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Monitoring Silver Catfish (*Pangasius sp.*) Demands and Red Tilapia (*Oreochromis Mossambicus sp.*) in Jeli Kelantan 2019.

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DECLARATION

I hereby declare that the work embodied in here is the result of my own research except for the excerpt as cited in the references.

_____

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Monitoring the silver catfish (*Pangasius sp*) demands and red tilapia (*Oreochromis mossambicus sp*) in Jeli, Kelantan 2019

ABSTRACT

In Jeli, there is no study about the demand of silver catfish and red tilapia. the purpose of this study is to monitoring the silver catfish demand and red tilapia in Jeli, Kelantan. The objective of this study is to to collect data on the demands of silver catfish and compared with the demands of red tilapia at three location, which are Jeli town, Ayer Lanas, and Kuala Balah in Jeli, Kelantan in 2019. A total of 15 fishmonger were selected in this 3 location in Jeli. The methods use in this study is survey questionnaire, which is face to face interview. The data collected were being analysed by using IBM Statistical Package for Social Science(SPSS) Statistics 25.0. In the result showed, there are no significant different between 3 location in Jeli but the total sale of silver catfish is less than to total sale of red tilapia. In conclusion, we reject the alternative hypothesis which is different of catfish demand and red tilapia demand between 3 location in Jeli and we accept the null hypothesis which is there was no different of catfish demand and red tilapia demand between this 3 locations in Jeli.

Keywords: silver catfish demand, red tilapia demand, using SPSS

Memantau permintaan ikan patin (*Pangasius sp.*) dan tilapia merah (*Oreochromis mossambicus sp*) di Jeli, Kelantan pada tahun 2019.

ABSTRAK

Di jeli, tidak ada kajian tentang permintaan ikan patin dan tilapia merah. Tujuan kajian ini adalah utk memantau permintaan ikan patin dan tilapia merah di Jeli, Kelantan. Objektif kajian in adalah utk mengumpul data mengenai permintaan ikan patin dan dan dibandingkan dengan permintaan ikan tilapia merah di tiga lokasi, iaitu Bandar Jeli, Ayer Lanas, dan Kuala Balah di Jeli, Kelantan pada tahun 2019. 15 penjual ikan telah dipilih di 3 lokasi ini di Jeli. Kaedah yang digunakan dalam kajian ini adalah soal selidik tinjauan, yang merupakan wawancara bersemuka. Data yang dikumpulkan telah dianalisis dengan menggunakan Statistik Pakej Sosial Sains(SPSS) 25.0. Hasilnya ditunjukkan, tidak dapat perbezaan yang ketara di 3 lokasi di Jeli tetapi jumlah penjualan ikan patin adalah kurang dari jumlah penjualan ikan tilapia merah. Sebagai kesimpulan, kami menolak hipotesis alternatif yang menunjukkan perbezaan permintaan ikan patin dan tilapia merah diantara 3 lokasi di Jeli dan kami menerima hipotesis nul yang menunjukkan tiada permintaan ikan patin dan tilapia merah di antara 3 lokasi di Jeli.

Kata kunci: permintaan ikan patin, permintaan ikan tilapia, penggunaan SPSS

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CHAPTER 1

1.0 INTRODUCTION

1.1 Research backgrounds

Demand on fish protein has improved in the world and, explore to fisheries where give positive impact to the development of aquaculture sectors, specifically in development of nations in the Asia Pacific area .The population in the world has expanded to 7.8 billion human beings and because of this growth. 2.2 million metric tons of fish have to be produced to fulfil the demand of fish consumption (Rosita, 2016). Aquaculture area improvement in Malaysia has started since 1920's. It began with freshwater aquaculture and then brackish-water aquaculture inside the past due 1930's.

The role of the aquaculture sector is important where has stated in the Third National Agriculture Policy (1998-2008) and recently, in the National Agro-Food Policy (2011-2020), as a major area of concentration to enhance the competitiveness of agriculture sector in Malaysia. In Malaysia, the demands of freshwater has increased such as silver catfish and catfish among the population. Department of fisheries Malaysia (DOF) should take some action to keep monitoring the demands of fresh water in each state.

The red tilapia has become increasingly popular because its similar appearance to the marine red snapper gives it higher market value. The original red tilapia were genetic mutants. The first red tilapia produced in Taiwan in the late 1960s, was a cross between a mutant reddish-orange female Mozambique tilapia and normal male Nile tilapia. It was called the Taiwanese red tilapia.

1.2 Problem statements

Nowadays, the aquaculture has become a fast growing industry. Fish and other aquaculture animals are known to play an important role in the diet throughout the Asia-pacific region. It also shown that the silver catfish is the third largest fish produce after catfish and red tilapia (DOF, 2017). The demand for silver catfish in Malaysia shows significant increase based on The Department of Fisheries Malaysia (DOF). But no previous research for silver catfish (*Pangasius sp.)* demands in Kelantan especially in Jeli. So there is no information and reference for the fishmongers to refers in marketing of silver catfish. This problem raises the concern of fishmongers to find out the silver catfish demands in Jeli.

1.3 Scope of study

- Aquaculture

1.3 Significance of study

The finding of this study can be a guideline and references to the fishmongers, farmers and population of Jeli about the demands of silver catfish in Jeli.

1.5 Question of study

1- How differents of demand of silver catfish and red tilapia in Jeli, Kelantan.

1.6 Limitation of study

This study focus on the monitoring the demands of silver catfish and red tilapia in Jeli in 2019. This location is one of the bigger city in Kelantan. So it will make the research difficult cover all region in Jeli. So, the researcher only choose the main town in Jeli which are Jeli, Ayer Lanas, and Kuala Balah to collect the data. But, there are not many fishmonger in Jeli. So the researcher only got 15 fishmonger to be respondents. Based on a few factors that affect to collect data in big area, the researcher as a student lacking of transportation and time. It is because Jeli has large area which is 1280.12km^2.

1.7 Objective

The main objective of this study is to collect data on the demands of silver catfish and compared with the demands of red tilapia at three location, which are Jeli town, Ayer Lanas, and Kuala Balah in Jeli, Kelantan in 2019.

1.8 Hypothesis

H_A = There are different the demand of silver catfish and demand of red tilapia between 3 location in Jeli.

H_O = There are no different the demand of silver catfish and demand of red tilapia between 3 location in Jeli.

CHAPTER 2

2.0 LITERATURE REVIEW

This chapter will discuss the review of related studies as well as empirical findings that are important to the conceptual framework and methodological consideration in order to achieve the objectives of this study.

2.1 Aquaculture Industry

Now, aquaculture was promoted in Malaysia to be an important industry and then to grow to be the main source of income of the country's economy. Located in an area where rich in supply of land and water, it will determine the aquaculture activities. Malaysia has continually work to ensure that this sector will not half -growth in their development efforts. When the population are increasing and growth rapidly for healthy supply of protein, the annual demand for fish will increase to 1.7million tons in 2011 and 1.93 million tons in 2020 as predicted (Yusoff, 2015).

In Malaysia, the fish intake has already expanded from 1970 and now it's far above 40 kg/capita/year (Teh, 2012). Approximately 30% of the nation's fish production contribute

from aquaculture. Aquaculture divide into two which are brackish water and freshwater production. On the industrial production of freshwater species, catfish are the biggest total of production freshwater aquaculture, followed by red tilapia and silver catfish. The improvement of aquaculture activities in rural regions has benefitted farmers and close by communities through allocation and accessibility of infrastructures including electricity, communication, and street access to assist to enhance the quality of life (Othman, 2006).

2.1.1 Demands of Fish Trending

Malaysia located around the sea, rivers and lakes. These ecosystems in Malaysia provide natural resources such as fish for its population. Human consumes fish because of their rich nutritional value. Fish contain higher protein value compare to meat (Smolin and Grosvenor, 2003). Nutrient content in fish are 55-84% water, 15- 24% protein, 0.1-22% fat and 0.1-0.3% carbohydrate (Kumar, 2005). Even now, the trend still do not have a lot of change, as the supply of many different animal protein sources at competitive costs. Certainly, a demands of fish in population of Malaysia and it appearance in demands still has no replacement. An average own family spends about 20 percent of their meals expenditure on fish. Fish consumption index increased from 53.1 kg in 2011 and is expected to be 61.1 kg in 2020. This make Malaysia to maintain as the highest consumers of fish in the world.

