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MODEL OF MARKETING INTEGRATION STRATEGY OF SEA FISH THROUGH APPLICATION OF HYGIENIC

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ABSTRACT: Building a Hygienic Fish Market (HFM) model for coastal communities is very urgent to implement because fisheries products in this area have not been served optimally due to incapability of marketing models to meet consumption quality standards. Therefore, a marketing model for marine fish is required to guarantee quality standards for public consumption. The significance of this research is to create an efficient marine fish marketing system to help increase market participants' profits, the level of customer satisfaction, and the role of local institutions. The objectives of this study included analyzing the impact of the integration of marine fish marketing strategy models through HFM in changing the level of business profits, the level of customer satisfaction, and the role of local institutions. To achieve the objectives of this quantitative and qualitative descriptive methods survey, accidental, and snowballing sampling techniques were administered. The population in this study involved fishermen, traders, consisting of groups that are members of the Marketing Group of HFM and customers. Data were analyzed with profitability analysis, t-test different levels of benefits, and descriptive. The results showed that: the application of the development of the HFM model could increase the profit rate by 88.45% for businesses, most of the final consumer respondents were very satisfied with the marketing model, and a total of 42.86% of respondents stated that local institutions played an important role in achieving efficient marketing.

Keywords: customer's respon, efficient marketing, hygienic fish market, local institutional role, business profits and customer satisfaction.

Abbreviations: HFM, Hygienic Fish Market; Poklaksar, Marketing Group; FGD, Focused Group Discussion; LGRD, Local Government and Rural Development; FAL, Fish Auction Locations; Pengambek, Free Riders.

I. INTRODUCTION

The coastal development effort has created considerable foreign exchange as seen in the coastal area development in Pontianak Regency, West Kalimantan. The regency is located in a strategic location that it is expected to benefit economically in the form of export earnings. However, as seen in the field only a few of the coastal communities who have experienced revenue improvement, while the rest are still struggling. In other words, the development has not yet contributed significantly to the coastal economy. This condition does not reflect such phenomenon as

high economic growth but is not accompanied by high social inconsistency [21] (Witarsa, 2015).

Observing the above phenomenon, it can be explained that the market opportunity for fisheries production in Jember Regency is very large and this condition opens the widest opportunity for various kinds of businesses ranging from pre production, production and post production phases. In general, however, the trend of economic development of coastal areas is not in line with the development of fisheries business in Pontianak regency of West Kalimantan. This is probably due to fishermen's limited access to market, making

them unable to enjoy the result. This condition might be caused by the limited amount of catch, the low quality catch, underprocessed fish, and the lack of local institutional support. The condition is in accordance with the results of [4] Hadi and Akhmadi (2014) saying that the impact of the implementation of poverty alleviation programs on the welfare of coastal communities along the coastal area in Jember Regency has not significantly improved the people's welfare.

The existence of the Fish Auction Location (FAL) as a wholesale market of local government to be used as a fish trading center turned optimally utilized. Therefore, fish marketing in Jember needs for a thoughtful solution with comprehensive termination. Improving the marketing so as to allow fishermen enjoy the results, it is not enough to just improve the capital, infrastructure, knowledge and skills that all of this intact crystallized in agribusiness activities. Against the crucial problem of marketing of marine fish, the local government, including the lower levels, needs to deal with it more seriously. Some facts on the ground show that the general public appreciation of the marine fish marketing model traditionally managed tends to be negative, especially because it appears to be filthy, stinking, and lack of hygienic. This condition affected the role of markets in a bid; they are struggling to boost economic activity in coastal areas, whereas it is where the fishermen's economy is dependent on [6] (Kurniawan, Budimawan, and Darma, 2013).

The study reveals that over the past few years, fish marketing in Tamilnadu has transformed itself into a more modern market despite the infrastructure and complication obstacles attached to the marketing system [17] (Singaravelu, K., and Nedumaran, 2012). The role of intermediaries in the fish marketing system continues to grow without any institutional involvement. However, it has intermediary shares in conditions that tend to decline. Its involvement in several intermediaries in the marketing chain harms the interests of both producers and consumers. The variation in the price of fish landing center area depends on the weather of the day or month or season. Even for these varieties, retail prices do not fluctuate a lot. Because of the monopoly situation at the wholesale level, it is maintained at a higher level even during the harvest season by controlling the supply of which utilizes the processing facility or by switching to different retail markets. In this regard, it has been revealed that whatever processing facilities including drying are only intermediaries and profits are not shared with other traders..

