

What drives the choice of poultry market channel and the change of purchase behavior due to highly pathogenic avian influenza outbreaks?

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ABSTRACT In Indonesia, market channels play an important role in food security in poultry meats. This review explains Indonesian consumers' choice of market channels to purchase poultry, and consumer concern of food scares and food safety in their consumption due to highly pathogenic avian influenza (HPAI) outbreak. The survey was conducted for the traditional and the modern channels and involves a sample of 1096 respondents in the Greater Jakarta Area. The logistic regres-

sion analysis reports the model proved that the substantial findings in the choice for the modern poultry market channel are the price/quality relationship, the safety feature, and the level of consumer trust. Some variables explaining the change in purchase behavior due to HPAI outbreaks are similar to the results of the choice of market channel. This study shows that the developed assessment can be used by the government to make the poultry supply more safe.

Key words: consumers' choice, poultry market channel, purchase behavior, avian influenza

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INTRODUCTION

The Indonesia poultry supply chain is selling poultry meat in 2 main market channels: the traditional channels such as street vendors and wet market, and modern channels such as supermarket, hypermarket, and specialty stores. The traditional channel mainly provides uncooled poultry meat, whereas the modern channel provides cooled and frozen poultry meat products. Even though the government of Indonesia regulated the poultry chain with food safety requirements, the traditional channel still applied not as much food safety as compared to the modern channel. Therefore, these channels attract different consumers with different preferences for poultry meat and for food safety. In order to improve the safety of the Indonesian poultry supply, it would be better if consumers would purchase their poultry from the modern channel. For a government to influence the preference of consumers for a market channel, it is necessary to know more about consumers' preferences and their purchase behavior with regard to poultry.

Only one study could be found on Indonesian consumers' decision making with regard to poultry consumption (Muladno and Thieme, 2009). It showed that the majority of consumers in the Jakarta region purchased their poultry meat from the traditional channel.

Moreover, it showed that concerns about food scares and disease threats, amongst which highly pathogenic avian influenza (HPAI), made consumers change the venue of purchasing poultry meat.

Most studies on the consumers' choice for a market channel were done by looking directly at their choice as to the type of retail (outlet) store, without associating the market channel of the retail (outlet) store. These studies examined the factors that influence the consumers' choice of a type of retail (outlet) store. The literature study of Spiggle and Sewall (1987) translated those different studies to a general model of retail selection research. The model illustrated that the determinant factors in retail (outlet) choice are consumer psychological factors, consumer characteristics, and retail outlet features. Consumer psychological factors are found by many recent studies shaping the consumers' choice of retail (outlet) store in the market channels (Krystallis et al., 2007; Chamhuri and Batt, 2013a; Iton, 2015). One of the psychological factors is the consumer's confidence in the market channel. In some studies, trust was studied as consumer perception that shows the consumer confidence in food chain actors, such as retail, to provide safety in their food product (de Jonge et al., 2007, 2008; Drescher et al., 2012; Arnot et al., 2016). Furthermore, the consumer characteristics have shown to influence the consumers' choice of retail (outlet) store (Florkowski et al., 1999; Bonne and Verbeke, 2006; Krystallis and Arvanitoyannis, 2006; Pechey and Monsivais, 2015). Lastly, retail outlet features were also found to have influence

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on the consumer choice of retail (outlet) store (Solgaard and Hansen, 2003; Sinha and Banerjee, 2004; Chamhuri and Batt, 2013a). Because these factors are considered as the relevant determinants of the consumers' choice of retail (outlet) store, they can be considered as the relevant determinants of the consumers' choice of market channel as well. These determinants are still relevant for the current study, because a recent study on outlet choice by Heider and Moeller (2012) used a similar approach. This study illustrated the consumer's decision to choose retail outlet using consumer preference drivers for outlet patronage: outlet-specific drivers (e.g., assortment, quality, and effortless consumption of product), lifestyle-specific drivers (e.g., time pressure, health orientation, and price sensitivity), and social-demographic drivers (e.g., gender, age, income, civil status, employment status, and place of residence).