2.1.2 Fish Resources

Majority of fishes in Malaysia comes from the sea. Freshwater fish on that time only contain less than 5% of the whole landed volume (DoF, 2012) while the rest came from the sea. In 2012, the total capture of fishes about 1.6 to 1.8 million metric ton annually. The sample will not improve again as most of the capture are from coastal zone, which indicated declining trend. So, the government take some action by encourage the farmers and provides incentives where emphasizes the need of farmers to ensure that aquaculture activities growth smoothly. In Malaysia, fish resources not only for food supply in country, but also exported to generate income and profits. In addition, the return always recorded show there an excess even after considering the costs to import different fish species to complete the domestic desires. Fish commodity indeed maintains to cushion Malaysian deficit in agricultural food product for some time and additionally during international economic crisis such as in 1997.

2.1.3 Production of Aquaculture

In 2012, overall of fish farmers (29,494) and culturists have been involved within the aquaculture sector. Most of the 22,779 group of workers (77.23%) have been participated in the freshwater aquaculture sub-region. The balance 22.77% of fish farmers/culturists (6,715) have been involved in the brackish water aquaculture sector. In 2012, freshwater aquaculture contributed 163,757 tonnes well worth RM992 million. the main cultured species were freshwater catfish (Clarias sp.), black and red tilapia

(Oreochromis sp.), silver catfish (Pangasius sp.), and freshwater large prawn (Macrobrachium rosenbergii sp.).

2.2 Fish Consumption and demands

Human be the consumers of fish due to their high nutritional value. Fish include higher protein value compare to meat (Smolin and Grosvenor, 2003). Nutrient content in fish are 55-84% water, 15- 24% protein, 0.1-22% fat and 0.1-0.3% carbohydrate (Kumar, 2005). In 2004, Ministry of Agriculture Malaysia stated that the average of fish intake per capita in Malaysia in 2003 turned into approximately 51.4 kg in line with 1 year with the common increment of about 1.6% every year since the year 2000. Based on the statement of Ministry of Agriculture in 2004, it showed in 2002 that the average of meat intake per capita on this country about 5.41 kg per year. It showed that the fish intake in Malaysia became far greater than the beef intake.

Fisheries had been of the primary sources of protein, accounting for about one fifth of all animal protein intake in the human diet. Placed into perspective, the demand for fisheries in Malaysia throughout the years has been on a consistent growth. However, the real annual fishery landings in Malaysia do not study a similar growth trend with fluctuations recorded in current years indicating that annual fish landing do not meet the population demand.

Since aquaculture became first developed within the 1920s, right here were on going plans towards promoting this region as well as deep sea fishing to satisfy the country's fishery demand. As an example, government projections in the 9th Malaysia

Plan (RMK9) showed an increase of manufacturing of 1.8million metric tonnes for fisheries (Othman, 2008). It is far

consequently pertinent for Malaysia to conduct an in-intensity overview of the reputation of its fishery sources and the demands located on the region with a view to proper fishery control in the nation. While the new inovation of efficient fishing gadgets keep to promise and supply growing quantity of fishes.

CHAPTER 3

3.0 METHODOLOGY

At this part, discuss procedure that use in this study. The way that the research conducted and what method that used in research will briefly in this chapter.

3.1 Area of Study

This study was be carried out in Jeli Kelantan. The main reason for choosing this location because the fishmongers did not know about different between the demands of silver catfish and red tilapia in Jeli. 3 location in Jeli had be choose to collect the data which were Jeli, Ayer Lanas, and Kuala Balah. The total population of Jeli is 40637 people. Sampling data was identified 15 fishmonger in 3 location.

3.2 Collection of Data

. The aim of this study to provide the data demands of silver catfish and compared with red tilapia in Jeli. A questionnaire will be provide to run the survey. Type of survey

to run in this research was face-to-face interview. The data research was collecting from 3 place in Jeli, which location was Jeli, Ayer Lanas, and Kuala Balah. The researcher was identified 15 fishmonger as a sample of data for this research.

3.3 Analysis of data

After collecting the data, the researcher was analysed the demands of silver catfish and red tilapia using IBM SPSS Statistics 25.0. The test that run in IBM SPSS Statistic 25.0 were frequency table which contain frequency value and percentage of each answers. Pie chart and histogram graphs of each question provided in the results to representive the frequency. Types of anova used for this research was one-way anova which provided table of anova and post hoc test. In post hoc test, there are information in multiple comparison table and homogenous subset. From the anova table and post hoc table, it showed a significant value between group and within group. Then, the result between silver catfish and red tilapia was compared the different demands in Jeli.

CHAPTER 4

4.0 RESULT AND DISCUSSION

4.1 FREQUENCY ANALYSIS

The study of quantitatively describing the characteristics of a set data descriptive statistics. Frequency analysis is a part of descriptive statistic. In statistics, frequency is the number of times an event occurs. Frequency analysis is an important area of statistics that deals with the number of occurrences (frequency) and analyses measures of frequency respondents choose the answer and the percentage of them. It may also generate by bar charts, pie chart and histograms. In this research, there are two types of freshwater fish, which are silver catfish and red tilapia. So, the frequency value and percentage had two types of that fish also.

4.1.1 FREQUENCY ANALYSIS OF SILVER CATFISH AND RED TILAPIA

Table 4.1: frequency choice of answer for silver catfish and red tilapia

Characteristics		Frequency of silver catfish	Frequency of red tilapia	Percentages of silver catfish	Percentages of red tilapia
Q1	Twice a week	3	3	20.0	20.0
	6-7 a week	12	12	80.0	80.0
Q2	1kg-10kg	9	5	60.0	33.3
	11kg-20kg	4	6	26.7	40.0
	21kg-30kg	0	2	0.0	13.3
	31kg-40kg	2	2	13.3	13.3
Q3	RM7-RM8	7	0	46.7	0.0
	RM9-RM10	8	0	53.3	0.0
	RM11-RM12	0	3	0.0	20.0
	RM13-RM14	0	12	0.0	80.0
Q4	Live	5	5	33.3	33.3
	Die	10	10	66.7	66.7
Q5	Eat	3	3	20.0	20.0
	Freeze	12	12	80.0	80.0
Q6	Week 1	15	15	100.0	100.0
Q7	Week 4	15	15	100.0	100.0

From Q1, many of fishmonger sell the silver catfish and red tilapia 6 to 7 times in a week. It is because they can get the supply of that fish from the retailer easily. In Jeli, the retailer for freshwater fish is more compare to the retailer for saltwater fish. It was related with the location of Jeli far from the sea (Nazaruddin, 2015). For three fishmonger that sell twice a week because they did not manage well in economic order quantity. So, they can't provide well the stock of silver catfish and red tilapia.

From Q2, this research were identified the demands of silver catfish and red tilapia in Jeli. The result showed that 9 fishmonger sold the silver catfish 1kg to 10kg, 4 fishmonger sold the silver catfish 11kg-20kg, and 2 fishmonger sold the silver catfish 31kg-40kg. For red tilapia 5 fishmonger sold 1kg to 10kg, 6 fishmonger sold 11kg to 20kg, 2 fishmonger sold 21kg to 30kg, and 2 fishmonger sold 31kg to 40kg. From the result, the total silver catfish sold were less than compared to red tilapia. According to Ibrahim in 2014, red tilapia were the most popular aquaculture fish among consumers in Malaysia. Red tilapia was accepted by consumer in Malaysia because of their attractive colour and have good quality of the meat (Kiat, 1998).

In Q3, the result showed that 7 fishmonger placed a price between RM7 to RM8 and 8 fishmonger placed a price between RM9 to RM10 for silver catfish. For red tilapia, 3 fishmonger placed the price between RM11 to RM12 and 12 fishmonger placed the price between RM13 to RM14. Q3 had relationship with Q2 because price was effected by total weight sold by fishmonger. The weight of freshwater fish sold high cause the price become increase. From the experience of fishmonger, the quality of red tilapia is more fresh compare to the silver catfish when got from the retailer. This research supported by Alapan et. al, 2016 on their research where quality of fish was found greatly affect the price of fish provides high demand in market.

In Q4, the result showed that 5 fishmonger sell the condition of fish live while 10 fishmonger sell the the condition of fish die for silver catfish and red tilapia. From the result, more fishmonger sell the condition of fish die because it easy to handle. Fish in die condition is easy to keep in the storage.