The development of HFM models in Jember was urgent to implement, given that fishery products in Jember are still unserved optimally. This is because the fish marketing model in Jember is still scattered in different places. Similarly, technical standards and hygienic quality of fishery products have not been

optimally implemented, especially in the traditional markets, whereas the future development of demand for implementing technical standards of quality and hygiene is an absolute necessity for the protection of consumers. Based on a variety of these conditions, Jember should build centralized marketing infrastructure of fishery products in several HFM areas. This is expected to increase fishermen's income, which is in line with Sathiadhas's views, stating that the expansion of the domestic retail sector in India has created a significant market for fresh and processed fish [15] (Sathiadhas, R., Narayanakumar, R., & Aswathy, 2011). The increase in the price of fresh and processed fish was higher than other food products. A macro-level analysis of the efficiency of the domestic marine fish marketing in India during the period 2000-2008 shows that lobster (80.37%), shark (77.12%), seerfish (75.22%) and mackerel (71.29%) get relatively higher share of the final consumer for fishermen than other varieties. Although the expansion of market share is certainly better for producers and end consumers in most types of fish, but producers and consumers still bear the burden of large traders monopoly.

Based on data from the Department of Husbandry, Fisheries and Marine of Jember (2015) the utilization of marine resources in Jember district is still around 22,5%, while its potential is larger considering the level of fish consumption in Jember at 19,2 kg/capita/year is expected to achieve the ideal amount at 31,4 kg/capita/year [3] (Antara Jatim News, 2016). In order to improve the marketing aspects so that fishermen can enjoy the results and guarantee customer's satisfaction level, it is necessary to develop integrative marketing strategies. Some facts on the ground show that the general public appreciation of the marine fish marketing model which is managed conventionally tends to be negative, especially because it appears to be filthy, stinking, and lack of hygienic.. Inefficient marketing systems encourage the maximum role of markets in moving economic activity along the coastal areas.

The marketing problem is a very important part of the fishing business especially related to the fish characteristic that is easy to rot. In order to maintain the freshness of fish from fishermen to consumers,, the basic principles of handling fish with cold chain are absolutely necessary. Specifically, problems and challenges in the fishery sector will continue to be faced in the future such as (1) declining environmental quality; (2) low ability of handling and processing of fishery product and marketing ability of fishery product, resulting in low selling value of fishery product; (3) limited fishery infrastructure, slow development of fishery technology, weak fisheries institutions, and limited fisheries data and information support; and (3) issues in international trade related to tariff and non-tariff barriers.

Seasonal fish production fluctuates, so at one time there could be an abundant of fish, while at other times there would be very limited of it. Therefore, it is necessary to apply refrigeration technology (cooling and mechanical freezing) or Cold Storage to keep fish fresh, quality and stable. Based on the above phenomenon, the main purposes of hygienic fish market in each fish market are as follows: 1) to provide comfortable and profitable market transaction of buying and selling fish and community traders; 2) to educate fish traders and the community about the benefits of fish sold and consumed in a hygienic and healthy manner, and 3) to create a productive working climate and increasing the original revenue.

There are five fish landing centers in Jember District namely Puger, Ambulu, Gumukmas, Kencong, and Tempurejo. Meanwhile, the development of marine fish production in Jember during 2010 - 2014 experienced a slowly increasing trend. However, this is still not in accordance with the potential of the abundant marine resources, as the process of fishing in this area has not been done optimally. Fish exploration is only 22.5% due to low human resources as actors in the fisheries and marine sector. This condition has implications for the low welfare of fishermen and their families as a result of low yielding; the quality of fish has not met of the standard, low fish prices and lack of support from the business world according to data on Fisheries, Livestock and Marine Office of Jember Regency (2011) in [15] (Sathiadhas, et. Al, 2011). The development of marine fish catch results in Jember Regency during the period of 2011 - 2015 can be illustrated in Table 1 below.

The research results [16] (Sibghatallah, 2006) revealed that HFM Pejompongan Jakarta can create comfortable market conditions and meet hygienic requirements for consumers by buying fish with quality and price that fits easily. Similarly, the research results [8] (Nur Anisah and Susilowati, 2007) in Tegal regency revealed that the consumer perception of *pindang* fish is positive, i.e. it is in good quality, but there needs to be improved quality, improved taste, improved hygienic packaging, more access to the product, more affordable price, and more importantly, hazardous Food Additives-free guarantee. Only then its quality is guaranteed and it can be durable for consumption in the long term.

According to [5] (Krishnaiah, 2011) the fish markets were commonly filthy and unhygienic. The fish markets are often characterized by wet and slippery flooring, unpleasant smell, fish wastes, improper drainage, buzzing flies, dogs, etc. High levels of noise and cacophony are typical of a fish market. Therefore, in the opinion of [2] (Alam, Haque, and Shikha, 2014), from his research result entitled Studies on public health and hygiene conditions of retailers' fish markets in south-central Bangladesh said that to improve and develop

marketing channels, physical marketing facilities should be improved to make the whole marketing system hygienic. Proper hygiene has to be maintained in the fish handling areas to prevent contamination and loss of quality of fish. Hygienic measures help in preventing or reducing fish spoilage, contamination, and microbial growth. The Department of Public Health under the ministry of Local Government and Rural Development (LGRD) should take a quick and proper action for maintaining the sanitation system and to improve the hygienic condition of the retail fish market.

