A Model of Fish Consumption Among Indonesian Youth with the Moderation on Their Perception of Fish Quality Assurance

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ABSTRACT This study provides a relevant examination of fish consumption among Indonesian youth; it contributes to their perception of fish quality assurance. A cross-sectional sample of Indonesian youth scholars between 17 and 26 years old (n = 1.163) responded to an online questionnaire validly from February to March 2021. Structural equation modelling was used to estimate the direction and strength of relationships between variables. The results demonstrate that fish availability, health involvement, fish consumption in childhood, sensory beliefs, and price correlated significantly with fish consumption among Indonesian youth, but that relationship was mediated by attitude to consume fish. Social pressure also has a significant correlation to fish consumption among Indonesian youth. Meanwhile, we found that Indonesian youth's perception of fish quality assurance negatively moderates the relationship between fish and fish consumption. This perception of fish quality assurance is likely not to affect the real-world relationship between the desire to consume fish and fish consumption. Understanding the role different variables play in their fish consumption habits may provide helpful insights for the government to develop strategies for increasing the final goal, which is the intake of fish among youn g consumers.

Keywords: Antecedents; attitude; fish consumption; Indonesian youth; moderation; perception of fish quality assurance

INTRODUCTION

During the last decades, increased attention has been paid to healthy consumption habits, whereas regular fish consumption is one of the main targets in healthy diet promotion. Indonesia is a maritime country divided into islands, and part of its territory is quite extensive waters. There are vast potential seas in the form of abundant natural resources, including many species of fish, especially fish that can be consumed as a food source. The Ministry of Marine Affairs and Fisheries confirmed improving nutrition from an early age. Fish has excellent nutritional content, such as the protein that contributes to growth, omega 3 and 6 fatty acids, beneficial for maternal health and the formation of the fetal brain, vitamins, and various minerals for both mother and her fetus (MMAF, 2018). Fish contains high protein and essential amino acids needed by the body, and it is also has a biological value that reaches 90%, with less binding tissue so that it is easier to digest (MMAF, 2021). However, the level of fish consumption in Indonesia is relatively low compared to the other potential fishery resource countries. Generally, fish consumption shows an increasing trend, albeit not high. Fish consumption in 2010 amounted to 30.48 kg/capita/year, increasing every year to around 2.67 kg/year to reach 54.50 kg/capita/year in 2020 with a growth rate of 6.68% (Source: Ministry of Marine Affairs and Fisheries of Indonesia). Compared to other ASEAN countries, Indonesia was the third on fish and seafood consumption per capita in 2017, below Malaysia and Myanmar (FAO, 2020). Several factors drive the causes of low consumption of fish in Indonesia; lack of infrastructure needed to distribute high-quality fish to consumers; certain types of fish with high quality such as tuna, shrimp, and crabs. They are most likely traded to the international market; also, people prefer to consume other food like beef, chicken, and egg, instead of fish, as their protein sources besides their lack of understanding of the benefits of fish consumption (FAO, 2020).

Food habits are a culturally standardized set of food-related behaviours expressed by individuals who have grown up within a given cultural tradition. In contrast, food is a visual element of culture that is learned, shared, and transmitted among groups of human beings from generation to generation (Wijaya, 2019). Since eating habits intend to be maintained into adulthood (Birch & Fisher, 1998), increasing fish intake among youth between their late teens and early twenties is essential for their health concerns. Thus, the government needs to encourage society's food habits by an advertising campaign on eating fish. According to a Danish study, the family's social norm played a significant role in explaining the intention to eat fish in the post-campaign period (Scholderer & Grunert, 2001). Therefore, the Ministry of Marine Affairs and Fisheries (MMAF), along with several partners, has tried to increase the national fish consumption rate in 34 provinces and is trying hard to ensure the availability of healthy fish for domestic consumption. Fishery Regulations include Law No. 45 of 2009 amending Law No. 31 of 2004 on Fisheries; Regulation No. 18 of 2012 on Food; and Presidential Instruction No. 1 of 2017 on the Healthy Living Community Movement. With the setting up of promotion forums almost in all regions, the government hopes to increase fish consumption.

The purpose of this study was to test a model of pathways that may relate psychological and other factors with the moderation of perception of fish quality assurance to fish

consumption of Indonesian youth. Figure 1 presents the links the model posits between the price, fish availability (Thong & Olsen, 2012); consumption habits in childhood, sensory beliefs, health involvement, attitude, social pressure as predictors of fish consumption (Thorsdottir *et al.*, 2012) with the moderation of perception of fish quality assurance.

