

Factors Affecting Consumers' Willingness to Pay for Imported Offal in Indonesia: A Case Study for Makassar City

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Abstract

This study explores the factors that affect consumers' willingness to pay (WTP) for imported offal in Makassar, Indonesia. The primary data derived from a field survey and hedonic price model are used for obtaining the estimated results. The paper finds that age, occupation (*OFFICER*), level of education (*UNIVERSITY GRADUATE*), ethnicity (*BUGIS*), *NON-AFFORDABILITY*, and *ACCESSIBILITY* significantly affect the WTP for imported offal in Makassar. Also the marginal implicit price (*MIP*) calculation shows that the willingness to pay of higher prices for imported offal decreases for older consumers. It is also found that if the price of imported offal in the market increases, the willingness to pay for the product will decrease.

Key words: hedonic price; imported offal; WTP

JEL classification: C83; D12; Q13

1. Introduction

The Indonesian people consume offal very frequently. The price of offal is higher than that of the neighbouring countries, such as Australia. The offal price in Indonesia can reach around AUD 6/kg, while in Australia the price of offal, such as liver, is only AUD 1/kg. There are several factors that lead to very high demand for offal. Firstly, some provinces have traditional foods that use offal as a primary ingredient. Secondly, many small companies sell processed food, such as crackers,

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meatballs, and sausages using offal, products which are affordable for consumers of all income levels. Thirdly, offal is an alternative source of protein since the price of beef can be very high, reaching AUD 6–10/kg. According to Stanley (2009), offal is a valuable, inexpensive protein in most developing countries with very poor populations, and offal is a staple of many diets.

The Indonesian Government has introduced a policy objective of achieving self-sufficiency in beef production by reducing the import quota of live cattle and beef products including offal. To work towards self-sufficiency in food, the Indonesian Government has developed a blueprint (Food and Agricultural Directorate, 2010) which gives details of a number of trade and production policies and projections for domestic production and the importation of live and processed beef. The Indonesian beef self-sufficiency policy aims to reduce live cattle and beef product imports to approximately 42% of 2010 levels by 2014. Hence, due to these policy objectives, the volume of offal exported to Indonesia halved to about 6000 tonnes in 2011.

In South Sulawesi Province, especially in Makassar City, the demand for offal is continuously increasing. The primary reason for this is that local communities use offal greatly in preparing traditional meals. The Makassar City requires approximately 16 tonnes of offal per day, but only one tonne can be supplied from local slaughterhouses (Republika, 2012). Because the quantity of imported offal in the market is limited and regulated, this has led to excessively high prices, limited offal products, and unobservable offal products in the market. The study of Saleh (2011) found that offal consumers in Makassar shifted their purchasing from local offal to imported offal. Therefore, it is important to know about the consumers' willingness to pay (WTP) in terms of imported offal due to the Indonesian Government beef self-sufficiency program by 2014 which was set up in 2011. From this perspective, it is of vital importance to get a better understanding of consumer perception toward imported offal especially in Makassar City.

The objectives of this study are: (1) to determine the factors influencing consumer WTP for imported offal, (2) to calculate the value of marginal implicit price (marginal WTP) for imported offal, and (3) to discuss international trade prospects for imported offal.

This study provides new evidence of WTP for imported offal, which has not been done before, particularly in Indonesia. The study will provide information, analysis, and recommendations to retailers in the offal supply chain that are expected to contribute to the sustainability of the offal industry in Makassar.

The remainder of the paper is structured as follows. Section 2 reviews the background of the study by drawing on existing literature. Section 3 describes the theoretical foundations of the study. Section 4 provides research methodology, including data sources and the hedonic price model. Section 5 presents and analyzes the study results. Finally, Section 6 concludes the paper with policy implications and study limitations.

2. Literature Review

Studies on consumer willingness to pay (WTP) for food products, including behavior, attitudes, and perceptions toward food products, have been conducted recently in many countries. WTP is a function of the product attributes, characteristic of the consumer, and other factors thought to influence the choice. The probability of WTP falling within a range of values also depends on these factors (Cranfield and Magnusson, 2003). The main objective of these studies was to build competitive advantage of products in the market and to help sellers develop their marketing strategies.

