

THE CURRENT STATE OF FISH MARKETING IN INDONESIA

Victor P. H. Nikijuluw, Bambang Sayaka, and Mewa Ariani ¹⁾

ABSTRAK

Ikan merupakan sumber protein utama bagi penduduk Indonesia. Namun distribusi produksinya sangat timpang menurut wilayah. Akibatnya konsumsi ikan tidak merata. Ketidakseimbangan antara produksi dan konsumsi merupakan masalah pemasaran dan distribusi. Dengan memahami kondisi pemasaran, distribusi, serta faktor-faktor yang mempengaruhi tingkat konsumsi maka diharapkan konsumsi ikan yang rendah dapat ditingkatkan. Organisasi pemasaran yang ada di tingkat nelayan belum sepenuhnya memberikan insentif bagi pengembangan produksi. Sarana dan prasarana pemasaran masih sangat terbatas. Ke depan, pemerintah sebaiknya mengambil bagian dalam penyediaan sarana yang cukup, penataan pemasaran di tingkat produsen melalui peraturan yang mempertimbangkan kondisi lokal, pengadaan kampanye guna meningkatkan konsumsi, pemberian kesempatan bagi swasta untuk berpartisipasi secara luas melalui penyediaan informasi pasar, serta mengadakan penelitian untuk mengantisipasi dan menyikapi perubahan konsumsi yang diakibatkan oleh perubahan lingkungan di masa yang akan datang.

Kata Kunci : *pemasaran distribusi, konsumsi, ikan, produk perikanan.*

ABSTRACT

Fish and fish-based products are main protein sources for Indonesian. Their production and availability are so varied by provinces and major islands. Consequently, their average consumption levels are spatially different. The inequality of consumption and production is traced to the problems of marketing and distribution. By understanding and solving the problems, per capita fish consumption level may be increased. The existing marketing organizations at producer level do not provide incentives to boost the production. Meanwhile, the marketing facilities and infrastructures are limited available. For the future development, particularly for increasing per capita fish consumption, supporting marketing facilities and infrastructures should be provided by the government. Other functions of the government are to provide regulations on the management of local fish auction markets, to undertake campaign of fish consumption, to provide marketing information in order to attract private sectors into the business, and to carry out research and development in order to anticipate changes of consumption pattern.

Key Words : *marketing distribution, consumption, fish, fisheries products.*

INTRODUCTION

The fisheries sector in Indonesia is varied as the archipelago itself. Fish which are commonly grouped into finfish, crustacean, and mollusk are produced by capture and aquaculture practices, by large and small production units, through labor and capital intensive techniques, from marine, brackish water and freshwater environments. The product types, processing techniques, distribution channels, and marketing system also exhibit wide range variety. Naturally, marketing problems are binding in these environments.

Fish is a cheap animal protein source for many people. Based on the 1996 fisheries production figure, it could be estimated that the average per capita fish availability was about 20 Kg. The Eastern Indonesian region has a higher per capita fish availability than the Western part. Often, and misleading, the per capita fish availability figure is conceived as the per capita fish consumption. In fact, the two figures are quite different and the first could be under or over-estimated as compared with the latter.

A more reliable information on the consumption could be found from the National Social Economic Survey (SUSENAS) undertaken by the Central Bureau

1) Research staff at the Center for Agro-Socioeconomics Research (CASER), Bogor.

of Statistics (BPS). Using the SUSENAS data, Nikijuluw (1998) recounted and analyzed the development and pattern of fish consumption by provinces of Indonesia. He found that nationally the consumption rate slowly increased from 13.44 Kg per capita in 1987 to 16.52 Kg in 1996. This average consumption level is indeed lower than the national target of 22.0 Kg per capita per year. Besides, the figures are also widely different by provinces. The consumption in Java as the most densely populated island is less than 8.0 Kg per capita per year. Among the provinces in Java, Yogyakarta had the lowest of 1.57 Kg per capita in 1996, while DKI Jakarta scored the highest of 7.22 Kg per capita. On the other hand, per capita fish consumption in the provinces of Maluku, Irian Jaya, and Sulawesi reached more than 40 Kg in the same year.

