

Factors influencing consumer intentions to avoid broiler chicken meat and products in Malaysia

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Abstract

Reports of bird flu outbreaks occur around the globe, posing a severe threat to the poultry industry and consumer health. Despite the number of bird flu scares, few studies have considered the impact on consumers' chicken consumption intentions in a non-western context, such as in Malaysia. The aim of this study is to determine the factors that influence consumers' intentions to take precautions by avoiding the consumption of broiler chicken meat and products in Malaysia when a bird flu outbreak occurs. A total of 276 online questionnaires were disseminated using convenience sampling with 109 respondents completing the questionnaires, generating a response rate of 40.8 percent. The study results show that attitudes, subjective norms, perceived behavioral control, perceived credibility of information, and perceived risk have a significant relationship with consumer intentions to take precautions by avoiding the consumption of broiler chicken meat and products. One factor is the exception: attention towards bird flu news. These findings shed some light on understanding the extent of consumer response (i.e. consumption behavior) to future health crises (e.g. bird flu). Moreover, for policy makers, these findings may serve as a guide and a reference to food safety issues in the poultry industry, especially future bird flu scares.

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Introduction

The poultry industry is one of the most important livestock industries in Malaysia (Department of Veterinary Service of Malaysia (DVS), 2011), with poultry meat being one of the cheapest and affordable key sources of protein for Malaysians (The Poultry Site, 2006). Poultry meat consumption per capita in Malaysia was 35 kg per person in 2010, and the consumption of poultry meat, in particular chicken meat, continues to grow (Department of Veterinary Service of Malaysia, 2011; Jayaraman *et al.*, 2013).

Given the importance of the poultry industry and chicken meat to Malaysians, the threat of bird flu scares should not be ignored. Previous experience has shown that Malaysia's poultry industry suffered from the first bird flu outbreak in 2004 (Gustri, 2004). Consumer awareness and concerns with food safety of livestock products has also increased, and bird flu scares may trigger a slump in demand for poultry products (Yeung and Morris, 2001). Previous studies note that food scares affect consumer purchasing behavior (Hume, 2001; Lobb *et al.*, 2006). Moreover, Knowles *et al.* (2007) argued that the impact of animal disease-related food scares, like bird flu, on consumers' buying behavior needs to be explored further. Even so, the study of consumers' behavioral responses, such as intention to take precautions by

avoiding the consumption of broiler chicken meat and products remains, is limited in Malaysia.

In light of the impact of future bird flu outbreaks on Malaysia's poultry industry, this study aims to identify the factors that influence consumers' intentions to take precautions by avoiding the consumption of broiler chicken meat and products. Specifically, this study examines whether attitudes, subjective norms, perceived behavioral control, attention towards bird flu news, perceived credibility towards bird flu information, and perceived risk in view of the bird flu scares, influences consumers' intentions to take precautions by avoiding the consumption of broiler chicken meat and products.

Even though, to date, no new cases of bird flu have been reported in Malaysia in 2013, the impact of future bird flu scares on Malaysia's poultry industry needs to be researched and reported. Livestock farming especially the broiler industry, covering feed millers, broiler farmers, and the broiler meat industry supply chain, gains valuable insights on consumers' behavioral responses towards broiler chicken meat and products in a bird flu scare scenario. Moreover, this study helps to raise concerns with quality standards and safety measures, and whether the necessary precautions are in place to prevent any future outbreak. Broiler chicken meat was chosen for this study because it is a widely consumed product

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and an affordable key protein source for Malaysians.

Literature review

This study has adopted Ajzen's (1991) Theory of Planned Behavior (TPB) as the underlying theory, which describes human behavior in terms of three main constructs or beliefs: behavioral beliefs, normative beliefs and control beliefs. Behavioral beliefs refer to the likely consequences of the behavior, creating either a positive or negative attitude towards a behavior. Normative beliefs refer to subjective norms or perceived social pressure, and control beliefs lead to perceived behavioral control (PBC) (Ajzen, 2002). The combination of these three constructs leads to the formation of behavioral intention. Specifically, attitudes, subjective norms and perceived behavioral control are predictors of intention towards an individual behavior.