Hedonic price analysis has been implemented in many studies to identify characteristics of food and agricultural products which significantly influence price. Most of the studies use a categorical dummy variable to evaluate the effect of characteristics on price (Huang and Lin, 2007; Oczkowski, 1994; Satimanon and Weatherspoon, 2010). According to Oczkowski (1994), the use of a series of dummy independent variables rather than a single continuous variable has some advantages in the hedonic price analysis. First, large measurement errors in the variable will have less of a misspecification impact if dummy variables are employed. Second, a series of dummy variables represents a more general specification (permitting non-linear impacts) of which a single continuous variable represents a special case.

Lancaster (1966) developed a consumer theory that goods are valued by consumers for their utility obtaining characteristics. Lancaster explored utility which is not directly taken from the goods but from characteristics of the goods. Rosen (1974) defined hedonic prices as implicit prices of product attributes that are revealed to consumers from observed prices of differentiated products and the specific amount of characteristics associated with them. Empirically, implicit prices are estimated by first-step regression analysis of hedonic price indices.

In the hedonic approach, price is considered a dependent variable, and specific characteristics are considered explanatory variables. The price function represents an equilibrium resulting from the interaction of buyers and sellers in each market. Subsequently, the hedonic price equation is a reduced form equation reflecting both supply and demand conditions (Parker and Zilberman, 1993).

Huang and Lin (2007) estimated a hedonic price model using panel data to identify important socioeconomic and demographic factors and product and market attributes that affect price consumers paid for fresh tomatoes in the New York-Philadelphia market. The study found an increasing portion of consumers were willing to pay higher prices for organic and packaged tomatoes. Wang et al. (2008) analyzed consumer WTP and price premiums for milk products manufactured using the hedonic price model. Based on the survey, the demand for food safety is emerging as an attribute demanded by Chinese consumers. Recently, Alcántara-Pilar et al. (2015) also used hedonic motivation to analyze the motivation duality in online consumer behavior.

Awono et al. (2011) estimated the marginal WTP for chicken attributes in Cameroon using data from a survey in the field. This study included socioeconomic and demographic independent variables such as age, household size, occupation, and

education in the analysis. Product attributes, such as price, taste, and quality, were also included in the hedonic model. It was found that consumer's substituted local flesh chicken by importing frozen chicken due to the practice in culinary usage and availability in the local market.

A hedonic pricing method has been rarely used in the empirical studies for beef and offal commodities. Especially for Indonesian study, it is totally absent. Therefore, this study will be a preliminary study for WTP of imported offal in Indonesia.

The hedonic price analysis will provide new evidence of consumer WTP for imported offal in Makassar City, Indonesia. Following this, consumer perception of the import trade policy will depict the effect of free trade (no import quotas) on consumer expenditure for offal. Both analyses will provide policy makers and retailers in the offal supply chain with information, analysis, and recommendations that are expected to contribute to the sustainability of the offal industry.

3. Theoretical Framework

Lancaster (1966) developed an alternative theory of consumer behavior. He described consumption as an activity in which goods, individually or in combination, are inputs and in which the output is a collection of characteristics. Lancaster's theory plays a crucial role and builds the necessary conceptual framework for the development of a modern hedonic demand analysis (Huang and Lin, 2007). Rosen (1974) said that, based on the hedonic hypothesis, goods are valued for their utility-bearing attributes or characteristics. The hedonic function is estimated using the market price, consumption or expenditure data, and objective characteristics that can be observed in a point of decision making based on what consumers actually do (Kyung Hee and Hatcher, 2001).