This disparity of fish consumption may be traced to the pattern of local fish supply. Nikijuluw (1998) indicated that Java which is inhabited by about 60 percent population shares only around 29 percent of the national fish production. While the Eastern Indonesian region whose population of about 15 percent contributed more than 30 percent of the national fish production. Hence, although fish (including fish-based products) are important diet items for the Indonesian (Rachman and Erwidodo, 1994), like other agricultural commodities, their availability and hence consumption are not evenly or proportionally distributed.

Since there exists problems of fish consumption which are not all fulfilled by the local supply, marketing and distribution become key elements if one considers increasing protein intake. The role of fish marketing is to meet the needs of society through effective and efficient bridging of the separations between production and consumption. The development of marketing and distribution will improve the availability of fish products and create time, place, and form utilities in a way that consumers will gain.

This paper analyzes factors that likely affect fish consumption. Understanding the factors, strategies and programs to increase fish consumption level is possible to formulate. To arrive at the objective, a synthesis is made on the basis of information collected from published and unpublished articles. The unpublished articles mostly are student theses. Although the scope of the analysis is the whole Indonesia, the island of Java gets a special emphasis. This is mainly due to the fact that the relevant information about other parts of Indonesia are limited. The synthesis comes up with

policy recommendations and the aspects need to consider for future research agenda.

LANDINGS AND SUPPLY

Macro studies (covering all Indonesia) and micro studies (focusing on specific area) revealed that not all fishers unload their catch in fish landing place (TPI) established by the government. For those who unload their catch in landing places, they are obliged to sell their fish through auction system. However, it should be pointed out that auction markets available in fish landing centers generally do not function well enough. For the whole Indonesia, only about 22 percent fishers who sell their fish through auction market (Nikijuluw *et al.*, 1987). This figure is not much different from that of micro level. For instance, in Demak Regency, only 20 percent fishers who sell their fish in the auction market, despite there is a provincial code which obliges all fishers to sell their catch in the auction (Manadiyanto *et al.*, 1991). The reasons for fishers do not participate in the auction market are small amount of catch, low and unstable prices bid in the auction market, inadequate service provided by auction market organizer, and unawareness of compliance with auction regulation (Manadiyanto. *et al.*, 1991; Rahlinawati, 1995).

The price realized in an auction as a competitive market should be higher and more predictable than in other markets. However, there are cases when fisher do not satisfy with the realized auction price (Ari and Nasran, 1982). There was also a tendency for fishers not to sell their catch in auction because of 5 percent to 8 percent deduction of the catch value that are officially applied in the auction market. Another study, however, indicates that variability of price in the auction market in some places in Java is lower than in the non-auction market (Manurung and Syukur, 1989). In other words, auction price is more stable than non-auction price.

Price of fish in the auction market determines earnings of fishers. The determining price level factors in fish landing centers are number of buyers involved (Latif, 1993), type of buyers (Ari and Nasran, 1982), dominant species (Sadhotomo *et al.*, 1987), quality of fish, and the availability of handling facilities (Tambunan, 1991). The more buyers participate in the auction, the more competitive is the market that leads to the formation of a competitive price. The presence of

large-scale buyers, particularly those who come from big cities, often drive the price up. On the average, average price hike is also driven by the presence of high value fish such as shrimp, large pelagic, and demersal fish. Although in some cases, fishers are not satisfied with realized price at auction markets, they eventually should accept it and complain nothing because of their weakness in bargaining position. After all, once they lay their fish in the auction hall, transaction with buyers is not under their control anymore but rather under the responsibility of the auctioneer.

The fish disembarkation in landing centers is not always performed by fishers. As in the cases in South Kalimantan and Kendal Regency, middlemen who buy fish from fishers at sea are the ones who unload fish in the landing places. Such middlemen go by boat to meet fishers when the latter are still in the fishing ground. Both fishers and middlemen can derive benefits from such practices. The middlemen can buy fish at sea with relatively low price, while the fishers can save their time and transfer costs needed to bring the fish from fishing ground to the landing centers (Nikijuluw and Basuki, 1991). The transaction between middlemen and fishers, therefore, is not through auction market.

The fish landings are not always fresh fish. In Juwana, Central Java, of the average over 100 ton landings per day, 40 percent are salted at sea fish. The total landing in Pekalongan, Central Java is split into 70 percent fresh fish and 30 percent salted at sea fish. The salted at sea fish is normally made in early days of fishing trip. Hence, salting is one way of preventing spoil and deterioration (Clucas and Basmal, 1995).

