# Consumer Purchase Decision on Fresh Fish in the New Norm: Preliminary Case Study in Indonesia

## Yuary Farradia[1], Mas Tri Djoko Sunarno[2]

[1]Faculty of Economics,
Universitas Pakuan, Jln. Pakuan, Bogor, West Java, 16143, INDONESIA

[2]Research Institute for Freshwater Aquaculture and Fisheries Extension,
Jln. Sempur No 1, Bogor, 16154, INDONESIA

*Corresponding Author

**Abstract:** Indonesia scores among the top five of fishery and aquaculture producers in the world, therefore the Ministry of Marine Affair and Fisheries has expected the aquaculture to play an increasingly important role in economic development and food security for the country. Covid-19 pandemic has an impact on the aquaculture industry in particular fresh water aquaculture subject to its consumer behavior pattern toward online purchase. There are indications that online purchase becoming a preferred choice in the new normal era. This paper studied on factors affecting consumer behavior pattern of fresh fish online purchase decision in the new norm during Covid-19 pandemic in Indonesia. Consumer buying decision variables namely culture, social, personal and psychological. A multiple regression analysis was used to test the data from 107 respondents who prefer to buy online in Indonesia. The result indicated a new trend of consumer behavior pattern to buy fresh fish on line instead of going to the market. Factors of culture, social, personal and psychological all together have significant effect to the consumer purchase decision of online fresh fish purchase behavior. However social factors do not have direct effect to the consumer purchase decision of online fresh fish purchase behavior. This study implies that it is a need to strengthen the collaboration among the supplier, buyer and fish farmer as well as other business stakeholders providing fresh fish for online market requirement.

**Keywords:** Fresh fish, consumer behavior, purchase decision, new norm, Indonesia

## 1. Introduction

Fish is classified as a healthy food for humans. Indonesia, which is around 70% of its territory covered by waters, has abundance fish stocks, both in marine and also in inland waters. Since establishing the Ministry of Marine Affairs and Fisheries, fish consumption per capita per year continuously increase from 21.6 kg in 2000 to around 50.7 kg in 2018 (MMAF 2019). Nowadays, the Indonesian government continues to encourage its people to consume as much fish through the Fish Eating Program (Figure 1) to perform equally to developed countries like Japan.
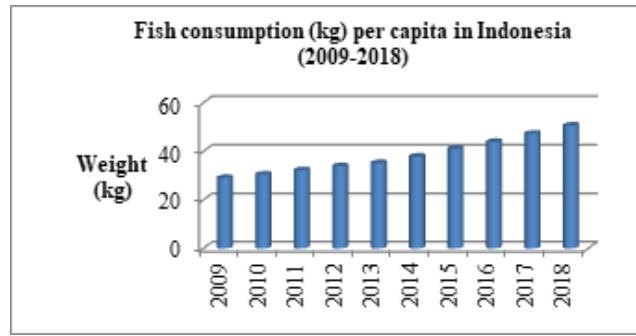
**Fig. 1 - Development of fish consumption per capita in Indonesia 2009-2018
(source: data compiled MMAF, 2019)**

Fish supply in Indonesia has been growing at a steady rate over the past 50 years, from 0.8 million tons in 1960 to 10.7 million tons in 2014 (FishstatJ, 2016). Aquaculture is projected to become the main supplier of fish in Indonesia around 2026 (Tran et al., 2017). This indicates an important role of aquaculture to meet domestic demands for fish. On the other hand, the government encourages the development of fish farming and is expected to replace the position of capture fisheries as a fish provider to meet the needs of the community. The development of freshwater fish farming which has a relatively cheap price and reaches out to the community in the interior becomes a strategic program for Indonesia. The production of freshwater fish farming has increased exponentially since year of 2000, following the equation: $Y = 36827 + 975.9\ X + 6108\ X2$ ($R^2=0.967$). This equation is due to an increase of fish culture and intensifications of fish culture area to marginal land (Sunarno, 2012; Sunarno and Marson, 2012; Sunarno et al., 2013; Sunarno, 2018; Sunarno et al., 2019).

