Exploring Consumers' Perception of Farm Animal Welfare in Muar, Johor

Nalini Arumugam[1], Ain Shafirah Mohd Halim[2], Anath Rau Krishnan[3]

[1,2]faculty Bioresources & Food Industry Universiti Sultan Zainal Abidin
[3]fakulti Kewangan Antarabangsa Universiti Malaysia Sabah

Abstract
The concept of animal welfare has been in existence since the early 1950s, and the Animal Welfare Act of Malaysia was officially established in 2015. Farm animal welfare (FAW) pertains to the imperative for farmers to establish habitats that enable animals to manifest their innate behaviors. Consumer perception encompasses the way individuals perceive various aspects of animal welfare, including variations in perception among species and nations, the impact of animal-friendly branding, and the extent to which consumers are ready to pay more for food produced from animals maintained under improved welfare conditions. In Malaysia, customers exhibit limited concern for farm animal welfare and possess insufficient awareness regarding the treatment of animals bred for food. The objective of this study was to establish the correlation between customers' impressions of farm animal welfare and their attitudes, knowledge, preferences for welfare-friendly products, and socio-demographic factors. This study categorized attitude, knowledge, welfare-friendly items, and socio-demographic parameters as independent variables, while customers' perception was considered the dependent variable. This study employed a simple random sampling method, selecting 100 participants in Muar, Johor. Data was gathered by distributing a survey questionnaire to consumers in Muar, Johor. The data is analyzed using SPSS, which provides outputs for descriptive and regression analyses. The results indicated that consumers' evaluations of farm animal care were highly influenced by their attitudes and level of knowledge. The findings indicated that residents in Muar, Johor lack awareness and knowledge concerning the well-being of livestock. Hence, it was imperative for consumers and students to grasp the concept of farm animal welfare in order to understand the manner in which animals were handled for the purpose of food production.

Keyword: Farm Animal Welfare, Consumer, Perceptions, Attitude, Knowledge

Introduction

The impression of farm animal welfare (FAW) by consumers is a complex matter that is shaped by several cultural, societal, and economic aspects. Research has indicated that consumers are becoming increasingly concerned about the well-being of farm animals and are interested in making choices that align with their personal values (Alonso et al., 2020; Cornish et al., 2019; Tomašević et al., 2020; Carnovale et al., 2021; Fleming et al., 2020; Comin et al., 2022; Rubini et al., 2021; Kiliç & Bozkurt, 2020; Vanhonacker et al., 2010; Bracke et al., 2005; Schukat et al., 2020; Hughes, 1995; Boaitey et al., 2020; Kling-Eveillard et al., 2007; Jiang et al., 2023; Kjaernes et al., 2022). These concerns are not limited to specific regions, as shown by research conducted in various countries including China (You et al., 2014), Australia (Fleming et al., 2020), Italy (Rubini et al., 2021), Brazil (Comin et al., 2022), Turkey (Kiliç & Bozkurt, 2020), and European countries (Pejman et al., 2019; Comin et al., 2022; Vanhonacker et al., 2010; Bracke et al., 2005; Schukat et al., 2020). Research indicates that consumers' attitudes regarding animal welfare are shaped by multiple factors, such as their degree of expertise, cultural background, and exposure to media information (Fleming et al., 2020; Comin et al., 2022; Jiang et al., 2023; Kjærnes et al., 2022). Furthermore, research has shown

that consumers' perception of animal welfare affects their purchasing decisions. Many consumers are willing to pay more for products that meet higher animal welfare standards, as evidenced by studies conducted by Carnovale et al. (2021), Trimania et al. (2022), Comin et al. (2022), Rubini et al. (2021), Kiliç & Bozkurt (2020), Vanhonacker et al. (2010), Bracke et al. (2005), and Schukat et al. (2020).

Moreover, studies have emphasized the necessity of training courses to alter farmers' attitudes and behaviors towards animal welfare, hence highlighting the crucial role of farmers in ensuring farm animal welfare standards (Hubbard et al., 2007; Kling-Eveillard et al., 2007). Consumers' consideration of animal welfare while making purchases has been associated with other factors, including price, provenance, and tenderness of the goods (Pejman et al., 2019). The agricultural sector has undergone adjustments in response to the public's concerns regarding farm animal welfare. Various animal welfare initiatives have been implemented to address consumer expectations (Schukat et al., 2020). Past studies have shown that consumers' attitudes toward farm animal welfare and protection have an impact on how farm animals are handled in society (Kupsala et al., 2015) and consumers that lived in rural areas were linked to a lower worry about Farm Animal Welfare and a greater acceptance of modern farming (Clark et al., 2016). Furthermore, beyond animal hygiene and health, public opinion has evolved to recognise the importance of animal biological demands, behavioral features, and well-being in general (Vecchio & Annunziata, 2012).