Besides salting at sea, fish are also processed into salted products on land, normally in the areas near landing place. Some other fish are also converted into salted-boiled, fermented, smoked and high-pressure cooked products. Fresh fish are normally sent to lucrative distant markets in big cities. There is an indication that the distribution of fresh fish and fish-based products in Java flow westward where Jakarta is the reference market (Nikijuluw, 1994). Traditionally processed fish products are sent to hinterland and consumed by low income group of consumers (Clucas and Basmal, 1995; Sumarno, 1994; Noor and Saleh, 1985; Kusuma, 1994).

DISTRIBUTION

Except in those cases where fishers sell their catch directly to local consumers, both fresh and processed fish typically change hands several times between landing places and points of retail sale. A variety of persons are involved in buying and distributing fresh and processed fish. In Pati Regency for instance, at least three fish marketing channels are identified. First is that from fishers to wholesalers, processors, retailers and consumers. The second channel is fishers-wholesalers-retailers-consumers. The third channel is fishers-retailers-consumers (Wijaya, 1996). In the marketing of salted fish in Java, at least there are six institutions involved. They are producers, assemblers who work in producer areas, interisland merchants, wholesalers, distributors from wholesalers into consumers areas, and retailers (Wibowo *et al.*, 1985^b).

The distribution of fish and fish-based products are partly determined by the availability of transportation facilities and infrastructures. Because there is a quite difference between Java and other islands of Indonesia in terms of transportation facilities and infrastructures, it turns that fish and fish-based products distribution in Java are more developed (Dholakia, 1989). In other words, from producer areas usually situated by coast, fish can be easily sent to hinterland and distant markets. Conversely, the distribution of fish and fish-based products in other islands is difficult to realize. It bears costs and risks.

Although Java is more developed than other islands in distribution of fish from producers to consumers, there are still some problems encountered. Surveys undertaken in three provinces in Java (West, Central, and East) indicated that the facilities of fish transportation and distribution could be categorized as the traditional ones (Saleh *et al.*, 1985; 1987^a, 1987^b; 1988; 1990). The absence of cold-chain system makes fish lose their freshness. Similarly, the poor condition of retail markets worsen fish quality. As a result, fish are not attractive compared with their substitute goods. Studies on fish distribution also disclosed that the government seemed to reluctantly develop or pay attention on retail fish market. This indication could be

attributed to the fact that fish retailers in public markets are always placed at inconvenient, dark, or dirty section (Saleh, 1981; 1991). Most supermarkets in big cities, however, offer fish in special and clean corners. Nevertheless, there are less number of fresh fish and traditional processed fish offered in supermarkets as compared with canned fish and other processed agricultural products. (Irianto, 1993).

Outside Java, access to fresh fish distribution channels is limited and the catch must be processed. There are some efforts to bring processed fish from other islands to Java. However, it seems that only salted fish which have longer self-life is profitable. Being the biggest market of salted fish products, Java should import salted fish from other islands. The important entry points of salted fish to Java are Surabaya, for the imports from eastern part of Indonesia, and Jakarta for the imports from Sumatera (Wibowo *et al.*, 1985^a, 1985^b).

The distribution of fish and fish-based products are lucrative for middlemen. Various studies indicate that middlemen always earn higher income and have bigger portion of marketing margin than what fishers do (Syukur and Nurasa, 1990; Suroyo, 1996; Tambunan, 1991; Nikijuluw and Basuki, 1991; Talaohu and Purnomo, 1993). In the marketing of processed fish, processors as an individual or a firm appears to derive substantial margin. The studies also propound that middlemen and processors have better bargaining position as compared to fishers. The presence of few middlemen and processors in some areas tend to form an oligopsony market (Manuring and Syukur, 1989; Basuki *et al.*, 1993).

The distribution of marketing benefit to each individual or party involved is shown by their respective share of the retail price. The bigger share derived, the better the individual position is in the market. It is found that the share of the retail price received by fishers (fisher' share) varies according to fish species and product, retail market distance, the length of marketing chain, and market structure. (Hanafiah, 1983; Setiawan, 1992; Rahmat, 1988). The fisher' share is normally less than 50 percent of the retail price.