However, this study further extends TPB with additional variables (Lu *et al.*, 2010) to form the theoretical framework (see Figure 1), such as attention towards bird flu news, perceived credibility of information, and perceived risk. In this study, precautionary behavioral intention is defined as the effort which an individual plans to carry out to avoid something, i.e. to avoid the consumption of broiler chicken meat and products because of a bird flu scare (Lu *et al.*, 2010). Prior research has shown that TPB is a useful tool in predicting the relationship between attitude and intention (Rivis and Sheeran, 2003), such as the intention to purchase genetically-modified food (Cook *et al.*, 2002; Spence and Townsend, 2006), and the intention to avoid consuming dairy food products (Lu *et al.*, 2010).

Attitude, a long-lasting affective orientation of a person towards an object, process, or behavior, has been shown by TPB to have a direct relationship with behavior through behavioral intentions (Ajzen, 1991). One's attitude towards a given behavior is basically determined or influenced by the individual's beliefs about the outcomes and the evaluation of the behavior (Stefani *et al.*, 2008). An empirical study by Lobb *et al.* (2007) shows that attitude is the key factor influencing intention to purchase chicken under the influence of different risk levels. Moreover, TPB has been used to explain that intentions to purchase genetically-modified food are positively influenced by attitude (Cook *et al.*, 2002). Hence, consumers who have positive and favorable attitudes towards broiler chicken meat and products are more likely to have weaker intentions to take precautions and avoid the consumption of broiler chicken meat and products.

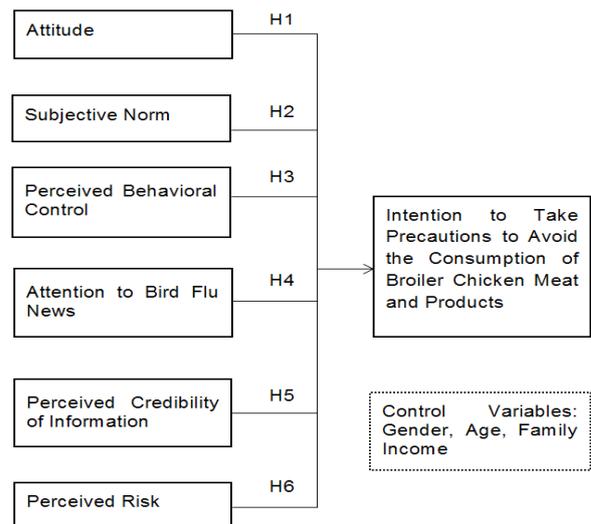


Figure 1. Theoretical framework

Therefore, on the basis of the literature review and discussion, the following hypotheses were formed. Hypothesis 1: Attitudes towards broiler chicken meat and products negatively predicts consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products.

Subjective norms refers to how a person behaves in the presence of the views of other parties, such as family members, friends, or teachers (Stefani *et al.*, 2008; Lu *et al.*, 2010), and have been shown to influence consumer food selection and consumption. Empirical research from Moser *et al.* (2005) identified subjective norms as one of the psychosocial factors affecting the consumption of fruit and vegetable. Consequently, subjective norms form the basis of a hypothesis: Hypothesis 2: Subjective norms positively predict consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products.

Perceived behavioral control (PBC), an individual's level of confidence in their ability to succeed in overcoming barriers to perform a behavior (Bandura, 1986; Ajzen, 1991), is mostly determined by a consumer's information and experience of the social environment (Dierks and Hanf, 2006). When an individual perceives more resources and opportunities and lower impediments, then their PBC over behavior is higher (Ajzen, 1991). These findings have been confirmed in previous research. For instance, Haapala and Probart (2004) noted a positive association in the relationship between perceived behavior control and food-handling behavior. Other research by Clayton *et al.* (2002), and Gordon (2003), argued that consumers perceive behavioral control before adopting safe handling practices for food. Accordingly, it is hypothesized that: Hypothesis 3: Perceived behavioral control positively predicts

consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products.