The major problems associated with the fish marketing were the long fish marketing channels, involvement of unnecessary middlemen, inadequate and unplanned infrastructural development, rough and unhygienic method of handling, improper and insufficient use of ice, contamination and lack of knowledge on quality aspects among fish traders, insufficient hygienic auction and retail spaces, absence of cold storage facility, inadequate drainage facilities, and lack of modern weighing system. Moreover, some measures such as introducing government fish shops, planned infrastructural development of fish markets, introduction of wholesaling and retailing facilities, provision for government and private funding assistance for fish traders, hygienic conditions of landing centers and markets, training and extension works in marketing and management of relevant market research, formation of fishermen or fish producers' cooperative society, sufficient auction and retail places, improved sanitation, and drainage system, digital weighing system, government run fish transportation system with proper storage facilities are recommended for more efficient fresh fish marketing system as applied in Rajshahi city [13] (Rahman, Hossain, Fatematuzzhura, Tasnoova, Ahmed, Hossain, and Ohtomi, 2012).

Commodity markets have always been a difficult ground for implementing any kind of marketing model. The fisheries market in Karnataka has always been a simple demand-supply driven market and calls for some discipline in the way that the market operates. This project attempts to design an integrated marketing strategy and an effective branding strategy to increase sales and improve the profitability of this industry. The analysis of the supply/demand gave ample scope for introducing a new brand. The name Matsya (means 'fish' in Sanskrit and Kannada) was coined and promotional strategies involving advertisements, food festivals and aesthetic outlets were designed [19] (Tara, Ragul, Kamat, Kumar, Pandharinath, and Srivatsan, 2014).

Unfortunately, research on this integrated marine fish marketing system for the past five years has not been found. Some research results related to the hygienic fish market were found since 2011 to 2014 in several countries. Studies related to similar matters from 2015

to 2019 are difficult to find. Based on this phenomenon, in the future there needs to be an integrated marketing model of marine fish that guarantees the development of an efficient marketing system, increasing profitability for market participants, especially for fishermen. In addition, the intended marketing system can guarantee consumer protection in the aspect of food safety which optimizes the role of local institutions.

Therefore, the purpose of the research is to analyze the impact of the integration of the marketing strategy

model of sea fish through the HFM to changes in the level of profits of the business, the level of customer satisfaction, and the role of local institutions. Furthermore the significances of this research are creating an efficient marine fish marketing system so that it can increase the profits of market participants, the level of customer satisfaction, and optimize the role of local institutions in the research location.

Table 1: Development of Sea Fish Production (ton) That Have High Economic Value in 2011–2015

| No | Fish Type | Years | | | | |
|---------------|-----------|----------------|----------------|----------------|----------------|-----------------|
| | | 2011 | 2012 | 2013 | 2014 | 2015 |
| 1 | Tuna | 415.2 | 401.5 | 421.5 | 418.7 | 426.66 |
| 2 | Skipjack | 1,839.9 | 1,979.0 | 1,925.4 | 1,914.2 | 1,946.74 |
| 3 | Cob | 1,628.9 | 1,625.0 | 1,706.9 | 1,685.4 | 1,710.68 |
| 4 | Layur | 237.4 | 265.3 | 272.3 | 295.2 | 299.92 |
| 5 | Tengiri | 117.2 | 116.6 | 108.5 | 112.7 | 114.62 |
| 6 | Shrimp | 24.5 | 16.0 | 21.9 | 25.8 | 26.32 |
| 7 | Squid | 11.1 | 10.7 | 13.6 | 18.2 | 18.58 |
| 8 | Karapu | 83.4 | 72.2 | 78.5 | 81.4 | 82.87 |
| 9 | Snapper | 72.4 | 80.7 | 75.8 | 84.7 | 99.78 |
| 10 | Manyung | 29.8 | 29.6 | 21.7 | 25.8 | 30.06 |
| Amount | | 4,459.8 | 4,596.6 | 4,645.8 | 4,662.1 | 4,756.21 |

Source: Department of Animal Husbandry, Fisheries, and Marine, District of Jember, 2016.