Consumer confidence in food chain participants will grow if welfare-friendly products are accurately branded with the correct information provided by an internationally recognised, traceable monitoring system and transparent. Consumers and citizens can improve the needs of millions of farm animals by taking responsibility at the point of purchasing welfare-friendly products, and citizens can drive legislation to obtain the minimum standard of welfare conditions that can meet animals' needs (Alonso et al., 2020). Attitudes toward welfare-friendly products and willingness to pay for them differed with socio-demographic characteristics where women, younger participants, and those that spent more time in school had the highest levels of concern and were more willing to pay for welfare-friendly products (Alonso et al., 2020).

Consumer perception of animal welfare is a complex matter that is shaped by several cultural, social, and economic aspects. Consumer's increasing concern for animal welfare has the capacity to influence modifications in agricultural methods and the range of products available. Gaining insight into consumer views and behaviors regarding animal welfare is essential for regulators, producers, and other stakeholders in the food business to ensure their policies are in line with consumer values and preferences.

Farm Animal Welfare (FAW) in Malaysia

The perception of farm animal welfare in Malaysia is influenced by various factors, including legislation, cultural practices, and religious considerations. The enforcement of the Animal Welfare Act in 2015 has had implications on the rise of animal cruelty cases in Malaysia Zolkipli@Zulkifli (2022). Additionally, the public's attitudes towards halal food and its associated animal welfare issues reflect the cultural and religious significance of animal welfare in a predominantly Muslim country like Malaysia (Jalil et al., 2018). Furthermore, industry stakeholders in Malaysia, along with those in China, Vietnam, and Thailand, have been motivated to improve livestock welfare, indicating a growing awareness of animal welfare concerns in the livestock industry (Sinclair et al., 2019; Sinclair & Phillips, 2019). These factors collectively shape the public attitude towards animal welfare in Malaysia, reflecting a complex interplay of cultural, religious, and legislative influences.

The public perspective on strays and companion animal management in Malaysia also sheds light on the societal attitudes towards animal welfare and the treatment of animals in the country (Munir et al., 2023). Understanding these perspectives is crucial for developing effective strategies for animal welfare management and addressing the challenges associated with stray animal populations. Overall, the perception of animal welfare in Malaysia is multifaceted, influenced by a combination of cultural, religious, and legislative factors, and it is essential to consider these aspects when addressing animal welfare issues in the country.

Method

In order to examine how customers perceive farm animal welfare (FAW) in Muar, Johor, a quantitative methodology was utilized to collect and analyse numerical data. A meticulously crafted survey questionnaire was designed, integrating Likert scales and closed-ended questions to quantitatively assess the attitudes, opinions, and preferences of the participants in relation to the welfare of farm animals. The survey encompassed facets such as knowledge of animal welfare concerns, hesitations regarding agricultural methodologies, and the influence of these components on consumer buying choices. A random sampling method was employed to guarantee a representative sample of the population. The data obtained from the survey undergoes statistical analysis, utilizing methods such as descriptive statistics, correlation analysis, and regression analysis. These techniques are used to identify patterns, relationships, and factors that influence consumers' perceptions of farm animal welfare in the specific area of Muar, Johor. The quantitative methodology seeks to offer significant insights into the prevailing attitudes and preferences of consumers in the region, enabling a full understanding of the elements that influence their opinions on farm animal welfare.

Results and Findings

A descriptive analysis was conducted to examine the profiles of the respondents, including their gender, age, marital status, ethnicity, religion, education level, occupation, and monthly income. The questionnaire was administered through face-to-face interviews, and a total of 100 respondents completed the questionnaire and participated in the study.

The results indicated the distribution of gender frequencies among the 100 respondents, with 67 being female and only 33 being male (Table 1). These findings demonstrate that female participation in this study is significantly higher, accounting for 67%, whereas male participation only accounts for 33%. The research discovered a slight overrepresentation of women due to the perception that women are generally more responsible for making household food purchases compared to men (Miranda-de la Lama et al, 2017).

