



Marketing of the Mud Crab (*Scylla serrata*) Cultivated in Mangrove Environment in Palampai Village, Kapuas Kuala District Central Kalimantan, Indonesia

Emmy Lilimantik*, Ayu Selma

Faculty of Marine and Fisheries, Lambung Mangkurat University, Indonesia

*Corresponding Author: emmy.lilimantik@ulm.ac.id

ARTICLE INFO

Article History:

Received: Feb. 11, 2025
Accepted: March 3, 2025
Online: March 5, 2025

Keywords:

Mud crabs,
Characteristics of
marketed crabs,
Marketing channels,
Institutional markets

ABSTRACT

This research aimed to examine the marketing of mud crabs cultivated in the mangrove environment in Palampai Village, Kapuas Kuala District, Kapuas Regency, Central Kalimantan Province. The data used consist of two types: primary data and secondary data, while data collection was conducted using three methods: observation, interviews, and documentation. A sample of 15 crab farmers was selected using the simple random sampling method, while the marketing institution samples included 3 middlemen, 5 retailers, 2 institutional markets, and 1 inter-island trader. They were determined based on the snowball sampling method. The ages of the samples varied between 45 and 56 years, with the duration of their business ranging from 2 to 6 years. Data analysis used a qualitative descriptive method to examine (a) the characteristics of the marketed crabs and (b) marketing channel analysis. The results of the analysis showed that (a) the characteristics of the marketed crabs must align with the quality, size, and weight of the crabs, and (b) the marketing channels for crabs consist of four channel patterns and involve four marketing institutions: middlemen, retailers, inter-island traders, and institutional markets.

INTRODUCTION

Indonesia has the largest distribution of mangrove ecosystems in the world, covering approximately 20% or 3.54 million hectares, which is divided into about 2.2 million hectares within forest areas and 1.3 million hectares outside forest areas, spread across 257 districts/cities (Dahuri & Sari, 2015). Mangroves are one of several productive ecosystems that can be found in brackish water areas (Lahjie *et al.*, 2019). They hold significant importance both ecologically and economically, and they also serve as a factor in shaping the socio-cultural aspects of the surrounding communities (Sobari *et al.*, 2006). The mangrove forests, in addition to being effective sediment traps, protecting coastlines from erosion, and facilitating nutrient cycling, they serve as spawning areas, feeding grounds, and nursery habitats for various organisms of economic value such as fish, shellfish, mud crabs, and shrimp (Alongi, 2008; Suprpto *et al.*, 2015).

Crabs that live in mangrove areas, known as mud crabs (*Scylla serrata*), are one of the high-value fishery commodities (Indarjo *et al.*, 2020). Crab farming in mangrove environments is an effort to grow crabs in conjunction with mangroves, where farmers raise crabs to increase their income while still paying attention to the conservation of mangrove forests (Rangka, 2007). Crabs can be continuously cultivated throughout the year due to the abundant availability of seeds in the wild, and the locations for their growth can be easily prepared (Mardiana *et al.*, 2015). The demand for crabs is relatively high due to the delicious and healthy taste of their meat (Rustam *et al.*, 2020), while the production of crabs cultivated in mangrove areas can be distributed to various target markets according to demand, such as local markets, restaurants, inter-island markets, and even international markets (Baker & Hossain, 2024).

The marketing of crabs cultivated in mangrove environments involves the characteristics of the crabs, such as quality and size, which will affect the product's appeal in the market (Baird & Flaherty, 2005; Primavera, 2006). Diverse marketing channels provide opportunities for farmers to reach consumers (Agbayani, 2001; Bennett & Reynolds, 2016; Johnny, 2020; Lilimantik & Mailita, 2021), and marketing institutions play a crucial role in supporting the distribution and marketing of crabs (Kumar & Singh, 2015; Hanafiah & Saefuddin, 2016). By understanding these three aspects, crab marketing can become more effective and efficient in increasing their income and ensuring the sustainability of their businesses.

MATERIALS AND METHODS

1. Research sites

This research was conducted from May to October 2024, while the research location was determined using purposive sampling in Palampai Village, Kapuas Kuala District, Kapuas Regency, Central Kalimantan Province-Indonesia (Fig. 1). Palampai Village has a mangrove forest located approximately ± 1 km toward the coastline, dominated by several types of mangroves, such as api-api (*Avicennia* spp.), pedada (*Sonneratia*), and bakau (*Rhizophora* sp.), lacang (*Bruguiera* sp.), nipah (*Nypa fruticans*), especially teruntum merah (*Lumnizera littorea*), and buta-buta (*Excoecaria agallocha*). The mangrove forest in this area is an ideal habitat for the development of crabs, while the majority of the community living in the area work as crab producers, utilizing the ponds in the mangrove environment to meet their livelihood needs.