II. METHODS OF RESEARCH

A. Methods, Time and Location of Research

This type of research is descriptive research, namely research that aims to find facts with an appropriate interpretation through quantitative and qualitative approaches [7] Nazir, 1985 in Hazmi, Sutiarmo, and Hadi, 2018). Meanwhile, the method used in this research was survey method, continuity descriptive method with panel technique, and Snowball sampling [18] (Nazir, 1999). This sustainable descriptive method is carried out through continuous research work on the impact of HFM model implementation on behavioral changes and object views dynamically over a certain time interval in order to reach detailed factual information. The process was in the form of interviews with fishermen, marketing institutions and end consumers following a list of structured questions that had been through the process of validity and reliability test. Furthermore, the snowball sampling technique is a sampling method where samples are obtained through a rolling process from one respondent to another, usually the method used to describe social or communication patterns (sociometric) of a particular community. This snowball sampling technique is a multi-stage technique, based on a snowball analogy, which starts with a small snowball then gradually enlarges, then extends based on the relationships to the respondents.

B. Time and Location of Research

This follow-up study was conducted in 2016 and the location of this research was conducted in the area of Auction Locations (FAL) Puger, Ambulu and Soni et al., *International Journal on Emerging Technologies* 10(1): 01-03(2019)4

Patrang Sub-districts of District of Jember by purposive sampling on the consideration that the HFM model was placed in FAL Puger and two sample districts as a pilot project model. In addition, the location of the research is also institutionally conducted at the Department of Animal Husbandry, Fisheries and Marine, District of Jember, FAL Puger Office and other literature studies.

C. Resources and Data Collection Techniques

The data collected in this study included primary and secondary data. The former were obtained from Fisherman respondents, HFM-based Traders, Consumers, FAL Puger Managers, and local institutions collected with several complementary data collection techniques including Focused Group Discussion (FGD), Indepth Interview and observation. The number of primary data consisted of 15 respondents, 40 respondents, 15 brokers, 15 retailers, and 9 local institutional respondents. The respondents of fishermen, intermediary traders, and retail traders have paired samples. On the other hand, the secondary data collected from related institution with this research covering two units of fisherman cooperative (Nusa Barong and Sumber Jaya), Village Government, Conventional Bank, Livestock Service Office, Fishery and Marine Department of District of Jember, FAL Puger Office, Marketing Executive Group (Poklaksar), and Institute of Fish Traders' Association).

C. Data analysis

To know the impact of the implementation of an integrative marketing strategy model of marine fish through the HFM Model along with the role of the local

institution to its economic implication, the economic implications are measured by the change in the level of profit received by the business actors after analyzing the application of the model by the average test t-test with the following formula [10] (Pasaribu, 1995):

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2} \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}} \quad (1)$$

Information:

\bar{X}_1 and \bar{X}_2 = The average value of benefits compared before and after the implementation of the HFM model
 n_1 dan n_2 = Number of samples compared
 S_1 dan S_2 = Standard deviation of \bar{X}_1 and \bar{X}_2
 In order to know the amount of Standard deviation \bar{X}_1 and \bar{X}_2 , then used the formula as follows:

$$S_i = \sqrt{\frac{\sum(X_i - \bar{X})^2}{n_i - 1}} \quad (2)$$

The criteria of decision making:

- t-count \leq t-table ($\alpha = 5\%$) then H_0 accepted means there is no real difference between the variables are compared.
- t-count $>$ t-table ($\alpha = 5\%$) then H_0 rejected means there is a real difference between the variables that are compared.

Furthermore, to identify the role of local institutions and the level of customer satisfaction after the implementation of an integrative marketing strategy model of marine fish, the use of descriptive statistical analysis tools with frequency table.

III. RESULTS AND DISCUSSION

A. Profitability Changes after Implementation of HFM Model

The results of the study in the second year after the implementation of the HFM model, especially for businesses to give change on increasing the rate of profit is very significant that is up to 88,45%, as shown in Table 2. The amendment was an implication of the application of the schematic model of HFM on the Marketing Strategy Model of Sea Fish Marketing Integration can be seen in Figure 1. Before applying the HFM model, the marine fish marketing channel pattern in the research area consists of 6 kinds of pattern, but after the application of the HFM model, only 3 kinds of channel patterns were built. This condition further demonstrates that the new marine fish marketing strategy built has an impact on marketing efficiency. This is in line with the recommendation in a study by [14] (Sarker, Salam, and Rana, 2017) on livelihood [Soni et al., International Journal on Emerging Technologies10\(1\): 01-03\(2019\)5](#)

condition of fishermen at Amtali Upazila, Barguna, Bangladesh between lays, as follows: 1) The fishermen should be encouraged to sell their fish to the market directly without involvement of the intermediaries, 2) Government should provide loans for them at a low interest rate and create alternative job opportunities in off peak season, and 3) Organization of fishery cooperative society should be done.