## 1.1 Fish Consumption Trend During Pandemic Covid-19

Since the virus pandemic at December 2019, fishery business activities facing disruptions mainly related to the mobility of sending production inputs as well as marketing the products. For fish farming, delays in the delivery of production inputs will cause disruption to the production process and subsequently the fresh fish marketing. On the other side, lockdown regulation during the pandemic covid-19 becomes the obstacle for the consumer to buy fish in both traditional and modern market. In fact, market activities limit in time operation.

In response to this, fisheries businesses have begun to use online purchasing and marketing. Despite the use of online media is still a new thing for middle and lower scale business players, indeed this would influence fresh fish supply and marketing. Therefore, in post pandemic Covid-19, aquaculture businesses and organizations are adjusting to the new norm – for the time being – of operating under the threat of a global pandemic, enforcing new policies and work arrangements and other measure to keep their workers and customers safe. However, there is limit data on consumer behavior of fresh fish online purchase decision. To overcome this gap it is a need to know what factors influencing the online purchase decision of fresh fish in Indonesia.

## 1.2 Consumer Behavior in the New Norm

In order to keep healthy, consumers across Asia have signaled their eating habits may change permanently once the world moves beyond the impact of Covid-19. In an exclusive Nielsen (2020) study indicates the shifts away from out-of-home dining eating habits to at-home food delivery or online delivery or takeaways. This phenomenon also occurred on fresh fish buying behavior at which consumer afraid to go to the market to fulfill their fish consumption despite the need of healthy food such fresh fish. This situation brings to change the consumer behavior pattern by doing online purchase. In addition, this situation may also be influenced by some factors such as culture, social, personal and psychological toward consumer buying decision.

As pandemic Covid-19 has enforced lockdown regulation which tend to switch the buying habit of consumer to do purchase online, therefore the aim of this study is to understand the consumer behavior on fresh fish online purchase decision in particular factors influencing the consumers purchase decision. The result of this study would be used as a marketing based strategy for fresh fish business toward successful Indonesia fish eating program.

## 2. Literature Review

### 2.1 Consumer Behavior on Fresh Fish Consumption

As stated by Kotler and Keller (2008), consumer behavior relates with how consumers do their purchase. In addition study of consumer behavior does not only include reasons for buying but also the consumption process of the consumer at large. In the entire process of buying, consumers get driven by influences such as feelings, motivation, income, lifestyle, opinions, culture, personality (Srivastava, 2013).

With regard to fish consumption, Theory of Planned Behavior (TPB) has been widely used to predict the intention to consume fish or seafood (EIBN, 2017). According to Ajzen (1991), intention to perform behavioral is influenced by three independent determinants; attitude towards behavior, subjective norms and Perceived Behavioral Control (PBC). Attitude could refer to the degree to which an individual has a psychology tendency after evaluating a particular food product (Ajzen 1991). Health benefits are also identified as a factor influencing consumers towards eating fish.

Social norms can be defined as social pressure from people in general or particular/groups of people as normative belief (Tuu et al., 2008). The subjective norms might pressure individually to perform the behavior. According to Verbeke and Vackier (2005) family is the most important social group that influences eating behavior. Negative feedback from family members tends to encourage a person who responsible for cooking (Brunsø et al., 2009).

Convenience to prepare and cook fish is reported affected the intention towards fish consumption. This might be related to time and effort to prepare and cook fish. Khan et al. (2018) reported that consumer knowledge concerning the health benefits of fish nutritional value has a positive influence on the intention to consume fish. There are Verbeke and Vackier (2005) who reported that fish consumption habit is a sign as a strong predictor of fish consumption frequency. Similar to this, pre-existing habits is strongly affected by fish-eating habit (Juhl and Poulsen, 2000).