In essence, the hedonic approach is the aggregation of commodities into characteristics and the estimation of implicit prices for units of characteristics. Following Ladd and Suvannunt (1976), total consumption of each characteristic can be expressed as a function of quantities of products consumed and of consumption input-output coefficients:

$$x_{0j} = f_j(q_1, q_2, \dots, q_n, x_{1j}, x_{2j}, \dots, x_{nj}), \quad (1)$$

for $j = 1, 2, \dots, m$, and

$$x_{0m+i} = f_{m+i}(q_i, x_{im+i}), \quad (2)$$

for $j = 1, 2, \dots, n$, where x_{0j} is the total amount of the j th product characteristic provided to the consumer by consumption of all products, q_i is the quantity of the i th product consumed, and x_{ij} is the quantity of the j th characteristic provided by one unit of product i . Next, x_{0m+i} represents the number of unique characteristics available only from the consumption of the i th product.

The consumer's utility function is expressed as:

$$U = U(x_{01}, x_{02}, \dots, x_{0m}, x_{0m+1}, \dots, x_{m+n}). \quad (3)$$

Because each x_{0j} is a function of the q_i and the x_{ij} , the consumer's utility function can be specified as:

$$U = U(q_1, \dots, q_n, x_{11}, x_{12}, \dots, x_{1m}, x_{21}, \dots, x_{2m}, \dots, x_{m+n}). \quad (4)$$

It is assumed that the consumer can vary only the q_i . The magnitudes of the x_{ij} are parameters to the consumer; their magnitudes are determined by the producers.

The market equilibrium hedonic price function is estimated by regressing the equilibrium prices of products on the characteristics of the products (Wahl et al., 1995). A general hedonic price model can be written as:

$$p_i = f_i(z), \quad (5)$$

where z represents a vector of all product attributes associated with the i th product.

The hedonic price model of the equation represents, essentially, a reduced form equation reflecting both supply and demand influences. Following Huang and Lin (2007) and Taylor (2003), the semi-log form is implemented for the functional form of the hedonic equation in this study because it has the advantage of transforming the dependent variable to approximate a normal distribution. Also, the semi-log allows for incremental changes in characteristics to have a constant effect on the percentage change in price. Ordinary least squares is used for estimation.

4. Methodology

4.1 Data Sources

Makassar is purposively selected as the study area for this research. This selection is based on local food traditions, the population size, and the importance of the city as the centre of trading activities in South Sulawesi Province. Makassar is one of the largest cities in Indonesia and is the central offal market in South Sulawesi Province.

In this study, 200 consumers were randomly selected in different traditional markets and supermarkets. Then, based on consumer expenditure on imported offal, this total sampling was reduced from 200 to only 102 to analyze the WTP. Respondents were asked about the amount and the price of imported offal that they bought. In the questionnaire, respondents were also asked to determine several factors, such as the quality, price, and availability, of imported offal in the market and indicate their attitude toward free trade or additional imported offal in the market. Respondents gave indications of whether they agreed or disagreed for each factor.

Information related to respondents' socio-demographic characteristics, such as age, income, and years of education, were also included in the questionnaire and the WTP analysis.

One of the main objectives of the survey was to collect data on the actual individual WTP for imported offal in Makassar. The sample selection was based on the actual offal purchase. A large body of literature suggests WTP is overstated in hypothetical valuation questions as compared to when actual payment is required (Blumenschein et al., 1998; Lusk, 2003).

In the questionnaire, offal consumers were asked a variety of questions concerning their perceptions about imported offal. Respondents were asked about the amount and the price of imported offal that they purchased. Information related to respondent socio-demographic characteristics, such as age, income, education, occupation, and ethnicity, were asked. In the questionnaire, respondents were also questioned to determine several factors which relate to product attributes and market factors. In this study, respondents were asked about product attributes in terms of the quality of imported offal (good or not) and the price of imported offal (affordable or not). For the market factor, the availability of imported offal in the market was asked (easy to get or not). Overall, respondents indicated yes or no for each factor.

A description of the dependent and independent variables used is shown in Table 1. The dependent variable for WTP hedonic price analysis is the price of imported offal paid by respondents. The independent variables are divided into three parts: product attribute variables (quality and non-affordability), a market factor variable (product accessibility), and household characteristic variables (age, income, education, ethnicity, occupation, and family size). The education variable was also used by Devi et al. (2015) and found statistically significant in analysing food consumption behavior in Fiji.