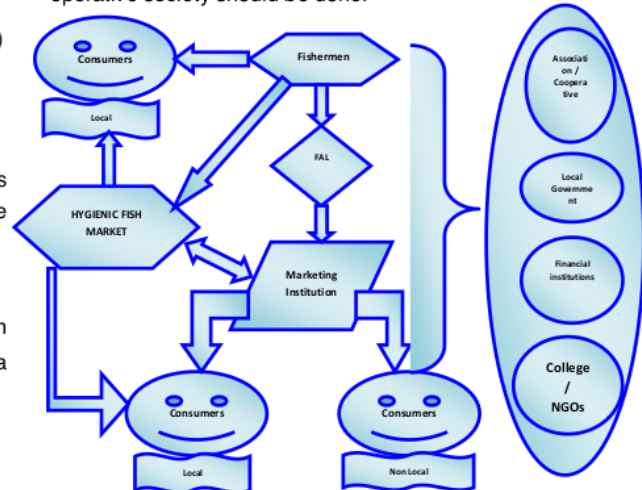


Figure 1. Figure of Marketing Strategy of Sea Fish Marketing through HFM Model and Local Institutional Role

Through Figure 1, the integrative strategy of the HFM model is explained that the existence of Freezer Box and Cool Box becomes the main equipment owned by marine fish traders with the HFM model. While the physical condition of HFM is recommended to meet the following criteria: 1) building (Fishing display space, Fish storage room, Fish restaurant room, Fish storage pond, Sort room, Quality test room, Office space, and Mosque room and toilet); 2) equipment (Ice equipment, fresh fish freezer equipment, live fish aquarium equipment, processed fish case equipment, sorting equipment, waste treatment equipment, water installation equipment, and electrical installation equipment); and 3) management (Technical management is carried out by the Livestock Service Office Fisheries and Marine of Jember Regency, by applying HACCP Plan and commercial management in cooperation between Jember District Government and stakeholders, in this case, professional private economic actors. The implementation of the integrative marketing strategy of the HFM model must be supported by existing local institutions such as regulatory agencies, financing, fish trader associations, and skill training institutions. Therefore, according to the recommendation of research conducted [7] [1] (Aktar, Islam Hossain, and Rahman, 2013) is necessary to provide institutional and organizational support, government support and extension services on fish preservation, handling, icing and curing for the development of fish marketing and fish quality.

Table 2 illustrates that the average rate of change in the level of profit at the fisherman level has increased profits at [5] the application of the marine fish marketing

strategy model of 69.97%. This means that this change is very significant compared to the previous when the respondent is in bond with the *pengambang/financier*. The higher level of fishermen profit is because they are no longer tied to the investors (*pengambang*), where the

average selling price of fish before the application of the HFM model of IDR 15,000, - / kg to IDR 31,500, - / Kg after there. In addition to these factors, also due to the treatment of fish hygiene from the process of catching to landings, transportation, and display at the retailer level.

Table 2. Changes of Fishermen Profitability and Marketing Agencies After Implementation of Hygienic Fish Market Model at Jember 2016

| NO | Change Profitability at Fisherman (IDR / kg) | | Change Level of Gains on Middleman / Poklaksar (IDR / kg) | | Change Level of Gains on Retail (Domestic and Regional) (IDR / kg) | |
|----------------|--|----------------|---|----------------|--|----------------|
| | Before | After | Before | After | Before | After |
| 1 | 10,000 | 18,600 | 4,500 | 7,800 | 4,250 | 7,200 |
| 2 | 11,000 | 18,500 | 5,500 | 7,700 | 4,000 | 7,500 |
| 3 | 12,000 | 20,000 | 5,000 | 7,600 | 3,750 | 7,300 |
| 4 | 11,500 | 19,500 | 4,000 | 7,500 | 3,000 | 6,500 |
| 5 | 13,000 | 21,500 | 3,750 | 7,700 | 3,250 | 6,600 |
| 6 | 12,500 | 22,000 | 4,250 | 7,750 | 3,000 | 6,500 |
| 7 | 12,000 | 21,500 | 5,200 | 7,800 | 3,000 | 6,000 |
| 8 | 11,500 | 20,000 | 5,000 | 7,650 | 3,250 | 6,400 |
| 9 | 12,000 | 19,000 | 4,750 | 7,700 | 3,750 | 7,300 |
| 10 | 12,000 | 19,500 | 4,500 | 7,700 | 4,000 | 7,500 |
| 11 | 13,000 | 18,750 | 5,000 | 7,700 | 4,000 | 7,300 |
| 12 | 10,000 | 18,500 | 3,500 | 7,650 | 4,300 | 6,750 |
| 13 | 10,500 | 18,000 | 3,750 | 7,600 | 4,400 | 6,750 |
| 4 | 11,000 | 18,750 | 3,500 | 7,850 | 3,500 | 7,000 |
| 15 | 10,000 | 18,250 | 3,000 | 7,800 | 3,250 | 6,400 |
| Sum | 172,000 | 292,350 | 65,200 | 115,500 | 54,950 | 103,100 |
| Average | 11,467 | 19,490 | 4,347 | 7,700 | 3,663 | 6,873 |
| Δ (%) | 69.97 | | 77.15 | | 87.63 | |

Source: Processed Primary Data, 2016.

