Fisheries Journal, 15 (1), 435-445 (2025)
http://doi.org/10.29303/jp.v15i1.1424

IDENTIFICATION OF THE TYPE OF GROUPER (Serranidae) RESULTS FROM THE CATCH OF LEWOLEBA FISHERMEN LANDED AT THE TPI LEWOLEBA MARKET

Identifikasi Jenis Ikan Kerapu (Serranidae) Hasil Tangkapan Nelayan Lewoleba yang Didaratkan di Pasar TPI Lewoleba

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(Received February 19th 2025; Accepted March 6th 2025)

ABSTRACT

Grouper is an important economic commodity whose existence continues to be sought after by fishermen. Knowing the types of fish landed and marketed at TPI Lewoleba will be very helpful as a basis for sustainable fisheries management that is appropriate for improving the quality of fish on the market, starting from the fishing management process, handling fishery products, processing, marketing and so on, so that it can also improve the welfare of the fishing community. This research was carried out at TPI Lewoleba in September 2024 – December 2024. The aim of this research was to determine the type of grouper (Serranidae) caught by fishermen landed at the TPI Lewoleba market. The method used in this research is descriptive research method. The results of the research are the types of grouper fish (Serranidae) landed at the TPI Lewoleba market, namely the species Cephalopholis boenak, Variola louti, Epinephelus ongus, Epinephelus fasciatus, and Cephalopholis miniata, Plectropomus leopardus, Epinephelus coeruleopunctatus, and Anyperodon leucogrammicus, Plectropomus oligacanthus, Plectropomus areolatus, and Epinephelus macrospilos, Cephalopholis sonnerati and Epinephelus undulosus. Based on the identification results of grouper fish (Serranidae) landed at the Lewoleba Fish Auction Place (TPI), 13 species were recorded.

Keywords: Grouper, Identification, Lewoleba

ABSTRAK

Ikan kerapu merupakan salah satu komoditi ekonomis penting yang keberadaannya terus dicari oleh nelayan. Mengetahui berbagai jenis ikan yang didaratkan dan diperdagangkan di TPI Lewoleba sangat penting sebagai acuan dalam upaya pengelolaan perikanan berkelanjutan. Dengan demikian, pengelolaan yang optimal ini juga dapat berkontribusi pada peningkatan kesejahteraan para nelayan setempat. Penelitian ini telah dilaksanakan di TPI Lewoleba pada bulan September 2024 – Desember 2024. Tujuan dari penelitian ini adalah untuk mengetahui jenis ikan kerapu (*Serranidae*) hasil tangkapan nelayan yang didaratkan di pasar TPI Lewoleba. Metode yang digunakan pada penelitian ini yaitu metode penelitian deskriptif. Hasil penelitian

yakni jenis ikan kerapu (*Serranidae*) yang didaratkan di pasar TPI Lewoleba yakni spesies *Cephalopholis boenak*, *Variola louti*, *Epinephelus ongus, Epinephelus fasciatus*, dan *Cephalopholis miniata*, *Plectropomus leopardus*, *Epinephelus coeruleopunctatus*, dan *Anyperodon leucogrammicus*, *Plectropomus oligacanthus*, *Plectropomus areolatus*, dan *Epinephelus macrospilos*, *Cephalopholis sonnerati* dan *Epinephelus undulosus*. Kesimpulan dari penelitian yakni berdasarkan hasil identifikasi ikan kerapu (Serranidae) yang didaratkan di Tempat Pelelangan Ikan (TPI) Lewoleba, terdapat sebanyak 13 spesies yang berhasil dicatat.

Kata Kunci: Identifikasi, Ikan Kerapu, Lewoleba

INTRODUCTION

Lembata Regency has a large coastal area with a high level of marine biota diversity. The fisheries sector is one of the main sectors in regional income. The local government through the Lembata Regency Fisheries Service has provided a Fish Auction Place (TPI) as a facility for fishermen to land their catch. Types of important economic biota such as lobster, grouper, snapper, tuna, squid, octopus, and others are often caught by fishermen in Lembata Regency. This was conveyed by the Fisheries and Marine Service in the Management and Zoning Plan document in the Regency (Lembata, 2018). Grouper (*Epinephelus* spp.) is one of the leading commodities in the global market. Market demand for grouper makes it one of the main targets in the capture fisheries sector. Lembata Regency, grouper is often caught by fishermen along with other important economic biota, such as lobster, snapper, tuna, squid, and octopus. The existence of grouper is closely related to the coral reef ecosystem, which is its main habitat. According to (Kusuma et al., 2021), grouper fish inhabit coral reef ecosystems that have a water base of sand, mud, or rocks. The high demand for grouper fish in the local and global markets makes grouper fish have a fairly high price. The high demand for grouper fish in the local and global markets causes the selling price to be quite high, with a local price range reaching IDR 75,000/kg. However, increasingly intensive fishing activities can affect the stock of grouper fish populations in nature.