Environmental circumstances such as economic factors, political factors, social factors, and technological factors can influence the consumers in their choice behavior. Outbreaks of HPAI have an influence on all of these factors. However, social factors can explain the change of behavior of consumers during or after HPAI outbreaks. Social factors, such as public health perspective that upsurge the consumers' perceived risk, can influence the consumers to be concerned about food scares (de Jonge et al., 2007). Many incidents of microbiological hazards, chemical hazards, and technological changes have shown to have influenced consumer perception of food safety risks, and are thus impacting their purchase behavior (Yeung and Morris, 2001). In the situation of food unsafety, the consumers will relieve their perceived risk by modifying their purchasing decision, for instance by reducing, shifting, or postponing the purchase of the offending product (Yeung and Morris, 2001). Similar responses occur in case of a zoonosis threat such as an HPAI outbreak. It has been shown that consumers stopped consuming poultry for different lengths of time because of their fear of HPAI (Figuíe and Fournier, 2008). This means that a zoonosis threat is a factor that affects the purchase behavior of consumers.

A thorough assessment of the consumers' choice behavior regarding the poultry market channel selection and the influence of HPAI outbreaks on this choice behavior under Indonesian circumstances has not been performed before. Related studies did not focus on explaining consumers' decision making in the poultry market channel. Most of the studies that analyzed influencing factors in consumers' decisions to buy products were associated with the store choice. Moreover, studies that were closely related to the problems in Indonesia were focusing on a broader definition of fresh meat, and not specifically on poultry meat (Krystallis et al., 2007; Chamhuri and Batt, 2013b). Finally, we did not find any studies on the factors that influenced consumer behavior due to HPAI outbreaks.

Therefore, this study is aiming at finding the determinant factors that influence the choice of poultry market channel and the consumers' change of purchase behavior due to HPAI. The model framework was based upon western-oriented studies that we adjusted to the Indonesian situation. First, the study analyzed the relation of those determinants to the consumer choice of market channel. Second, the study analyzed the relation of those determinants to the consumer purchase behavioral changes due to HPAI outbreaks.

MATERIAL AND METHODS

The survey used in this study was developed to investigate the food market channels and poultry consumptions in the Greater Jakarta Area. It was implemented on a representative sample of different social and economic strata in the urban communities in and around Jakarta. The sample considers 2 types of market channels: the traditional channel and the modern channel. The survey was conducted via face-to-face interviews in December 2013. Details of the questionnaire, the sampling, and the statistical analyses are provided in the next paragraphs.

Questionnaire Design and Measurement

The questionnaire consisted of 5 parts following a research framework adapted from earlier retail selection research (Spiggle and Sewall, 1987; Heider and Moeller, 2012) shown in Figure 1. The trust model by de Jonge et al. (2008) was used to define the psychological questions on their trust in the market channel (part 1 of the questionnaire). Previous studies have confirmed trust in food as an important psychological factor (de Jonge et al., 2007, 2008; Van Kleef et al., 2007). In the questionnaire, trust was measured using 7 questions (on a 5-point Likert scale varying from "totally disagree" to "totally agree") on care, competence, and openness of the market channel regarding the food safety in poultry meat.

The second part of the questionnaire consisted of a set of standard questions on consumer characteristics: age, income groups, gender, marital status, occupation, education, place of residence, and meat consumption (Florkowski et al., 1999; Verbeke et al., 2011; Iton, 2015). The variables, income groups, gender, marital status, occupation, education, and place of residence were measured with a nominal scale. The variables age and meat consumption were measured with an interval scale.