Table 1: Gender

Gender	Frequency	Percentage (%)
Male	33	33
Female	67	67
Total	100	100

Source: Survey, 2023

The survey mostly consists of respondents aged 21-25 years old, accounting for 41 (41%) participants. This is followed by the age group above 46 years old, which includes 31 (31%) respondents. Thus, a small proportion of the participants participated in this study belong to the age range of 15-20 years old, with only one respondent (1%) falling into this category. This is followed by age groups of 31-35, 36-40, and 41-45, each comprising 4 (4%), 4 (4%), and 6 (6%) respondents, respectively. In general, the study found that 41% of the respondents are within the age range of 21-25 years old, making it the largest age group (Table 2).

Table 2 Frequencies of age

Age	Frequency	Percentage (%)
15-20	1	1
21-25	41	41
26-30	13	13
31-35	4	4
36-40	4	4
41-45	6	6
Above 46	31	31
Total	**100**	**100**

Source: Survey, 2023

According to the provided table, there are three categories of marital status: single, married, and widower/widow. The study mostly consists of married respondents, accounting for 54 individuals, or 54% of the total sample. The single group, on the other hand, comprises 44 respondents, or 44% of the sample. The study included a small number of respondents, specifically widowers/widows, who accounted for only 2% of the total participants. This is mostly due to the fact that the majority of individuals participating fall between the age range of 21-25 and are also above the age of 46, which is typically the age at which most people are married.

Table 3 Frequencies of marital

Status	Frequency	Percentage (%)
Single	44	44
Married	54	54
Widower/Widow	2	2
Total	**100**	**100**

Source: Survey, 2023

This study involves two racial groupings, namely the Malay and Chinese populations. The Malay respondents are the majority, accounting for approximately 98 (98%) of the total respondents. The Chinese, as a minority racial group, were included in this survey with a total of 2 responses, accounting for 2% of the participants. The reason for this is that the majority of responders in Muar, Johor are of Malay ethnicity (Table 4).

Table 4 Frequencies of race

Race	Frequency	Percentage (%)
Malay	98	98
Chinese	2	2
Total	**100**	**100**

Source: Survey, 2023

Table 5 displays the frequencies of education levels among the respondents. The majority of participants, comprising 68 individuals (68%), possess a high degree of education, specifically college/university education. Thus, just a small fraction of the respondents possesses a secondary level of education, specifically 32 individuals, accounting for 32% of the total respondents. According to the provided table, there are six categories of occupations: government, private sector, self-employed, unemployed/retired, housewife, and student. The study primarily consists of students, with 31 respondents accounting for 31% of the total.

Table 5 Frequencies of the level of education

Education	Frequency	Percentage (%)
Secondary school	32	32
College/University	68	68
Total	**100**	**100**

Source: Survey, 2023

The study found that 23% of respondents were from the private sector, while 18% were self-employed. The minority group consists of 5 (5%) respondents who are jobless or retired, while 7 (7%) respondents are housewives and government employees, and 16 (16%) respondents fall into other categories. This is mostly

due to the fact that the majority of individuals involved fall between the age range of 21-25 years old, with a significant proportion being students at this stage of their lives.

Table 6 Frequencies of occupation

Occupation	Frequency	Percentage (%)
Government	16	16
Private	23	23
Self-employed	18	18
Unemployed/Retired	5	5
Housewife	7	7
Student	31	31
Total	**100**	**100**

Source: Survey, 2023

The study found that the majority of respondents have an income below RM3,000, accounting for 65% of the total respondents. The second largest group, including 20% of the respondents, reported an income between RM3,001 and RM5,000. Thus, a small proportion of the participants, specifically 2 (2%) individuals, reported having an income exceeding RM10,000 in this survey. Additionally, 13 (13%) respondents reported having an income between RM5,001 and RM10,000. In general, most of the participants in this survey have an income ranging from below RM3,000 to RM5,000, accounting for around 85% of the total respondents (Table 7).

Table 7 Frequencies of monthly income

Income	Frequency	Percentage (%)
< RM3,000	65	65
RM3,001-RM5,000	20	20
RM5,001-RM10,000	13	13
> RM10,000	2	2
Total	**100**	**100**

Source: Survey, 2023

Table 8 presents the level of awareness regarding farm animal welfare. The questionnaire asked respondents, "Are you familiar with Farm Animal Welfare?" It was found that 51 (51%) respondents had no knowledge of farm animal welfare, while 49 (49%) respondents were knowledgeable about it.