Furthermore, retailers had increased profits higher than the collector traders/middlemen/Poklaksar, i.e. an average of 87.63% after the application of the HFM model. Changes in profit are due to the average retailer-hygienic purchasing fresh fish from the previous marketing agency with an average purchase price of IDR 32,347 / kg before the application of the HFM model of an average purchase price of IDR 39,000/kg. The retailer trades fresh hygienic fish to the final consumer with an average price of IDR 37,311 / kg, while before the use of the model HFM it was sold with an average of IDR 47,500/kg. Marketing costs incurred by marketing agencies at the end of the hygienic fish marketing channels consist of depreciation charges Freezer Box tools and small appliances as well as other complementary market retribution. Although the price of fish at a relatively high HFM (average IDR 47,500, - / kg), the satisfaction level of the auction reaches the maximum.

Furthermore, statistical changes in the level of profits earned by the business of marine fish in the study area can be divided into three groups: fishermen, wholesalers/brokers/ Poklaksar and retailers. For further details, the results of different test average of the degree of change in the level of benefit in the three groups of saltwater fish business people are presented in Table 3a, 3b, and 3c.

Table 3a below shows that statistically the application of HFM in the study area has an impact on the increase in profits received by fishermen significantly at a 99% confidence level. This is indicated by the value of the t-test (32,83) which is higher than t-table (2,98) on a real- α of level of 1% means that H0 is rejected. The high rate of change was due to the sale price from the fishermen increased by 100%, but the cost of treatment hygienic fish catches increased from an average of IDR 5,000 / kg to IDR 10,000 / kg; an increase of 100%. Fishermen in question are the fishermen who are not under contract with "the *pengambang*" (financier) thus free to sell to anyone on the equilibrium price level. This condition indicates that the rising cost of fishing is accompanied by a significant increase in profits. This condition was consistent with the results of research [11] (Prihatmaji, and Rustiani, 2012) in the coastal areas that benefit the fishermen of Rembang drastically increased selling catches HFM at up to 35%.

Table 3b and 3c show that both the middlemen/ Poklaksar or retail sales experienced a significant improvement after the application of the model HFM. The increase, however, in profits experienced by retail traders is higher compared to other traders. This is because retailers in addition to selling fresh fish, also sold in the form of culinary despite the high marketing costs increased, but profits increased even higher. The marketing costs incurred by other traders include labor

costs, transportation, treatment maintaining hygiene in fish and retribution. Therefore, the impact of the HFM models will create a high efficiency marketing system of marine fish compared to previous models. However, according to findings of [12] (Qatan, Knútsson, and Gestsson, 2013) the efficiency of the marine fish market will be influenced by many factors such as lack of infrastructure in the centers of the landing, a large number of small-scale fishermen and truckers' role in the new marketing system. These factors have a huge impact on the quantity and quality of the fish that will be

traded in the market. There are some basic requirements to consider, such as logistics, government rules and regulations, technology and stakeholder acceptance of the new system to ensure the success of a new market. It is expected that the market authority will find the results of this study so useful for improving the existing conditions that can eliminate the development of a new fish wholesale market and develop a long-term plan for the operation of the market to overcome market barriers.

Table 3a. Analysis Results of Average Difference Test to Profitability Changes for Fishermen

| Paired Samples Test | | | | | | | | |
|---------------------------------|--------------------|----------------|-----------------|---|-----------|--------|----|-----------------|
| | Paired Differences | | | | | T | df | Sig. (2-tailed) |
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| Y ₂ - Y ₁ | 8,023.333 | 946.396 | 244.358 | 8,547.430 | 7,499.236 | 32.834 | 14 | .000 |

DESCRIPTION: Y₁ = PROFIT BEFORE APPLICATION OF HFM MODEL, AND Y₂ = PROFIT AFTER APPLICATION OF HFM MODEL
Source: Processed Primary Data, 2016

Table 3b . Analysis Results of Average Difference Test to Change Level of Traders profit

| Paired Samples Test | | | | | | | | |
|---------------------------------|--------------------|----------------|-----------------|---|----------|--------|----|-----------------|
| | Paired Differences | | | | | T | df | Sig. (2-tailed) |
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| Y ₂ - Y ₁ | 3,353.333 | 753.199 | 194,475 | 2,936.225 | 3770,441 | 17.243 | 14 | .000 |

Description: Y₁ = profit before application of HFM Model, and Y₂ = profit after application of HFM Model
Source: Processed Primary Data, 2016.