Given the high market demand and fairly frequent fishing activities, sustainable capture fisheries management is needed, especially for grouper fish and other economically important biota. Therefore, identifying grouper species landed at the Fish Auction Place (TPI) is an important part of supporting sustainable fishery resource management. According to (Parliansyah et al., 2023), to recognize various types of fish in the waters, an identification process using a special identification key is needed. In addition, identification of the name of the fish species is carried out by observing the special characteristics or morphology of the species, which are then compared with similar characteristics in other species. A good understanding of the landed grouper species can help in the formulation of more appropriate fisheries management policies, including in terms of conservation and marketing strategies.

The purpose of this study was to identify the species of grouper (Serranidae) caught by fishermen landed at the Lewoleba TPI market. The findings of this study are expected to provide information on grouper (Serranidae) species and play a role in supporting conservation efforts and sustainable fisheries management. In addition, the results of this study are also expected to help increase the added value and competitiveness of grouper products in the market.

METHODS

Time and Place

This research was conducted at the Lewoleba Fish Auction Place (TPI) from September to December 2024 with a total of 12 sampling times.

Tools and Materials

The tools used in this study include identification guidebooks, cameras, stationery, plastic bags, label paper, and trays. The materials used are fish samples.

Method

The method used in this study is a descriptive research method, which aims to describe or provide information about data, conditions, or phenomena (Leni Masnidar Nasution, 2017).

Research Procedure

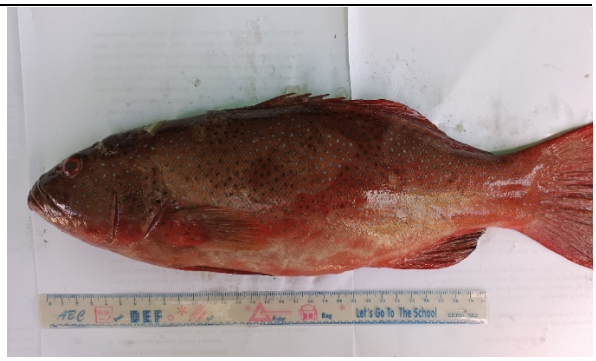
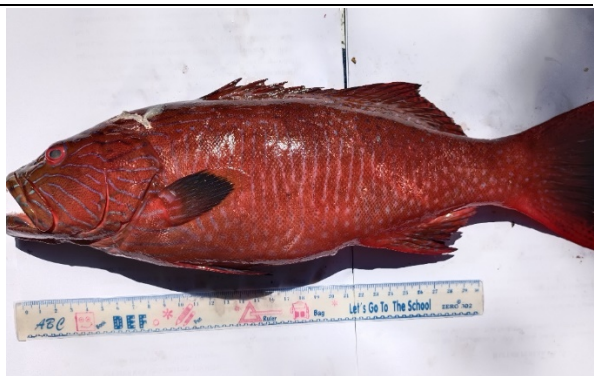
Fish sampling using the random sampling method. The fish that were successfully obtained were then recorded, documented, and stored in labeled plastic bags. The fish identification process is carried out by observing their morphological characteristics, referring to the species identification guidebook.