DEMAND AND CONSUMPTION

The disposable annual income affects demand for fish and fish products in the whole Indonesia (Nikijuluw, 1986), processed fish in Bandung (Basuki *et al.*, 1991), fresh fish in East Java (Saleh *et al.*, 1987^a),

salted fish for the whole Indonesia (Zulham *et al.*, 1986), and salted and salted-boiled fish in Semarang (Hakiemah, 1995). An assessment on SUSENAS data for the whole Indonesia found that income elasticity are different for rural and urban areas as well as for the income groups. The highest income group tends to be less responsive to fish consumption if their income change (Rachman and Erwidodo, 1994). Overall, income elasticity of demand for fresh fish is positive but less than unity, indicating that fresh fish is a normal good. An increasing income by certain percentage, therefore, will raise fresh fish consumption at smaller percentage. On the other hand, income elasticity of demand for traditional processed fish (salted, salted-boiled and fermented) is negative, meaning that traditional processed fish are inferior goods. Therefore, an increase of income will reduce consumption of the traditional processed fish.

The demand for fish is also affected by own price. The higher the price, the lesser amount of fish will be consumed. Meanwhile, chicken, beef, tofu (*tahu*) and soybean cake (*tempe*) are found to be substitutes to fish (Basuki *et al.*, 1991). The consumption of *tahu* and *tempe* tended to get higher as recorded by the Susenas 1993 and 1996. The consumption of these soybean-based products are higher in Java than in other islands. The high consumption of *tahu* and *tempe* in Java may compensate the island's low fish consumption.

The educational attainment of housewife or head of family also affect demand for fish, especially for those staying in urban areas. The higher educational attainment, the more fish are consumed (Basuki *et al.*, 1991; Hakiemah, 1995; Anggoro, 1994). Other factors affecting demand are residence of consumers which actually reflect the distance from the market, availability of fish in the local markets, taste and preference, and household size (Manadiyanto and Putra, 1993; Hidayat and Syukur, 1993; Nurasa and Manadiyanto, 1991). Comparing Java and other islands, there is an evidence that income elasticity of demand for fish in Java is more elastic than in other islands. The income elasticity of fish demand in urban area is higher than that in rural area (Nikijuluw, 1986; Widjanarko, 1995; Hakiemah, 1995; Mukhohir, 1990; Anggoro, 1994; Rachman and Erwidodo, 1994).

The variability and types of fish product determine fish consumption level. In the eastern part of Indonesia and some big cities in Java, people prefer fresh fish to processed fish. This fact is closely related to the availability of fish and fish-based products locally. In

Semarang, Central Java, the most preferred processed fish products is high pressure-cooked fish, followed by salted, salted-boiled, fermented and smoked (Saleh *et al.*, 1985; Hakiemah, 1995; Murniyati *et al.*, 1992). The people in urban areas of the East Java eat less fish compared to other protein sources. Contrary, in urban area of the West Java, people consume more fish (processed fish) than other protein sources (Saleh *et al.*, 1987^a).

The Jakarta metropolitan which are inhabited by people from various background might be used to portray the development fish consumption in urban area. In the last 10 years, consumption of Jakarta has been slowly increasing. This increasing of fish consumption is not comparable with the huge transshipment from other islands and flows from rural areas. The unbalance consumption and transshipment is because Jakarta is the main place of the embarkation of fish to the export market. Hence the lucrative fish price realized in Jakarta is due to both local and international demand. (Nikijuluw, 1994; Clucas and Basmal, 1995).

INSTITUTION

Middlemen play substantial roles in fish marketing. Almost every where, particularly in the remote and desolate areas where government institutions and personnel are limited, middlemen always exist. The presence of middlemen, however, is subject to debating. In one hand, middlemen are said to exploit fishers, basing on the fact that the former charge low price to fish landings of the latter. On the other hand, middlemen usually help fishers in times of need and trouble. A sort of informal credit and working capital are provided by middlemen and procedures of getting the credits are not cumbersome. Hence, it is unfair to disregard the roles of the middlemen (Susilowati, 1983; Basuki *et al.*, 1993; Mintoro, 1989).

Fishers cooperative is another institution which is dealt with fish marketing. In the Central Java, almost all fish auction markets are managed and run by the cooperatives. Beside providing auction facilities, cooperatives sell fishing input factors to fishers. In some cases, cooperatives should buy fish in auction market if there are no so many buyers as auction participants. (Nikijuluw *et al.*, 1987; Eddiwan, 1983). In other words, cooperatives may be envisaged as price stabilizer.