Marketing of Mud Crab (*Scylla serrata*) Cultivated in Mangrove Environment in Palampai Village
Kapas Kuala District, Central Kalimantan, Indonesia

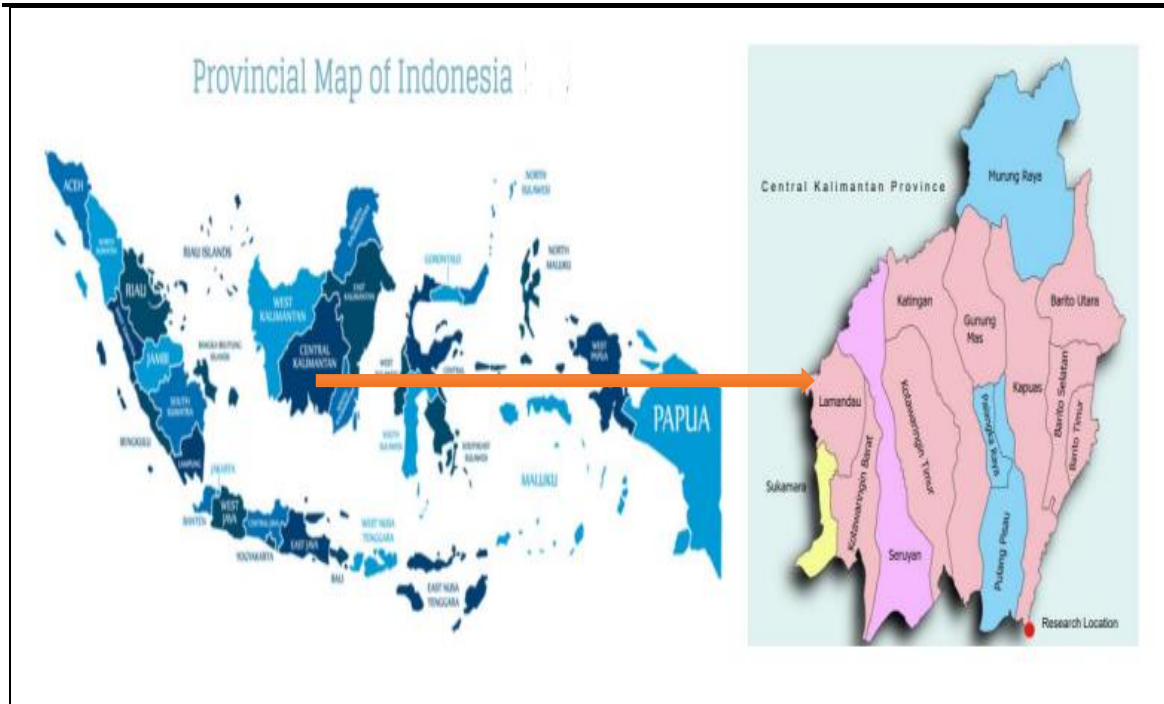


Fig. 1. Map of Palampai Village, Kapuas Kuala District, Central Kalimantan, Indonesia

2. Respondents and data collection method

The total number of respondents involved in this study was 26 people, consisting of 15 crab farmers, 3 middlemen, 5 retailers, 2 institutional markets, and 1 inter-island trader. Fifteen out of 50 crab farmers were selected using the simple random sampling method, which aligns with **Kothari (2024)** statement that in a homogeneous population, a smaller sample size (10%-15%) can be used to obtain representative results. Meanwhile, intermediaries (middlemen, retailers, and inter-island traders) were selected using the snowball sampling method, which is based on information from initial respondents, allowing the sample size to gradually increase, similar to a snowball effect (**Biernacki & Waldorf, 1981**). The ages of the respondents varied between 45 and 56 years, with the duration of their businesses ranging from 2 to 6 years.