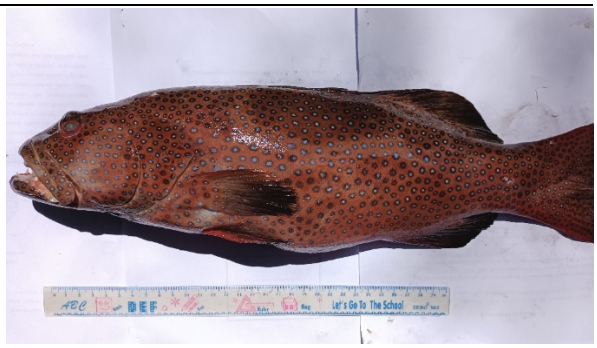
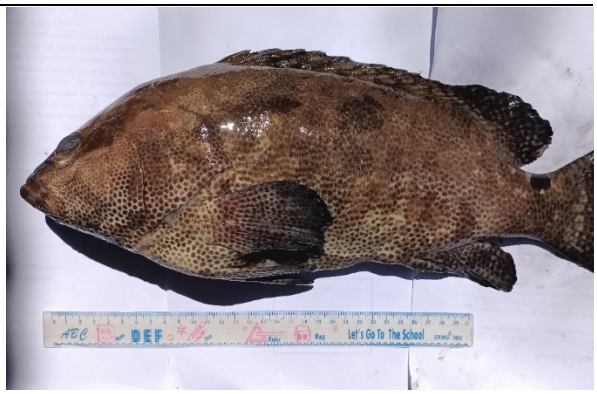
RESULTS

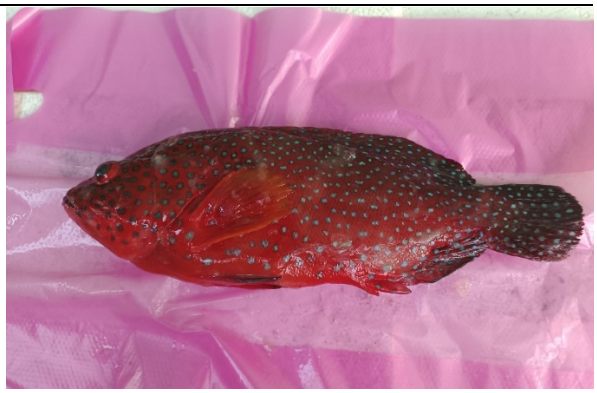
The results of the study obtained several species of grouper fish (Serranidae) landed at the Lewoleba TPI market, namely the species *Cephalopholis boenak*, *Variola louti*, *Epinephelus ongus, Epinephelus fasciatus*, *Cephalopholis miniata*, *Plectropomus leopardus*, *Epinephelus coeruleopunctatus*, *Anyperodon leucogrammicus*, *Plectropomus oligacanthus*, *Plectropomus areolatus*, *Epinephelus macrospilos*, *Cephalopholis sonnerati* and *Epinephelus undulosus*. Furthermore, the data is displayed in the following table:

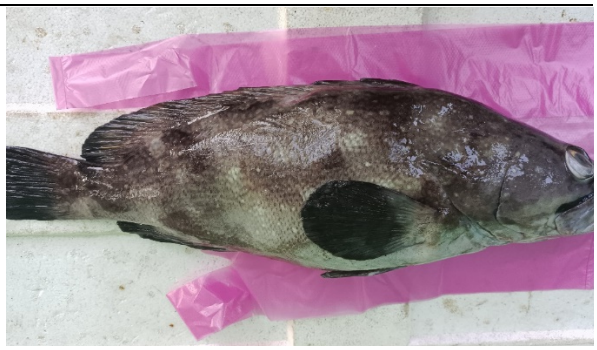
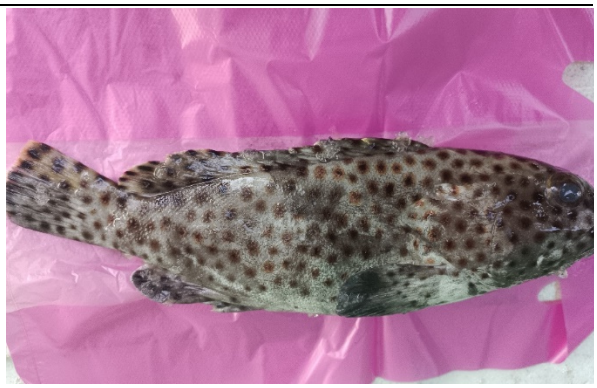
Table 1. Types of Grouper Fish Landed at the Lewoleba TPI Market