In Q5, the results showed 3 respondents had said that they eat the balance of silver catfish and red tilapia that didn't sold while 12 respondents had said that they had freeze the balance of silver catfish and red tilapia. 12 respondents that freeze the balance of silver catfish and red tilapia to keep for next sale. They freeze because to maintain the nutritional quality in fish and free of pathogenic and spoilage microorganisms and their toxins. This result supported by Nwaigwe of research in 2017 where it stated that freeze methods resorted to keep the fish free of pathogenic and spoilage microorganisms and their toxins, free of chemical compounds causing problems, nutritional quality is retained, and extending the shelf-life of fish.

In Q6, results showed that all fishmonger agree that week 1 was highest sale of silver catfish and red tilapia rather than others week. In Q7, results showed that all fishmonger agree that week 4 was the lowest sale of silver catfish and red tilapia compare to others week. All fishmonger assumed that because the salary of consumers were in early month. This results were proved by Rohayu research in 2001 where it stated the trend of salary in Malaysia was in week 1 of the month.

The result showed that total sale of silver catfish is less than total sale of red tilapia. So, it had conclude that red tilapia has more demand from people in 3 location in Jeli. It is because the quality of meat and colour of the red tilapia are good and attractive. This was supported by Kiat in 1998 where red tilapia were accepted by consumer in Malaysia because of their attractive colour and have good quality of the meat.

4.1.2 THE PIE CHART AND HISTOGRAM GRAPHS OF SILVER CATFISH QUESTIONNAIRE.

According to Pete Greasley in 2008, using graphs to visually illustrate the data. The pie chart representative the question that had range in choice of answer while the histogram graphs representative the question that had only permanent choice of answer. There are each pie chart and histogram for all question in below:

4.1.2.1 THE PIE CHART AND HISTOGRAM GRAPHS OF SILVER CATFISH QUESTIONS

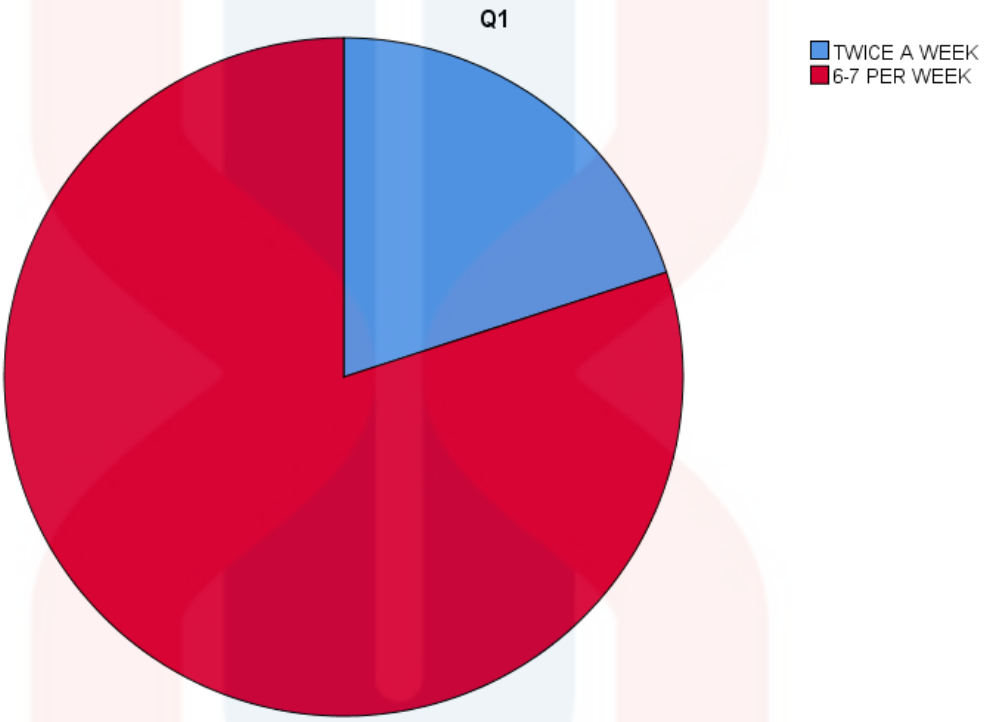

Figure 4.1: pie chart representive percentage of Q1 for silver catfish.

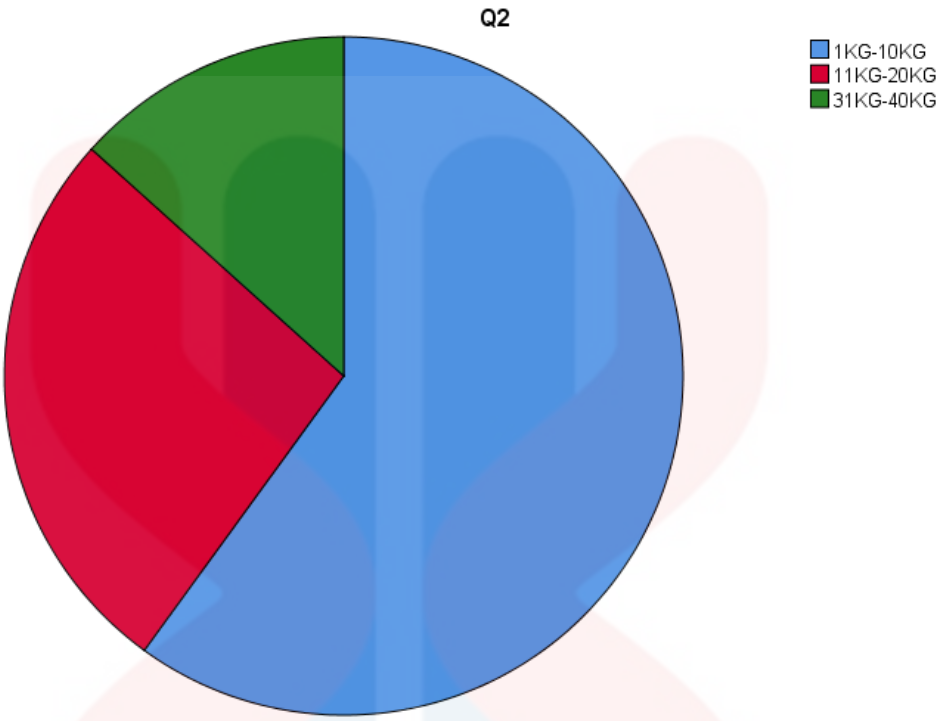

Figure 4.2: pie chart representive the percentage of Q2 for silver catfish.

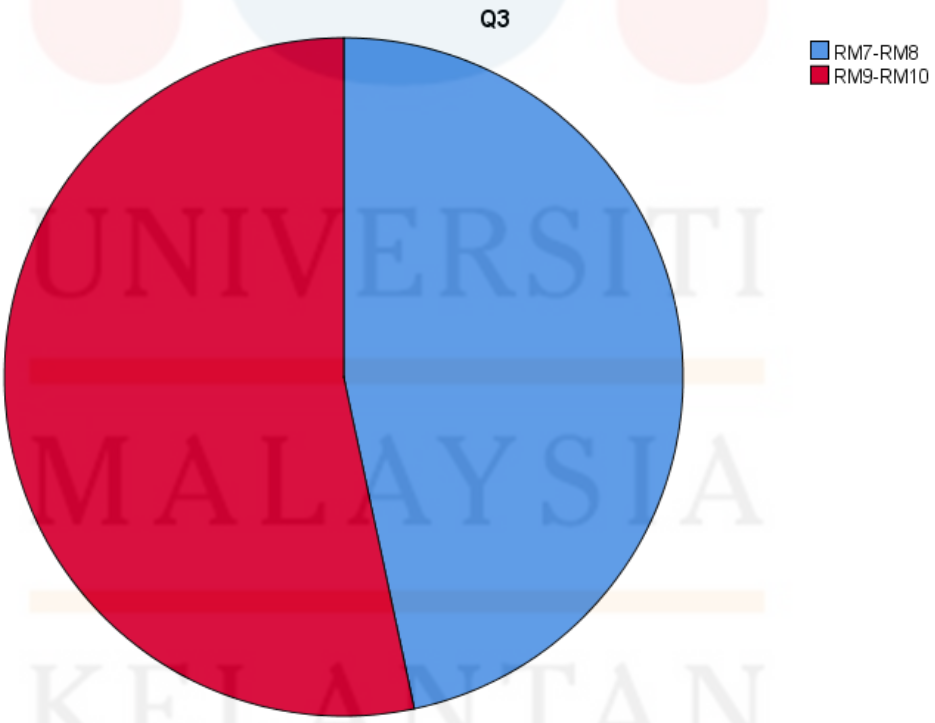

Figure 4.3: pie chart representive the percentage of Q3 for silver catfish.