### 2.2 Online Purchase

Earlier study by Machlis (1998) reported that online grocery stores are among the fastest growing online businesses. Currently, the Indonesian consumers are increasingly venturing online not only for goods but also for perishable products such fresh fish. Morganosky and Cude (2000) study on consumer demand for online food retail channels found that a huge majority stated convenience and saving time as their primary reasons for buying groceries online, followed by physical or constraint issues that made it difficult for them to shop at traditional grocery stores. One of the advantages of buying over the internet is the ease of comparing prices against other product/service offerings (Strauss and Frost, 1999). This easy access to current and detailed information on products and services facilitates consumers in making more informed decisions. Furthermore, the internet users can receive more attractive sales promotional offers from e-retailers' websites and also through individual e-mail accounts. Another advantage of online shopping, as compared to physical shopping, is the ability of consumers to carry out transactions any time of the day (Cheah, 2001; Strauss and Frost, 1999). In fact, unlike the traditional shopping environment, consumers can enjoy window-shopping on the internet without the pressure to purchase (figure 2). Another important factor is the hassle-free experience of shopping online. Majorly 5 factors affect the online purchasing decision namely convenience, security and privacy, product Related Factors, service related factors, website related factors, personal factors (Khanna and Awal, 2015).
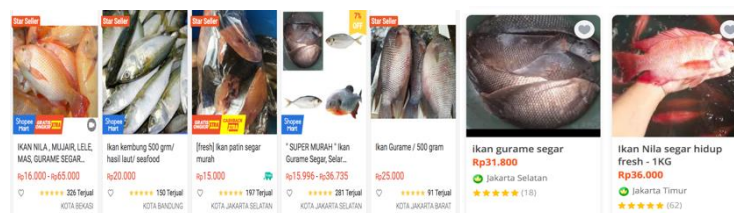


**Figure 2 - Fresh Fish Online Market In Indonesia**
Source: internet compilation

### 2.3 Consumer Purchase Decision

Factors that influence consumer behavior is the cultural, social, personal, psychological. Most of these factors are not considered by marketers but in fact should be taken into account to determine how far the factors that affect consumer behavior of consumer purchases (Kotler and Keller, 2012). According to Durmaz (2008) and Kotler and Keller (2012), culture, subculture, and social class are particularly important influences on consumer buying behavior. Culture is the

fundamental determinant of a person's wants and behavior. Every culture is composed of sub-sub - culture smaller provide identification and dissemination of more specific for their members. Sub-culture can be divided into four types, namely nationalism groups, religious groups, racial groups, geographic areas. In addition to cultural factors, social factors such as reference groups, family, and social roles and statuses affect purchasing behavior (Durmaz, 2008). One's reference group consists of all the groups that have a direct or indirect influence on the attitudes or behavior of the person. The psychological factors consist of motivation, intuition, learning, perception, attitude, personality, belief and manners (Durmaz, 2008). Personal purchase decisions are also influenced by personal characteristics. These characteristics include age and stage in the life cycle, occupation, economic circumstances, lifestyle and personality and self-concept buyer (Kotler and Keller, 2012). Psychological factors are the means used to identify their feelings, collect and analyze information, formulate ideas and opinions and take action. Psychological factors consist of motivation, perception, learning and beliefs and attitudes. Based on the above factors that influence consumer behavior, conceptual framework of this study is presented in figure 3.
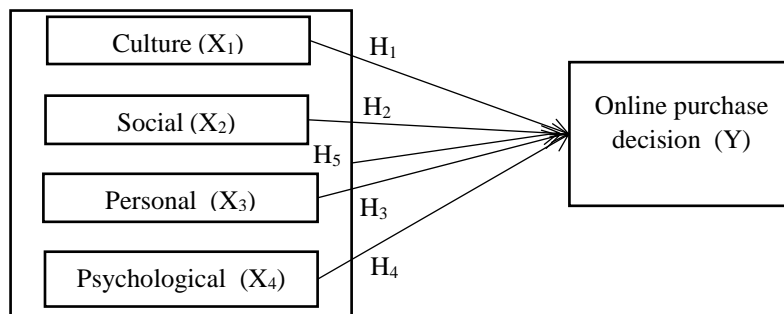


**Fig. 3 - Conceptual Framework**

There are five hypotheses can be drawn and further examined, which are:

H1 : Cultural factors has direct effect on consumer online purchase decisions of fresh fish.

with the formula of regression for H1 : $Y = \beta_0 + \beta_1 X_1 + \varepsilon$

H2 : Social factors has direct effect on consumer online purchase decisions of fresh fish.

