5,58	2,00	30
7.	KM. Jaya Putra	17,54	5,34	1,86	30
8.	KM. Sari Mulya	16,73	5,28	2,20	30

9.	KM. Andora-E	18,80	4,85	1,88	30
10.	KM. Inka Mina 358	15,90	4,60	2,30	32
11.	KM. Inka Mina 642	16,20	4,70	1,72	34
12.	KM. Atlantik	19,00	5,69	1,85	34
13.	KM. Sri Lestari 3	16,80	5,28	2,20	37
14.	KM. Senar Jaya 5	17,72	5,42	2,40	40
15.	KM. Kusuma Karya	17,50	5,85	2,15	40
16.	KM. Barokah Jaya 02	18,30	5,61	2,25	42
17..	KM. Mandala C	19,50	5,53	2,17	42
18.	KM. Senar Jaya 2	24,80	6,24	2,77	74
19.	KM. Sri Dewi 1P	23,25	6,40	2,57	77
20.	KM. Tien Sudarmo 1	27,15	6,74	2,96	97
	Minimum	15,78	4,60	1,72	25
	Maksimum	27,15	6,74	2,96	97
	Rata-rata	18,55	5,47	2,17	40,40

Based on Table 2 we can see the value of specification of main gillnet vessel dimension ratio in FLB Karangsong which has been studied for length or length value of 15,78-27,15 m with average 18,55 m, for breadth or wide value of range between 4.60-6.74 m with an average of 5.47 m, for the depth value or in the range between 1.72-2.96 m with an average of 2.17 m, and GT ranged from 25-97 GT that has been studied. In this study for Vessels that have a small GT does not guarantee to have a long, wide or inferior value of a vessel that has a large GT so vice versa that has a large GT does not guarantee has a long, wide and deeper value of the vessel has a small GT. This happens because to calculate the GT a vessel not only calculates the length, width and in the vessel alone, there are other factors that must be counted as the upper and inner volumes of a vessel, so that the length, width and width of the vessel will be adjusted to the desired needs when making the vessel. The distribution of the main dimensions of the vessel is shown in Figure 1.