Table 3c. Analysis Results of Average Difference Test to Change Level of Traders Retailer Profit

| Paired Samples Test | | | | | | | | |
|---------------------------------|--------------------|----------------|-----------------|---|----------|--------|----|-----------------|
| | Paired Differences | | | | | t | df | Sig. (2-tailed) |
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| Y ₂ - Y ₁ | 3210,000 | 392,428 | 101,324 | 2992,680 | 3427,319 | 31,680 | 14 | .000 |

Description: Y₁ = profit before application of HFM Model, and Y₂ = profit after application of HFM Model
Source: Processed Primary Data, 2016.

B. Consumer Response towards Hygienic Fish Market Development

Research results revealed that as many as 60% of consumer respondents expressed great satisfaction with the marketing model prevailing in the study area, while as many as 40% of respondents said they were satisfied. The factors that cause satisfaction level of respondents because the fish is fresh, clean and has been selected from high quality fish. Another factor is that the meat is very clean, quality, reasonable prices and has a variety. This condition occurs because according to the profile picture of the consumer, where the average formal education is middle to low educated respondents, pertained to be high. Therefore, respondents use rational considerations in making

effective decisions with a preference to spend household budgets the right choice according to affordability and need. On the other hand, up to 40% of the respondents agreed on considering the fish sold in HFM being clean, in good-quality and relatively affordable.

The results also describe the level of customer satisfaction as seen from the comparison of the level of customer satisfaction to buy fresh fish directly from fishermen or from the traditional fish market at HFM, that as much as 90% of respondents were very satisfied. It is based on the consideration that despite the more expensive price (IDR 63.000, - / kg) and quite distant (6 km), they would still make purchases as long as the quality, freshness, and cleanliness can be

guaranteed 96%. As many as 10% of consumer respondents stated somehow satisfied, because regardless the higher price, its quality, cleanliness, and freshness to be consumed are guaranteed thus good for the growth of the human body, although at the same time sometimes they felt less satisfied with the customer service merchant/consumer.

Given that HFM is currently operating at some points in subdistrict of Ambulu, Jember, some customers gave feedback for the improvement of the HFM development model to make it work more effectively in building an efficient marketing system. Suggestions included: 20% of respondents saw no need to disseminate to the public regarding the importance of consuming fresh and hygienic fish for human growth as to persuade and educate them about the need to eat fish by at least 31,4 kg/capita/year. Furthermore, 10% of consumer respondents advised that more hygienic fish market is necessary to meet demands of buyers, gthat even the population of Jember reached more than 2,5 million people. Moreover, more HFM should be further spread across the district. Most (70%) of respondents consumers HFM suggested that hygiene should be improved, and it should be located in urban centers to make it affordable for those living around the center of the town. Many facilities in HFM have not met the standards, such as sanitation, supermarket, waste management, infiltration, display table for Milet (stainless steel), parking areas, and other supporting facilities.

C. Local Institutional Roles

The role of local institutions is crucial in building effective and efficient marine marketing. Prior to illustrating the existence of local institutional role HFM in the research area, it will be disclosed in advance about

the perception or view of local institutions in the area of research, as shown in Table 4. It is obtained that 42.86% of respondents stated strongly agree to the development of HFM because it can encourage an increase in the income of fishermen and traders. While others agree on building HFM because people are increasingly interested to consume sea fish, considering that the level of fish consumption in Jember is only 19.2 kg /capita /year. This number is expected to increase up to the ideal number, that is 31,4 kg/capita/year. Table 4 below also reveals that 14.29% of respondents stated undecided on the development of HFM because many traders are running their businesses in the traditional fish market. Others have not understood the concept completely.

Based on the above conditions, then in the opinion of [9] Nurmanaf (2007), although it is not the only factor of agricultural production, but certain capital constraints are a very determining factor. Many offer funding as long as very few farmers use it; as if there was no meeting point between the two parties, financial institutions, and farm entrepreneurs. On the one hand, the rules regarding formal financing schemes are rigid, while on the other hand farmers and rural communities have limitations. In fact, informal sources of financing are more familiar to them and turn out to be alternatives, despite the fact that they charge higher interest. From this fact, the concrete steps needed to support the development of microfinance agriculture services are appropriate, both in terms of financial institutions and in terms of farmers as entrepreneurs. Actual action is needed, such as integrating various strategic components to develop the potential of rural financial markets and strengthen links between microfinance institutions at the local level and commercial financing networks.