The main contribution of this research is to explore the moderating effect of perception on fish quality assurance in the fish consumption pattern of young Indonesian academics. Second, this research was conducted in Indonesia, an archipelago developing country with abundant marine resources, to understand all the factors that affect its young fish consumption.

The remainder of the study is arranged as follows. Section 2 provides the research methods and measurements. Section 3 explains the results from the data collected. Sections 4 and 5 elaborate on the main discussions from the findings and conclusions.

METHODS

Sample and data collection

This study was conducted from February to March 2021 in Indonesia. The target population was Indonesian youth between 17 and 26 years old. Data were collected based on representative's population among three parts of the region in Indonesia based in Indonesian Food Culture Mapping (Wijaya, 2019); Western part of Indonesia consist of 4 main islands (Sumatera, Java, Bali, West Nusa Tenggara, and those nearest islands), Central part of Indonesia consists of 2 main islands (Sulawesi, Kalimantan, and surrounding islands), and East part of Indonesian consist of 3 main islands (East Nusa Tenggara, Maluku, Papua, and surrounding islands). From those three parts, based on Indonesian Statistics, 81.8% population are in the western part of Indonesia, 13.4% of the population are in the central part of Indonesia, and 4.8% are in the eastern part of Indonesia. The sample consisted of university students between 17 and 26 years old. The questionnaire was distributed online. A link of questionnaires was sent to more than 1500 individuals, where the survey was introduced based on the above proportional population. The total number of respondents who took part in the study was 1.195, and 97.32% are valid.
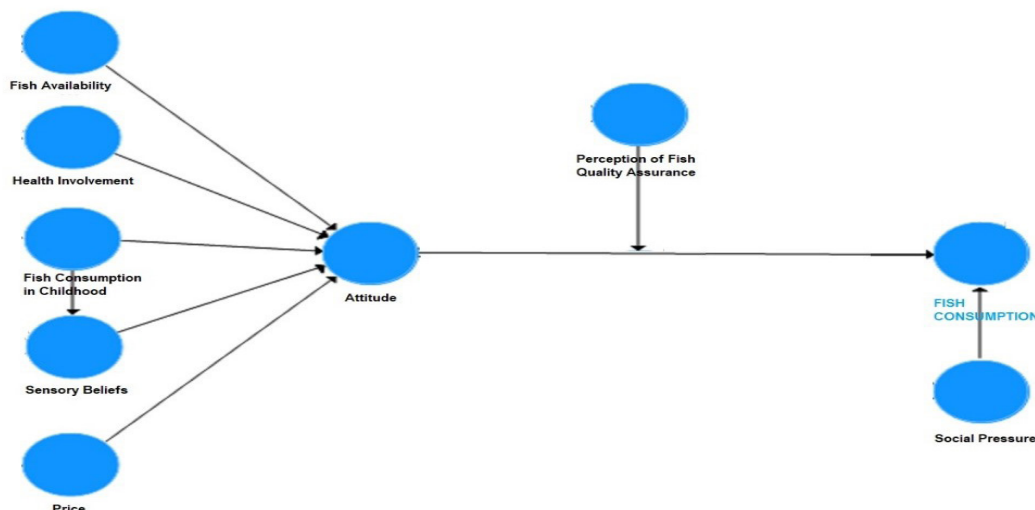
Measurement of the constructs

Measurement of constructs was based on (Thong & Olsen, 2012) and (Thorsdottir *et al.*, 2012). Fish consumption in childhood was measured with the following item:

"Eating fish is something I am used to from my childhood."

The statement was a five-point rating scale with the endpoints labelled "Strongly disagree" (value 1) and "Strongly agree" (value 5) and the middle point labelled "Neither agree nor disagree." High scores on the above item reflected high fish consumption in childhood.

What children eat is influenced by several factors. Biological influences, parental influences, and societal influences are just a few. To date, almost all of the research has centred on determining biological drives to eat certain foods and the relationship between parenting behaviours and food intake (Schwartz & Puhl, 2003). Moreover, eating is typically a social event for children, and children's observations of other eaters, such as parents, other adults, peers, siblings, and children's observations of others' eating behaviour, influence the development of their preferences and eating behaviours. Because people's eating behaviour in that environment serves as a model for the developing child, the social context in which children's eating patterns develop becomes essential. Models can significantly impact food selection, especially if they're similar to the observer or are perceived to be particularly powerful, like older peers (Schwartz & Puhl, 2003).