The third part of the questionnaire contained a set of closed questions on market outlet features. The following features were used: "best price" (Sinha and Banerjee, 2004; Goldman and Hino, 2005; Chamhuri and Batt, 2009), "best quality" (Figuíe and Truyen, 2006), "best price/quality relationship" (Vukasovič, 2014),

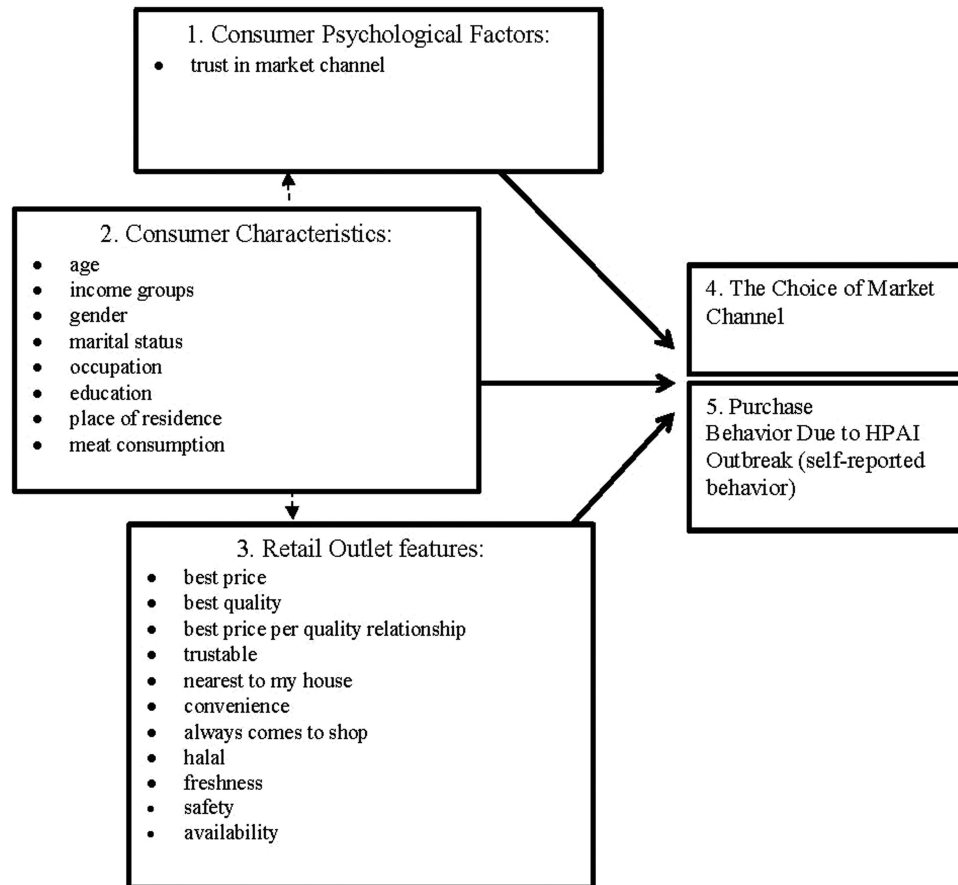


Figure 1. Research framework for the choice of poultry market channel and the change of purchase behavior due to HPAI outbreak.

“trustable” (Chamhuri and Batt, 2013a, 2013b), “convenience” (Bonne and Verbeke, 2006; Chamhuri and Batt, 2009), “halal” (Chamhuri and Batt, 2009, 2013a), “freshness” (Goldman et al., 1999; Verbeke and Viaene, 2000; Goldman and Hino, 2005; Vanhonacker et al., 2016; Sujiwo et al., 2018), “safety” (Figué and Truyen, 2006), “nearest to my house,” “habit,” and “availability” (Vanhonacker et al., 2016).

The fourth part of the questionnaire was aimed at the market channel where the consumer usually buys poultry meat. The following outlets were defined: wet markets, street vendors, supermarkets, hypermarkets, and specialty stores (Daryanto et al., 2014). Responses were grouped into 2 market channels: traditional and modern channels.

The last part of the questionnaire contained questions on the consumers’ change of poultry purchase behavior due to HPAI outbreaks. Answers could be: not changed, changed product, changed outlet, changed seller, and changed channel. The responses were grouped into 2 actions: a change of purchase behavior due to HPAI outbreaks or no change in purchase behavior.