The state-owned enterprises are institutions which also involve in fish and fish product marketing.

In Java, a state-owned enterprise located in Pekalongan buy fish and distributed them to the hinterland of Java. People in the hinterland, therefore, can have fresh fish. In the eastern part of Indonesia, state-owned enterprises collaborate with small-scale fishers in various schemes, especially in fish marketing. The enterprises which are economically bigger provide marketing facilities, buy fish from small-scale fishers and send the fish to export markets. Beside fish for human consumption, the enterprises also buy bait fish both for export and domestic uses. The enterprises also function as fish price stabilizer (Mulyadi, 1983; Nikijuluw, 1998).

The marketing of salted fish is under concern of private enterprises. Private enterprises have prominent role in the assembling the products from small producers in remote islands and the distribution of the products to consumers in Java. The domination of private enterprises in this business, however, still brings about negative impact which is hardly overcome. This domination enlarges business scale of the private companies which have big capital accumulation. Finally this capital accumulation become a capital requirement which is basically a barrier for the small-scale firms to enter into the business (Wibowo *et al.*, 1985^a, 1985^b).

RECOMMENDATION

Ideally selling fish through auction market should provide more benefits to the producers providing that there are many buyers and so the market is competitive. With English auction system as applied now, price is increasingly bid. The highest bidder get the fish. By this virtue, there should be a strategy to involve more buyers in auction markets. The auction management should promote the auction by providing reliable and timely information so that the more buyers can participate. The information that should be provided and sent to the potential buyers are the availability of fish by species, size, quality, price, and numbers. It should be emphasized that the buyers are not only confined to those reside in the same places, but better if they also come from other places. The more buyer involved, the more competitive market will be, and the bigger earnings that might be generated by the fishers as producers.

Market information is crucially important for the buyers of the auction markets. As fish auction is undertaking everyday, the information then always should be updated. This is not that easy task for the auction market management. To make the information

can timely reach the potential buyers, local fisheries service should take part or overtake this task. Having better officials and wide communication network, the fisheries service can compile all auction information from the same areas and distribute them to the traders in consumer areas. The fisheries cooperative should also involve in spreading market information.

In some areas particularly in eastern part of the country, fish landing center are limited in number. The government through the provincial fisheries services should have an effort to provide this facility. Besides, regulation of auction markets should be amended locally by considering local characteristics. The enforcement of auction regulation should be prioritized. In the same time awareness building on the function and importance of government-built facilities should be conducted.

Reflected by the availability of transportation and communication facilities, fish and fish-based products distribution in Java is more developed than in outer Java. Nevertheless, cold-chain system should be promoted in Java to provide consumers with better quality fish. Ice availability is a prerequisite for the promotion of cold chain system. Therefore, investment in ice plant should be prioritized. To bring fish to interior of Java, there should be transportation means. Hence effort towards providing the means should be considered by the government, more specially provincial government and fisheries service. Facilitated by the means and employing cold-chain system, the per capita consumption in the interior of the island may be increased.

In the mean time, distribution of fish and fish products in other islands should be directed toward bringing the products to Java. Indeed, this only can be done if processing activities have been developed. Therefore processing technologies that have been successfully developed and held by research institutions should be disseminated to fish processors. The excess supply of fish and fish-based products frequently taken place in the east should be a strong reasoning to develop storage facilities in the region. Whereas direct export from major cities in the east should be promoted.

The distribution of fish and fish-based products may be performed by fishers themselves. In this concern, fisher wives may take part. If so, then marketing channel can be shortened and efficiency can be attained. Since processing and distribution require additional capital, a credit scheme for those activities should be programmed.

The per capita income and educational attainment may get higher in the future. Since these two factors positively affect fresh fish consumption, it can be predicted that demand for fresh fish will increase. As an anticipation, more fresh fish should be provided in retail market. That is the same to say that retail market for fresh fish should be developed.

On the average, fish consumption is low. The rate of consumption slowly increased. In Java, the consumption is far below both the average and the national target. Since about 60 percent population are living in Java, efforts to promote fish consumption in the island should be prioritized. The local government, through the fisheries service should coordinately and in integrated manners undertake fish campaign so that awareness of people are developed. The availability of fish and accessibility by all class of consumers should be considered.