The data sources in this study consist of (a) primary data obtained according to the research needs through direct observation (**Kumar, 2014**) of crab farmers and intermediaries in the research area, which includes size and weight, price, and quantity of crab production, and (b) secondary data from relevant agencies related to this research, as well as related literature obtained indirectly from various written sources (**Saunders et al., 2016**). Meanwhile, data collection was conducted using three methods: (a) interviews involving direct interaction between the researcher and respondents, where the researcher asks questions to the respondents to obtain information, views, or experiences regarding a specific topic (**Kvale, 2007**), (b) documentation, where data collection is based on existing records or data, which can include reports, photos, recordings, articles, and

various other types of documents relevant to the research topic (Creswell, 2014), and (c) surveys by observing phenomena or behaviors directly in the field (Taherdoost, 2021).

3. Data analysis

The marketing of crabs cultivated in the mangrove environment in Palampai Village was analyzed using a qualitative descriptive method that focuses on providing a clear picture of the subject or phenomenon being studied (Silverman, 2013), which includes: (a) the characteristics of the marketed crabs and (b) marketing channel analysis.

RESULTS AND DISCUSSION

1. Characteristics of marketed crabs

1.1. Quality

The quality of crabs that meets market standards is crucial to fulfilling consumer expectations and ensuring product competitiveness. Aspects that must be considered for crabs that will be sold in the market include:

- **Physical quality**, where (a) the crabs sold should preferably be alive, as moving crabs indicate the health and freshness of the product, (b) the shell should be intact without any cracks or damage. A healthy shell indicates that the crab has grown well, and (c) bright and clean shell colors are more appealing to consumers, indicating that the crab is healthy.
- **Meat quality**, where (a) crab meat should have a firm and non-watery texture, indicating that the meat is of high quality, (b) the consistency of the meat should be uniform, with no parts that are too soft or too hard, and (c) high-quality crab meat is usually bright white or cream in color.
- **Taste and aroma**, where (a) fresh crab meat typically has a distinctive sweet flavor, and (b) the aroma of high-quality crab meat should not have a strong fishy smell, indicating that the crab is in good condition.

1.2. Size and weight

The cultivation of crabs from seed to harvest size takes between 6 to 12 months, depending on various factors that affect growth. However, with good management, crabs can reach the desired size in a shorter time, thereby increasing farming efficiency (Diniah *et al.*, 2024). In general, crabs can be harvested when they reach a weight between 0.3 and 1kg, which is considered ideal for the market, both for local consumption and export (Hussain & Hossain, 2015). In Palampai Village, there are several grades of crabs produced by crab farmers, as presented in Table (1.)

Table 1. Size and quantity of mud crab production (Processed Primary Data, 2024)

| No. | Type | Weight (gr) | Price (IDR/Kg) | Production (Kg/day) |
|-----|-------------|-------------|-------------------|---------------------|
| 1. | Female crab | >400 | 150.000 – 500.000 | 25-70 |
| 2. | Female crab | 250-400 | 150.000 – 300.000 | 15-65 |
| 3. | Male crab | >500 | 100.000 – 450.000 | 20-70 |

**Marketing of Mud Crab (*Scylla serrata*) Cultivated in Mangrove Environment in Palampai Village
Kapuas Kuala District, Central Kalimantan, Indonesia**

| | | | | |
|----|------------------------|---------|-------------------|-------|
| 4. | Male crab | 300-500 | 100.000 – 270.000 | 15-50 |
| 5. | Cam crab ¹⁾ | <250 gr | 30.000 – 80.000 | 5-30 |
| 6. | BS crab ²⁾ | <300 gr | 15.000 – 25.000 | 10-40 |

Description

- ¹⁾ Cam Crab refers to mud crabs that are caught and are female, with the following criteria: weight of the crab < 250g, the crab has not yet spawned, or the crab is in the early stages of gonad maturity.
- ²⁾ BS Crab refers to mud crabs that are caught and are male, with the following criteria: weight of the crab < 300g, incomplete claws, and a weak shell.

2. Marketing channel analysis

The marketing channels for crabs produced from the mangrove pond cultivation in Palampai Village consist of four patterns and involve four marketing institutions that function to deliver production results from the production area to the consumption area. The marketing channels in question are presented in Fig. (2).