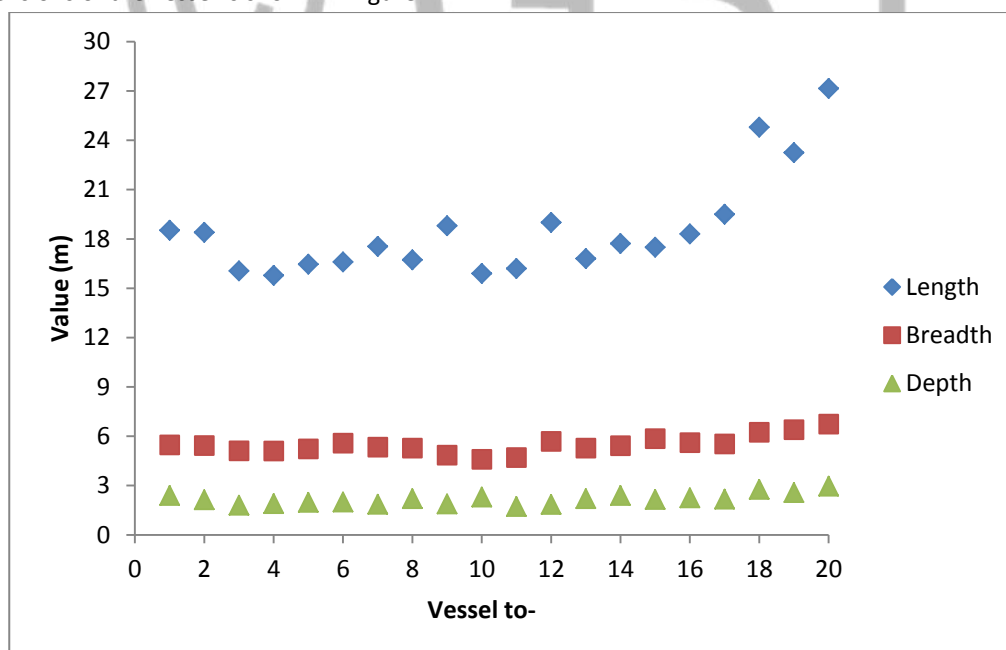


Figure 1. The Distribution of Gillnet's Main Dimension In FLB Karangsong

In Figure 1 it can be seen that the values of L, B, and D vessels 1-20 vessels vary in value. There are two types of data obtained in this study, the first data gross tonnage (GT) gillnet vessel data obtained from the document ownervessel of the vessel while the second data length, width, and in the vessel directly measured. GT

GT size and length, breadth and depth measurement results have no effect on speed, strength or stability of vessels. But affecting the velocity, strength and stability of the vessel is the value of the vessel's main dimensional ratio of L/B, L/D, and B/D because the GT vessel calculation differs from the calculation for the vessel's main dimension.

Iskandar (1990) in Pasaribu (2011) states that for gillnet vessels to operate swiftly, large values of length, medium breadth and small depths are required because these values are the main dimensions of the vessel. The calculation of the vessel's main dimensions can be seen in Table 3 and compared to the value of the vessel dimension ratio based on the operating method in Indonesia can be seen in Table 1 compared static gear method.

Table 3. Calculation of the Vessel's Main Dimensions

No	Vessel Name	Rasio Dimensi Utama Kapal (m)			GT
		Legth/Breadth	Legth/Depth	Breadth/Depth	
1.	KM. Teguh Jaya 24	3,39	7,72	2,28	25
2.	KM. Garuda Mas P	3,39	8,64	2,55	28
3.	KM. Lancar Subur	3,14	8,92	2,84	28
4.	KM. Mandala	3,09	8,31	2,68	29
5.	KM. Banda Rasa	3,15	8,31	2,64	29
6.	KM. Anugrah	2,97	8,30	2,79	30
7.	KM. Jaya Putra	3,28	9,43	2,87	30
8.	KM. Sari Mulya	3,17	7,60	2,40	30
9.	KM. Andora-E	3,88	10,00	2,58	30
10.	KM. Inka Mina 358	3,46	6,91	2,00	32
11.	KM. Inka Mina 642	3,45	9,42	2,73	34
12.	KM. Atlantik	3,34	10,27	3,08	34
13.	KM. Sri Lestari 3	3,18	7,64	2,40	37
14.	KM. Senar Jaya 5	3,27	7,38	2,26	40
15.	KM. Kusuma Karya	2,99	8,14	2,72	40
16.	KM. Barokah Jaya 02	3,26	8,13	2,49	42
17..	KM. Mandala C	3,53	8,99	2,55	42
18.	KM. Senar Jaya 2	3,97	8,95	2,25	74
19.	KM. Sri Dewi 1P	3,63	9,05	2,49	77
20.	KM. Tien Sudarmo 1	4,03	9,17	2,28	97
Minimum		2,97	6,91	2,00	25
Maximum		4,03	10,27	2,79	97

The main dimensions of the measured gillnet vessel consist of L/B, L/D, and B/D. Fyson (1985) in Palembang (2013) states in a vessel design, the comparison characteristics are important things to note. Fishing ground aimed for gillnet vessels in FLB Karangsong for vessels over 30 GT i.e. WPP 711 covering waters of Karimata Strait, Natuna Sea and South China Sea and WPP 718 covering Aru Sea waters, Arafuru Sea, and East Timor Sea, while for vessels under 30 GT are usually looking for fishing ground in WPP 712 covering the waters of the Java Sea. The condition of this water affects the characteristics of fishing vessels that support in the region. Vessels used should pay attention to the vessel's seawall in the process of fishing.

Value L/B

Palembang (2013) in Apriliani (2017) states that the value of L/B ratio in vessel design is used to analyze the movement and speed of a vessel. The smaller the L/B ratio value the vessel has good vessel

movement and the effect on the speed of the vessel resulting in slow speed. The calculation of the value of L/B gillnet vessel in FLB Karangsong has a value with a range between 2.97-4.03 value is small because it closes the minimum value of operating methods in Indonesia. The distribution of L/B values can be seen in Figure 2.