with the formula of regression for H2: $Y = \beta_0 + \beta_2 X_2 + \varepsilon$

H3 : Personal factors has direct effect on consumer online purchase decision of fresh fish.

with the formula of regression for H3: $Y = \beta_0 + \beta_3 X_3 + \varepsilon$

H4 : Psychological factors has direct effect on consumer online purchase decision of fresh fish

with the formula of regression for H4 : $Y = \beta_0 + \beta_4 X_4 + \varepsilon$

H5 : Culture, social, personal and psychological factors have direct effect on consumer online purchase decision of

fresh fish with the formula of multiple regression for H5

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$

## 3. Methodology

The analysis is based on multiple regression analysis because there are four independent factors. According to Sekaran and Bougie (2009) multiple regression analysis is use if the independent variable is more than one. The study was carried out using a purposive sampling survey approach. Unit analysis of this study are consumers who consume fresh fish from online purchase. A total 200 questionnaires were distributed out based on consumer data availability from both fish online retail and fish farmer. Out of 127 responses only 107 responses were used for the final analysis. The questionnaire is designed with four Likert scale with the scale construct strongly agree, agree, disagree and strongly disagree. The reliability

of items in the questionnaire was measured using Cronbach's Alpha method of examining reliability as presented in Table 2. The reliability value of items in the questionnaire was 0.943 for the independent variables whilst dependent variable value was 0.784. The Cronbach's Alpha > 0.6, indicated that all research instrument indicator of variable are reliable. The validity test of variables also valid significant indicated by the value of X1 - Y and dependent variable are bigger than r value. Data analysis is run by using SPSS 23.

**Table 2 - Reliability Statistics**

|  | Cronbach's Alpha | N of Items |
|---|---|---|
| Independent Variables | .943 | 16 |
| Dependent Variable | .784 | 4 |

## 4. Result and Discussion

Normality test was used to determine whether or not the normal distribution of data (Santoso, 2010). Data analysis result indicate all data are in normal distribution based on Kolmogorov–Smirnov, presented at table 3. Heteroscedasticity test was used to test a regression model residual variance inequality from one observation to another observation. Heteroscedasticity occurs if there is residual variance is not constant. The regression model to be good if there is not heteroscedasticity (Ghozali, 2007).

**Table 3 - One-Sample Kolmogorov-Smirnov Test**

|  |  | Unstandardized Residual |
|---|---|---|
| N |  | 107 |
| Normal Parameters[a,b] | Mean | .0000000 |
|  | Std. Deviation | 1.29660790 |
| Most Extreme Differences | Absolute | .061 |
|  | Positive | .035 |
|  | Negative | -.061 |
| Test Statistic |  | .061 |
| Asymp. Sig. (2-tailed) |  | .200[c,d] |

a. Test distribution is Normal    c. Lilliefors Significance Correction

b. Calculated from data          d. This is a lower bound of the true significance

**Table 4 - Glejser Heteroscedasticity test Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| 1 (Constant) | .767 | .355 | | 2.158 | .033 |
| CULTURE | .126 | .045 | .473 | 2.802 | .006 |
| SOCIAL | -.098 | .055 | -.327 | -1.769 | .080 |
| PERSONAL | -.009 | .062 | -.029 | -.150 | .881 |
| PSYCHOLOGICAL | -.001 | .055 | -.003 | -.020 | .984 |

a. Dependent Variable: RES2

**Table 5 - Regression Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | Zero-order | Partial | Part | Tolerance | VIF |
| (Constant) | .371 | .593 | | .626 | .532 | | | | | |
| CULTURE | .251 | .075 | .285 | 3.345 | .001 | .793 | .314 | .160 | .315 | 3.176 |
| SOCIAL | .024 | .092 | .025 | .262 | .793 | .758 | .026 | .013 | .262 | 3.819 |
| PERSONAL | .322 | .104 | .308 | 3.103 | .002 | .822 | .294 | .148 | .232 | 4.307 |
| PSYCHOLOGICAL | .345 | .091 | .332 | 3.776 | .000 | .808 | .350 | .181 | .295 | 3.388 |