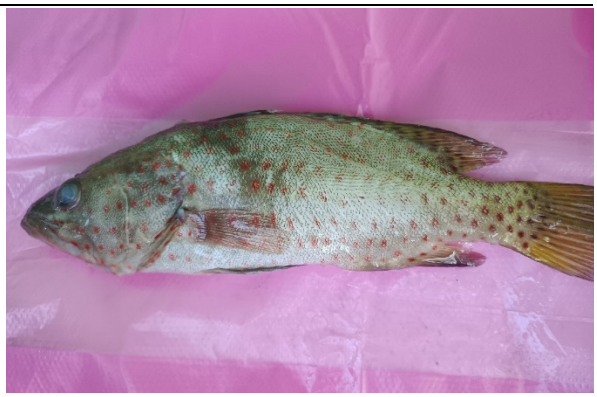
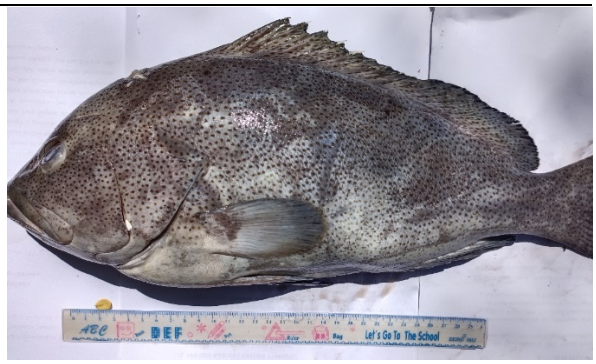
No.	Species Name	Morphology	Picture
1.	***Cephalopholis sonnerati***	**Tomato Hind** This fish lives in coral reef ecosystems at depths between 10 and 150 meters. Morphologically, its body shape tends to widen with special characteristics in the form of nine spines on the round fins. The number of scales on its lateral line ranges from 66 to 80. When it reaches adulthood, the body of this fish shows color variations, ranging from orange red to yellowish brown, accompanied by a pattern of small yellow or red spots that are dense, and sometimes there are pale spots on its body.	

No.	Species Name	Morphology	Picture
2.	***Variola louti***	**Yellow-edged lyretail** This fish inhabits coral reef ecosystems at depths between 3 and 24 meters. Morphologically, it has nine spines on its dorsal fin but when mature it can be distinguished by the presence of a wide yellow edge on the back of the body. In the juvenile phase, this fish is characterized by the presence of a black line extending from the head to the body, accompanied by the presence of black spots at the base of the upper tail fin rays.	
3.	***Plectropomus leopardus***	**Leopard coralgrouper** This fish lives in coral reef habitats at depths between 0 and 100 meters. In terms of physical form, this fish has hard bones on the dorsal fin accompanied by small spots on the head that are almost the same size as the nostrils. Meanwhile, its tail fin is concave. Its body color varies from reddish to dark greenish brown, with smaller spots that have dark blue edges.	
4.	***Plectropomus oligacanthus***	**Highfin coralgrouper** This fish lives in coral reef ecosystems at depths of 4 to 150 meters. Morphologically, this fish is equipped with spines on the dorsal fin and a concave tail fin. When it reaches adulthood, its body displays a blue stripe pattern on the head, accompanied by blue vertical lines and other stripe patterns on the front of the body.	

No.	Species Name	Morphology	Picture
5.	***Cephalopholis boenak***	**Chocolate hind** This fish is generally found in shallow waters with dead and muddy coral substrates at depths of 0 to 30 meters. In terms of morphology, this fish has a dorsal fin consisting of 9 spines and 15 to 17 soft rays, and a round tail fin. There are 8 soft rays on the anal fin. Other easily recognizable characteristics are the presence of black or blue spots in a circle on the head, the body color tends to be brown with a pattern of 7 to 8 dark lines, and the presence of spots on the gill cover. In addition, some parts of the fins have white edges.	
6.	***Plectropomus areolatus***	**Squaretail coralgrouper** This fish lives in coral reef habitats at depths of 0 to 20 meters. Morphologically, this fish has spines on the dorsal fin and caudal fin that are arranged perpendicular to each other. The head and body of this fish have color variations ranging from greenish gray to brownish pink, decorated with a pattern of dark-edged blue spots that are arranged closely. The size of the spots is generally uniform, and a similar motif is also seen on the fins.	
7.	***Epinephelus ongus***	**White-streaked grouper** This fish lives in coral reef waters and rocky areas at a depth of 5 to 25 meters. From the morphological aspect, this fish is equipped with 11 spines on the dorsal fin and 14 to 16 soft rays, and has a round tail fin. Its body tends to widen with a fairly dense white spot	