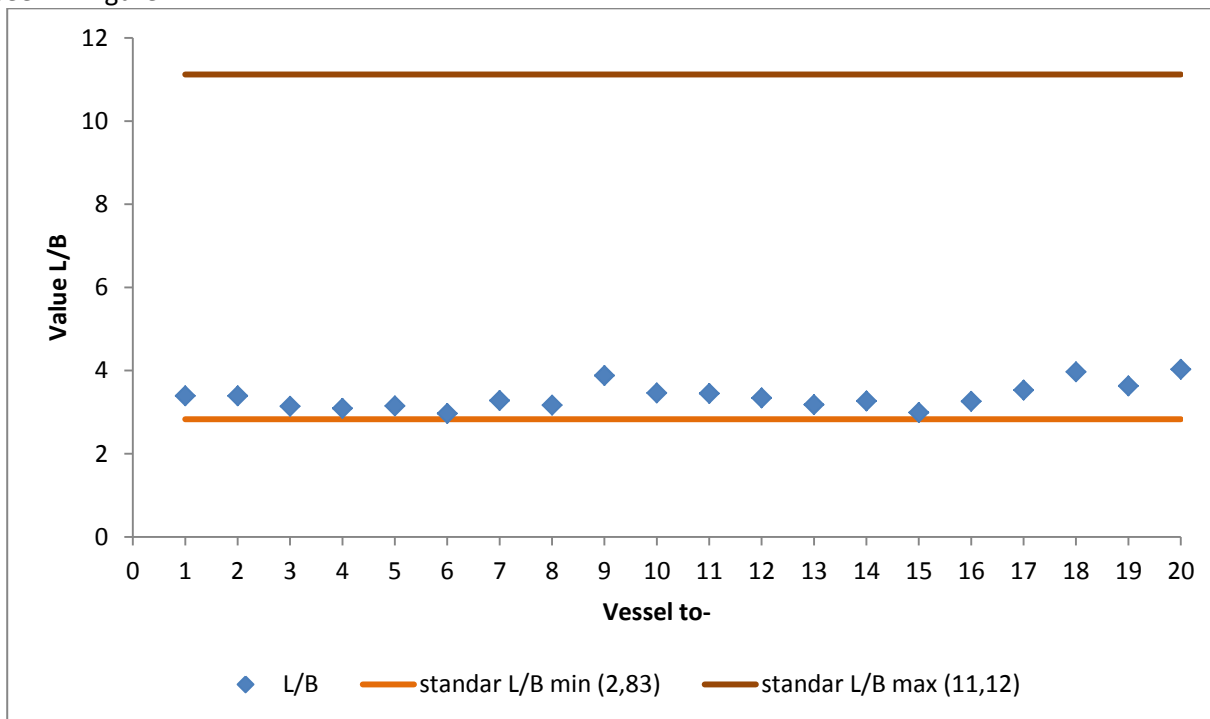


Figure 2. Ratio of L / B Ratio of Gillnet Vessel In FLB Karangsong

Figure 2 shows that the distribution of L/B ratio of gallant vessels in FLB Karangsong, this value is in accordance with the needs of the vessel in FLB Karangsong because in FLB Karangsong prefer the body of a fat Vessel like the letter U, this is because fishermen in FLB Karangsong prefer the magnitude hatch space on the vessel body compared with the speed of a vessel, so that the results obtained more than the slim vessel body like the letter V with high speed, this is causing the vessel in FLB Karangsong more slowly.

Value L/D

(Palembang 2013; Guritno 2016) states that the value of L/D is the value of the elongated strength of a vessel, the greater the L/D value will result in the strength of the vessel's weakening. The calculation of the L/D values of gillnet vessels in FLB Karangsong has varied values approaching the minimum operating method in Indonesia, and the calculation results of the vessel's main dimensions are included in the range of the value of the method of catching operations in Indonesia. The distribution of L / D ratio of gillnet vessels can be seen in Figure 3.