The fisheries cooperatives should enlarge their scope of activities to include marketing and distribution of fish. Particularly in Java, fisheries cooperatives can establish joint business with supermarkets and other retailers in the marketing of fresh fish. In other islands, it seems that marketing of processed fish will be more profitable.

There are no so much information about consumption of fish by species. The total demand for and supply of fish by area (regency, province, or region) should be understood in order to establish the optimum allocation and distribution system. The demand for fish according to consumer age is also important to be conceived since there is a tendency of change in population structure due to success of family planning program. The possibility of shipping fish from eastern Indonesia to Java also needs to be scrutinized further. All these are the areas or topics which should be studied further in order to improve fish marketing system and increase per capita fish consumption in Indonesia.

REFERENCES

- Anggoro, S. 1994. An Analysis of Some Economic Factors Which Influence Fish Consumption of Yogyakarta Household. *Unpublished Bachelor Thesis* at Faculty of Agriculture, University of Gajah Mada.

- Ari, E. and S. Nasran. 1982. Marketing of Bali Sardine in Muncar. *Pros No.2/SPL/82: 217-223*. Center Research Institute for Fisheries.
- Basuki, R., E. Reswati, and Satrawidjaja. 1991. Demand elasticity for processed fish in Bandung Regency. *Jurnal Penelitian Perikanan Laut*, 62:39-47. Research Institute for Marine Fisheries. Jakarta.
- Basuki, R., I.E. Putra, and Sarjana. 1993. Marketing institutions for pelagic fish in Indramayu: structure, concentration, and rentability of marketing institution. *Jurnal Penelitian Perikanan Laut*, 80: 1 - 16. Research Institute for Marine Fisheries. Jakarta.
- Clucas, I.J. and J. Basmal. 1995. The Processing, Distribution and Marketing of Small Pelagic Fish from Three Fishing Ports in Central Java, Indonesia. Research Institute for Marine Fisheries, Jakarta.
- Dholakia, N. 1989. Marketing Challenges in Indonesia's Fisheries. A Preliminary Assessment. Fisheries Research and Development Project, CRIFI, AARD. 8 p.
- Eddiwan. 1983. The Role of Cooperative in Fish Marketing and Development of Fishermen Village. *Pros. No. 3/WSEP/1983: 145 - 150*. Center Research Institute for Fisheries. Jakarta.
- Hakiemah. 1995. The Demand Elasticity of Salted and Boiled Fish in Semarang Municipality, Central Java. *Unpublished Bachelor Thesis*, University of Diponegoro.
- Hanafiah. A.M. 1983. The Pattern of Fish Product and Marketing in Riau. *Pros. No.3/WSEP/1983: 119 - 130*. Center Research Institute for Fisheries. Jakarta.
- Hidayat, N. and M. Syukur. 1993. The Marketing of Small Pelagic Fish in Maluku. *Jurnal Penelitian Perikanan Laut*, 84:1-9. Research Institute for Marine Fisheries. Jakarta.
- Irianto, H.E. 1993. Canned Fish Products in Java Market. *Terubuk*, 19(57):54-67. Faculty of Fisheries, Riau University.
- Kusuma, I.B.Y. 1994. A study on the Marketing of Salted-Boiled Fish in Kusumba, Bali. *Unpublished Diploma Thesis* at Fisheries College, Jakarta.
- Latif, H. 1993. Marketing and Break-even Analyses of Salted Fish products in Pelabuhan Ratu, Sukabumi, West Java. *Unpublished Diploma Thesis* at Fisheries College, Jakarta.
- Manadiyanto, V.P.H. Nikijuluw, T. Nurasa. 1991. A Study on the Use of Fish Auction and The Marketing of Catch of Fishers in Demak Regency. *Jurnal Penelitian Perikanan Laut*, 61:69-74. Research Institute for Marine Fisheries. Jakarta.
- Manadiyanto and I.E. Putra. 1993. Community Preferences to Fresh and Processed Fish. (A Case Study in Surabaya Municipality). *Terubuk*, 19 (55):15-25. Faculty of Fisheries, University of Riau.
- Manurung, V.T. and M. Syukur. 1989. The Impact of Auction Market on The Stability Fish Price at The Fishermen Level in Northern Coast of Java. *Forum Penelitian Agro Ekonomi*, 7(2):12-19. Center for Agricultural Social and Economic Research. Bogor.
- Mintoro, A. 1989. Marketing system and informal credit for fishers in Langkat, North Sumatra. *Forum Penelitian Agro Ekonomi*, 7(1) : 35 - 43. Center for Agricultural Social Economic Research. Bogor.
- Mukhoir, A. 1990. Fish Consumption Pattern in the Community of Palembang, South Sumatera. *Unpublished Diploma Thesis* at Fisheries College, Jakarta.
- Mulyadi, J. 1983. The role of state fishery enterprise in marketing the catches of fishermen, problems and remedies. *Pros. No.3/WSEP/1983: 131 - 134*. Center Research Institute for Fisheries. Jakarta.
- Murniyati, A. Poernomo, Y.N. Fawzya, and M. Suherman. 1992. Study on the quality and price of dried salted fish in the processors and markets in West and Central Java. *Jurnal Penelitian Pasca Panen Perikanan*. 74 : 25 : 35 Research Institute for Marine Fisheries. Jakarta.
- Nikijuluw, V.P.H. 1986. Income Elasticity for Fish Demand in Indonesia. *Jurnal Penelitian Perikanan Laut*, 34 : 91 - 98. Research Institute for Marine Fisheries. Jakarta.