All the independent (explanatory) variables are specified as qualitative (dummy) variables for the WTP analysis. The use of dummy variables provides benefits, such as large measurement errors in the variable will have less of a misspecification impact, and a series of dummy variables represent a more general specification (Oczkowski, 1994). In this study, the dummy variables are able to incorporate consumers' demographic characteristics, attitudes, and perceptions toward imported offal prices to better explain variation in the WTP estimation.

4.2 The Hedonic Price Model

For the purpose of this study, the projected model is specified in the logarithmic function (the semi-log) and ordinary least squares is used for estimation.

The dependent variable is in the log-linear form except for the independent (explanatory) variables. The hedonic price model in this study is expressed as:

$$\begin{aligned} \ln(P) = & \beta_0 + \beta_1 \text{Age} > 40 + \beta_2 \text{Inc}_{high} + \beta_3 \text{Universitygraduates} \\ & + \beta_4 \text{Fam2} + \beta_5 \text{Bugis} + \beta_6 \text{Officers} \\ & + \beta_7 \text{Imp_Non - Affordability} + \beta_8 \text{Imp_Quality} \\ & + \beta_9 \text{Imp_Accessibility} + \varepsilon_i, \end{aligned} \tag{6}$$

where $\ln(P)$ is the log-linear form of imported offal price, β_0 is an intercept, $\beta_1 - \beta_9$ are parameters to be estimated, and ε_i is an error term.

Table 1. Definitions of Dependent and Independent Variables of Consumers' WTP for Imported Offal in Makassar City

Variable	Definition	Mean (Std Dev.)
Dependent Variable		
<i>PRICE</i>	Price of imported offal (Rp/Kg)	51,470 (7091.629)
Independent Variable		
Product Attributes:		
<i>QUALITY</i>	=1 if product quality is good; = 0 otherwise	0.794 (0.406)
<i>NON-AFFORDABILITY</i>	=1 if the product is non affordable or expensive; = 0 otherwise	0.882 (0.323)
Market Factor:		
<i>ACCESSIBILITY</i>	= 1 if the product is easy to get; = 0 otherwise	0.803 (0.398)
Household Characteristics:		
<i>AGE>40</i>	= 1 if age of household head is more than 40 years; = 0 otherwise	0.598 (0.492)
<i>INC_HIGH</i>	= 1 if the household income is more than Rp. 6,000,000/month; = 0 otherwise	0.509 (0.502)
<i>UNIVERSITY GRADUATES</i>	= 1 if household head graduated from university/college; = 0 otherwise	0.196 (0.398)
<i>BUGIS</i>	= 1 if the ethnic of household is Bugis; = 0 otherwise	0.529 (0.501)
<i>OFFICER</i>	= 1 if the household head's occupation is an officer; = 0 otherwise	0.372 (0.485)
<i>FAM2</i>	=1 if family size are 3-4 people; = 0 otherwise	0.441 (0.498)

Source: Authors' calculations from field survey (2013).

Following Taylor (2003), the marginal implicit price (*MIP*) or marginal WTP is computed as:

$$MIP = c \times \bar{p}. \quad (7)$$

where *MIP* is the marginal implicit price for the estimated coefficient, *c* is the estimated coefficient, and \bar{p} is the average price paid or mean value of the dependent variable. All data is analyzed using STATA software version 13.

5. Results and Discussion

To determine the factors that affect consumer WTP for imported offal in Makassar City, we use a hedonic price model and calculated the marginal implicit price (*MIP*) or marginal WTP. Table 2 shows the results of the parameter estimation of demographic, product attributes, and a market factor variable on WTP for imported offal obtained from the hedonic price model.

This study uses market data which represent customers' purchasing behavior in order to measure "real" WTP. Since WTP estimates are derived from actual demand data, they are generally very reliable and reflect externally valid results. Also, this can be a cost-effective and time-efficient method to estimate consumer WTP. In Table 2, the hedonic model estimation shows that the overall model is significant.