The questionnaire was developed in English and translated into Bahasa (Indonesian Language). In order to check the validity of the translations, the questionnaire was then translated back to English by a different

person and compared with the original questionnaire. Then, the questionnaires were pre-tested with 30 respondents at different market outlets. Feedback from the pre-test survey initiated minor changes in the final questionnaire.

Sample Size and Design

The method of non-probability sampling, also known as quota sampling, was used to select the respondents. This method is the non-probabilistic analog of stratified random sampling. It is typically used to assure that smaller groups are adequately represented in the sample.

First, the quota was designed to have 60% of the respondents of the DKI Jakarta Region and 40% of the respondents from the surrounding areas. The rationale was to have more information of the higher income population in DKI Jakarta region. In addition, the surrounding area provides the information of middle and low income population.

The second quota concerned different income groups. The definition of income groups was based on the classification of individual expenditures per capita per month per region in the 2013 National Socio-Economic Survey (Jakarta and surroundings). Assuming that the lowest

Table 1. The stratified number of respondents per area, market type, and income level.

Expenditure per month	Jakarta			Outside Jakarta (surrounding region)			Total
	Wet market	Street vendor	Modern market	Wet market	Street vendor	Modern market	
>137.7 Euro	199	36	94	110	74	52	565
91.8 to 137.6 Euro	65	22	41	56	33	18	235
55.1 to 91.7 Euro	61	21	32	33	38	15	200
<55.1 Euro	24	14	17	11	20	10	96
Total	349	93	184	210	165	95	1,096

number of family members is 3, the individual expenditures were transformed into family expenditures. Also, the 8 original classes were reduced to 4 classes by combining the lower and the higher expenditure groups.

The third quota was aimed at having 30% of the respondents in the modern channel and 70% in the traditional channel. Although 20% of the poultry meat is bought in the modern channel, in order to have a sufficiently large sample to draw statistically sound conclusions, the modern channel respondents' quota was set at 30. The quota for the traditional channel was split over the wet markets (40% of the respondents) and street vendors (30% of the respondents).

Based on Slovin's methods (Slovin, 1960) and the designed quota, using a 5% error tolerance, the data collection was aimed at 1032 respondents. Practically, to collect data in the traditional channel, 2 wet markets and 1 area of poultry street vendors were selected in South Jakarta. For each of the areas East Jakarta, Bekasi and Bogor, 1 wet market and 1 area of street vendors were selected. In total, data in the traditional channel were collected in 5 wet markets and 4 areas with poultry street vendors. In the modern channel there are not too many outlets. Therefore, to collect data in the modern channel, the enumerators had the freedom to find respondents at every outlet in the modern channel for each of the areas South Jakarta, East Jakarta, Bekasi, and Bogor. Interviews were held with respondents who, at the time of the interview, were buying poultry meat. The final number of respondents was 1096 with a slightly different quota composition than planned (Table 1).

Data Analysis

Before further statistical analyses, first the variables were tested for univariate normality using chi-square test. The data were normally distributed ($P = 0.000$) with a 95% significance level and therefore valid for further analysis. Because the trust variable had 7 possible responses, those responses were tested on reliability using Cronbach's alpha. The resulting Cronbach's alpha of 0.8883 indicates that the average correlation of the set of items within the construct was an accurate estimate of the average correlation of all items that pertain

to the trust variable construct. Hence, we used the average of the 7 attribute values as the new trust variable value. Next, we grouped the new trust variable value as follows: low trust (1 to 3 points) and high trust (4 to 5 points). After that, we tested the trust variables for reliability using the Cronbach's alpha (0.789), and the result was regarded as reliable.

A descriptive statistical analysis was carried out to summarize the respondents' responses using cross-tabulation. Differences between the determinant factors in the different market channels and between the determinant factors and the respondents' change of behavior due to HPAI outbreaks were statistically tested using Pearson's chi-square.