The sensory belief was measured with five items: (1). *"Fish has an unpleasant smell"*; (2). *"Fish has a good taste"*; (3). *"Fish has good texture"*; (4). *"Fishbones cannot be eaten and hard to be removed"*; and (5). *"Eating fish is boring."* Above each statement was a five-point rating scale with the endpoints labelled "Strongly disagree" (value 1) and "Strongly agree" (value 5) and the middle point labelled "Neither agree nor disagree." The items "Fish has an unpleasant smell," "Fishbones cannot be eaten and hard to be removed," and "Eating fish is boring" were recoded so that high scores on all items indicated a positive sensory belief.

Sensory exposure contributes to flavour preferences later in life (Nicklaus, 2009). Another study also confirmed that sensory experiences occur in the early life of childhood. Early

Figure 1. The proposed causal relationships between fish consumption and the predictor variables.

sensory exposure contributes to flavour preferences later in life. Thus food preferences in childhood also contribute to persisting throughout life (Mennella et al., 2001). Aside from those attributes, fish are also seen as challenging to prepare, as a study in Belgian shows that 84% of the respondent were inconvenienced by fishbone (Birch & Lawley, 2012).

Health involvement was measured with the following statements; (1). "*Health is critical to me*"; (2). "*I appreciate healthy food very much*"; and (3). "*Eat fish makes healthy.*" The endpoints were labelled "Strongly disagree" (value 1) and "Strongly agree" (value 5) on a five-point rating scale, with the midway position labelled "Neither agree nor disagree." As a result, a high score on those questions indicated a favourable health involvement.

Involvement has been shown to substantially explain consumers' purchase and eating decisions (Marshall & Bell, 2004), including fish consumption behaviour in particular (Verbeke et al., 2007). Personal relevance and importance attached to health issues based on inherent needs, values, and interests are referred to as health involvement (Zaichkowsky, 1985). According to empirical data (Olsen, 2001), attitudes regarding fish consumption are associated with health involvement or the value of healthy eating. Other studies by (Olsen, 2003) and (Verbeke & Vackier, 2005), the importance of health and healthy eating can have a favourable effect on adults' fish or seafood consumption. Olsen (2003) also found a positive relationship between health involvement and seafood consumption and an indirect effect through attitude.

Social pressure was measured with three items: (1). "*Eating fish is something I have learned from my parents*"; (2). "*How much do my parents influence how much fish I eat?*"; and (3). "*My family consumes fish regularly.*" Following the first and third statements were a five-point rating scale with the endpoints labelled: "Strongly disagree" (value 1) and "Strongly agree" (value 5), and the middle point labelled "Neither agree nor disagree." Meanwhile, the second statement was a five-point rating scale with the endpoints "Very discouraging" (value 1), "Very encouraging" (value 5), and "Neither encouraging nor discouraging" as the midway point. As a result, a high score on those three criteria indicated much social pressure to consume fish.

The family is a barrier or a motivator when a family member delivers negative or good comments. Negative comments from family members tend to persuade them not to prepare fishmeal in the home (Brunsø et al., 2009). Meanwhile (Verbeke & Vackier, 2005) revealed that a more positive attitude toward eating fish, as well as increased social pressure, could lead to a greater desire to consume fish.

Fish Availability was measured with: (1). "*Fish dishes are so much available and easy to buy*"; (2). "*Vary fish dishes make me eat fish as much as I want*"; and (3). "*I easily buy and eat fish.*"

Price was measured with:

"*Fish price was affordable.*"

The endpoints were labelled "Strongly disagree" (value 1) and "Strongly agree" (value 5) on a five-point rating scale, with the middle point labelled "Neither agree nor disagree."

" As a result, a high price measurement score indicated a high fish availability and price affordability. Economic and market concerns (e.g., cost and availability), sensory factors, cultural factors, recreational habits, and access to other foods influence how much and what type of fish a person consumes. In addition, (Djunaidah, 2017), fish taste varies from the different types. Freshwater fish is less flavorful than seafood. Aside from taste, shape, and size variations, the price of fish varies greatly. As a result, consumers have a wide range of options from which to choose. Fish is processed into various preparations due to its high diversity, catering to all economic classes.