- Nikijuluw, V.P.H., Manadiyanto, T. Susilowati. 1987 Marketing Institutions Directly Buying Catch of Fishers. *Jurnal Penelitian Perikanan Laut*, 43:1-6. Research Institute for Marine Fisheries. Jakarta.
- Nikijuluw, V.P.H., and R. Basuki. 1991 Market Structure, Conduct, and Performance of Fresh Fish in South Kalimantan. *Prosiding Temu Karya Ilmiah Perikanan Rakyat*, p.632-640. Center Research Institute for Fisheries. Jakarta 18-19. Desember 1989.
- Nikijuluw, V.P.H. 1994. *Integration of Fish Auction Markets in Java, Indonesia*. Unpublished Ph.D. Dissertation, Department of Agricultural Economics, UPLB, Los Banos, Philippines.
- Nikijuluw, V.P.H. 1998. Permintaan dan Penawaran Ikan Serta Implikasinya Bagi Pembangunan Perikanan. *Agro-Ekonomika*, 28(1):57-79.
- Noor, M., and S. Saleh. 1985. Central Java Consumer's Attitude toward Fresh Fish Consumption. *Laporan Penelitian Teknologi Perikanan*, 48 : 23 - 30. Research Institute for Marine Fisheries. Jakarta.
- Nurasa, T. and Manadiyanto. 1991. People Attitude on Processed Fish in Semarang Regency. *Jurnal Penelitian Perikanan Laut*, 62 : 29-37. Research Institute for Marine Fisheries. Jakarta.
- Rachman, H.P.S. dan Erwidodo. 1994. Kajian Sistem Permintaan Pangan di Indonesia. *Jurnal Agro Ekonomi*, 13(2):72-89.
- Rahlinawati. 1995. The Activity of Fresh Fish Marketing in the Coastal Fishing Port of Lombok, West Nusa Tenggara. *Unpublished Diploma Thesis*, Fisheries College, Jakarta.
- Rahmat, F. 1988. The Marketing of Milk Fish in Malang Municipality. East Java. *Unpublished Bachelor Thesis*, Faculty of Fisheries, Bogor Agricultural University.
- Sadhotomo, B., S.B. Atmadja, B. Sumiono. 1987. The Pattern of Relationship between Price and Catch Rates of Small Pelagic Fishes Caught by Purse Seiner in Java Sea. *Jurnal Penelitian Perikanan Laut*, 44:31-38. Research Institute for Marine Fisheries. Jakarta.
- Saleh, S. 1981. The Phenomena Constrains of fresh sea fish market in Central Java. *Bulletin Penelitian Perikanan*, 1(3):481-490. Central Research Institutes for Fisheries. Jakarta.
- Saleh, S., H.M. Mahyudin, Hanafi, Y. Sudradjat, M. Suherman. 1990. Fish Marketing System and Consumption Level of West Java People. *Jurnal Penelitian Pasca Panen Perikanan*, 64 : 29 - 39. Research Institute for Marine Fisheries. Jakarta
- Saleh, S., M. Noor, A. Taher, Tb.S.A. Yusuf, and Hanafi. 1987^a. A Study on Marketing and Consumption Level of Fresh Fish in East Java. *Jurnal Pasca Panen Perikanan*, 57 : 45 - 51. Research Institute for Marine Fisheries. Jakarta.
- Saleh, S., M. Noor, and S Putro. 1987^b. A Study on Quality of Fresh Fish at Market Places in East Java. *Jurnal Penelitian Pasca Panen Perikanan*, 57 : 39 - 43. Research Institute for Marine Fisheries. Jakarta.
- Saleh, S., H.M. Mahyudin, B.S.B. Utomo, and Sugiyono. 1988. Attitude of West Java People in Consuming Fresh and Cured Fish. *Jurnal Penelitian Pasca Panen Perikanan*, 60 : 1-8. Research Institute for Marine Fisheries. Jakarta.
- Saleh, S. 1991. The influence of traditional marketing system on fish consumption. *Prosiding Temu Karya Ilmiah Perikanan Rakyat*, p. 647 - 653. Jakarta, 18 - 19 December 1989. Central Research Institute for Fisheries. Jakarta.
- Saleh, S., Tb. S.A. Yusuf, A. Taher, U. Rahayu. 1985. Marketing and Fresh Consumption level in Central Java. *Jurnal Penelitian Pasca Panen Perikanan*, 47: 25-35. Research Institute for Marine Fisheries. Jakarta.
- Setiawan, W. 1992. Production and Marketing Management of High Pressure-cooked Milk Fish Processing Firm . A Case Study in Semarang. *Unpublished Bachelor Thesis* at Faculty of Fisheries, Bogor Agricultural University (IPB). Bogor.
- Sumarno. 1994. The Processing of Mackerel in Jatirejo. Lekok District, Pasuruan Regency. *Unpublished Diploma Thesis* at Fisheries College, Jakarta.