Another factor influencing consumer decisions is the attention given to news stories. Lu *et al.* (2010) acknowledged that consumer intention and purpose in interpreting food safety related media messages is one of the determinants influencing precautionary behavior. The availability of food safety information affects consumer demand, especially purchasing and food consumption (Piggott and Marsh, 2004). Based on Lobb *et al.* (2006) study, television, newspapers, radio, and the internet serve as the major mass media sources of information. This finding is further supported by Shepherd and Saghaian (2008), who noted that consumers typically source food safety information from television, internet and newspapers, especially during periods of uncertainty. A study carried out by Stead *et al.* (2005), found that the mass media plays an effective role in triggering desired communications outcomes and is associated with attitude changes. With bird flu news, a survey of college students in Taiwan by Wei *et al.* (2007) confirmed that attention to bird flu news has a positive and significant relationship to the third-person perception of bird flu news. Therefore, the review of the literature review and discussion leads to the fourth hypothesis. Hypothesis 4: Attention towards bird flu news positively predicts consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products.

Perceived credibility of information refers to a person's level of certainty in the reliability and truthfulness of an information source (Gaziano and McGrath, 1986; Lu *et al.*, 2010). As the credibility of news and information sources has been shown to determine the acceptance of food-safety information (Lu *et al.*, 2010), this study employs perceived credibility of information as an important variable that influences intentions to take precautions to avoid consumption of broiler meat and products. A study on behavioral intentions to purchase chicken found that trust in information from different sources has an impact (Mazzocchi *et al.*, 2004). Other chicken studies, by Lobb *et al.* (2007) and Stefani *et al.* (2008), also observed that a stronger perception of the food-safety related information provided by media, equates to a higher level of trust and perceived risk, and a lower level of consumption of chicken. Mazzocchi *et al.* (2004) also noted that during a food-related scare, increasing trust in information provided by the media amplifies the negative effect to chicken purchases. Overall, the credibility of food safety information is a crucial factor determining consumers' buying behavior under uncertainty (Dierks and Hanf, 2006),

and leads to the following hypothesis. Hypothesis 5: Perceived credibility of information positively predicts consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products.

The perception of risk, where extreme events may cause harm to human, materials, structure or the natural environment (Slovic and Weber, 2002), has been associated with bird flu and TPB by Mazzocchi *et al.* (2004). Their research adopted perceived risk as an indirect predictor of consumer intention to buy broiler meat (Mazzocchi *et al.*, 2004). Addition empirical research by Lobb *et al.* (2007) and Stefani *et al.* (2008) has indicated that risk perception appears to be a significant factor in intention towards the purchase of chicken. Their computation of risk perception was based on the weighted average of perception of risk factors related to microbiological risk, chemicals, and bird flu. Likewise, Gordon (2003) found that the content of food-borne illness information stimulates risk perception. These findings are supported by the decline of broiler chicken consumption at the end of 2005, following the outbreak of bird flu in Europe, and highlight the importance of evaluating the perceived risks associated with food purchasing and consumption (Lobb *et al.*, 2006). Consequently, this study tests the following hypothesis. Hypothesis 6: The higher the perceived risk toward bird flu, the higher consumer's intentions to take precautions to avoid the consumption of broiler chicken meat and products.

Research methodology

Individual consumers who consume broiler chicken and products in Penang, Malaysia, are the unit of analysis for this study. According to the rule of thumb by Sekaran and Bougie (2010), the sample size should be between 10 to 20 observations for each and every variable. As this study consists of seven variables, the sample size should be between 70 to 140, or more than 70 respondents.

The respondents were selected through convenience sampling method, and the study online questionnaire was disseminating by e-mail to all individuals. All respondents participated on a voluntary basis and were assured of confidentiality and anonymity. A total of 276 online questionnaires distributed, and 109 completed responses were returned, generating 40.8 percent response rate, which is deemed acceptable (Sekaran and Bougie, 2010). All items were assessed using a seven-point Likert scale, ranging from "1" or strongly disagree to "7" or strongly agree. Attitude (three items), subjective

norms (three items), and perceived behavioral control (four items), attention to bird flu news (four items), perceived credibility of bird flu information (four items), and the intention to take precautions to avoid the consumption of broiler chicken meat and products (three items), were adapted from Lu *et al.* (2010). Perceived risk was measured in three items adapted from Lobb *et al.* (2006). All the collected data were analyzed using SPSS version 19.0.

Significant findings and results

Goodness of Data

This study use factor analysis and reliability analysis to test goodness of data (Hair *et al.*, 2006). The sample size of is 109, which is considered acceptable, even though the recommended sample size is 200 (Coakes *et al.*, 2006). The criteria to retain each item is based on discriminant validity, where loading should be at least 0.40, no cross-loading of items above 0.40, and also on convergent validity (Eigenvalues = 1 or above, loading at least 0.40) (Straub *et al.*, 2004; Fied, 2005). The seminal work from Hair *et al.* (2006) recommends the measurement of sampling adequacy, or Kaiser-Meyer-Olkin (KMO), to test the availability of sufficient numbers of significant correlations between items, and its significance is tested with Bartlett's test of sphericity.