Attitude towards fish consumption was measured with a scale consisting of the following statements: (1). "*I prefer to eat a meal with fish dishes rather than other dishes*" (2). "*I plan to eat fish at least once for three days.*" Following statements were a five-point rating scale with the endpoints labelled: "Strongly disagree" (value 1) and "Strongly agree" (value 5), and the middle point labelled "Neither agree nor disagree." As a result, a high attitude rating score suggested a favourable attitude toward fish consumption. Attitude refers to a person's evaluation judgments of perceived costs/risks and benefits of performing a given behaviour, and affective judgments relate to beliefs about positive or negative feelings derived from the activity; thus, attitude shows the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour (Verbeke & Vackier, 2005). Any relevant information towards attitude on fish consumption might encourage higher fish consumption in general (Leek et al., 2000). In terms of attitude, past research has repeatedly demonstrated that attitudes are directly associated with consuming fish (Honkanen et al., 2005) and seafood consumption (Olsen, 2003; Rortveit & Olsen, 2007).

Perception of Fish Quality Assurance was measure with three items: (1). "*I am sure that government assures the quality of fish in the market, fish distributor, and other fish suppliers*"; (2). "*I am sure that government, fresh fish seller, fish stall and restaurant responsible for preserve fish in good quality*"; and 3. "*I am sure that I ate fish dishes that were safe and of good quality.*" The endpoints were labelled "Strongly disagree" (value 1) and "Strongly agree" (value 5), and the middle point was labelled "Neither agree nor disagree." High scores across the board indicated a high perception toward fish quality assurance. The outcomes of (Yeung & Morris, 2001) support the idea of perceived risk as a foundation for understanding consumer attitudes toward their perception of the food safety concerns, moreover their perceptions on, in this case, fish quality assurance influence their behaviour on fish consumption. As a result, to increase Indonesian's fish consumption, the government and related parties must improve coordination between stakeholders involved in quality control and food safety of fishery products (Djunaidah, 2017).

Fish consumption was measured with:

"How often I eat fish."

The alternatives of each item were coded 1 = never within this month, 2 = once a month, 3 = 2-3 times a month, 4 = 4-5 times a month, 5 = more than 5 times a month. High scores, therefore, reflected high fish consumption. The fish

consumption rate varies greatly from region to region; according to preliminary figures for 2019 (MMAF, 2021), fish consumption ranged from 33.35 kg/cap/yr to 72.76 kg/cap/yr. These five provinces with fish consumption rates below 40 kg/cap/yr are West Java (38.23 kg/cap/yr), Central Java (35.99 kg/cap/yr), Yogyakarta Special Region (33.35 kg/cap/yr), and Lampung (36.88 kg/cap/yr). All these five provinces are in the Western part of Indonesia.

Meanwhile, Maluku Province in the Eastern part of Indonesia (72.76 kg/cap/yr) and North Sulawesi in the Central part of Indonesia (71.13 kg/cap/yr) are the two provinces with fish consumption rates exceeding 70 kg/cap/yr. The lowest participation rates are found in Java and Sumatra, the Western Part of Indonesia, the most densely populated. As a result, it can be concluded that national fish consumption still has room to grow.

Data screening and analytical procedure

When the response pattern was examined, it was discovered that a small number of people had either misunderstood the instructions or had not provided severe responses. In total, 32 respondents' responses were removed from the analysis since they could not be taken seriously. As a result, a total of 1.163 answers were initially analyzed and then analyzed using structural equation modelling (i.e., partial least squares).

Based on these validity and reliability results, the models are stable, all within the threshold. Furthermore, the findings show that psychological and other factors (i.e., fish availability, health involvement, fish consumption in childhood, sensory beliefs, and price) correlate positively significantly to fish consumption among Indonesian youth with the mediation of attitude toward fish consumption; social pressure also has positive relationships significantly to fish consumption among Indonesian youth, but there is also a negative relationship in which fish consumption is negatively affected when perceptions of fish quality assurance are higher.

RESULTS AND DISCUSSION

Respondent profiles

The respondents in this study are Indonesian youth between 17 and 26 years old, who currently have or have had an education at a university or the equivalent. Respondents were taken from 3 geographic areas based on Indonesian Food Culture Mapping (Wijaya, 2019), consist of 81.8% respondents from the western part of Indonesia, which is consist of Sumatra, Java, Bali, West Nusa Tenggara, and those nearest islands; 13.4% respondents from the central part of Indonesia which is consist of Sulawesi, Kalimantan, and surrounding islands; and 4.8% respondents from the eastern part of Indonesia which is consist of East Nusa Tenggara, Maluku, Papua, and surrounding islands.