Table 8 Knowledge about FAW

Knowledge	Frequency	Percentage (%)
Yes	49	49
No	51	51
Total	**100**	**100**

Source: Survey, 2023

Table 9 displays the animal welfare code of practice, along with the questionnaire question "Are you familiar with the animal welfare code of practice?" The majority of respondents in this study, specifically 86 (86%), were not aware of the animal welfare code of practice. Only a small proportion of the responders, specifically 14 (14%), were knowledgeable of the animal welfare code of practice. This is because the animal welfare code of practice was not been communicated to all residents in Muar, Johor.

Table 9 Animal welfare code of practice

Code of practice	Frequency	Percentage (%)

Yes	14	14
No	86	86
Total	**100**	**100**

Source: Survey, 2023

Table 10 displays the animal welfare complaint system, specifically focusing on the question asked in the questionnaire: "Are you aware of the existence of an animal welfare complaint system?" It is evident from the data that the majority of respondents were unaware of the presence of such a complaint system for animals. The study included 81 respondents, accounting for 81% of the total sample, who reported their welfare status. Only 19% of the respondents were aware of complaint methods for animal welfare.

Table 10 Animal welfare complaint system

Complaint system	Frequency	Percentage (%)
Yes	19	19
No	81	81
Total	**100**	**100**

Source: Survey, 2023

Table 11 presents data on farm animal welfare, specifically addressing the question from the questionnaire: "Where do you obtain information about farm animal welfare?" The majority of respondents (60%) obtained the information from social media, whereas smaller proportions used Google (12%), university sources (5%), and television (4%) in this study. In this study, a small proportion of the respondents indicated that they obtain information through Facebook, with only 2% of the respondents. Similarly, a minority of respondents reported getting information from friends, school, websites, the internet, and the office, with each category having 2% or 3% of the respondents. Therefore, it can be inferred that around 60 customers lack awareness regarding farm animal welfare due to the fact that some of these consumers are between the ages of 41 and above 46 years old.

Table 11 Information about FAW

Information	Frequency	Percentage (%)
Facebook	2	2
Friend	2	2
Google	5	5
Internet	3	3
Office	3	3
School	2	2
Social Media	12	12
Television	4	4
University	5	5
Website	2	2
No Information	60	60
Total	**100**	**100**

Source: Survey, 2023

The reliability analysis is a method to verify the internal consistency of a scale in this study. Besides, Cronbach's alpha coefficient was used to check the consistency as it is the most common indicator. This method was commonly used when using multiple likert questions in the questionnaire that form a scale and to ascertain if the scale used is reliable. The Cronbach's alpha value of each variable was presented in Table 11.

Table 12 Cronbach's alpha value of each variable

Construct	Cronbach's Alpha	N of items
Consumers' Perception	0.654	5

Attitude	0.616	4
Knowledge	0.823	5
Consumers' Perception, Attitude, and Knowledge	0.814	14

Based on the table 12 above, Cronbach's alpha that has obtained for the questionnaire was 0.814 with total of 14 items. Cronbach's alpha should have a minimum level of 0.50 for the scale variable to be measured as being high reliability. Thus, table 1 shows that all the variables are highly reliable and consistent. Knowledge has high reliability which presents 0.823 Cronbach's alpha with 5 items, followed by consumers' perception and attitude which present 0.654 with 5 items and 0.616 with 4 items.

Table 13 Consumers' Perception of Farm Animal Welfare

Statement	Strongly Disagree	Disagree	Slightly Agree	Agree	Strongly Agree
	n (%)	n (%)	n (%)	n (%)	n (%)
Children need to be educated about the welfare of farm animals at school	0	0	2 (2)	33 (33)	65 (65)
New animal welfare laws are needed to prevent the abuse of farm animals	0	0	7 (7)	21 (21)	72 (72)
Breeders need to disclose their management in the handling of farm animals	0	0	1 (1)	26 (26)	73 (73)
The welfare of farm animals should be given priority to get better product quality	0	0	2 (2)	12 (12)	86 (86)
Farm animals can express their natural behavior in terms of pain, emotion, and fear.	0	1 (1)	9 (9)	30 (30)	60 (60)

Source: Survey, 2023

The results of customers' perception of farm animal welfare are presented in Table 13. The data presented in section B, Question 1 reflects the opinions of consumers regarding the necessity of educating children about farm animal care in schools. 65% of the respondents strongly agreed that children should get education in school regarding farm animal care, whereas just 2% mildly agreed with this statement. The respondents were surveyed on the necessity of new animal welfare laws to combat animal abuse. The results indicated that 72% of the respondents strongly agreed with the need for new animal welfare regulations, while 7% marginally agreed with the statement.