Finally, multivariable logistic regression analysis was employed to measure the association of relevant determinant factors to the respondents' choice of market channel and the change of purchasing behavior of respondents due to HPAI outbreaks. The logistic regression is a robust test predicting the probability of an event taking place (Hair et al., 1998). Before the logistic regression, Spearman's correlation coefficients between the variables were determined to check for multicollinearity. Because all correlations were smaller than 0.7, it was concluded that multicollinearity was not present.

The general format of the multivariate logistic regression model is shown by Equation 1 as follows:

$$\ln\left(\frac{v}{1-v}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_p X_p \quad (1)$$

where the log of the odds of the outcomes is represented by $\ln\left(\frac{v}{1-v}\right)$ (i.e., high level or low level of trust, best price or not, best quality or not, best price/quality relationship or not, trustable or not, nearest to my house or not, convenience or not, always comes to shop or not, halal or not, freshness or not, safety or not, availability or not, choose to shop in the modern channel or not, and reported change of purchase behavior or not, represented by (v) and $(1-v)$, respectively), estimated intercept is represented by β_0 , and the coefficient regression of each independent variable included in the analysis is represented by $\beta_1 \dots \beta_p$.

Table 2. Descriptive statistics (counts) of the social-demographic characteristics of the respondents in relation to their choice of market channel and their change in meat purchase behavior due to HPAI outbreaks.

General Characteristics	Market channel			Changing purchase behavior due to HPAI outbreaks			
	Traditional	Modern	<i>P</i> value	No	Yes	Do not know AI	<i>P</i> value
Market							0.000
Traditional	–	–	–	408	346	63	
Modern				101	172	6	
Trust toward market channel			0.000				0.022
High trust	636	259		398	438	59	
Low trust	181	20		111	80	10	
Age group			0.641				0.000
<25 yr old	64	14		21	49	8	
26 to 30 yr old	118	43		66	86	9	
31 to 35 yr old	171	61		117	100	15	
36 to 40 yr old	166	58		114	90	20	
41 to 45 yr old	118	46		90	70	4	
>45 yr old	180	57		101	123	13	
Income groups per month			0.844				0.049
>137.7 Euro	419	146		259	279	27	
91.8 to 137.6 Euro	176	59		110	109	16	
55.1 to 91.7 Euro	153	47		103	83	14	
<55.1 Euro	69	27		37	47	12	
Gender			0.868				0.043
Male	67	22		30	52	7	
Female	750	257		479	466	62	
Marital status			0.142				0.000
Married	750	258		483	465	60	
Single	46	19		11	47	7	
Divorced	21	2		15	6	2	
Occupation			0.365				0.648
Nonhousewife	361	132		232	227	34	
Housewife	456	147		277	291	35	
Education			0.018				0.096
Lower education	171	42		83	117	13	
Senior high school	361	116		232	219	26	
University	285	121		194	182	30	
Place of residence			0.001				0.001
DKI Jakarta	442	184		317	265	44	
Outside Jakarta (Bogor, Depok, Tangerang, Bekasi)	375	95		192	253	25	
Kilogram meat per Purchase			0.007				0.000
≤ 1 kg	461	183		274	336	34	
Above 1 kg	356	96		235	182	35	
Outlet features			0.000				0.000
Best price	65	12		45	27	5	
Best quality	176	94		155	111	4	
Best price/quality	16	42		13	43	2	
Trustable	57	14		23	31	17	
Nearest to house	220	28		121	105	22	
Convenience	99	60		73	82	4	
Always comes to shop	20	4		8	11	5	
Halal	11	5		5	11	0	
Freshness	141	8		55	84	10	
Safety	2	4		4	2	0	
Availability	10	8		7	11	0	

P-values denote the results of the chi-square test. Significance in 0.05 (bold).
HPAI, highly pathologic avian influenza.