Confirmatory factor analysis and quality of measures

Confirmatory factor analysis of the eight latent factors, attitude towards fish consumption, social pressure, fish availability, fish consumption in childhood, sensory belief, health involvement, price, and fish consumption, and also moderation of perception in fish quality assurance was conducted to evaluate the measurement quality of the constructs. To determine the validity of the latent constructs, the factor loadings in the measurement model were

inspected. In all instances, the individual factors loading was mainly more incredible than the recommended value of 0.7. With a value of more than 0.5, the factor loading is still acceptable as long as the construct validity and reliability meet the requirements (Ketchen, 2013; Hair *et al.*, 2014). Thus, all the loading factors were acceptable and suggested that the measured construct had acceptable validity (see Table 1). Cronbach's alpha also addresses whether the indicators for latent variables display convergent validity and hence display reliability. By convention, the exact cutoffs apply greater or equal to 0.80 for a good scale, 0.70 for an acceptable scale, and 0.60 for exploratory purposes (Garson, 2016). Average extracted (AVE) may be used to test both convergent and divergent validity. AVE reflects the average commonality for each latent factor in a reflective model. In an adequate model, AVE should be greater than 0.5 (Chin, 1998; Höck & Ringle, 2006). Fornell & Larcker (1981), composite reliability should be higher than 0.58, and the composite reliability for all measures met the criterion. It ranged from 0.839 to 1.000. These analyses verify that the measures used are reasonably reliable and valid in all instances.

Testing the structural model

The cross-validated redundancy or Q-square test was used to assess predictive relevance, ranging from 0.135, 0.338, and 0.204 for sensory belief, attitude towards fish consumption, and fish consumption. The value of Q2, which is more than 0.05, indicates that the model has predictive relevance, accurate for that particular construct. Thus, as above, predictions of sensory belief, attitude towards fish consumption, and fish consumption are relevant and accurate. Meanwhile, for a model to meet the criteria for a fit model, the Standardized Root Mean Square (SMSR) value must be less than 0.05 (Cangur & Ercan, 2015). However, based on the explanation from the SMART PLS website, the limitations or criteria for the fit model include that the RMS Theta value or Root Mean Square Theta must be less than 0.080, the SRMR value must be less than 0.10 or less than 0.08, and the Normed Fit Index (NFI) value must be less than 0.9.

Based on measured, the RMS Theta value or Root Mean Square Theta is 0.174 (not less than 0.080), the SRMR or Standardized Root Mean Square value is 0.093 (less than 0.10), and the NFI value is 0.678 (less than 0.9). So, based on the three model assessments, two of them meet the criteria for the fit model. Thus, it can be concluded that the model fits the data. Finally, the findings are shown in Figure 2. The fit of the overall model was acceptable.

As shown in the Table 2, the Output Path Coefficient is to see the magnitude of the direct effect of each independent (exogenous) variable on the Tabel 2 (endogenous) variable. The amount of the parameter coefficient for the FCC variable on SB is 0.480, which means a positive influence on the FCC on SB. Or it can be interpreted that the better the FCC value, the SB will increase. An increase of one FCC unit would increase SB by 48%. Based on calculations using bootstrap or resampling, where the test results of the FCC estimation coefficient on SB bootstrap results are 0.484 with a t-value of 18.832, thep-value is 0.000 less than 0.05, so accept H1 or which means that the direct influence of FCC on SB is significant.

Table 1. Standardized factor loadings and reliability of constructs standardized.

	Standardized factor loadings (>0.7 or still aceptable at >0.5)	P-value (<0.05)	Cronbach's alpha (>0.6)	Composite reliability (>0.7)	Average variance extracted (ave)
Fish consumption (Fc)			1.00	1.00	1.00
"How often i eat fish"	1.00	0.00			
Attitude towards fish consumption (att)			0.74	0.89	0.80
"I prefer to eat a meal with fish dishes rather than other dishes."	0.91	0.00			
"I plan to eat fish at least once for three days	0.87	0.00			
Social pressure (sp)			0.72	0.84	0.64
"Eating fish is something I have learned from my parents";	0.80	0.00			
"How much their parents are influencing their fish consumption; and	0.74	0.00			
"My family consume fish regularly."	0.85	0.00			
Moderating effect fqa			1.00	1.00	1.00
Perception of fish quality assurance (pofqa)			0.86	0.91	0.77
"I am sure that government assures the quality of fish in the market, fish distributor, and other fish suppliers."	0.86	0.00			
"I am sure that government, fresh fish seller, fish stall and restaurant responsible for preserve fish in good quality."	0.88	0.00			
"I am sure that fish dishes that I ate were safe and of good quality."	0.90	0.00			
Fish availability (fa)			0.76	0.85	0.66
"Fish dishes are so much available and easy to buy."	0.75	0.00			
"Vary fish dishes make me eat fish as much as I want."	0.87	0.00			
"I easily buy and eat fish."	0.82	0.00			
Health involvement (hi)			0.60	0.77	0.53
"Health is critical to me."	0.61	0.00			
"I appreciate healthy food very much."	0.74	0.00			
"eat fish makes healthy."	0.82	0.00			
Fish consumption in childhood (fcc)			1.00	1.00	1.00
"Eating fish is something I am used to from my childhood."	1.00	0.00			
Sensory belief (sb)			0.67	0.82	0.60
"fish has a good taste."	0.86	0.00			
"fish has good texture"	0.78	0.00			
"Eating fish is boring."	0.68	0.00			
Price (p)			1.00	1.00	1.00
"fish price was affordable."	1.00	0.00			