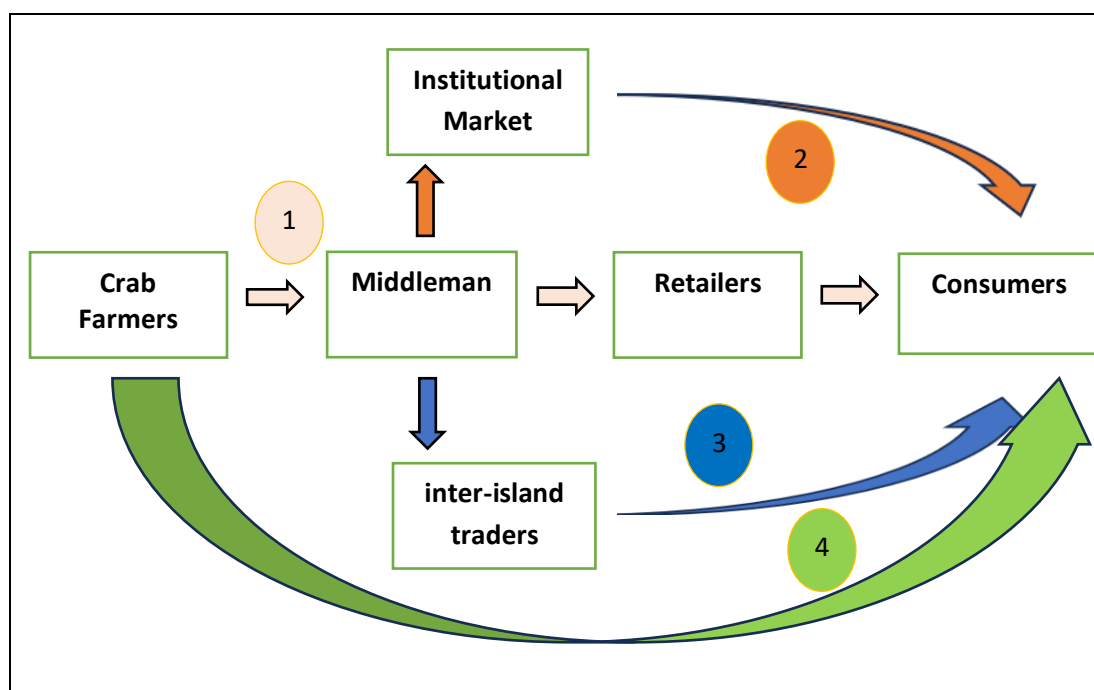


Fig. 2. Marketing channel of crab in Palampai Village

Explanation of Fig. (2)

Channel 1: Crab farmers sell their production to middlemen located in Palampai Village. This process is the initial step in the crab marketing channel, where farmers offer the crabs they have produced to middlemen. These middlemen act as intermediaries who gather products from various farmers in the area. After receiving the crabs from the farmers, the collecting traders will conduct a selection process and determine the price before selling them to retailers. Retailers play a role in distributing the crabs to end consumers, either through traditional markets or modern markets. This process ensures that the produced crabs can effectively and efficiently reach consumers. Typically, the

crabs sold in Channel 1 are those that do not meet the quality standards for export or those with production volumes that exceed market demand. This is important to maintain the quality of the products being exported and to ensure that the crabs sold in the local market remain fresh and of high quality. Thus, crab farmers can maximize their harvest yields and reduce losses from unsold products.

Channel 2: Crab farmers sell their production by offering their catch to middlemen. The middlemen act as intermediaries who collect crabs from various farmers, allowing them to obtain a larger volume for sale. After that, the crabs collected by the middlemen are sold to institutional markets such as restaurants, hotels, and other food institutions that require a large supply of crabs. Sales to institutional markets are often conducted at more stable prices and in larger quantities compared to direct sales to consumers. Subsequently, the crabs are sold again to end consumers, such as individuals or families purchasing crabs for personal consumption, or small businesses like food stalls that sell crabs to their customers.

Channel 3: Middlemen sell crabs to inter-island traders who play a strategic role in ensuring that the collected crabs can reach larger markets, both inter-island and international markets. They typically also have access to efficient transportation means necessary for quickly and safely transporting crabs to more distant locations, as well as knowledge of market demand in various regions. After that, the crabs sold to inter-island traders will be exported to international markets. This export process is a crucial step in expanding the market for crab products, where inter-island traders establish relationships with importers in other countries. The export process also involves various procedures, including meeting the quality standards and regulations set by the destination country. The crabs that are exported are typically high-quality products that meet specific criteria, ensuring they are accepted in foreign markets.