According to Sekaran and Bougie (2010), in order to determine variables are free from error and biasness, reliability analysis is carried out to ensure the goodness of measure, and to determine the stability and consistency for each item by referring to Cronbach's alpha value. The minimum value of Cronbach's alpha considered acceptable is equal or above 0.60 (Sekaran and Bougie, 2010).

In this study, the factors that influence intention to take precautions to avoid broiler chicken meat and products comprises of six variables (namely, attitude, subjective norms, perceived behavioral control, attention to bird flu news, perceived credibility of bird flu related information and perceived risk) with a total 21 items, while the dependent variable (intention to take precautionary behavior) consists of three items. All 21 items of independent variables and three items of dependent variable were subjected to varimax rotated principal component analysis. The decision to retain each and every item was based on factor loading which was at least 0.40, no cross-loading of items above 0.40, Eigenvalues greater than 1 (Straub *et al.*, 2004), and also the scree test (Hair *et al.*, 2006). In order to determine the optimum number of factors that can be extracted or considered, researchers typically use multiple criteria, such as the

Eigenvalue as the cutoff point, when the number of variables are between 20 and 50 (Hair *et al.*, 2006).

Exploratory factor analysis for each and every scale of independent variable indicates all constructs were within a single dimension, with the variance explained over 50 percent and the total variance explained at 78.98 percent. The Kaiser Meyer-Olkin measure of sampling adequacy was 0.802, which is considered high (close to 1.0) indicating that factor analysis was useful with the data. The Bartlett's test of sphericity was also significant at 0.000 (see Table 1).

Factor analysis was also conducted on the dependent variable, intention to take precautions to avoid consuming broiler chicken meat and products, to determine the factor loading, see Table 2. It comprises three items to indicate consumer intentions to avoid broiler chicken meat and products. The measure of sampling adequacy, Kaiser Meyer-Olkin, is 0.642 and above the 0.60 benchmark level that indicates whether the factor analysis is useful with the data. The factor analysis indicates that three items are under a single unique factor (Eigenvalue = 2.2), with total variance of 73.3 percent and considered good. The Bartlett's test of sphericity was significant at 0.000.

Reliability analysis was conducted for each variable, with the Cronbach's alpha for the overall scale of each and every dimension ranging from 0.816 - 0.922. The Cronbach's alpha value for attitude is 0.913, subjective norms is 0.922, perceived behavioral control (PBC) is 0.906, attention to bird flu news is 0.816, perceived credibility of information is 0.860, perceived risk is 0.899 and intention to avoid broiler chicken meat and products is 0.816. All items show good internal consistencies and are above the accepted minimum value of 0.60 for Cronbach's alpha, as stated by Sekaran and Bougie (2010).

Hierarchical regression analysis and findings

A total of six hypotheses (H1-H6) tested consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products because of bird flu scares. In Table 3, demographic variables (age, gender, and household income) are included in the first block as control variables. The second block, with six independent variables, includes attitude, subjective norm, perceived behavioral control, attention to bird flu news, perceived credibility of information and perceived risk in view of bird flu threat.

Results of the analysis show that upon controlling the control variable, significant positive relationships were reported between subjective norms ($\beta = 0.200$,

Table 1. Rotated component factor loadings and Cronbach's alpha for independent variables