No.	Species Name	Morphology	Picture
		pattern, while the fins often display wavy lines. Another visible feature is the presence of a black line above the jaw, although it looks less firm or faint.	
8.	***Epinephelus fasciatus***	**Blacktip grouper** This fish lives in coral reef environments and rocky waters with depths between 0 and 160 meters. In terms of morphology, this species has a dorsal fin consisting of 11 spines and 15 to 17 soft rays, while the caudal fin is round. The body color varies from pale pink to greenish yellow, with a tendency to turn reddish after death. Other characteristics are the presence of 5 to 6 dark red rows on the body and the tip of the dorsal fin layer with black spines. The maximum size that can be achieved is 36 cm. The Sunu Karet Grouper is a predator that preys on zoobenthos, such as molluscs, echinoderms, benthic crustaceans, and small fish.	
9.	***Cephalopholis miniata***	**Coral grouper** This fish can grow to a maximum length of 45 cm (TL). The body color of this fish varies from reddish orange to dark red, with bright blue spots evenly distributed throughout the body and fins, except on the pectoral fins. In the juvenile stage, this fish is yellow with faint blue spots. When entering the juvenile phase, the line pattern resembles *C. sexmaculata*, but can be distinguished by the presence of spots around the mouth that have blue lines.	

No.	Species Name	Morphology	Picture
		Spotted Grouper is generally found in coastal coral reef ecosystems, especially on coral walls that have many caves and clear waters around the reef. The depth range of its habitat ranges from 6 to 150 meters. Spotted Grouper is a carnivore, with its main food being benthic crustaceans and small fish.	
10.	***Epinephelus coeruleopunctatus***	**Whitespotted grouper** This fish lives in coral reef habitats. This fish is generally found in areas around caves at depths of 0 to 65 meters. The dorsal fin consists of 11 spines and 15 to 17 soft rays, while the tail fin is round. The body color of this fish is dominated by grayish brown, decorated with a pattern of pale spots or large patches, and there is a black line visible on the upper part of its mouth. The pectoral and tail fins are mostly dark gray and can grow up to 76 cm in length.	
11.	***Epinephelus macrospilos***	**Snubnose grouper** This fish lives in coral reef ecosystems at depths of 0–45 meters. Its dorsal fin has 11 spines, while its caudal fin is rounded. The number of scales on the lateral line ranges from 48–52. The black spots on the pectoral fins are less visible, while the rear edge of the caudal fin stands out with a striking white color.	

No.	Species Name	Morphology	Picture
12.	***Anyperodon leucogrammicus***	**Slender Grouper** Physically, this species has fewer black spots on the pectoral fin area and the rear edge of the caudal fin which is clearly visible with a striking white color. In addition, there are four whitish lines that stretch from behind the eyes to the body.	
13.	***Epinephelus undulosus***	**Wavy-lined grouper** This species lives at depths of 15–90 meters. The dorsal fin of this fish consists of 11 spines and 17 to 19 soft rays, with a vertical caudal fin. The membrane on the spiny dorsal fin appears plain without any stripe pattern. Its body is reddish gray with many fine dark lines that wavy lengthwise, and its head is spotted.	

Source: Research Results

DISCUSSION

Grouper fish (Serranidae) landed at TPI Lewoleba amounted to 13 species with a total of 885 individuals. The types of grouper fish (Serranidae) landed at TPI Lewoleba market are the species *Cephalopholis boenak, Variola louti, Epinephelus ongus, Epinephelus fasciatus, Cephalopholis miniata, Plectropomus leopardus, Epinephelus coeruleopunctatus, Anyperodon leucogrammicus, Plectropomus oligacanthus, Plectropomus areolatus, Epinephelus macrospilos, Cephalopholis sonnerati* and *Epinephelus undulosus*. Reef fish play a significant role in maintaining the balance of the food chain, especially as the main food source for predatory fish (carnivores) (Sugara et al., 2021). Of the many types of fish caught by fishermen, it can be said that grouper fish (Serranidae) are quite abundant. The abundance of coral fish species in an area can be used as a bioindicator of the fertility of an area. The diversity of fish species in a water area reflects the level of quality and condition of the aquatic ecosystem (Santika & Anas, 2024). According to (Yuliana et al., 2017), the large number of coral fish can be a sign that the coral reef ecosystem is in a healthy condition, because coral fish utilize various forms of reefs as a place to live, shelter, and food sources. Furthermore, according to (Tadjuddah et al., 2013), the high diversity of grouper species in an area indicates that the waters have conditions that support the sustainability of the ecosystem, including the availability of food and habitat protection on coral reefs.