Respondents were surveyed regarding whether breeders should reveal their practices in treating farm animals. Of the participants, 73% strongly agreed with the need for breeders to publish their management methods, while just 1% marginally agreed with this statement. Consumers were also queried about whether the well-being of farm animals should be prioritized over improved product quality. 86% of the respondents strongly agreed that prioritizing the wellbeing of farm animals leads to improved product quality, whereas 2% of the respondents marginally agreed with this statement. 60% of respondents strongly concurred with the assertion that farm animals are capable of exhibiting their innate behaviors in relation to pain, emotion, and fear, whereas a mere 1% of respondents expressed disagreement with this statement.

Table 14 Consumers' Attitude of FAW

Statement	Strongly Disagree	Disagree	Slightly Agree	Agree	Strongly Agree

	n (%)	n (%)	n (%)	n (%)	n (%)
Farm animals should be free from thirst, hunger, injury, and disease at all times	0	2 (2)	7 (7)	28 (28)	63 (63)
Farm animals should have space to move freely	0	1 (1)	1 (1)	20 (20)	78 (78)
Farm animals should have good handling during processing and transportation situations	0	0	2 (2)	23 (23)	75 (75)
Farm animals should have the freedom to express their normal behaviour	0	2 (2)	11 (11)	27 (27)	60 (60)
Farm animals should have freedom from fear and stress	1 (1)	0	5 (5)	34 (34)	60 (60)

Source: Survey, 2023

The results of customers' views about FAW are displayed in Table 14. 78% of customers expressed significant agreement with the statement that "farm animals should be provided with ample space for unrestricted movement." An further 20% of customers concurred that ample room is crucial for farm animals to have unrestricted movement. One individual (1%) expressed slight agreement, while another individual (1%) disagreed with the given remark. According to the statement "farm animals should be handled well during processing and transportation situations," 75% of consumers strongly agreed, 23% agreed, and 2% slightly agreed. According to the statement "farm animals should be free from thirst, hunger, injury, and disease at all times", 63% of customers strongly agreed, 28% agreed, 7% slightly agreed, and 2% disagreed.

Consumers were surveyed regarding whether farm animals should be granted freedom from fear and stress. It was discovered that 60 (60%) participants expressed strong agreement with the statement, whereas 34 (34%) participants expressed agreement. Out of the total responders, only 5 (5%) expressed a modest agreement with the statement, while 1 (1%) firmly opposed that farm animals should have freedom. Hence, a majority of customers, specifically 60% of them, strongly supported the notion that farm animals should be allowed to exhibit their natural behavior. Additionally, 27% agreed, 11% slightly agreed, and a little 2% disagreed with this statement.

Table 15 Consumers' knowledge of FAW

Statement	Strongly Disagree	Disagree	Slightly Agree	Agree	Strongly Agree
	n %	n %	n %	n %	n %
I know farm animals are fed enough nutritious food	0	3 (3)	5 (5)	38 (38)	54 (54)
I know the farm animals are housed in a clean, comfortable, and large space	0	4 (4)	10 (10)	37 (37)	49 (49)
I know that farm animals are given priority to do activities outside the livestock enclosure area	1 (1)	7 (7)	19 (19)	35 (35)	38 (38)
I know farm animals are free from fear and stress	0	0	20 (20)	33 (33)	47 (47)
I know farm animals are given health checks every time to avoid any diseases.	0	3 (3)	9 (9)	32 (32)	56 (56)

The findings of consumers' knowledge of FAW are displayed in Table 15. The majority of consumers (56%) strongly agreed that farm animals get regular health checks to prevent any infections. Additionally, 32% of respondents agreed with this statement, while 9% marginally agreed. Only 3% of the respondents expressed disagreement on the provision of health exams to farm animals. According to the statement "I know farm animals were fed enough nutritious food", 54% of the respondents strongly agreed that farmers provided sufficient nutritious food to their livestock or poultry. Additionally, 38% of the respondents agreed, 5% slightly agreed, and only 3% disagreed with the statement.