Channel 4: Crab farmers sell their production directly to end consumers. Typically, the consumers who purchase are often local residents who have easy access to the cultivation sites. They may already be familiar with the crab products offered and prefer to buy directly from the source. Purchasing directly from the farmers also assures them that the products they buy are fresh and of high quality. Additionally, the consumers who purchase can also include visitors to the cultivation area. Tourists or visitors who come to the region are often interested in buying crabs in smaller quantities.

In addition to explaining the marketing channels, Fig. (2) also identifies the marketing institutions involved in the marketing of mud crabs produced in the mangrove areas of Palampai Village, namely:

1. **Middleman:** Middlemen can come from the same area as the crab farmers or from outside the cultivation area and serve as intermediaries connecting crab farmers with broader markets. Middlemen play a crucial role in the crab marketing system because they have close relationships with the crab farmers. Middlemen purchase crabs from

several crab farmers, allowing them to gather a sufficient volume for sale to other marketing institutions such as retailers, inter-island traders, exporters, and institutional markets. Middlemen typically sort the mud crabs based on gender, weight, and size to ensure that the crabs sold meet the quality standards desired by the market. This sorting process is not only important for determining the economic value of the purchased crabs but also helps maintain the balance between production and demand, contributing to the sustainability of crab farming.

2. **Retailer:** Retailers are individuals who distribute crabs in retail markets, both traditional and modern. Retailers typically establish close cooperation with middlemen to ensure the availability of fresh crabs needed to meet consumer demand in the market. Additionally, retailers provide information to middlemen regarding market demand trends, allowing them to adjust their supply to meet those needs.
3. **Inter-island traders:** Inter-island traders are individuals or companies that engage in the trade of goods between different islands. They play a crucial role in the distribution of goods and services, including local products such as crabs, from one island to another. They serve as a link between local producers (in this case, crab farmers) and consumers on other islands. Inter-island traders typically use sea or air transportation to transport crabs to the destination island. Upon arrival, they also utilize land transportation to distribute the crabs to more distant locations. Inter-island traders usually have cooperative relationships with local traders (in this case, middlemen) on the destination island to ensure efficient distribution and meet market demand.
4. **Institutional market:** This refers to markets that serve food needs for specific events or require a regular supply of crabs, such as institutions, hotels, and restaurants. They purchase crabs in large quantities and often have long-term contracts with suppliers to ensure the availability of quality crabs and stable prices. Typically, the institutional market also negotiates with suppliers, in this case, middleman, regarding pricing, payment terms, and timely delivery conditions.

CONCLUSION

The quality of crabs marketed is influenced by various factors such as physical quality, meat quality, as well as taste and aroma, all of which contribute to the product's appeal in the market. The ideal size and weight of crabs for the market range from 0.3 to 1kg, indicating that good maintenance and efficient farming management are crucial to achieving these sizes. The marketing channels for crabs consist of four distribution patterns involving marketing institutions, namely middlemen, retailers, inter-island traders, and the institutional market. Each channel plays an important role in ensuring that the crabs reach consumers while maintaining quality, whereas middlemen act as intermediaries who gather products from farmers, retailers distribute crabs to end

consumers, inter-island traders expand market reach, and institutional markets meet the regular supply needs of restaurants and hotels. The characteristics of the product and effective marketing channels are crucial for enhancing the competitiveness of crabs in the market, as well as for ensuring the sustainability and growth of the crab farming industry.