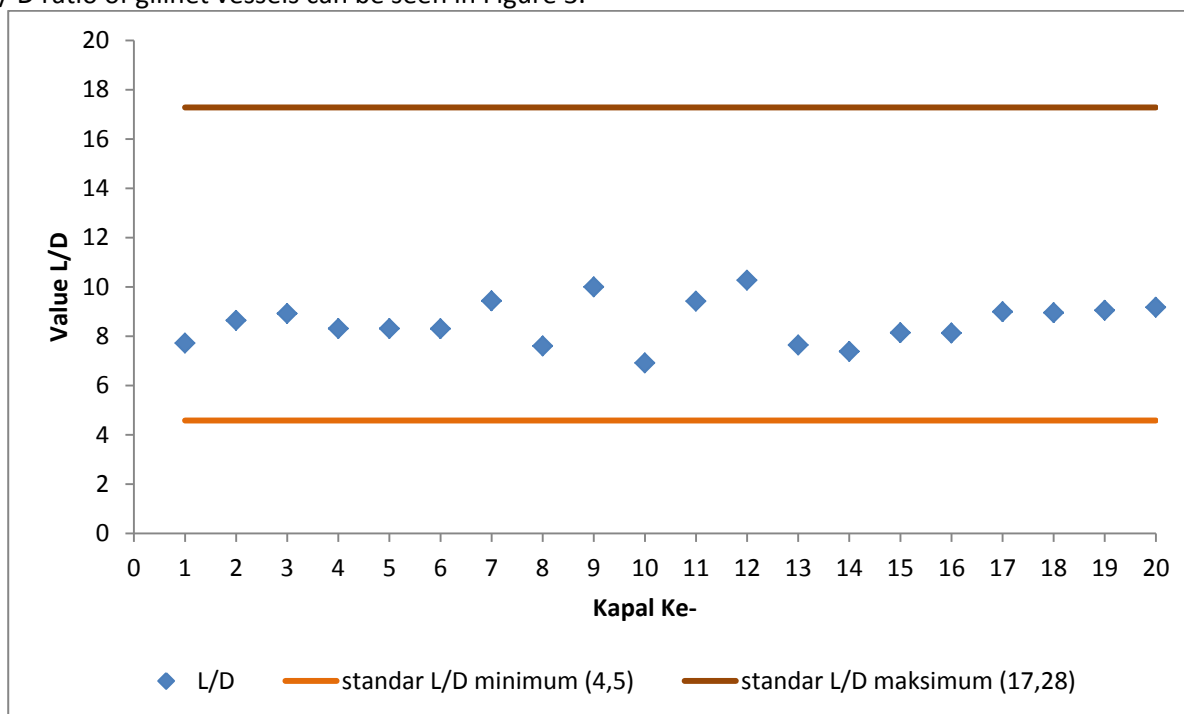


Figure 3. Gillnet Vessel L / D Ratio Value In FLB Karangsong Nilai B/D

Figure 3 shows that the distribution of L/D value in FLB Karangsong is relatively small, close to a minimum value of comparison of vessel ratio value in Indonesia with static gear method. The calculation of L/D values of gillnet vessels in FLB Karangsong has a small L/D value with a range between 6.91-10.27 which results in gillnet vessels having strong elongated strength. (Pangalila, 2010) suggests that long and large vessels have an influence on the strength of the vessel's length, so the vessel is not easily broken when it comes to the forces from the outside that work to affect the elongated strength of the vessel.

Value B/D

The ratio value B/D is the value used to analyze the stability and movement of the vessel. (Novita, 2014) states the greater the value of the ratio of B/D, the stability of the vessel and the movement of the vessel is getting better. The calculation result of the B/D value of gillnet vessel in FLB Karangsong has a value with a range between 2,00-2,79. The value is classified as average when compared with the value of vessel ratio in Indonesia with static gear method.