Analyses chi-square and Pearson's chi-square were carried out with SPSS 22 (IBM Corp. New York); analyses Cronbach's alpha, Spearman's correlation coefficients, descriptive statistics, and logistic regressions were carried out with Stata 13 (StataCorp., Texas).

RESULTS

Table 2 provides an overview of the 11 social-demographic characteristics for respondents in the 2 different market channels, and for respondents who did and did not change their meat purchase due to HPAI outbreaks. Five social-demographic characteristics, trust, education, place of residence, meat purchase, and outlet features, were significantly ($P < 0.05$) associated with the choice of market channel. Consumers with a senior high school education did mostly purchase meat at the traditional channel, whereas consumers with a higher education seemed to purchase more at the modern channel. The within-class differences in the other 4 significant socio-demographic characteristics were less prominent (Table 2). More (nine) social-demographic consumer characteristics were significantly ($P < 0.05$) associated with the self-reported change in purchase behavior due to HPAI. These factors were type of market channel, trust, age, income, gender, marital status, place of residence, total amount of meat per purchase, and outlet features. Consumers living outside of Jakarta were more likely to change their purchase behavior due to HPAI outbreaks. Likewise, consumers purchasing small amounts of meat were also more likely to change their purchase behavior due to HPAI outbreaks. The within-class differences in the other 7 significant socio-demographic were less prominent.

Table 3 gives the results of 2 logistic regression model estimations of the determinant factors that significantly associated with the consumers' choice of poultry market channel, and the consumers' change of purchase behavior due to HPAI. The logistic regression model of choice of poultry market channel was significant whereby 21% of the variation could be explained by the model (pseudo R² value = 0.2115). The 2 most influential among 9 significant variables that were associated with the consumers' choice of modern channel were the best price/quality relationship variable and the safety variable. The other variables that were significantly ($P < 0.05$) associated with the choice of the modern channel were best quality, convenience, availability, and a high level of trust in the market channel. Three determinants were associated with the respondents' choice of the traditional channel: freshness as an outlet feature, living outside Jakarta, and purchasing more than 1 kg of meat.

Table 3 presents the significant variables that were associated with the consumers' change of purchase behavior due to HPAI. The model did explain 9% of the variation (the pseudo R² value = 0.0940). Best price/quality was the most influential variable to the

consumers' change of purchase. The other significant variables associated to the consumers' change of purchase were convenience, halal, freshness, availability, a high level of trust, being single, and living outside Jakarta.

DISCUSSION

In this study, we provided more insight in the relevant determinants of the choice for a market channel and the change in purchase behavior due to HPAI outbreaks. We focused on consumer psychological factors, consumer characteristics, and outlet features, and related those to the choice for a market channel and the change of purchase behavior due to HPAI outbreaks.

The most important variables related to the choice for the modern poultry market channel were the price/quality relationship, the safety feature, and the level of consumer trust. The most important variables for the choice for the traditional poultry market channel were freshness, living outside Jakarta, and the amount per purchase. Some variables explaining the change in purchase behavior due to HPAI outbreaks were similar to those for the choice of market channel (the price/quality relationship, the level of consumer trust, living outside Jakarta, and the amount per purchase). Those results support the notion that consumers' decisions in purchase behavior are related to the microbiological hazard incidents (Yeung and Morris, 2001; Figuié and Fournier, 2008). If the government were to pull producers toward the modern channel by means of a change in preference of consumers, the government should take those factors into account.

The relationship between price and quality was an important factor for the consumers to choose for the modern channel, as well as for a change in purchase behavior. Also Yu et al. (2011) showed that the relationship between the perceived channel quality, price, and value determines the consumers' choice of market channel, and that the intention to switch channels is related to price attributes. Therefore, a government can influence the price/quality relationship of the preferred market channel by subsidies and/or taxes. For instance, by subsidizing the modern channel the price/quality relationship of poultry sold in that channel can be improved. The other way around, by additional or increased taxes, the price quality relationship of poultry in the traditional channel can be decreased. However, in the Indonesian situation these types of measures are difficult to implement. The Indonesian poultry consumers use quality and freshness interchangeably (Chamhuri et al., 2015). In other words, freshness is a synonym for quality. Quality relies on the consumers' perceptions and judgments of the products (Chamhuri and Batt, 2015). Therefore, another option to increase the price/quality relationship is by promoting the quality aspect of the poultry in the modern channel. Such a campaign should focus on the safety of poultry in the modern channel, but should also take freshness into

Table 3. Odds ratio (OR) of the variables in the estimated logistic regression model for the consumers' choice of market channel and their purchase behavior due to HPAI outbreaks.