Table 2. Means, standard deviations, and inter-correlation of constructs of the direct effect.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Att -> FC	0.276	0.276	0.034	8.144	0.000
FA -> Att	0.260	0.263	0.032	8.169	0.000
FCC -> Att	0.155	0.154	0.030	5.233	0.000
FCC -> SB	0.480	0.484	0.025	18.832	0.000
PoFQA -> FC	-0.017	-0.014	0.029	0.592	0.554
HI -> Att	0.105	0.105	0.023	4.659	0.000
Moderating PoFQA -> FC	-0.088	-0.094	0.029	3.061	0.002
Price -> Att	0.119	0.120	0.029	4.189	0.000
SB -> Att	0.266	0.262	0.028	9.559	0.000
SP -> FC	0.272	0.273	0.031	8.815	0.000

Table 3. Means, standard deviations, and inter-correlation of constructs of the indirect effect.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
FCC -> SB -> Att	0.127	0.127	0.014	8.870	0.000
FA -> Att -> FC	0.072	0.073	0.012	5.812	0.000
FCC -> Att -> FC	0.043	0.043	0.011	3.999	0.000
HI -> Att -> FC	0.029	0.029	0.007	4.188	0.000
Price -> Att -> FC	0.033	0.033	0.009	3.765	0.000
SB -> Att -> FC	0.073	0.072	0.012	6.174	0.000
FCC -> SB -> Att -> FC	0.035	0.035	0.006	5.737	0.000

Meanwhile, the magnitude of the parameter coefficient for the moderating variable PoFQA on the relationship between Att and FC is -0.088, as shown in Figure 3, which means that there is a negative effect of PoFQA moderation on the relationship between Att and FC. Or it can be interpreted that PoFQA moderation weakens the relationship between Att and FC. Based on calculations using bootstrap or resampling, where the estimated coefficient of PoFQA moderation on the relationship between Att and FC bootstrap results is -0.094 with a count value of 3.061, the p-value is 0.002 less than 0.05 so accept H1 or which means the direct effect of FQA moderation the relationship between Att and FC was statistically significant.

An indirect effect is the effect of the independent variable on the dependent variable through the intermediate variable. In this model, the intermediary is a variable attitude towards fish consumption, as an intermediary for the influence of fish availability, fish consumption in childhood, sensory belief, health involvement, and price on fish consumption. Based on the table above, the indirect effect is significant because the p-value of all indirect effects is less than 0.05.

Results suggest that all the latent factors have either direct or indirect effects on fish consumption, as follows in Figure 2.

According to these results, our moderation test hypotheses received varying degrees of support. Moderation tests are based on Jeremy Dawson Slopes to plot the interaction effects, which help interpret two-way interaction effects (often thought of as a relationship between attitude toward fish consumption and fish consumption, moderated by a third variable (i.e. perseption of fish quality assurance) (Dawson, 2014).

Based on the results mentioned above, our hypothesis has proven that fish availability, health involvement, fish consumption in childhood, sensory beliefs, and price are significantly correlated with fish consumption among Indonesian youth; this relationship is mediated by attitude to consume fish. Another hypothesis is proved that social pressure significantly correlates with fish consumption among Indonesian youth. Finally, we also prove that the hypothesis of the perceptions of fish quality assurance moderate in the relationship between attitude to consuming fish and fish consumption. It was proved that the effect of moderation is such that this relationship will be negatively affected when perceptions of fish quality assurance are higher (i.e., moderation test hypothesis). Overall, the moderation test hypothesis results indicate that fish consumption of Indonesian youth is more influenced by other constraints than their perception of fish quality assurance in the relationship between attitude to consuming fish and fish consumption.