In this study, it was discovered that 49% of the customers strongly agreed with the statement "I am aware that farm animals are housed in a clean, comfortable, and spacious environment." 37 (37%) participants agreed and 10 (10%) participants slightly agreed with the proposition. Thus, a mere 4 (4%) of the respondents expressed disagreement with the assertion. Therefore, it demonstrates that the majority of consumers are aware that farm animals have received adequate care. In addition, 47% of consumers strongly believed that farm animals were free from anxiety and stress, while 33% agreed and 22% marginally agreed. Therefore, it can be inferred that customers are aware that farm animals experience less stress due to the diligent care provided by farmers to ensure the well-being of their livestock or poultry. In addition, 38% of the respondents strongly agreed that allowing farm animals to engage in activities outside the livestock enclosure area is crucial for their welfare. 35 respondents, or 35% of the total, agreed with the statement. Additionally, 19 respondents, or 19% of the total, slightly agreed with the statement. However, one percent of the respondents strongly disagreed with the statement, while seven percent of the respondents disagreed. In general, the majority of customers are aware that the cattle or poultry activities occurring outside their enclosure constitute a component of their well-being.

Welfare-friendly Product

Table 16 Willingness to pay more for welfare-friendly product

Willingness to pay	N	(%)
Yes	96	96
No	4	4
Total	**100**	**100**

The results of individuals' willingness to pay a higher price for products that promote animal welfare are displayed in Table 16. The majority of customers, accounting for 96% of respondents, expressed a willingness to pay a higher price for food that is produced in a manner that promotes animal welfare. Only a small minority of 4% of respondents said that they were not prepared to pay more for such products.

Table 17 Percentage (%) of willingness to pay for the welfare-friendly product

Percentage of WTP	n	(%)
1% - 3%	31	31
4% - 5%	30	30
6% - 10%	24	24
> 10%	15	15
Total	**100**	**100**

According to the above Table 17, consumers were surveyed on their readiness to pay a certain percentage for a product that is welfare-friendly. 31% of the respondents expressed a willingness to spend between 1% and 3% more for food that adheres to higher ethical standards, while 30% of the respondents were willing to pay between 4% and 5% more for a product that promotes animal welfare. Only a small fraction of consumers, with 15 respondents (15%), are willing to pay more than 10%. The next highest percentage, with 24

respondents (24%), falls between the range of 6% to 10%. This indicates that the majority of consumers were unwilling to allocate additional funds towards food products that adhere to elevated ethical standards.

Multiple Regression Analysis
Multiple regression shows the interaction between independent and dependent variables. Multiple regression analysis is the method used to analyze the statistical significance between the independent and dependent variables. If the significant values are below 0.05, it can conclude that there is a significant relationship between the independent and dependent variables. In this study, the independent variables are attitude, knowledge, welfare-friendly product, and socio-demographics while the dependent variable is consumers' perception.

Table 18 Model Summary

Model	R	R Square	Adjusted R Square	Std. error of the Estimate
1	.640	.409	.384	.30181

Table 18 compares the R and R2 value where the R-value indicates the strength of the relationship between independent variables (Attitude, Knowledge, Welfare-friendly Product, and Socio-demographic) with the dependent variable (Consumers' Perception). In this study, the value of R=0.640 indicates a strong relationship. Moreover, the R2 is 0.409 means that the independent variables fitted 40.9% of the variance (R square) towards consumers' perception of farm animal welfare respectively.

Table 19 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.991	4	1.498	16.442	.000
	Residual	8.654	95	.091		
	Total	14.644	99			

The model used in this research was significantly based on the ANOVA table as the p=0.000 less than 0.05 and the result can be simplified as follow:

F=16.442, p=0.000

We can conclude that the groups of variables (Attitude, Knowledge, Welfare-friendly Product and socio-demographic) can be used to reliably predict consumers' perception of farm animal welfare.