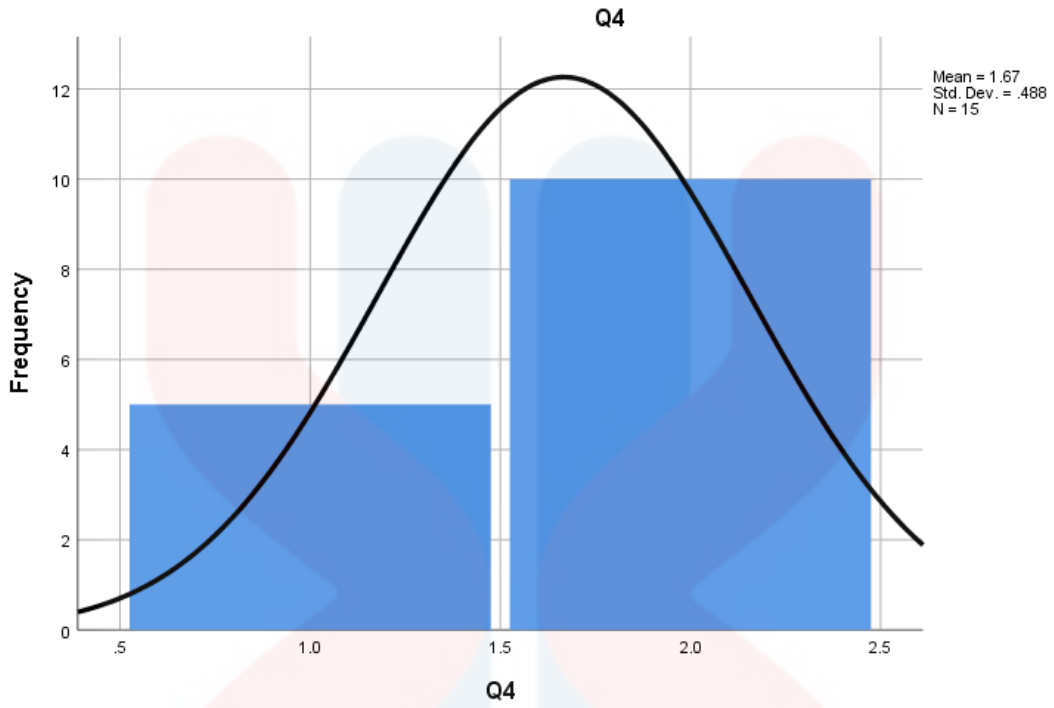

Figure 4.4: histogram graph representive the percentage of Q4 for silver catfish.

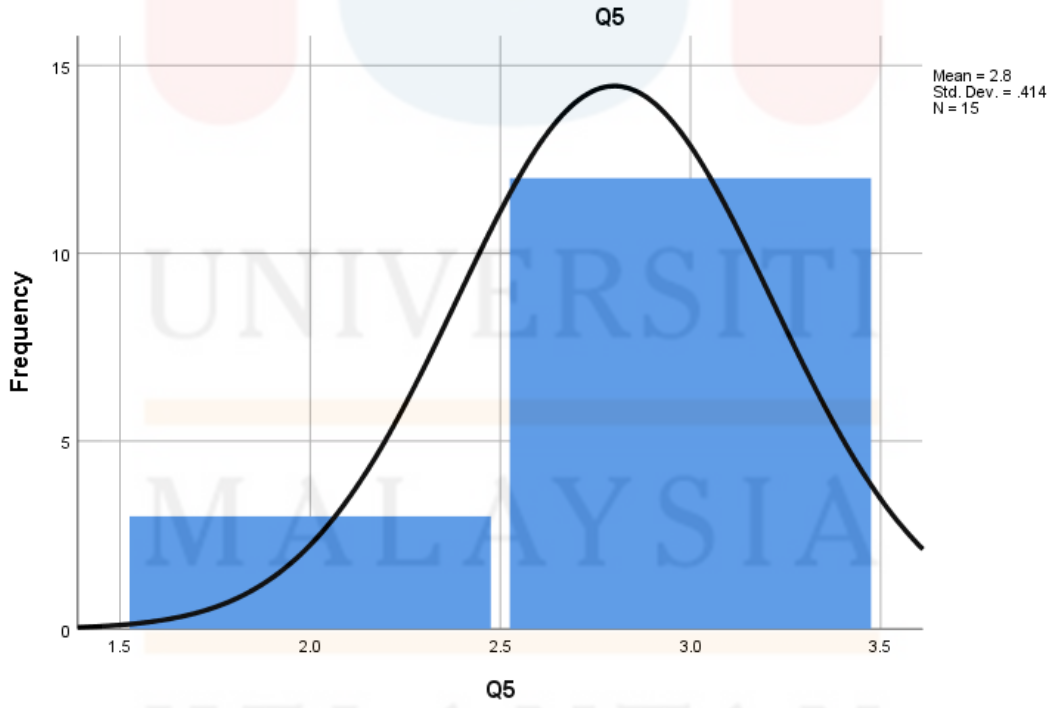

Figure 4.5: histogram graph representive the percentage of Q5 for silver catfish.

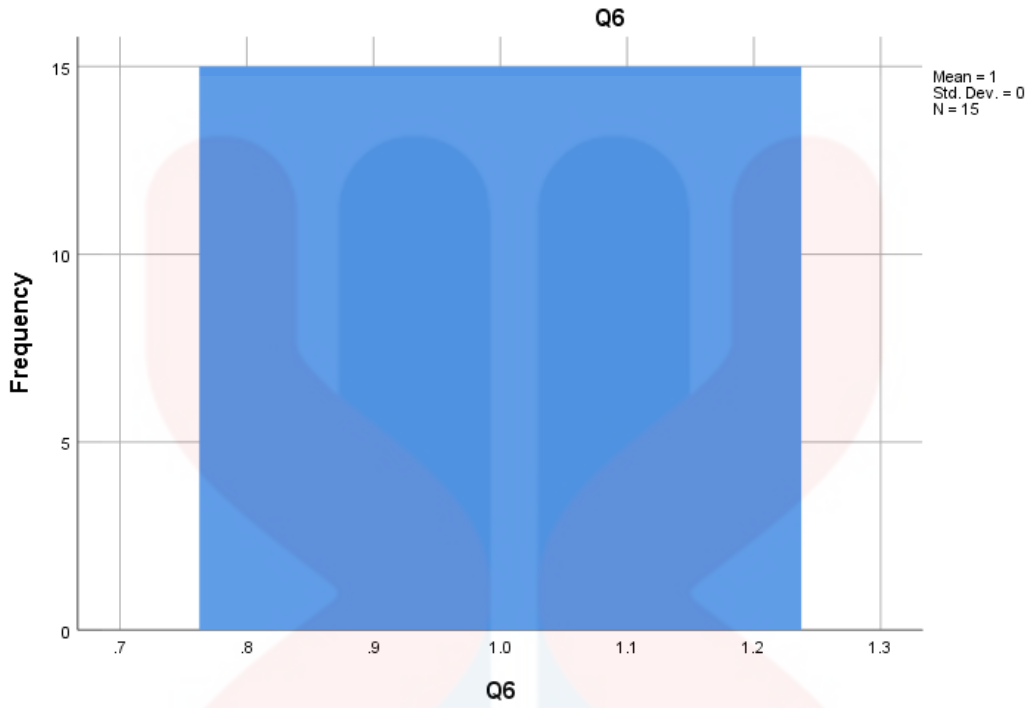

Figure 4.6: histogram graph representive the percentage of Q6 for silver catfish.

Figure 4.7: histogram graph representive the percentage of Q7 for silver catfish.