REFERENCES

- Agbayani, R. F. (2001).** Production economics and marketing of mud crabs in the Philippines. *Asian Fisheries Science*, 14(2): 201-210.
- Alongi, D. M. (2008).** Mangrove forests: a global perspective. In : *Coastal Ecosystem Processes*. Springer, New York, 400pp.
- Baird, I. G. and Flaherty, M. (2005).** The role of mangrove ecosystems in the production and marketing of mud crabs (*Scylla spp.*) in Southeast Asia. *Aquaculture Research*, 36(3):1-10.
- Baker, S. M. and Hossain, M. (2024).** Production and marketing practices of mangrove crab industry to meet local and international demand. *Aquaculture Research*, 55(2): 201-208.
- Bennett, E. A. and Reynolds, J. (2016).** The role of diverse marketing channels in enhancing the livelihoods of aquaculture producers. *Aquaculture Economics & Management*. 20(2): 123-145.
- Biernacki, P. and Waldorf, D. (1981).** Snowball sampling: problems and techniques of chain referral sampling. *Sociological Methods and Research*. 10(2): 141–163.
- Creswell, J. W. (2014).** *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage Publications, USA. 473pp.
- Dahuri, R. and Sari, D. (2015).** *Mangrove ecosystem in Indonesia: status and management*. Jakarta: Penerbit Universitas Indonesia.
- Diniah, S.; Karnan, K. and Suyantri, E. (2024).** The morphometrics of mangrove crabs (*scylla serrata*) in the essential ecosystem area (KEE) of Bagek Kembar Mangrove Forest, Sekotong, West Lombok. *Jurnal Biologi Tropis*, 24 (3): 574 – 580.
- Hanafiah, M. and Saefuddin, A. (2016).** The impact of marketing institutions on the distribution of crab products in Indonesia. *Journal of Fisheries and Aquatic Science*, 11(1): 1-10.
- Hussain, M. G. and Hossain, M. A. (2015).** Growth performance of mud crab (*Scylla serrata*) in different salinity levels. *Aquaculture Research*, 46(1) : 1-10.
- Indarjo, A.; Salim, G.; Zein, M.; Septian, D. and Bija, S. (2020).** The population and mortality characteristics of mangrove crab (*Scylla serrata*) in the mangrove ecosystem of Tarakan City, Indonesia. *Biodiversitas*, 21(8): 3856-3866.
- Johny, P. K. (2020).** Marketing channels and price spread of mud crab (*Scylla serrata*) in India. *Journal of Aquaculture Research and Development*, 11(1), 1-8.
- Kothari, C. R. (2004).** *Research methodology: methods and techniques*. New Age International., India, 400pp.

- Kumar, R. (2014).** Research methodology: a step-by-step guide for beginners. SAGE Publications, London, 392pp.
- Kumar, S. and Singh, R. (2015).** Role of marketing institutions in the distribution of aquaculture products: a case study of crab marketing in India. *Aquaculture Economics & Management*, 19(3): 245-260.
- Kvale, S. (2007).** Doing interviews. Thousand Oaks, CA: SAGE Publications, London, 192pp.
- Lahjie, A.M.; Nouval, B.; Lahjie, A.A.; Ruslim, Y. and Kristiningrum, R. (2019).** Economic valuation from direct use of mangrove forest restoration in Balikpapan Bay, East Kalimantan, Indonesia. *F1000Research*, 8:9.
- Lilimantik, E. and Mailita. (2021).** Pemasaran Ikan Hasil Budidaya Air Tawar Di Kalimantan Selatan. Penerbit Global Science, Malang, 73pp.
- Mardiana; Mingkid, W. and Sinja, H. (2015).** Evaluation the feasibility and development of *scylla spp* culture area at Likupang II Village, North Minahasa. *Jurnal Budidaya Perairan*, 3 (1): 154 – 164.
- Primavera, J. H. (2006).** The role of mangroves in the production of mud crabs (*Scylla spp.*) in the Philippines. In *Mangroves and the Global Climate Change*. Manila: University of the Philippines Press, 20pp.
- Rangka, N.A. (2007).** Status usaha kepiting bakau ditinjau dari aspek peluang dan prospeknya. *Jurnal Neptunus*, 14 (1): 90 – 100.
- Rustam.; Hamsiah. and Hartinah. (2020).** Pengembangan usaha budidaya kepiting dalam kawasan hutan mangrove melalui sistem silvofishery yang berbasis masyarakat. *Jurnal Balireso*, 5(1): 65-74.
- Saunders, M., Lewis, P., & Thornhill, A. (2016).** **Research methods for business students (7th ed.). Pearson, Inggris, 768 pp.**
- Silverman, D. (2013).** A very short, fairly interesting, reasonably cheap book about qualitative research (2nd ed.). SAGE Publication, London, 168pp.
- Sobari, M.P.; Adrianto, L. and Azis, N. (2006).** Analisis ekonomi alternatif pengelolaan ekosistem mangrove Kecamatan Barru, Kabupaten Barru. *Buletin Ekonomi Perikanan*. 6(3): 59- 80.
- Suprpto, D.; Kirana, M.; Susilowati, I. and Fauzi, A. (2015).** Economic valuation of mangrove restoration in Indonesia. *Jurnal Ekonomi Pembangunan*, 16(2): 121-130.
- Taherdoost, H. (2021).** Data collection methods and tools for research; a step-by-step guide to choose data collection technique for academic and business research projects. *International Journal of Academic Research in Management* 10 (1): 10-38.