Table 20 Coefficients

Model	Unstandardized Coefficient		Standardized Coefficient	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.235	.392		5.700	.000
Attitude	.076	.014	.479	5.584	.000
Knowledge	.028	.010	.240	2.677	.009
Welfare-friendly Product	-.003	.012	-.021	-.267	.790
Socio-demographic	.044	.031	.118	1.435	.155

Table 20 illustrated the significant value for variables attitude, knowledge, welfare-friendly product and socio-demographic. Attitude and knowledge were found to have 0.000 and 0.009 respectively less than 0.05 to be accepted, welfare-friendly product and socio-demographic have more than 0.05 which were 0.790 and 0.115 where it cannot be accepted. Therefore, attitude and knowledge have a significant relationship with consumers' perception of FAW. The unstandardized B coefficients are the positive value that points out positive relationships as the attitude (0.076), knowledge (0.028), welfare-friendly product (-0.003) and

socio-demographic (0.044) increase, the consumers' perceptions also will increase based on the general statistical equation;

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

Where;

Y – Consumers' perception

X_0 – Constant

X_1 – Attitude

X_2 – Knowledge

X_3 – Welfare-friendly product

X_4 – Socio-demographic

Thus, the equation for this study is:

$$Y = 2.235 + 0.076X_1 + 0.028X_2 - 0.003X_3 + 0.044X_4$$

As a results, the coefficients for attitude and knowledge were statistically significant because the p-value was smaller than 0.05. Besides, the coefficients for WFP and socio-demographic were not statistically significant because the p-value was larger than 0.05.

Conclusion
Based on the survey results, it can be inferred that consumers in Muar, Johor have insufficient awareness of FAW and lack knowledge about its nature. The results indicated a greater participation of women and individuals with advanced education. In addition, most Muar consumers believe that prioritizing the wellbeing of farm animals is crucial for enhancing the quality of the products. The majority of consumers in Muar expressed their willingness to pay a higher price for WFP, primarily due to the advantages associated with product quality. This study identifies four factors that impact consumers' perception of FAW: attitude, knowledge, welfare-friendly product, and socio-demographics. It can be concluded that attitude and knowledge have a significant and influential relationship with consumers' perception of FAW. According to the findings of this study, there are several recommendations that can be proposed for further research. A primary suggestion is that future research should broaden the scope of the current study issue. Due to the scarcity of research on this particular topic, it is imperative to do further investigation, particularly among Malaysians, as no local study has been carried out on these matters thus far. A second suggestion is to contemplate carrying out this study across all states in Malaysia, with a more extensive sample size, in order to effectively demonstrate the significance of FAW to all consumers.

References:

1. Alonso, M., González-Montaña, J., & Pérez, J. (2020). Consumers' concerns and perceptions of farm animal welfare. Animals, 10(3), 385. https://doi.org/10.3390/ani10030385
2. Boaitey, A., Eden, M., & Jette-Nantel, S. (2020). Too close to eat? Solidarity with animals, animal welfare and meat consumption.. https://doi.org/10.1101/2020.01.30.926592
3. Bracke, M., Greef, K., & Hopster, H. (2005). Qualitative stakeholder analysis for the development of sustainable monitoring systems for farm animal welfare. Journal of Agricultural and Environmental Ethics, 18(1), 27-56. https://doi.org/10.1007/s10806-004-3085-2
4. Carnovale, F., Xiao, J., Arney, D., Descovich, K., Guo, W., Shi, B., … & Phillips, C. (2021). Chinese public attitudes towards, and knowledge of, animal welfare. Animals, 11(3), 855. https://doi.org/10.3390/ani11030855

5.   Comin, V., Karsburg, H., Souza, B., Almeida, H., Neira, L., & Rossi, G. (2022). Perception of animal welfare and its certification system by Brazilian consumers and dairy farmers. Journal of Dairy Research, 89(1), 53-56. https://doi.org/10.1017/s0022029922000024

6.   Cornish, A., Jamieson, J., Raubenheimer, D., & McGreevy, P. (2019). Applying the behavioural change wheel to encourage higher welfare food choices. Animals, 9(8), 524. https://doi.org/10.3390/ani9080524

7.   Fleming, P., Wickham, S., Barnes, A., Miller, D., & Collins, T. (2020). Varying opinions about animal welfare in the Australian live export industry: a survey. Animals, 10(10), 1864. https://doi.org/10.3390/ani10101864

8.   Hubbard, C., Bourlakis, M., & Garrod, G. (2007). Pig in the middle: farmers and the delivery of farm animal welfare standards. British Food Journal, 109(11), 919-930. https://doi.org/10.1108/00070700710835723