Determinant	Choice of market channel			Changing purchase behavior due to HPAI outbreak		
	OR	95% CI	<i>P</i> value	OR	95% CI	<i>P</i> value
Consumer psychological factor						
Low trust (reference)	1			1		
High trust	5.52	3.24 to 9.41	0.000	1.50	1.06 to 2.13	0.023
Consumer characteristics						
Age group						
<25 yr old (reference)	1			1		
26 to 30 yr old	1.92	0.80 to 4.63	0.146	0.84	0.41 to 1.73	0.625
31 to 35 yr old	2.06	0.85 to 4.98	0.110	0.64	0.31 to 1.31	0.220
36 to 40 yr old	2.35	0.96 to 5.75	0.061	0.62	0.30 to 1.28	0.197
41 to 45 yr old	1.73	0.69 to 4.35	0.242	0.53	0.25 to 1.11	0.092
>45 yr old	2.26	0.92 to 5.61	0.078	0.89	0.43 to 1.83	0.754
Income groups per month						
<55.1 Euro (reference)	1			1		
55.1 to 91.7 Euro	0.61	0.31 to 1.18	0.141	0.65	0.37 to 1.15	0.138
91.8 to 137.6 Euro	0.59	0.31 to 1.13	0.114	0.81	0.46 to 1.43	0.471
>137.7 Euro	0.66	0.36 to 1.20	0.175	0.93	0.55 to 1.57	0.781
Gender						
Male (reference)	1			1		
Female	0.90	0.48 to 1.71	0.751	0.65	0.37 to 1.15	0.115
Marital status						
Married (reference)	1			1		
Single	2.24	0.95 to 5.24	0.064	3.75	1.64 to 8.59	0.002
Divorced	0.33	0.07 to 1.52	0.154	0.29	0.11 to 0.81	0.018
Occupation						
Non-housewife (reference)	1			1		
Housewife	1.00	0.69 to 1.46	0.982	1.34	0.98 to 1.83	0.070
Education						
Lower education	1			1		
Senior high school	1.15	0.72 to 1.84	0.551	0.70	0.49 to 1.02	0.063
University	1.41	0.85 to 2.33	0.190	0.74	0.49 to 1.12	0.157
Place of residence						
DKI Jakarta (reference)	1			1		
Outside Jakarta (Bogor, Depok, Tangerang, Bekasi)	0.62	0.44 to 0.86	0.005	1.84	1.39 to 2.44	0.000
Kilogram meat per purchase						
≤ 1 kg (reference)	1			1		
Above 1 kg	0.48	0.34 to 0.68	0.000	0.43	0.43 to 0.78	0.000
Outlet features						
Best price (reference)	1			1		
Best quality	3.49	1.72 to 7.07	0.001	1.20	0.62–1.94	0.752
Best price/quality	13.73	5.51 to 34.19	0.000	5.37	2.37 to 12.19	0.000
Trustable	1.05	0.43 to 2.55	0.920	1.91	0.89 to 4.08	0.097
Nearest to house	0.56	0.26 to 1.20	0.134	0.99	0.55 to 1.78	0.964
Convenience	3.98	1.89 to 8.36	0.000	1.92	1.04 to 3.52	0.037
Always comes to shop	0.73	0.21 to 2.61	0.631	2.26	0.77 to 6.62	0.136
Halal	2.43	0.64 to 9.25	0.195	3.44	0.99 to 11.88	0.050
Freshness	0.24	0.09 to 0.64	0.004	2.30	1.23 to 4.28	0.009
Safety	13.51	1.94 to 93.96	0.008	1.23	0.20 to 7.40	0.824
Availability	4.73	1.39 to 15.97	0.012	3.18	1.03 to 9.79	0.044
Constanta						
Log likelihood		-490.28001			-644.94184	
Number of obs		1096			1027	
LR chi2(16)		262.94			133.76	
Prob > chi2		0.0000			0.0000	
Pseudo R2		0.2115			0.0940	