a. Dependent Variable: BUYING DECISION

The heteroscedasticity test result presented at table 4 was indicated no heteroscedasticity as all the significant values are above the 0.05. On the other hand, autocorrelation test is only performed on the time series data, so in this study is not necessary to do autocorrelation testing. Multicollinearity test was used to determine existence of high correlation between variables in a multiple regression model. If there is a high correlation between the independent variables, then relation between them of the dependent variable will be disrupted. As such, a good regression model should not be a correlation between independent variables, or may be mutually collinear but not highly correlated. Results presented in table 5 show that VIF score for culture, social, personal, and psychological are all < 10. This results indicate that there is no indication of multicollinearity due to value of all VIF < 10. Hence, it can be concluded that there is no multicollinearity in the regression model.

The coefficient correlation as presented in table 6 indicated that independent variables culture, social, personal and psychological simultaneously had effect 75.7% to the online purchase decision. This result was significant supported by the significant value 0.000 < 0.01 (table 7 Anova), Hence the hypotheses $H_5$ was accepted. The multiple regression formulation is $Y = 0.371 + 0.251X_1 + 0.024X_2 + 0.322X_3 + 0.345X_4$. The partial hypotheses result was indicated by the value of t and significant value presented in table 5 above. Hypothesis $H_1$, $H_3$ and $H_4$ were accepted whilst the Hypothesis $H_2$ was rejected. The partial regression for culture $Y = 0.371 + 0.251X_1$; personal $Y = 0.371 + 0.322X_3$, and psychological $Y = 0.371 + 0.345X_4$ , respectively.

**Table 6 - Coefficient correlation and determination**

| R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|
| .876[a] | .767 | .757 | 1.32179 |

**Table 7 - ANOVA[a]**

| | Model | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 585.270 | 4 | 146.318 | 83.748 | .000[b] |
| | Residual | 178.206 | 102 | 1.747 | | |
| | Total | 763.477 | 106 | | | |

a. Dependent Variable: BUYING DECISION

Data analysis above shows cultural, social, personal and psychological factors simultaneously significant influences on consumer purchase decision of online fresh fish in Indonesia. This is supported by preliminary study that consumers had purchase intention to do online purchase of fresh fish in China (Wang and Somogyi, 2018). Culture factor is the basic influence of the desire and behavior because culture of community may be developed since childhood. The online purchase of fresh fish could be developed based on the development of family and surrounding community habit on using online purchase. It is also may be developed due to the education level. On the other side, online purchase makes seller has high opportunity to meet buyer directly which give benefit on both seller and buyer. This is supported by the previous study that online purchase will reduce dependency on intermediaries (Ismail and Khalid, 2015).

Personal factor which influence online purchase decision of fresh fish includes age and stage in the life cycle, occupation, personality and life style of consumer. In the modern life style, consumer prefer to save their time of buying to the market by doing online purchase. Education and income background are also become the basis of this personal factors as more educated, modern people prefer to do their buying activity more practical instead of buying at traditional market. This is in line with the result from previous study stated that individual factor such as the level of educational and Income are the factors influence fresh fish purchasing decision in traditional market (Siswati and Putri, 2018).

Relate to the new norm of pandemic covid-19, main reason of personal factor to do online purchase is to avoid the virus infection. On the other side, psychological factor such feelings and opinion dominate the decision to do online subject to the safety reason in particular of covid-19.

## 5. Conclusion

Based on the overall factors of culture, personal and psychological effect on the online purchase decision then it strongly indicated that pandemic covid-19 has shift the consumer behavior for fresh fish purchase toward online process. The lockdown condition has enforced consumer to follow the culture habit on doing online purchase not only for good but also for the fresh fish. Moreover, personal life style for more practical as well as the psychological for being save from the virus have brought the new behavior on purchasing decision of fresh fish.

As the trend in fish consumption per capita in Indonesia continues to increase every year in which the Indonesian government has encouraged aquaculture production as a provider of fish for community needs, therefore, the government of Indonesia has an obligation to facilitate the providing fresh fish started from upstream to downstream despite pandemic covid-19. In the new normal, the process of supplying fish to the dining table has changed, from direct purchases in the market (traditional and / or modern) to online purchases. The timely delivery and quality of fresh fish as needed holds the key to the success of the on-line purchasing process. This also applies to the process of producing fresh fish. Therefore, it is a need to strengthen the supporting supply of the production operation such as seed, feed and collaboration among the supplier, buyer and fish farmer as well as other business stakeholders, in order to be able in providing fresh fish for online market requirement.