Table 2. Effect of Socioeconomic and Demographic Factors, Product Attributes and Market Factor on Consumers' WTP for Imported Offal

Variable	Coefficient	<i>MIP</i> (\bar{p} = Rp. 51,470)
Household characteristics:		
<i>AGE>40</i>	-0.077 *** (0.031)	Rp. 3,963
<i>INC_HIGH</i>	0.029 (0.030)	Rp. 1,492
<i>UNIVERSITY GRADUATES</i>	-0.024 (0.041)	Rp. 1,235
<i>FAM2</i>	0.025 (0.030)	Rp. 1,286
<i>BUGIS</i>	0.055* (0.030)	Rp. 2,830
<i>OFFICER</i>	0.068* (0.036)	Rp. 3,499
Product attributes:		
<i>QUALITY</i>	0.071 (0.063)	Rp. 3,654
<i>NON-AFFORDABILITY</i>	-0.159** (0.069)	Rp. 8,183
Market factor:		
<i>ACCESSIBILITY</i>	-0.082* (0.048)	Rp. 4,220
Constant	10.959*** (0.052)	
<i>R</i> ²	0.1915	
<i>F</i> -Test	0.0162	
Breusch-Pagan test for heteroskedasticity	0.33	
Chi ² (1)		
Mean VIF	1.93	

Notes: Figures in parenthesis represent the standard errors; ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

The estimated model has an R^2 of 0.19 which means 19% of the variance of imported offal price (dependent variable) is accounted for by the model. While the R^2 is relatively small, this does not undermine the model's validity. Cohen (1988, pp. 531–533) describes that in several situations the amount of association between constructs is greater than the proportion of the variance. Cyr et al. (2009) suggests that low R^2 values are common in behavioral science research; see for example Davis, 1993; Davis et al., 1989; Krönung and Eckhardt, 2011; Wagner et al., 2013.

The test for heteroskedasticity is given by the Breusch-Pagan (Breusch and Pagan, 1979). The test is designed to detect any linear form of heteroskedasticity by testing the null hypothesis that error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. In this study, the Breusch-Pagan p -value indicates there is no evidence that heteroskedasticity is a problem.

Difficulties arise in regression when the predictors are highly correlated or multicollinearity exists. In order to check the evidence of multicollinearity, this study performs a calculation of variance inflation factors (VIFs); see for example Chatterjee and Hadi, 1986. VIF calculates the centered or uncentered VIFs for the independent variables specified in a linear regression model. According to the values of the centred VIFs, we have no VIFs greater than 10 (mean VIF = 1.93). This means no harmful collinearity is detected in the model.

For the socioeconomic and demographic variables, the age of the household head ($AGE > 40$) is found to be negative and statistically significant in affecting prices paid for imported offal. The marginal willingness to pay for older households suggest that each percentage point increases for household age reduces the WTP less than or equal to Rp. 3,963/kg. These findings show that consumers are less likely to buy imported offal as age increases. This shows that there is a greater concern for health among the older people. The study of Verbeke et al. (2000) suggests that with increasing age, decisions to cut fresh meat consumption are mediated by increasing health awareness and concern.

In terms of occupation, the officer variable is found to be positive and had a statistically significant effect on consumers' WTP at the 10% level. The positive effect of MIP suggests that each percentage point increases in a household where someone works as an officer, the willingness to pay for imported offal increases by Rp. 3,499/kg.

In terms of the ethnicity variable, Bugis ethnicity has a positive and statistically significant effect on the WTP for imported offal. The $MIPs$ show that each percentage point increase in the number of Bugis households is associated with an increased WTP more for imported offal by Rp. 2,830/kg. This figure shows us that local ethnics ($BUGIS$) in Makassar will pay more for imported offal.

In this study, other socioeconomic and demographic factors such as income, level of education, and number of family household members do not have a significant impact on the WTP for imported offal in Makassar City. Based on the MIP and the positive sign of the income (INC_HIGH) and family size ($FAM2$), coefficients confirm that consumers increase their WTP for imported offal by Rp.

1,492/kg and Rp. 1,286/kg, respectively as their income and number of family size in the household increase. In contrast, consumers decrease their WTP by Rp. 1,235/kg if the level of education increases or people graduate from university.