P values denote the significance of variable association to the choice of market channel and change purchase behavior. Value in bold = significance in 0.05.

HPAI, highly pathology avian influenza.

account, as, in our findings, it was clear that freshness was an important argument for the consumers who purchased poultry on the traditional market, a fact that was also shown in earlier research (Daryanto et al., 2014; Chamhuri et al., 2015). For Indonesian consumers, freshness is related to slaughtering on the spot or the night before sales. As long as consumers link freshness to the time between slaughtering and sales, the modern channel will have a negative image with regard to freshness. That means the government should communicate a redefinition of freshness, linking this term to the quality and the taste of poultry rather than to the time since slaughtering.

Another factor related to the purchase of poultry meat in the traditional channel was living outside Jakarta. This might be related to a higher availability of traditional outlets outside Jakarta. So by increasing the availability of modern outlets outside Jakarta, consumers may change their preference toward the modern channel.

The amount of poultry (more than 1 kg) purchased was also associated with buying in the traditional channel. This may have been related to the lower price of poultry in the traditional market compared to the modern market. This aspect might be changed by the aforementioned measures with regard to subsidies and taxes.

Finally, it was shown that the psychological factor level of trust was higher for consumers who purchased poultry meat in the modern channel, and for consumers who changed their purchase behavior after an HPAI outbreak. This can be seen as a result of the higher level of food safety in the modern channel and shows the degree of consumer confidence in the market channel (de Jonge et al., 2007; Drescher et al., 2012).

The study was done in 2013; however, since that time, the poultry market and socioeconomic circumstances in western Java have not changed very much "(D. Indrawan, unpublished data)." That means the information is still relevant to the current situation in Western Java and can be used to support the Indonesia government with decisions on how to change consumers' preferences towards a modern market channel. However, this study has a few limitations. The study was designed to model the consumers' choice of poultry market channel and a change in purchase behavior due to HPAI outbreaks. Therefore, we only looked at the factors behind poultry purchase in a specific market channel, making this study rather descriptive. We did not consider the factors that motivate or demotivate consumers in the traditional channel to change to the modern channel. Furthermore, the questions with regard to a change after HPAI outbreaks did only look at a change in purchase behavior and did not check the effect of product substitution from poultry to beef or fish. These might have been a reason that the pseudo R² of both logistic regression models was relatively low (0.2115 and 0.0940, respectively). Finally, the conceptual model we used, based upon consumer psychological factors, consumer characteristics and retail outlet fea-

tures, was adapted from studies in Europe and United States (Spiggle and Sewall, 1987; Heider and Moeller, 2012) and may not have been appropriate for the Indonesian situation. In future studies, other explanatory variables that are specifically related to the population under study can be added to each factor. However, the results of this study are the first of its kind and can be seen as a first indication for the Indonesian government in what direction they should implement their policies to restructure the poultry supply chain.

CONCLUSION

This study provides information about consumers' preferences with regard to their choice of market channel. Results can be used to change the consumers' preference toward a modern market channel. This can be done by improving the price/quality relation of the poultry in the modern market channel, for instance by changing taxes and/or subsidies, as well as by advertising the food safety features of the modern market channel. Special attention should be paid to the perceived freshness that consumers associate with the traditional market channel. By changing the preference of the consumers toward the modern poultry market channel, the Indonesian government can pull producers toward this channel, thus making poultry supply more safe.

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