Grouper fish in the young phase are generally found in shallow waters near the coast, while when they enter adulthood, these fish will move towards deeper waters up to 40 meters. Based on the results of the study (Perangin-angin et al., 2016) the distribution of demersal fish resources based on depth layers shows that as the depth of the waters increases, the number of

species and families of demersal fish tends to decrease. The ideal habitat for the growth of this fish is on the sandy bottom of waters filled with coral reefs and seagrass beds. According to (Dwiarianto & Syah, 2020) that ecological conditions suitable for the growth of grouper fish include water temperatures between 24°C - 31°C, salinity 30-33 ppt, dissolved oxygen above 3.5 ppm, and pH between 7.8 - 8.

Grouper fishing generally uses handlines. Handlines are passive fishing gear, environmentally friendly, and have a high level of selectivity in choosing the size of the fish caught (Telussa & Ernaningsih, 2019). Handlines are one type of fishing gear used by small-scale fishermen for small sizes including grouper (*Epinephelus fuscoguttatus*) (Shadiqin et al., 2019). Furthermore, according to (Yudha et al., 2017), the fishing gear commonly used in waters to catch grouper consists of fishing rods, nets, spears, and traps.

The grouper (*Epinephelus* sp.) fishing season in Indonesia varies depending on geographic location and local oceanographic conditions. Several studies have identified patterns of grouper fishing seasons in various Indonesian waters. The grouper fishing season in various Indonesian waters shows variations depending on local oceanographic conditions and environmental factors. Several studies report that the grouper fishing season in Bengkulu waters occurs almost throughout the year, except in February and July (Sugara et al., 2022). The peak fishing occurs in March. February and July are considered non-fishing seasons, with fishing season indices of 85.4% and 85%, respectively (Syaputra et al., 2020). The results of research in Saleh Bay also show that the demersal fishing season occurs in January, March, May, September, November, and December (Akbarsyah et al., 2020).

Grouper is one of the fishery commodities with high economic value, especially in international market trading activities. However, in recent years, the intensity of grouper fishing has continued to increase, causing great pressure on natural stocks. Excessive exploitation can cause a significant population decline (Nurulludin et al., 2022) and very high fishing intensity can lead to overfishing, so that more sustainable capture fisheries management is needed to ensure stock sustainability and ecosystem balance (Ernaningsih et al., 2023). This condition requires more adaptive management policies, including restrictions on catch quotas and regulation of conservation areas (Nurulludin, et al., 2022). To maintain the sustainability of grouper fisheries, conservation efforts are needed such as restrictions on minimum catch sizes, implementation of conservation zones, and regulation of fishing seasons so that fish populations can recover and meet market needs in the long term (Dwiarianto & Syah, 2020). In addition, the development of grouper fish farming activities can be an alternative to meet market demand and maintain ecosystem balance. As one of the leading commodities in marine cultivation, several varieties of grouper fish are developed through crossbreeding to produce faster growth, better environmental resilience, and optimal economic benefits (Kamal et al., 2019).

CONCLUSION

Based on the results of the identification of grouper fish species (Serranidae) landed at the Lewoleba Fish Auction Place (TPI), there were 13 species that were successfully recorded. The species include *Cephalopholis boenak, Variola louti, Epinephelus ongus, Epinephelus fasciatus, Cephalopholis miniata, Plectropomus leopardus, Epinephelus coeruleopunctatus, Anyperodon leucogrammicus, Plectropomus oligacanthus, Plectropomus areolatus, Epinephelus macrospilos, Cephalopholis sonnerati*, and *Epinephelus undulosus*. The diversity of grouper species shows that the waters around Lewoleba have quite high potential for grouper fish resources, which can be utilized sustainably as a fishery commodity with important economic value for local fishermen.

ACKNOWLEDGEMENT

The researcher expressed his great gratitude to Mrs. Nuraini who has provided assistance to support the smooth running of this research. Appreciation is also conveyed to all related elements at the research location for their cooperation and support. Their contribution has been an important factor in the success and smooth implementation of this research.

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