Table 4. Local Institutional Role in Hygienic Fish Market in Jember 2016

| No | Local Institutional Role Description | Amount of Respondents (People) | (%) | Information |
|----|--|--------------------------------|---------------|---|
| 1 | Local Institutional outlook on HFM: | | | |
| | a. Strongly Agree to the presence of HFM | 3 | 42.86 | Because it can increase the income of fishermen and traders |
| | b. Agree on the presence of HFM | 2 | 28.57 | Because people are increasingly interested in buying marine fish |
| | c. Doubt on the existence of HFM | 1 | 14.29 | Because there are still traders out HFM |
| | d. Disagree on the presence of HFM | 1 | 14.29 | Because there is still a traditional fish market |
| | Amount | 7 | 100.00 | |
| 2 | Roles and Forms of Local Institutional Support to the presence of HFM in the area: | | | |
| | a. Providing services to capital | 3 | 42.86 | Businesses operating capital is limited |
| | b. Guidance for strengthening business skills, | 2 | 28.57 | Skill, technology and limited market businesses |
| | c. Strengthening institutional marketing including the development of HFM facilities in the area Special strategic | 2 | 28.57 | In order HFM market structure leads to a perfectly competitive market |
| | Amount | 7 | 100.00 | |

Source: Processed Primary Data, 2016.

Table 4 above also illustrated as much as 42.86% of respondents stated that the role of local institutions, especially the district administration, the government district and village administration strongly support the to strengthen hygienic fish marketing including building HFM facilities located in a special area. This means that the physical development of HFM built by local institutions can effectively improve the marketing system of marine fish towards efficient marketing as has been demonstrated by the government of DKI, Jakarta, Yogyakarta, Tegal, Cilacap, Semarang and Rembang. This condition was consistent with the results of research [16] (Sibghatallah, 2006) on Customer Satisfaction Analysis HFM in Jakarta. This study revealed that HFM could create comfortable market conditions which could meet the hygiene standards which allow more consumers to buy fish with the quality and affordable price. Similarly, the findings of [8] (Nur Anisah, and Susilowati, 2007) on Marketing Management of Pindang Fish in Tegal regency which revealed that consumer perceptions of pindang fish are that the quality is pretty good, but there needs to be improvement of the quality of the taste to be more savory, of the package hygiene, accessibility, and price affordability.

Meanwhile, 28.57% of respondents believe that the role of local institutions such as NGOs, educational institutions and trainings, consultants and other stakeholders have not manifested in real initiatives. The role of these local institutions can actually be realized in the form of concrete measures such as developing and strengthening the management skills of marketing for merchants; technology and post-harvest processing of marine fish for fishermen and fishermen, and building a network of the wider market. One role of local institutions which has been realized is strengthening of institutional marketing through the establishment of marketing implementation in the marketing group (*Poklaksar*); this group facilitates not only to strengthen the hygienic fish marketing but also for non HFM. The village government through the Village Fund Allocation Program and Village Fund Program of the relevant ministries also facilitated the construction of physical facilities HFM in specific areas located in coastal areas where fishing boats can land easily. This is supported by the findings [6] [20] (Vredegoor and Pennink, 2013) confirming that with the support of the empirical data from this region we can confirm that it is worthwhile to include the local community in the model for regional economic development. The newly added variables: at the individual level; Skills and Knowledge and at the level of the collective: Human Coordination was supported by the empirical material.

Related to the fish market sanitation and marine fish hygiene as well as the role of local institutions, the study of [2] (Alam, et. Al, 2014) in southern Bangladesh can be a reference. Their results revealed that about 13% of retailers have not gone to educational institutions, 60% were primary school graduates and the rest, 27%, were graduated from secondary schools. Although many of them are literate, knowledge and practice of public health, hygiene and sanitation were found very limited.

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Consequently, the cleanliness and sanitation systems of retail fish market is very low. A hygienic fish market should have adequate water supply, toilets, and other sanitation facilities. Due to the limited infrastructural facilities for fish landing, preservation, distribution, marketing, and quality assurance, the condition of the fish at the retail level has suffered from serious health problems. It is therefore important for the handling and preparation of fish and fishery products to guarantee the cleanliness and health. To ensure this, it would require a quick measures and well-management by government, especially the local government and rural development authorities.

IV. CONCLUSION

Post implementation of the HFM model development specifically for companies oriented at the level of profit significantly reaching up to 88.45%. Up to 60% of respondents were very satisfied with the applicable model, while as many as 40% of respondents stated just satisfied. Ways to increase customer satisfaction by purchasing fresh fish directly to HFM which most (90%) consumers stated very satisfied with buying fresh sea fish in the traditional fish market. Local institutions that exist in the research area were helpful in building inefficient traditional systems. Efforts should be made to improve the system strikes that occur in fishermen are financially trapped by financiers, and strengthen hygienic fish institutional. The role of local security could be realized in the form of concrete measures such as providing guidance and skills development for workers, technology and the processing of broader results.

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Conflict of Interest:

This article is not intended to be used for personal gain. In addition, the author expresses no conflict of interest, collaborative, or other interests with reviewers, companies, funders or related institutions.

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