A possible explanation for the results presented in Figures 3 and Figures 4 is that when the perception of fish quality assurance is in low-level, Indonesian youth eager to eat more fish can still enjoy eating more fish. Furthermore, Indonesian youth who tend to eat less fish will keep their fish consumption as low as possible, which leads to a pretty broad gap in fish consumption between fish lovers and fish aversion. Meanwhile, when the perception of fish quality
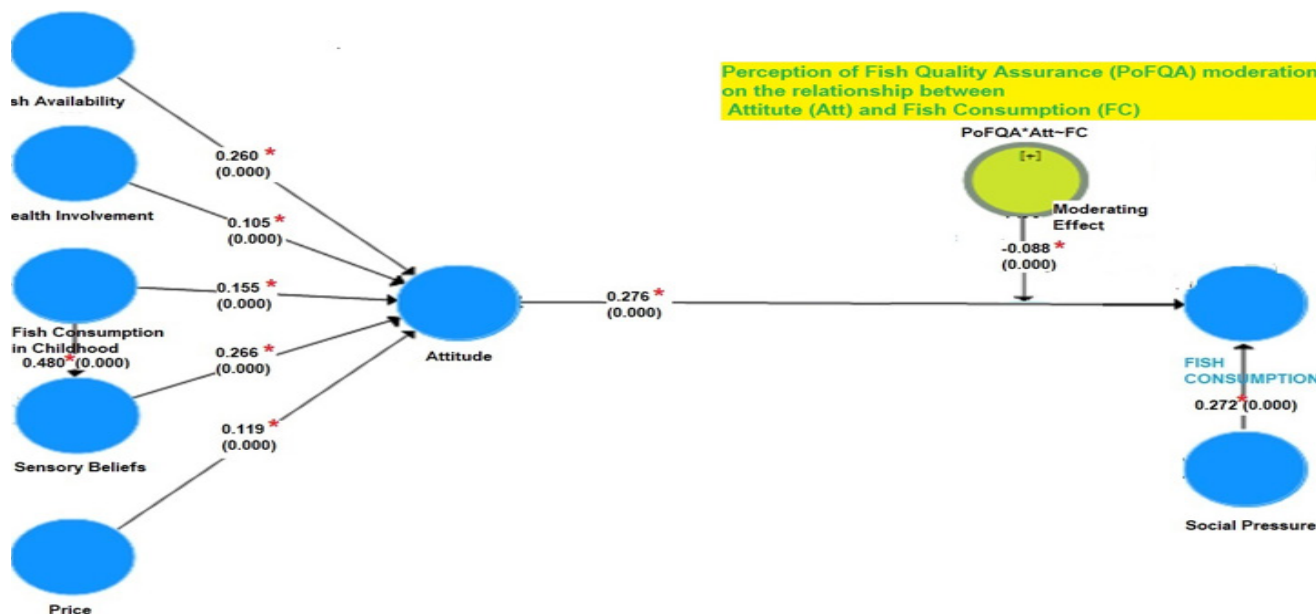
Figure 2. The final model with standardizing path coefficients.
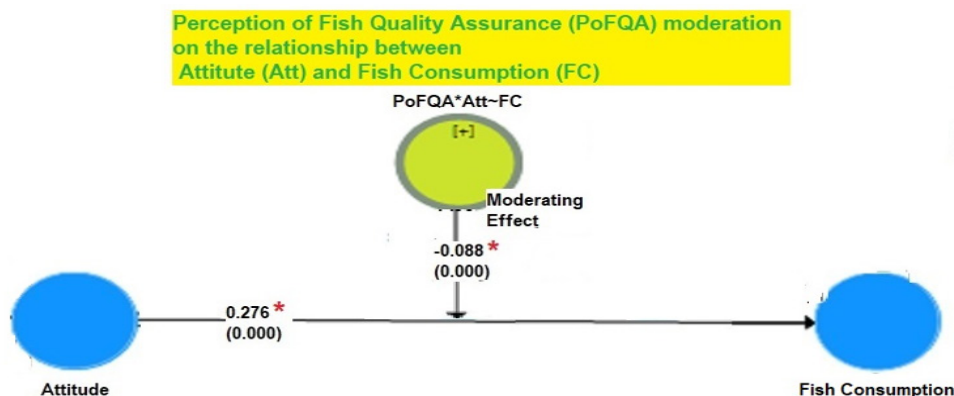
Note : *p less than 0.05

Figure 3. Model estimation of moderation test of perception of fish quality assurance between attitude to consuming fish and fish consumption.