- Suroyo, T. 1996. Study on the Marketing and Distribution of Ikan Selar (Selar spp.) Landed in Tawang Fish Landing Place, Rowosari District, Kendal Regency, Central Java. *Unpublished Bachelor Thesis*, Faculty of Animal Husbandry, University of Diponegoro, Semarang.
- Susilowati, T. 1983. The Status of Fish Collectors in Fishermen Community in Tanjung Jabung, Jambi. *Pros. No. 3/WSEP/1983:135-143*. Central Research Institute for Fisheries. Jakarta.
- Syukur, M. and T. Nurasa. 1990. Marketing efficiency of fresh and processed fish in Maluku. *Jurnal Penelitian Perikanan Laut*, 54:73-78. Research Institute for Marine Fisheries. Jakarta.
- Talaohu, S.H. and A.H. Purnomo. 1993. Opportunity and Constrains on Marketing Small Pelagic Fish in Irian Jaya. *Jurnal Penelitian Perikanan Laut*, 76 : 120 - 127. Research Institute for Marine Fisheries. Jakarta.
- Tambunan, T.D. 1991. Study on Marketing and Distribution of Marine Fish Product in Pelabuhan Ratu, Sukabumi. *Unpublished Diploma Thesis* at Fisheries College, Jakarta.
- Wibowo, S., R. Arifudin, Sastrawijaya, Hermanto, S. Ilyas. 1985^a. Dried salted fish distribution and marketing constraints: II Distribution map and marketing chain for dried-salted fish. *Jurnal Penelitian Pasca Panen Perikanan*, 47: 35 - 43. Research Institute for Marine Fisheries. Jakarta.
- Wibowo, S., B Priono, Murdinah, M. Noor, and S Nasran. 1985^b. Dried Salted Fish Distribution and Constraints: I The pattern of dried salted fish production in Indonesia. *Laporan Penelitian Teknologi Perikanan*, 48: 31 - 39. Research Institute for Marine Fisheries. Jakarta.
- Widjarnako, L.A. 1995. Consumer Motivation and Demand for Canned Fish Products in Semarang. *Unpublished Bachelor Thesis* at Faculty of Animal Husbandry, University of Diponegoro. Semarang.
- Wijaya, N.I. 1996. An Analysis of Marine Fish Marketing in Pati Regency, Central Java. *Unpublished Bachelor Thesis*, Faculty of Agriculture, University of Gajah Mada. 97 p.
- Zulham, A., V.T. Manurung, and Chong, K.C. 1986. Demand and Supply Analysis of Salted Fish in Indonesia. Center for Agro-economic Research, Bogor. 34 p.