In Q1 showed the percentage of twice a week was 20% while 6 to 7 in a week was 80%. In this pie chart showed that percentage of twice a week was less than 6 to 7 in a week. In Q2 showed the percentage of 1kg to 10kg was 60%, 11kg to 20kg was 26.7%, and 31kg to 40kg was 13.3%. The total sales of silver catfish in a week more to 1kg-10kg compare than to 11kg-20kg and 31kg-40kg. In Q3 showed the percentage of RM7-RM8 was 46.7% while RM9-RM10 was 53.7%. From the percentage both choice of answer, the price of silver catfish sell quite balanced between RM7-RM8 and RM9-RM10.

In Q4 showed the percentage of respondents kept the condition of silver catfish in live was 33.3% while for die was 66.7%. It showed that respondent major to keep the condition of silver catfish in die before selling it. In Q5 showed the percentage of respondent eat the balance of silver catfish not sale was 20% while kept the balance of silver catfish in freeze condition was 80%. In Q6 and Q7, the percentage of respondents select the higher week of sale was 100% and the percentage of lower week was 100%. There are no multiple answer selected by respondents because it influence because times of salary by buyers which in first week gain the salary.

4.1.2.2 THE PIE CHART AND HISTOGRAM GRAPH FOR RED TILAPIA QUESTIONS

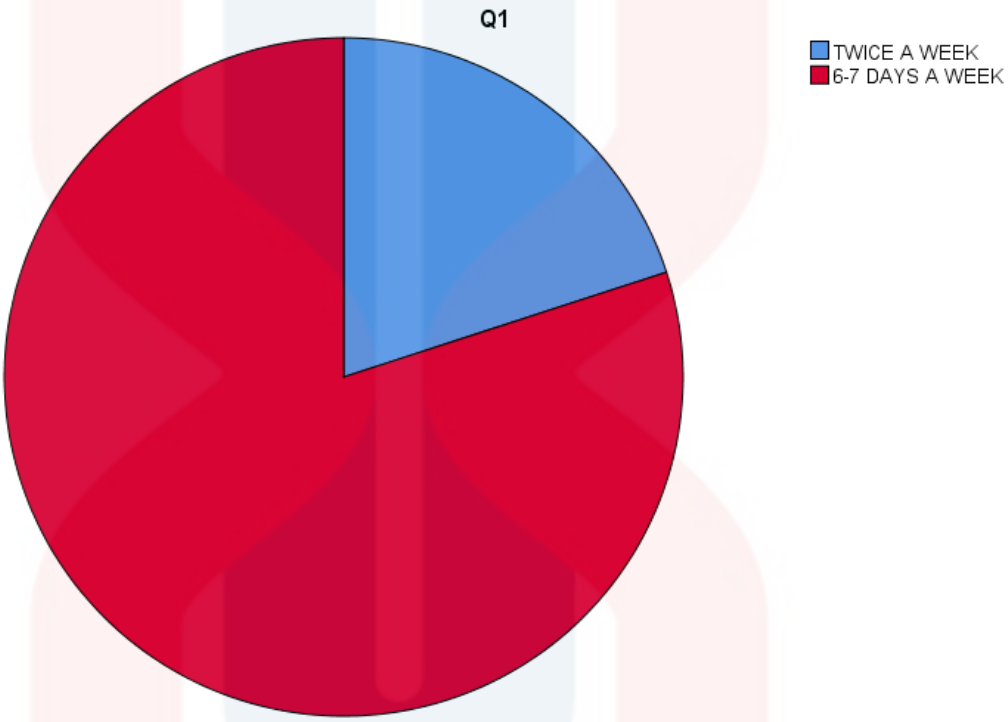

Figure 4.8: pie chart representive the percentage of Q1 for red tilapia.

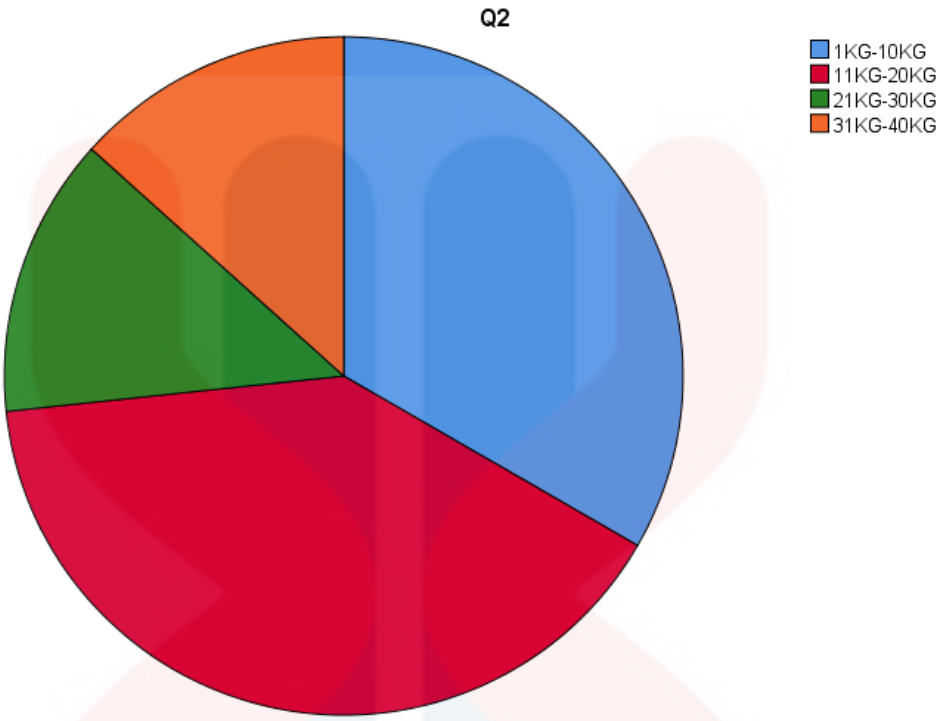

Figure 4.9: pie chart representive the percentage of Q2 for red tilapia.

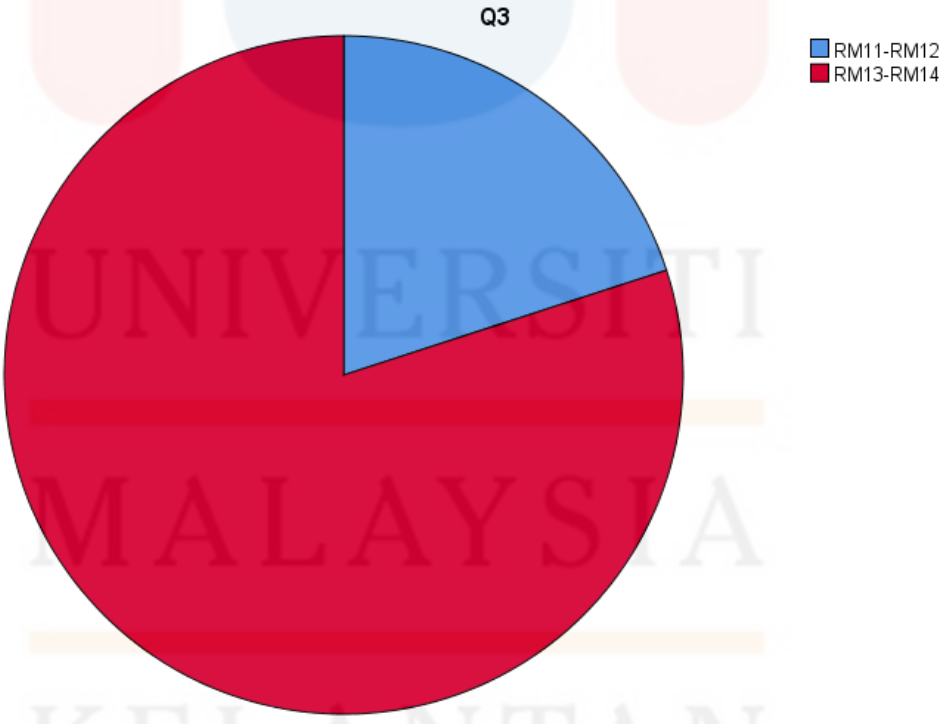

Figure 4.10: pie chart representive the percentage of Q3 for red tilapia.