In terms of the product attributes and market factors, only *NON-AFFORDABILITY* and *ACCESSIBILITY* variables have shown a significant impact on the WTP, while *QUALITY* has insignificant impact on the WTP. The coefficient of *NON-AFFORDABILITY* variable is negative and statistically significant at the 5% level. The *MIP* value confirms that if the price of imported offal in the market increases, the WTP for the product decreases by Rp. 8,183/kg. Consumers regard that imported offal was quite expensive and was very difficult to find in the market. If the price of imported offal increases, it is less affordable, and consumers' WTP for imported offal will decrease. Beef and offal exports to Indonesia have decreased since quotas were introduced to limit overseas supply and to encourage local meat production. In 2011, the volume of offal exported to Indonesia halved to about 6000 tonnes. As a result, offal price has increased significantly. In 2007, the price of offal was Rp. 20,000 to Rp. 25,000/kg, but since 2011 it has reached Rp. 35,000/kg to Rp. 60,000/kg. Saleh (2011) found that offal consumers in Makassar shifted their expenditure from local offal to imported offal. At this time, the restriction on imported quotas had not been put into effect. This finding indicates that consumers in Makassar are willing to pay lower prices for imported offal. This finding is consistent with the general belief that consumers are not willing to pay a price premium above 10–30%.

The *ACCESSIBILITY* variable is found to be negative and had a significant impact on the WTP for imported offal at the 10% level. The *MIP* value suggests that, if imported offal is easy to find in the market, consumers' WTP for imported offal decreases by Rp. 4,222/kg. Thus, supply of imported offal needs to be added in Makassar City because it is less accessible.

The quality of a product is an important factor in influencing the willingness to pay. In this study, the *QUALITY* variable is not significant in affecting consumers' WTP for imported offal. However, the *MIP* value and the positive sign of the coefficients indicate that consumers will increase their WTP if the quality of imported offal is good. Based on our survey, the main reason for most respondents not being willing to pay higher price for imported offal is the poor quality of the product, especially for imported offal sold in the traditional markets. Offal with high price was mostly found in the supermarket. Some consumers who bought imported offal in the traditional markets found the low quality of imported offal in terms of the freshness and packaging. Thus, in this study, quality effects do exist and should be taken into account when the supply of imported offal is brought into the market.

Since 2011, the Indonesian Government has only permitted liver and heart to be exported to Indonesia (Minister of Agriculture, 2011). In this study, in order to get more understanding about consumers' attitude with regard to the need of imported offal in Makassar, respondents were asked whether they agree or not for more imported offal to come into the marketplace. The majority of respondents (91%) agreed for more imported offal in the marketplace. Since 2011, beef and offal

prices in Makassar have been very expensive, reaching AUS 10/kg and AUS 6/kg, respectively. Therefore, consumers need more variety of meat products in the market (local and imported) to normalize the price. The high price of meat products was also observed in most provinces in Indonesia from 2011 to 2013. Thus, before achieving the self-sufficiency in beef products can be achieved in Indonesia, a new regulation is needed to increase the supply of cattle by conducting gradual import of cattle and beef products including offal products in a sufficient amount for the purpose of beef price stabilization. This regulation would open more international trade prospects for offal products in Indonesia, and consumers would have more choices. Price would also be normalized.

Based on the hedonic price analysis, it is clear that consumers in Makassar are likely to purchase more imported offal if the product is available in the market. This study results should encourage local producers and exporting countries to produce and sell more offal and beef products in Makassar.

Reduction in the number of cattle and offal imports has meant that the availability of beef and offal is not evenly distributed throughout the Indonesian market. As a result, the Minister of the Trade Republic of Indonesia announced a new regulation on imported live cattle and beef products in order to create beef price stabilization throughout Indonesia in 2013 (The Minister of Trade Republic of Indonesia, 2013).

Indonesia's ministries of agriculture and trade released a new regulation on the import of meat and meat products in late August or early September 2013. The regulation set a reference price system, and meat imports were allowed when local price was set above a particular level. Accordingly, the supply of cattle by conducting a gradual import of cattle and beef products including offal products in sufficient amounts was for the purpose of beef price stabilization. This regulation would open for more international animal products in the market.