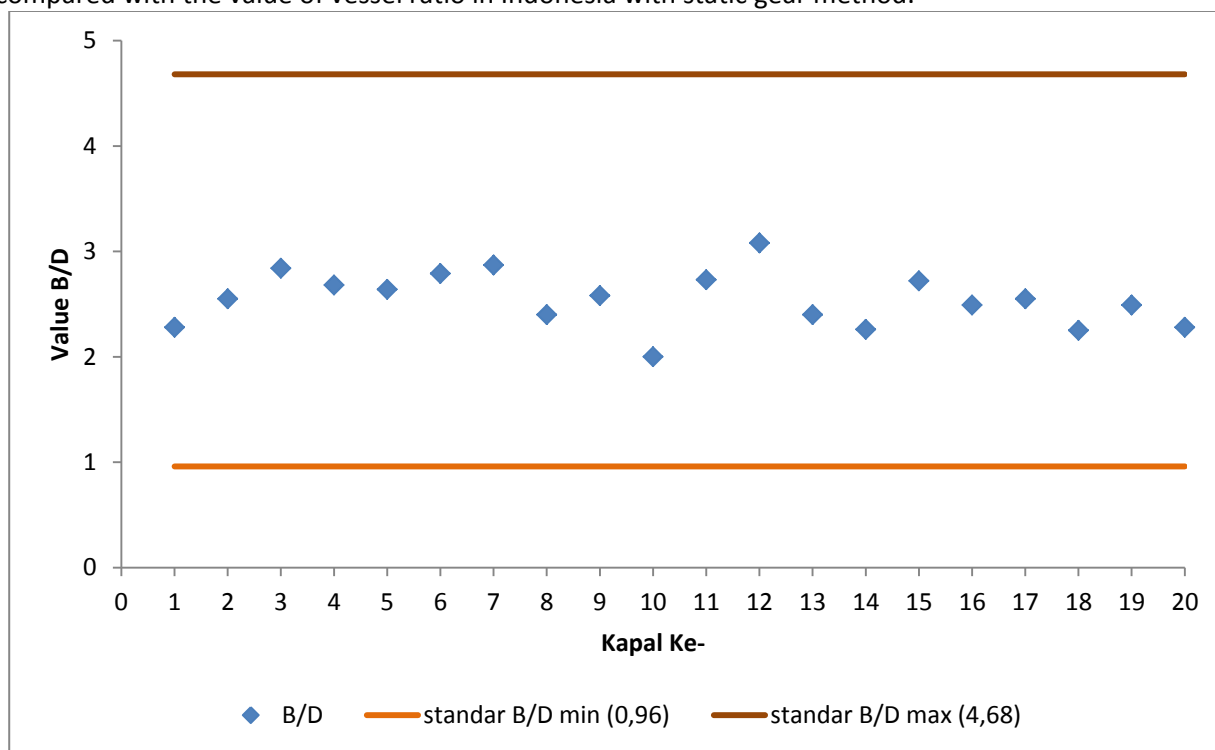


Figure 4. Gillnet Vessel Ratio B / D Value in FLB Karangsong

Figure 4 shows that the value is classified as being in the middle of the minimum and maximum B/D ratio that exists in Indonesia with static gear operating method. Thus, it can be interpreted that the gillnet vessel in FLB Karangsong has good stability and good vessel movement. (Mulyanto 2010) states that the vessel requires high stability due to the way the operation of the net is on one side of the stomach which leads to the load on the spot and when the net is lifted onto the vessel will be sloped.

CONCLUSION

Based on the results of research on the characteristics of the main dimension of the vessel in FLB Karangsong Indramayu Regency can be concluded that the vessels studied have the value of the main dimensions of the vessel ratio ranging from 2.97-4.03 for L/B, while for L/D 6.91 -10.27, and for B/D from 2.00 to 2.79. Can be interpreted vessel in FLB Karangsong has strong vessel strength, have stability and the ability to push a good vessel. This value has met the standard criteria of the vessel's main dimension ratio by static gear operating method in Indonesia.

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