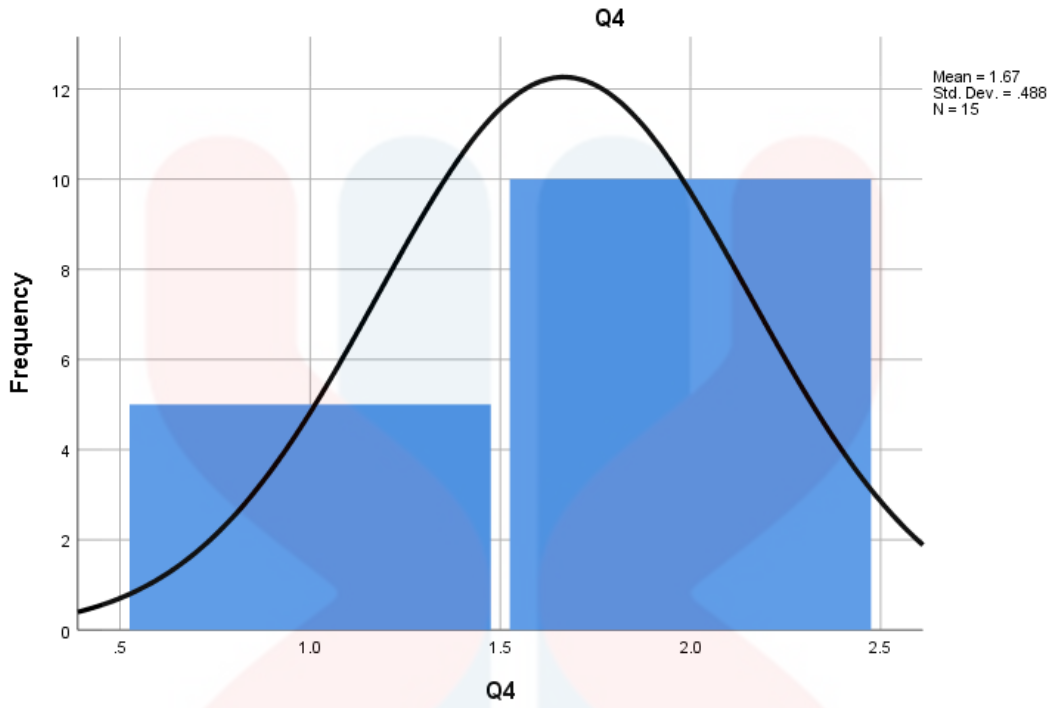

Figure 4.11: histogram graph representive the percentage of Q4 for red tilapia.

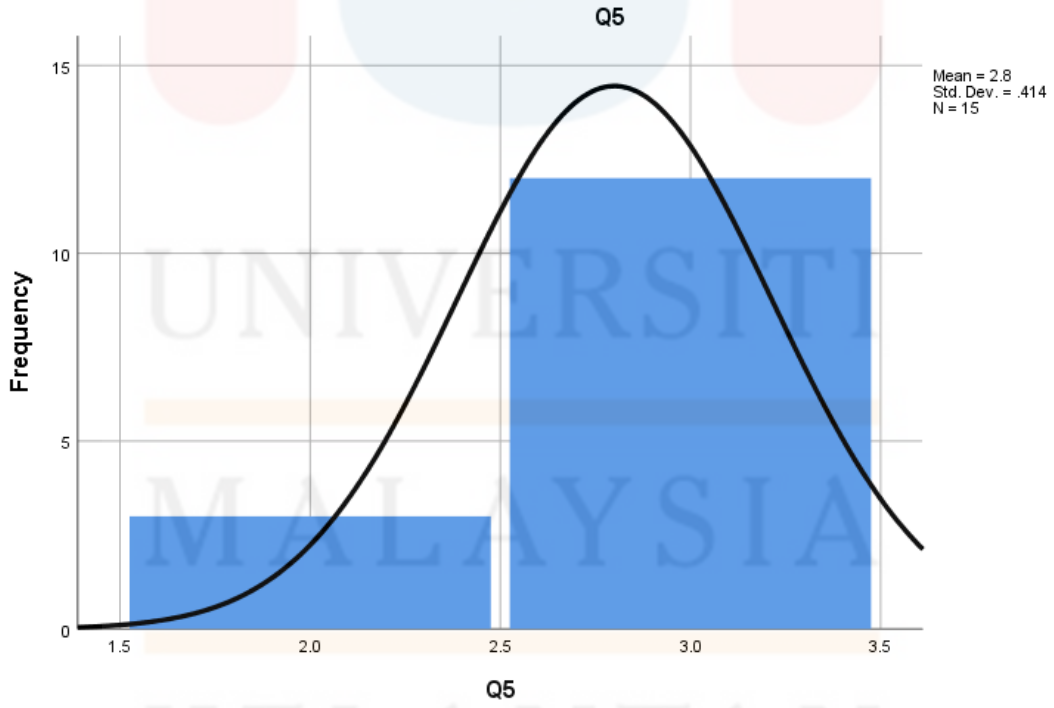

Figure 4.12: histogram graph representive the percentage of Q5 for red tilapia.

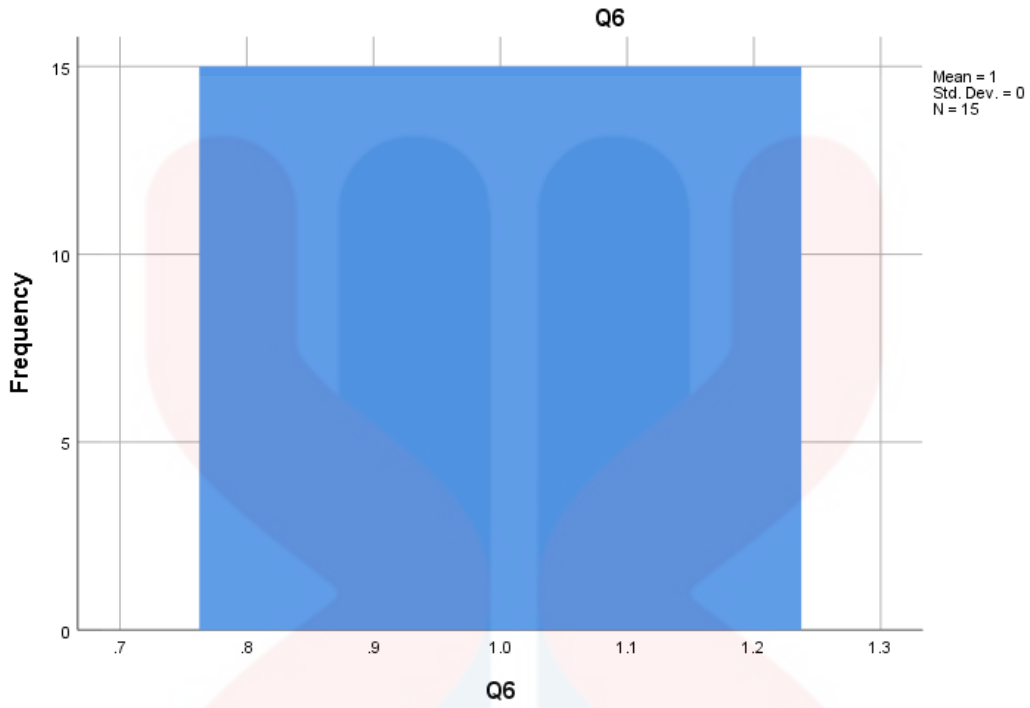

Figure 4.13: Histogram graph representive the percentage of Q6 for red tilapia.

Figure 4.14: Histogram graph representive the percentage of Q7 for red tilapia.

In Q1 showed the percentage of twice a week was 20% while 6 to 7 in a week was 80%. In this pie chart showed that percentage of twice a week was less than 6 to 7 in a week. In Q2 showed the percentage of 1kg to 10kg was 33.3%, 11kg to 20kg was 40%, 21kg to 30kg was 13.3%, and 31kg to 40kg was 13.3%. The percentage of total sales in a week more to 11kg-20kg compare than to 1kg-10kg, 21kg-30kg, and 31kg-40kg. In Q3 showed the percentage of RM11-RM12 was 20% while RM13-RM14 was 80%. From the percentage both choice of answer, the price of red tilapia sell more to RM13-RM14 compared to RM11-RM12.

In Q4 showed the percentage of respondents kept the condition of red tilapia in live was 33.3% while for die was 66.7%. It showed that respondent major to keep the condition of silver catfish in die before selling it. In Q5 showed the percentage of respondent eat the balance of silver catfish not sale was 20% while kept the balance of silver catfish in freeze condition was 80%. In Q6 and Q7, the percentage of respondents select the higher week in week 1 was 100% and the percentage of lower week in week 4 was 100%. There are no multiple answer selected by respondents because it influence because times of salary by buyers which in first week gain the salary.