Another concern from consumers in Makassar is about imported halal meat in the market. They need to be assured that the products they buy have halal certificates. Indonesia has the largest Muslim population in the world (88% of Indonesia's population are Muslim), and Muslims are required to consume only halal foods because of religious restrictions (Hanzaee and Ramezani, 2011).

As the world's most populous Muslim country, Indonesia has the potential to become a major market for countries producing and exporting meat. For example, according to Kidane (2003), Australian exports of meat account for about 46% of the total Australian production of meat, and 19% of total world exports of meat. About 52 and 33% of Australian meat exports are sold in Asian and American markets, respectively. The requirements for listing establishments for export to Indonesia are that (1) establishments must comply with the Australian Standard for the Hygienic Rendering of Animal Products, (2) animal by-product meals are free of pig materials, (3) import permits are required, and (4) produce should be shipped directly from Australia to Indonesia (Australian Meat Processor Corporation, 2010).

Currently there are quotas for Australian beef export to Indonesia; however, this is carried out on a quarterly basis over a year. This policy has tremendous

negative effect on the Australian producers (exporters) as they cannot properly plan for their production. This policy can be changed to an “annual quota” basis rather than a “quarterly quota” basis to provide greater stability for Australian producers as well as for Indonesian consumers.

6. Conclusions

We have discussed the product attributes, socioeconomic, demographic, and market factors which affect consumers’ WTP for imported offal and the marginal implicit prices. We have used the hedonic price model for the analysis. The evaluation of consumer willingness to pay will be useful for offal marketers, traders, and policy makers in understanding the amount that a consumer is willing to pay for imported offal. In this study, we divide independent variables into three categories: product attributes, a market factor, and socioeconomic and demographic factors.

The results of the hedonic price analysis imply that age, occupation (*OFFICER*), level of education (*UNIVERSITY GRADUATE*), ethnicity (*BUGIS*), *NON-AFFORDABILITY* and *ACCESSIBILITY* variables have significant impact on the WTP for imported offal in Makassar. Based on the marginal implicit price calculation, the WTP for higher prices for imported offal decreases for older consumers.

In terms of ethnicity, the marginal implicit price reveals that consumers with a Bugis ethnic background are willing to pay more for imported offal. The heads of households with officer type occupations would also pay more for imported offal.

Makassar consumers are still willing to pay for imported offal; international trade opportunities are still present for exporters. Local retailers, importers, and exporters should consider better quality products and requirements such as halal certificates and well-handling and packaging of imported offal. Quality improvement strategies in all aspects must be effective. Furthermore, ongoing research on the demand and supply of offal should be continued to support the accurate data of consumption and production nationally.

Overall, this study suggests that consumers’ WTP for imported offal in Makassar has undergone structural changes due to government programs for beef self-sufficiency by 2014. This had an important implication for consumers’ expenditure, preferences, and resource allocation in the exporting countries. By observing imported offal qualities, WTP, and market factors, it is understandable that consumers in Makassar are keen to spend more for imported offal when it is available, affordable, and of good quality. Thus, Australia or other exporting countries could gain more if the quota of imported offal in Indonesia is increased. Indonesia’s ministries of agriculture and trade released a new regulation on the import of meat and meat products in late August or early September 2013. The regulation sets a reference price system, and meat imports were allowed when local price was set above a particular level. Hence, the supply of cattle by conducting a gradual import of cattle and beef products, including offal products in sufficient amounts, was for the purpose of beef price stabilization in the market.

The empirical results in this research should be interpreted with caution due to the limited sample size and the narrow study area. This study is based only on data from urban households due to time and budget constraints. The consumer survey was based on beef and offal buyers from local markets in Makassar City which did not represent all consumers of Indonesia. Therefore, the result could not be generalised to Indonesia as a whole due to the fact that a restricted sample was used. Furthermore, broadening the study area would be an ideal strategy for future research and development in this field.

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