## Acknowledgement

# References

Ajen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.

Brunsø, K., Verbeke, W., Olsen, S. O., & Jeppesen, L. V. (2009). Motives, barriers and quality evaluation in fish consumption situations. Exploring and comparing heavy and light users in Spain and Belgium. *British Food Journal*, 111(7), 699–716.

Cheah, K. H. (2001). *Issues Related to Internet Shopping: An Ethnic Comparison*. Unpublished MBA Dissertation, University of Malaya, Kuala Lumpur.

[EIBN] - EU-Indonesian Business Report. (2017). *Fisheries and Aquaculture*. German - Indonesian Chamber of Industry and Commerce. Indonesia. http://www.ekonid.or.id.

FishstatJ. (2016). *Database and Software for Fishery Statistical Analysis*. United Nations FAO. Accessed on August 2016 from <http://www.fao.org/fishery/statistics/software/fishstatj/en>.

Ghozali, I. (2007). *Analysis Application of Multivariate With SPSS Program*. University of Diponegoro. Semarang [in Bahasa]

Gujarat, D. (1993). *Basic Econometric*. 3rd Edition. Jakarta: Erlanga. [In Bahasa]

Ismail A. S., & Khalid, H. Leveraging social media for the fishing industry: An Exploratory study. *Second International Converence, HCIB 2015 Hold as Part of HCl International 2015, Los Angeles, CA, USA, August 2 – 7, 2015, Proceedings*, 106-107

Juhl, H. J., & Poulsen, C. S. (2000). Antecedents and effects of consumer involvement in fish as a product group. *Appetite*, 34(3), 261–267

Khan, A. Q., Aldosari, F., & Hussain, S. M. (2018). Fish consumption behavior and fish farming attitude in Kingdom of Saudi Arabia (KSA), *Journal of the Saudi Society of Agricultural Sciences* 17(2), 195-199.

Kotler, P. & Keller, K. L. (2012). *Marketing Management* 14th Edition. Prentice Hall

Kotler, P., & Keller, K. (2008). *Marketing Management*. 12th Edition, Prentice Hall.

Machlis, S. (1998). Filling up Grocery Carts Online: Time-Pressed Consumers Expected To Push Growth, Computer World, July 27, site accessed http://www.computerworld.com/news/ 1998/story/0,11280,31959,00.html, February 5, 2006 in Ghazali, E., Mutum, D. & Mahbob, N. A. (2006). Exploratory Study of Buying Fish Online: Are Malaysians Ready To Adopt Online Grocery Shopping? Int. J. Electronic Marketing and Retailing, Vol. 1, No. 1, pp.67–82.

[MMAF] - Ministry of Marine Affair and Fisheries. (2019). *Marine Affair and Fisheries in Figures 2018*. Jakarta Indonesia

Morganosky, M. A. & Cude, B. J. (2000). Consumer response to online grocery shopping, *International Journal of Retail and Distribution Management*, Vol. 28, No. 1, pp.17–26.

Nielson (2020). Asian Consumers Are Rethinking How They Eat Post Covid-19. https://www.nielsen.com/eu/en/insights/article/2020/asian-consumers-are-rethinking-how-they-eat-post-covid-19/

Rupa, K., & Gunjan, A. (2019). Consumer Online Purchasing Decision and its Influencing Factors in Uttrakhand: An Exploratory Study of Selected Districts of Garhwal Division (March 14, 2019). International Conference on Advances in Engineering Science Management & Technology (ICAESMT) - 2019, Uttaranchal University, Dehradun, India. Available at SSRN: https://ssrn.com/abstract=3383352 or http://dx.doi.org/10.2139/ssrn.3383352

Santoso, S. (2010). *Statistik Multivariat*. Jakarta: PT. Elex Media Komputindo [In Bahasa]

Sekaran, U. & Bougie, R. (2009*). Research Methods for Business: A Skill Building Approach*. 5th Edition. John Wiley and Sons Ltd, United Kingdom

Shalini, S. (2013). Factors affecting buying behavior of consumers in unauthorized colonies for FMCG products. *Global Journal of Management and Business Studies*. ISSN 2248-9878 Volume 3, Number 7, http://www.ripublication.com/gjmbs_spl/gjmbsv3n7_13.pdf, 10.01.2013.