4.2 ANOVA TEST

Analysis of variances (ANOVA) is a statistical test for detecting in group means where there is one parametric dependent variable and one or more independent variables. A statistically significant ANOVA is typically followed up with multiple comparison procedure to identify which group significant from each other (sawyer, 2009). A one-way analysis of variance was conducted to evaluate the null hypothesis that there is no significant different between the demands of silver catfish and the demands of red tilapia in 3 town in Jeli which are Jeli town, Ayer Lanas Town, and Kuala Balah Town (n=15).

4.2.1 SIGNIFICANT BETWEEN GROUP OF EACH QUESTION FOR SILVER CATFISH AND RED TILAPIA.

Table 4.2: significant value between group of silver catfish and red tilapia each question

Characteristics		F silver catfish	Significants of silver catfish	F of red tilapia	Significants of red tilapia
Q1	Between groups	1.386	0.288	1.385	0.288
Q2	Between groups	0.533	0.600	1.168	0.344
Q3	Between groups	3.399	0.068	0.750	0.493
Q4	Between groups	6.245	0.014	6.245	0.014
Q5	Between groups	1.082	0.370	1.082	0.370
Q6	Between groups	0.000	0.000	0.000	0.000
Q7	Between group	0.000	0.000	0.000	0.000

For Q1, the result showed same significant between-group for silver catfish and red tilapia are larger than 0.05($p<0.05$) which are 0.288, so it can conclude that no differs significantly across place groups for silver catfish and red tilapia. Thus, there are no significant evidence to reject the null hypothesis in Q1. For Q2, the result showed significant between-group for silver catfish and red tilapia are larger than 0.05($p<0.05$) which are 0.600 and 0.344, so it can conclude that no differs significantly across place groups for silver catfish and red tilapia. Thus, there are no significant evidence to reject null hypothesis in Q2. For Q3, the result showed significant between-group for silver catfish and red tilapia are larger than 0.05($p<0.05$) which are 0.068 and 0.493, so it can conclude that no differs significantly across place groups for silver catfish and red tilapia. Thus, there are no significant evidence to reject the null hypothesis in Q3.

For Q4, the result showed same significant between-group for silver catfish and red tilapia are smaller than 0.05($p<0.05$) which are 0.014, so it can conclude that differs significantly across place for silver catfish and red tilapia. Thus, there are significant evidence to reject null hypothesis in Q4. For Q5, the result showed same significant between-group for silver catfish and red tilapia are larger than 0.05($p<0.05$) which are 0.370, so it can conclude that no differs significantly across the place groups for silver catfish. Thus, there are no significant evidence to reject the null hypothesis in Q5. For Q6 and Q7, the result showed no significant between-group for silver catfish and red tilapia because the result are not valid. Thus, there are no significant evidence to reject the null hypothesis in Q6 and Q7.

4.2.2 POST HOC TEST (COMPARISON MULTIPLE)

Table 4.3: post hoc test results

Dependent variable	(I)place	(J)place	Significant value	
			Silver catfish	Red tilapia
Q1	Jeli town	Ayer Lanas	0.268	0.268
		Kuala Balah	0.614	0.614
	Ayer Lanas	Jeli Town	0.268	0.268
		Kuala Balah	0.846	0.846
	Kuala Balah	Jeli Town	0.614	0.614
		Ayer Lanas	0.846	0.846
Q2	Jeli Town	Ayer Lanas	0.869	0.705
		Kuala Balah	0.825	0.317
	Ayer Lanas	Jeli Town	0.869	0.705
		Kuala Balah	0.572	0.751
	Kuala Balah	Jeli Town	0.825	0.317
		Ayer Lanas	0.572	0.751
Q3	Jeli Town	Ayer Lanas	0.087	0.862
		Kuala Balah	0.148	0.462
	Ayer Lanas	Jeli Town	0.087	0.862
		Kuala Balah	0.985	0.764
	Kuala Balah	Jeli Town	0.148	0.462
		Ayer Lanas	0.985	0.764

Q4	Jeli Town	Ayer Lanas	0.037	0.037
		Kuala Balah	0.768	0.768
	Ayer Lanas	Jeli Town	0.037	0.037
		Kuala Balah	0.018	0.018
	Kuala Balah	Jeli Town	0.768	0.768
		Ayer Lanas	0.018	0.018
Q5	Jeli Town	Ayer Lanas	0.629	0.629
		Kuala Balah	0.808	0.808
	Ayer Lanas	Jeli Town	0.629	0.629
		Kuala Balah	0.349	0.349
	Kuala Balah	Jeli Town	0.808	0.808
		Ayer Lanas	0.349	0.349

Post hoc comparisons to evaluate pairwise differences among group were conducted with the use of Tukey HSD test to determine where the significance lies within 3 place. In Q1, test revealed no significant pairwise different for silver catfish and red tilapia between Jeli town and Ayer Lanas (0.268), Jeli town and Kuala Balah (0.614), and Ayer Lanas and Kuala Balah (0.846) because the result showed for sig. were larger than 0.05($p>0.05$). In Q2, test revealed no sigfinicant pairwise different for silver catfish and red tilapia between Jeli town and Ayer Lanas (0.869 and 0.705), Jeli town and Kuala Balah (0.825 and 0.317), and Ayer Lanas and Kuala Balah (0.572 and 0.751) because the result showed for sig. were larger than 0.05($p<0.05$). In Q3, test revealed no significant pairwise different for silver catfish and red tilapia between Jeli town and Ayer Lanas (0.087 and 0.862), Jeli town and Kuala Balah (0.148 and 0.462), and Ayer Lanas and

Kuala Balah (0.985 and 0.764) because the result showed for sig. were larger than 0.05($p<0.05$).

In Q4, test revealed significant pairwise different for silver catfish and red tilapia between Jeli town and Ayer Lanas (0.037) because of the result showed for sig. were smaller than 0.05($p<0.05$). But between Jeli town and Kuala Balah (0.808) and Ayer Lanas and Kuala Balah showed no significant pairwise different because of the result showed for sig. were larger than 0.05($p<0.05$). In Q5, test revealed no significant pairwise different for silver catfish and red tilapia between Jeli town and Ayer Lanas (0.629), Jeli town and Kuala Balah (0.808), and Ayer Lanas and Kuala Balah (0.349) because of the result showed for sig. were larger than 0.05($p<0.05$).

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

In this study there is one objective, which is to collect data on the demands of silver catfish and compare with the demands of red tilapia at 3 location which are Jeli town, Ayer Lanas, and Kuala Balah in Jeli, Kelantan in 2019.

The questionnaire were distributed to 15 fishmonger in three location which are Jeli Town, Ayer Lanas, and Kuala Balah. In general, the percentage of frequency in selling times show that the fishmonger more selling 6 to 7 days in a week. Then, the percentage of frequency for sales in a week(kg) show that most fishmonger can sell the silver catfish 1kg to 10kg in a week compare than to 11kg to 20kg and 31kg to 40kg. The percentage of frequency for sales in a week(kg) also showed that most fishmonger can sell the red tilapia 11kg to 20kg in a week compare than to 1kg to 10kg, 21kg to 30kg, and 31kg to 40kg. The condition of fish time selling more in die because it easy to handle with die fish compare to live fish and easy to keep in storage for freeze. Percentage of frequency highest and lowest sale was week first and week four due to consumer where salary comes in first week of every month

Generally, most of the question were not significant based on the anova table. Only one question that had significant. The question was about how to keep the silver catfish in condition live or die. Most of respondents answer that they kept the silver catfish in die condition because it is easy to handle. Easy to handle in such storage, no need feed required to give and easy to do cleaning process.

As for the conclusion, the alternative hypothesis for this study was being rejected even the results showed a small difference between silver catfish and red tilapia in 3 town in Jeli. It is because there are more similarity in the results.

5.2 RECOMMENDATION

As for the recommendation, based on this study, there is several recommendation for future research especially on collecting data the demands of silver catfish. First and foremost, is to choose multiple target group from the population especially, the target group may can increase their demand by consumption in the population. By focusing on fishmonger also important to observe the sale rates in population by know the demands. Beside then, the researcher should have good connection with Department of Aquaculture to ease them in data search and approaching the target group in the population. Third suggestion is improve the area research such as from Jeli area to Kelantan area. It is important the data about the demand of certain fish in the area because it easy for the production of fish to produce.