Items	Component					
	1	2	3	4	5	6
Attitude						
Overall, consuming broiler chicken meat and products is good.	0.142	0.017	-0.361	0.011	-0.181	0.817
Overall, consuming broiler chicken meat and product is safe.	0.092	0.099	-0.224	-0.106	-0.248	0.810
Overall, consuming broiler chicken meat and products is encouraged.	0.127	0.051	-0.396	-0.007	-0.218	0.777
Subjective Norms						
My Parents think I should not consume broiler chicken meat and products.	-0.183	0.031	0.818	-0.035	0.245	-0.319
My lecturers think I should not consume broiler chicken meat and products.	-0.152	-0.048	0.858	-0.045	0.092	-0.290
My friends think I should not consume broiler chicken meat and products.	-0.139	0.008	0.838	-0.051	0.270	-0.228
Perceived Behavioral Control						
I believe I can avoid consuming bird flu virus contaminated broiler chicken meat and products.	0.841	0.098	-0.206	0.098	-0.035	0.079
I believe I can reduce my likelihood of consuming bird flu virus contaminated broiler chicken meat and products.	0.857	0.115	-0.211	0.045	-0.023	0.006
I believe that I can take action to reduce the chances of consuming bird flu virus contaminated broiler chicken meat and products.	0.848	0.245	-0.009	0.196	-0.038	0.159
I believe that I will be on alert not to consume bird flu virus contaminated broiler chicken meat and products.	0.843	0.209	-0.050	0.096	-0.029	0.105
Attention to Bird Flu News						
I pay attention to bird flu news on TV.	0.075	0.092	-0.025	0.706	0.097	0.242
I pay attention to bird flu news on newspaper.	0.081	0.176	-0.044	0.847	0.074	-0.095
I pay attention to bird flu news on radio.	0.133	0.069	0.014	0.861	0.083	-0.085
I pay attention to bird flu news on internet.	0.140	0.378	-0.095	0.645	0.113	-0.223
Perceived Credibility of Bird Flu Information						
News reports regarding bird flu on TV are credible.	0.221	0.796	-0.052	0.120	-0.002	0.273
News reports regarding bird flu on newspaper are credible.	0.318	0.743	0.127	0.295	0.023	0.139
News reports regarding bird flu on radio are credible.	0.324	0.772	0.064	0.249	0.062	0.084
News reports regarding bird flu on internet are credible.	-0.010	0.818	-0.100	0.050	-0.031	-0.204
Perceived Risk						
Overall, the microbiology contamination risk on broiler chicken meat and products is high.	-0.017	-0.030	0.142	0.144	0.900	-0.165
Overall, the additive contamination risk on broiler chicken meat and products is high.	-0.069	-0.006	0.235	0.136	0.850	-0.147
Overall, the bird flu virus contamination risk on broiler meat and products is high.	-0.011	0.076	0.138	0.058	0.865	-0.190
Eigenvalues	3.302	2.787	2.673	2.659	2.607	2.558
Total Variance (78.98%)	15.722	13.273	12.730	12.661	12.413	12.183
Cronbach's Alpha	0.906	0.860	0.922	0.816	0.899	0.913
KMO	0.802					
Bartlett's test of sphericity	1649.738					

Table 2. Rotated component factor loadings and Cronbach's alpha for dependent variable

Intention to Take Precautionary Behavior	Loadings
I intend to avoid consuming broiler chicken meat and products	0.918
I will suggest to my family members not to consume broiler chicken meat and products	0.893
I will seek information about bird flu in order to avoid buying broiler chicken meat and products.	0.748
Eigenvalues	2.200
Total Variance	73.33%
KMO	0.642
Bartlett's test of sphericity	139.649
Cronbach's Alpha	0.816

$p < 0.05$), perceived behavioral control ($\beta = 0.278$, $p < 0.01$), perceived credibility of information ($\beta = 0.189$, $p < 0.05$) and perceived risk ($\beta = 0.184$, $p < 0.05$), with consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products in view of bird flu scares. However, attitude ($\beta = -0.368$, $p < 0.001$) shows a negative and significant relationship. Except hypothesis four (attention to bird flu news), which has an insignificant relationship, all

hypotheses were supported (see Table 3).

The results also revealed that demographic variables (such as gender, age and household monthly income) associated with all the independent variables accounted for 48.9 percent variance on consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products in view of a bird flu outbreak. This is also the case in another Malaysia-based study by Teng *et al.* (2011), who argued that external variables or socio-demographic variables such as age, income, and gender have strong relationships with consumers' intention to purchase green foods.