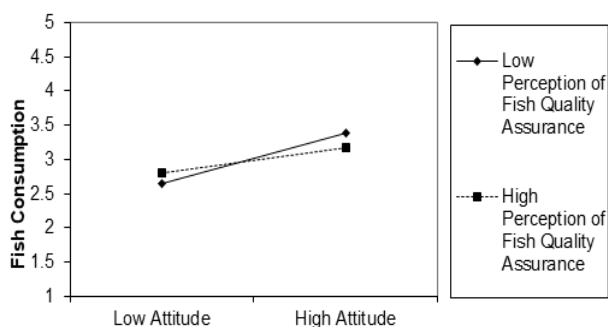Note: *= significant at α=0.05 two-tailed test.

Figure 4. Moderation test of perception of fish quality assurance that moderate relationship between attitude to consuming fish and fish consumption.

assurance is are sufficiently high (e.g., have significant trust in the government role and other related parties on ensuring fish quality in the markets, fish stalls, and restaurants), Indonesian youth who tend to eat less fish will eat a bit more amount of fish. However, those who loved to eat fish will continue to consume significantly more. Consequently, the gap in fish consumption between Indonesian youth who have less and more attitude to consume fish is likely to be narrowed.

Those Indonesian youth with a high attitude to eating more fish and a high perception of fish quality assurance cannot maximize their fish consumption, as they might face other difficulties consuming more fish effectively. Such other factors can relate to less fish availability in the local nearest market and higher prices. Therefore, one can be said that good perceptions of fish quality assurance and the guarantee of adequate fish availability and standard fish prices throughout the year will positively impact the relationship between the attitude of Indonesian youth to consume fish and their fish consumption. Other research (Arthatiani & Kusnadi, 2018) confirmed that fish consumption patterns in Indonesia reveal that not all Indonesian households consume fish, with fresh seawater fish being the most popular. According to the findings, fish consumption can increase if household incomes rise and prices fall. As a result, the government's policy tool increases fish availability on the market while simultaneously lowering prices. These findings suggest that other factors play a role in the low fish consumption among Indonesian youth.

CONCLUSION

The conclusions of this study are as follows. First, there is a positive relationship between fish availability and attitude

towards fish consumption (FA and Att); second, there is a positive relationship between health involvement and attitude towards fish consumption (HI and Att); third, there is a positive relationship between fish consumption in childhood and sensory belief (FCC and SB); fourth, there is also a positive relationship between fish consumption in childhood and attitude toward fish consumption (FFC and Att); fifth, there is a positive relationship between sensory belief and attitude towards fish consumption (SB and Att); sixth, there is a positive relationship between price and attitude towards fish consumption (P and Att); seventh, there is a positive relationship between attitude towards fish consumption and fish consumption (Att and FC); eighth, there is a positive relationship between social pressure and fish consumption (SP and FC). Finally, it also concluded that perception of fish quality assurance (PoFQA) negatively moderates the relationship between fish consumption and fish consumption, adversely affecting the relationship.

Policy implications that can be formulated based on the findings are as follows. Governments should pay more attention to establishing and funding programs that offer more strategies for increasing fish consumption among young consumers, such as guaranteeing adequate fish availability and standard fish prices throughout the year. Additionally, for the 81.8% of the Indonesian population are in the western part of Indonesia, the government should focus more on providing adequate infrastructure to deliver fresh fish in good quality and sufficient quantity to fulfil fish demand among those Indonesian youth who's loved to eat fish more.

However, as this study has limitations, it is suggested that it is crucial to involve an essential-regional comparison of each Indonesian food culture mapping for future research. Also, a complementary line of research could include an analysis of an environment where Indonesian youth on their food culture, and how that environment may motivate as a conditioning factor of theirs fish-eating habit. Additionally, as this study focused solely on Indonesian youth in Indonesian as a whole, future comparative studies should examine each of the three-region based on Indonesian food culture mapping to further investigate the factors that influence their attitude to consume fish and what factors moderate the relationship between attitude to consuming fish and fish consumption. Such future research should examine the various factors that Indonesian youth face to consume fish, in tandem with a consideration of their food culture, and examine the possibility for government and related parties to deal with such barriers to increase fish consumption among young consumers.

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