Siswati, L., & Putri, A. (2018). Factors which influence the fish purchasing Decision: A study on traditional market in Riau Mainland. ICFSS – 2017, IOP Publishing, IOP Conf. Series: Erath and Envirionmental Science 156. 012064 doi:10.1088/1755-1315/156/1/012064

Strauss, J. & Frost, R. (1999). *E-Marketing*, 2nd Edition. Prentice-Hall, Upper Saddle River, New Jersey.

Sunarno, M. T. D. (2012). Revitalizing mini-scale fish feed factory to support catfish farming business in Gunungkidul Regency, Province of D. I. Yogyakarta. *Prosiding Seminar Nasional Riset dan Kebijakan Sosial Ekonomi Kelautan dan Perikanan Tahun 2012. Buku 1*. Jakarta: Balai Besar Penelitian Sosial Ekonomi Kelautan dan Perikanan, pp. 29-33. [in Bahasa]

Sunarno, M. T. D. (2018). *Strategy of Providing Home-Made Diet Having Good Quality and Economical Price for Increasing Freshwater Aquaculture Business*. Orasi Pengukuhan Profesor di Bidang Nutrisi Ikan dan Teknologi Pakan. Jakarta: Badan Riset dan Sumber Daya Manusia Kelautan dan Perikanan, Kementerian Kelautan dan Perikanan [in Bahasa]

Sunarno, M. T. D., & Marson. (2012). Swampy area for development of patin culture. *Proceeding International Conference on Indonesia Inland Waters III*. Palembang: Research Institute for Inland Waters Fisheries, pp. 57-63.

Sunarno, M. T. D., Saputra, A., & Syamsunarno, M. B. (2019). Feeding appropriate formulated diet for improving gonad maturation and spawning of brooder of some native fishes of indonesia. The 1st International Conference on Agriculture and Rural Development. *IOP Conf. Series: Earth and Environmental Science*, 383, 012031. doi:10.1088/1755-1315/383/1/012031

Sunarno, M. T. D., Sulhi, M., & Suryaningrum, L. H. (2013). Study of home-made diet in supporting industrialization of catfish culture (*Pangasius* sp.) in Kampar District, Provincy of Riau. *Prosiding Forum Inovasi Teknologi Akuakultur 2013*. Jakarta: Pusat Penelitian dan Pengembangan Perikanan Budidaya, pp. 371-379. [in Bahasa]

Tran, N., Rodriguez, U. P., Chan, C. Y., Phillips, M. J. Mohan C. V., Henriksson, P. J. G., *et al*. (2017). Indonesian aquaculture futures: An analysis of fish supply and demand in Indonesia to 2030 and role of aquaculture using the AsiaFish model. *Marine Policy*, 79, pp. 25-32

Tuu, H. H., Olsen, S. O., Thao, D. T., & Anh, N. T. K. (2008) The role of norms in explaining attitudes, intention and consumption of a common food (fish) in Vietnam, Appetite **51(3)**, 546-551

Verbeke, W., & Vackier, I. (2005). Individual determinants of fish consumption: Application of the theory of planned behavior. *Appetite*, 44(1), 67-82.

Wang, O., & Somogyi, S. (2018). Consumer adoption of online food shopping in China. *British Food Journal*, Vol. 120 Issie 12.

Yakup, D., & Sebastian, J. (2012): Integrated Approach to Factors Affecting Consumers Purchase Behavior in Poland and an Empirical Study , Global Journal of Management and Business Research (GJMBR), Volume 12 Issue 15: 77-104. Online ISSN: 2249-4588 & Print ISSN: 0975-5853. USA. https://globaljournals.org/GJMBR_Volume12/8-Integrated-Approach-to-Factors-Affecting.pdf.