This study has highlighted a number of findings on the factors that influence consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products in view of bird flu scares. Attitude was found to be negatively related, that is a more favorable attitude towards broiler chicken meat and products corresponds to a lower possibility to take precautions to avoid chicken meat. This is consistent

Table 3. Hierarchical regression analysis with demographic variables and independent variables

Variable	Frequency	
	Step 1	Step 2
Control variables		
Gender	-0.142	-0.102
Age	-0.146	0.141
Family monthly Income	-0.167	-0.091
Model variables		
Attitude		-0.368***
Subjective Norms		0.200*
Perceived Behavioral Control		0.278***
Attention to bird flu news		0.148
Perceived Credibility of information		0.189*
Perceived risk		0.184*
F value	2.668**	10.517***
R ²	0.071	0.489
Adjusted R ²	0.044	0.442
R ² change	0.071	0.418
F change	2.668**	7.849***

Note: * p < 0.05; ** p < 0.01; *** p < 0.001, beta weights are from the final regression equation with all blocks of variables in the model (n = 109)

with previous findings by Lu *et al.* (2010).

Subjective norm was also found to have a positive and significant relationship and is also consistent with existing studies by Oygard and Rise (2005), and Rivis and Sheeran (2003). In addition, Lu *et al.* (2010) also noted that friends, family, and lecturers had a significant and positive impact on intention to take precautionary measures towards their food during a food scare.

Perceived behavioral control was reported to have a positive and significant relationship with consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products in view of bird flu scares. Similar findings are present in empirical studies by Lee, Murphy and Neale (2009), Lobb *et al.* (2006), Stefani *et al.* (2008), Lu *et al.* (2010), and Stead *et al.* (2005), where the intention to adopt precautionary behavior can be significantly predicted by perceived behavioral control. In other words, previous studies indicate that high perception of behavioral control tends to have a positive association with intentions.

Nonetheless, the result obtained on attention to bird flu news shows an insignificant relationship. This result differed from previous researched findings by Lu *et al.* (2010), who found that attention to news creates a positive effect on intention to take precautionary behavior. According to Lu *et al.* (2010), drawing consumers' attention to food scare issues enhances their intentions to avoid the particular products. Yet, this result can be justified on the basis that consumers only pay attention to such news when there are media reports that arouse their attention to a bird flu outbreak; at present, this is absent in Malaysia. A news message needs to be outstanding in order to trigger the desired

cognitive and emotional response (Stead *et al.*, 2005). Since the outbreaks in 2004 and 2006, bird flu news reports on have scaled down and are no longer front page; there is no arousal of attention towards bird flu news. Hence, the insignificant relationship results for the proposed hypothesis.

Another factor, perceived credibility of information, was found to have a positive and significant relationship with consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products in view of bird flu scares. Credibility or trust in food safety information (bird flu outbreak with human fatalities) may enhance consumers' ability to judge or weigh the risks of exposure, as well their intention to take precautionary behavior (de Jonge *et al.*, 2007). This is in agreement with Lu *et al.* (2010), who noted that the extensive and overwhelming food safety news from reputable mass media channels serves as the stimuli to consumers' intentions to take precautions to avoid the particular food.

As for perceived risk, the result indicates it is significantly related to consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products in view of bird flu scares. The higher the perceived risk by respondents, the higher is the consumers' intentions to take precautions to avoid the consumption of broiler chicken meat and products in view of bird flu scares. Prior studies by Lobb *et al.* (2007), and Shepherd and Saghalian (2008), also found that consumers took actions that could minimize the risks of exposure associated with food scares.

Limitations and suggestions for future study

As with all empirical research, this study has several limitations which need to be highlighted. One such limitation is related to the sample of the study. Generalization of this study needs caution because the entire sample is confined to individual consumers from one location, namely Penang, Malaysia. Hence, it may not be representative of the entire population in Malaysia. Moreover, it is also important to consider that this study measures behavioral intention rather than actual behavior. Therefore, future research should investigate a larger sample size covering all states in Malaysia so that the results can be generalized to consumers in Malaysia as a whole. Future studies also should include the measures of actual behavior and are encouraged to apply Structural Equation Modeling (SEM) technique for interpreting the results.

Conclusion

In summary, the hypotheses in this study are well supported except attention to bird flu news. The results of this study show that attitude, subjective norms, perceived behavioral control, perceived credibility information, and perceived risk, have significant relationships with the consumers intentions to take precautions to avoid consumption of broiler chicken meat and products. These shed some light on understanding consumer response to future health crises (e.g. bird flu scares). Moreover, for the Malaysian government's Department of Veterinary Service, this study outlines the key factors that influence consumer's behavioral intention, and provides valuable input to policy development related to food safety in poultry.

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