9.   Hughes, D. (1995). Animal welfare. British Food Journal, 97(10), 3-7. https://doi.org/10.1108/00070709510104529

10. Jalil, N., Tawde, A., Zito, S., Sinclair, M., Fryer, C., Zulkifli, I & Phillips, C. (2018). Attitudes of the public towards halal food and associated animal welfare issues in two countries with predominantly muslim and non-muslim populations. Plos One, 13(10), e0204094. https://doi.org/10.1371/journal.pone.0204094

11. Jiang, B., Tang, W., Cui, L., & Wei, Y. (2023). Factors influencing chinese public attitudes toward farm animal welfare. Frontiers in Psychology, 14. https://doi.org/10.3389/fpsyg.2023.1049530

12. Kiliç, İ. and Bozkurt, Z. (2020). Assessment of Turkish consumer attitudes using an animal welfare attitude scale (awas). Veterinaria México Oa, 7(1). https://doi.org/10.22201/fmvz.24486760e.2020.1.663

13. Kjærnes, U., Borgen, S., & Thorjussen, C. (2022). Behind a fluttering veil of trust: the dynamics of public concerns over farm animal welfare in Norway. Sociologia Ruralis, 62(4), 763-781. https://doi.org/10.1111/soru.12405

14. Kling-Eveillard, F., Dockès, A., & Souquet, C. (2007). Attitudes of French pig farmers towards animal welfare. British Food Journal, 109(11), 859-869. https://doi.org/10.1108/00070700710835679

15. Munir, S., Mokhtar, M., & Arham, A. (2023). Public perspectives on strays and companion animal management in Malaysia.. https://doi.org/10.21203/rs.3.rs-2707849/v1

16. Pejman, N., Kallas, Z., Dalmau, A., & Velarde, A. (2019). Should animal welfare regulations be more restrictive? a case study in eight European union countries. Animals, 9(4), 195. https://doi.org/10.3390/ani9040195

17. Rubini, G., Nannoni, E., Pasquale, J., Martelli, G., & Sardi, L. (2021). Update on animal welfare perception by italian consumers: a descriptive survey. Italian Journal of Food Safety, 10(3). https://doi.org/10.4081/ijfs.2021.9588

18. Schukat, S., Plettenberg, L., & Heise, H. (2020). Animal welfare programs in Germany—an empirical study on the attitudes of pig farmers. Agriculture, 10(12), 609. https://doi.org/10.3390/agriculture10120609

19. Sinclair, M. and Phillips, C. (2019). Asian livestock industry leaders' perceptions of the importance of, and solutions for, animal welfare issues. Animals, 9(6), 319. https://doi.org/10.3390/ani9060319

20. Sinclair, M., Zulkifli, I., Nhiem, D., Katawatin, S., Todd, B., Burn, G., … & Phillips, C. (2019). Motivations for industry stakeholders in china, vietnam, thailand and malaysia to improve livestock welfare. Animals, 9(7), 416. https://doi.org/10.3390/ani9070416

21. Tomašević, I., Bahelka, I., Čítek, J., Čandek-Potokar, M., Đjekić, I., Getya, A., … & Font-i-Furnols, M. (2020). Attitudes and beliefs of eastern european consumers towards animal welfare. Animals, 10(7), 1220. https://doi.org/10.3390/ani10071220

22. Trimania, I., Kusnadi, N., & Putri, T. (2022). Consumer willingness to pay for premium price of eggs animal welfare in Mojokerto, east java. IOP Conference Series Earth and Environmental Science, 1107(1), 012080. https://doi.org/10.1088/1755-1315/1107/1/012080

23. Vanhonacker, F., Verbeke, W., Poucke, E., Pieniak, Z., Nijs, G., & Tuyttens, F. (2010). The concept of farm animal welfare: citizen perceptions and stakeholder opinion in Flanders, Belgium. Journal of Agricultural and Environmental Ethics, 25(1), 79-101. https://doi.org/10.1007/s10806-010-9299-6

24. You, X., Yi-bo, L., Zhang, M., Huo-qi, Y., & Zhao, R. (2014). A survey of chinese citizens' perceptions on farm animal welfare. Plos One, 9(10), e109177. https://doi.org/10.1371/journal.pone.0109177

25. Zolkipli@Zulkifli, A. (2022). The influence of animal welfare act 2015 enforcement on the rise of animal cruelty cases in Malaysia. Malaysian Journal of Social Sciences and Humanities (Mjssh), 7(12), e001955. https://doi.org/10.47405/mjssh.v7i12.1955