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APPENDICES

MONITORING ABOUT THE DEMANDS OF SILVER CATFISH IN JELI

NAME:

AGES:

RACE:

PLACE:

PHONE NO:

QUESTIONS OF SILVER CATFISH DEMANDS IN JELI.

1) In a week, how many times selling silver catfish?
   A- once a week
   B- (3-5 times a week)
   C- twice a week
   D- (6-7 times a week)

2) How many kilogram sells in a week?
   A- (1kg-10kg)
   B- (11kg-20kg)
   C- (21kg-30kg)
   D- (31kg-40kg)

3) How much you sell silver catfish per kilo?
   A- (RM7-RM8)
   B- (RM9-RM10)
   C- (RM11-RM12)
   D- (RM13-RM14)

4) The silver catfish live or die before sells?
   A- (live)
   B- (die)

5) If die, how do you keep the balance of the silver catfish that's not sell in the day?
   A- (throw)
   B - (eat)
   C- (freeze)
   D- (give for free)

6) What weeks the sell of silver catfish highest?
   A- (week 1)
   B- (week 3)
   C- (week 3)
   D- (week4)

7) What weeks the sell of silver catfish lowest?
   A- (week 1)
   B- (week 2)
   C- (week 3)
   D- (week 4)

PART B: QUESTIONS OF RED TILAPIA DEMANDS IN JELI.

1) In a week, how many times selling red tilapia?
   A- once a week
   B- (3-5 times a week)
   C- twice a week
   D- (6-7 times a week)

2) How many kilogram sells in a week?
   A- (1kg-10kg)
   B- (11kg-20kg)
   C- (21kg-30kg)
   D- (31kg-40kg)

3) How much you sell red tilapia per kilo?
   A- (RM7-RM8)
   B- (RM9-RM10)
   C- (RM12-RM13)
   D- (RM13-RM14)

4) The red tilapia live or die before sells?
   A- (live)
   B- (die)

5) If die, how do you keep the balance of the red tilapia that's not sell in the day
   A- (throw)
   B- (eat)
   C- (freeze)
   D- (give for free)

6) What weeks the sells of red tilapia highest?
   A- (week 1)
   B- (week 3)
   C- (week 3)
   D- (week4)

7) What weeks the sells of red tilapia lowest?
   A- (week 1)
   B- (week 2)
   C- (week 3)
   D- (week 4)

FREQUENCY

Statistics

		Q1	Q2	Q3
N	Valid	15	15	15
	Missing	0	0	0
Percentiles	100	4.00	4.00	2.00

FREQUENCY TABLE

Q1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	TWICE A WEEK	3	20.0	20.0	20.0
	6-7 PER WEEK	12	80.0	80.0	100.0
	Total	15	100.0	100.0	

Q2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1KG-10KG	9	60.0	60.0	60.0
	11KG-20KG	4	26.7	26.7	86.7
	31KG-40KG	2	13.3	13.3	100.0
	Total	15	100.0	100.0	

Q3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	RM7-RM8	7	46.7	46.7	46.7
	RM9-RM10	8	53.3	53.3	100.0
	Total	15	100.0	100.0	

Statistics

		Q4	Q5	Q6	Q7
N	Valid	15	15	15	15
	Missing	0	0	0	0
Percentiles	100	2.00	3.00	1.00	4.00

Q4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LIVE	5	33.3	33.3	33.3
	DIE	10	66.7	66.7	100.0
	Total	15	100.0	100.0	

Q5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	EAT	3	20.0	20.0	20.0
	FREEZE	12	80.0	80.0	100.0
	Total	15	100.0	100.0	

Q6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	WEEK 1	15	100.0	100.0	100.0

Q7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	WEEK 4	15	100.0	100.0	100.0

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Q1	Between Groups	1.800	2	.900	1.385	.288
	Within Groups	7.800	12	.650		
	Total	9.600	14			
Q2	Between Groups	1.250	2	.625	.533	.600
	Within Groups	14.083	12	1.174		
	Total	15.333	14			
Q3	Between Groups	1.350	2	.675	3.399	.068
	Within Groups	2.383	12	.199		

	Total	3.733	14			
Q4	Between Groups	1.700	2	.850	6.245	.014
	Within Groups	1.633	12	.136		
	Total	3.333	14			
Q5	Between Groups	.367	2	.183	1.082	.370
	Within Groups	2.033	12	.169		
	Total	2.400	14			
Q6	Between Groups	.000	2	.000	.	.
	Within Groups	.000	12	.000		
	Total	.000	14			
Q7	Between Groups	.000	2	.000	.	.
	Within Groups	.000	12	.000		
	Total	.000	14			

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) PLACE	(J) PLACE	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Q1	JELI TOWN	AYER LANAS	.800	.488	.268	-.50	2.10
		KUALA BALAH	.500	.520	.614	-.89	1.89
	AYER LANAS	JELI TOWN	-.800	.488	.268	-2.10	.50
		KUALA BALAH	-.300	.541	.846	-1.74	1.14
	KUALA BALAH	JELI TOWN	-.500	.520	.614	-1.89	.89
		AYER LANAS	.300	.541	.846	-1.14	1.74
Q2	JELI TOWN	AYER LANAS	-.333	.656	.869	-2.08	1.42
		KUALA BALAH	.417	.699	.825	-1.45	2.28
	AYER LANAS	JELI TOWN	.333	.656	.869	-1.42	2.08
		KUALA BALAH	.750	.727	.572	-1.19	2.69
	KUALA BALAH	JELI TOWN	-.417	.699	.825	-2.28	1.45
		AYER LANAS	-.750	.727	.572	-2.69	1.19
Q3	JELI TOWN	AYER LANAS	-.633	.270	.087	-1.35	.09
		KUALA BALAH	-.583	.288	.148	-1.35	.18
	AYER LANAS	JELI TOWN	.633	.270	.087	-.09	1.35
		KUALA BALAH	.050	.299	.985	-.75	.85
	KUALA BALAH	JELI TOWN	.583	.288	.148	-.18	1.35
		AYER LANAS	-.050	.299	.985	-.85	.75
Q4	JELI TOWN	AYER LANAS	.633*	.223	.037	.04	1.23
		KUALA BALAH	-.167	.238	.768	-.80	.47
	AYER LANAS	JELI TOWN	-.633*	.223	.037	-1.23	-.04
		KUALA BALAH	-.800*	.247	.018	-1.46	-.14

	KUALA BALAH	JELI TOWN	.167	.238	.768	-.47	.80
		AYER LANAS	.800*	.247	.018	.14	1.46
Q5	JELI TOWN	AYER LANAS	.233	.249	.629	-.43	.90
		KUALA BALAH	-.167	.266	.808	-.88	.54
	AYER LANAS	JELI TOWN	-.233	.249	.629	-.90	.43
		KUALA BALAH	-.400	.276	.349	-1.14	.34
	KUALA BALAH	JELI TOWN	.167	.266	.808	-.54	.88
		AYER LANAS	.400	.276	.349	-.34	1.14

*. The mean difference is significant at the 0.05 level.

HOMOGENOUS SET

Q1

Tukey HSD[a,b]

PLACE	N	Subset for alpha = 0.05 1
AYER LANAS	5	3.20
KUALA BALAH	4	3.50
JELI TOWN	6	4.00
Sig.		.305

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.865.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Q2

Tukey HSD[a,b]

PLACE	N	Subset for alpha = 0.05 1
KUALA BALAH	4	1.25
JELI TOWN	6	1.67
AYER LANAS	5	2.00
Sig.		.544

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.865.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Q3

Tukey HSD[a,b]

PLACE	N	Subset for alpha = 0.05 1
JELI TOWN	6	1.17

KUALA BALAH	4	1.75
AYER LANAS	5	1.80
Sig.		.109

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.865.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Q4

Tukey HSD[a,b]

		Subset for alpha = 0.05	
PLACE	N	1	2
AYER LANAS	5	1.20	
JELI TOWN	6		1.83
KUALA BALAH	4		2.00
Sig.		1.000	.765

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.865.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Q5

Tukey HSD[a,b]

		Subset for alpha = 0.05
PLACE	N	1
AYER LANAS	5	2.60
JELI TOWN	6	2.83
KUALA BALAH	4	3.00
Sig.		.318

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.865.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.