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Consumer Attitudes, Norms and Willingness to Pay: Exploring the Market Dynamics for Free-Range Eggs in East Java

Ariani Trisna Murti[1], Budi Hartono[1]*, Hari Dwi Utami[1], Tri Wahyu Nugroho[2], Tina Sri Purwanti[1], Jaisy Aghniarahim Putritamara[1]

[1]Department of Socio-economic, Faculty of Animal Science, Brawijaya University, Malang, Indonesia; [2]Department of Socio-economic, Faculty of Agriculture, Brawijaya University, Malang, Indonesia.

Abstract | This study examines the influence of various factors on consumer behavior, focusing on demographics, attitudes, subjective norms, perceived behavioral control, and willingness to pay (WTP). The purchase decision is analyzed through product stability, habitual buying, recommendations, and repurchase intention. Utilizing cross-sectional data from 510 respondents who are purchasing free-range eggs, structural equation modeling is employed to address the research questions. The results reveal that consumer demographics, product attitude, subjective norms, and perceived behavioral control positively and significantly impact willingness to pay (WTP), which is a mediating variable. Additionally, WTP, and these factors, significantly influence key outcomes like product stability, habitual buying, recommendations, and repurchase intention. Notably, the study underscores the mediating role of WTP, highlighting its importance in bridging the effects of consumer characteristics on purchase intentions. Based on these findings, the study suggests several practical implications and business policy recommendations . Programs such as loyalty cards or discounts can encourage repeat purchases, while educating consumers about the benefits of free-range eggs may enhance their willingness to pay and positively influence their attitudes toward the product.

Keywords | Free-range eggs, Consumer perception, Purchase intention, Structural equation modeling, Purchasing decision, Willingness to pay

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***Correspondence** | Budi Hartono, Department of Socio-economic, Faculty of Animal Science, Brawijaya University, Malang, Indonesia; **Email:** budihartono_ub@ub.ac.id
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INTRODUCTION

Food insecurity, defined as the inability to access adequate nutritious sustenance due to resource limitations, continues to pose significant global challenges (Bahn *et al.*, 2021; UNICEF, 2021). This phenomenon, and various forms of malnutrition, represents a substantial threat to human health and well-being (Hwalla *et al.*, 2016). Recognizing of these issues, the United Nations has incorporated them into its Sustainable Development Goals (SDGs), specifically SDGs 1, 2, and 3, which aim to eradicate poverty, eliminate hunger, and promote good health by 2030 (Bahn *et al.*,

2021). These targets underscore the relationship between food security, nutrition, and overall societal development. However, achieving these objectives has proven particularly challenging for developing countries such as Indonesia, where progress remains notably slow (Babu *et al*., 2014; WHO, 2022). This disparity highlights the need for targeted interventions and comprehensive strategies to address the multifaceted nature of food insecurity and its associated health implications in resource-constrained settings. In this context, eggs emerge as a potential solution, given their status as a globally significant and widely consumed staple food. Lesnierowski and Stangierski (2018) highlight the egg's importance, noting its high protein content. Moreover, eggs possess notable antioxidant properties, containing a spectrum of beneficial compounds, including carotenoids, vitamins E and A, and essential minerals such as selenium and iodine (Nimalaratne and Wu, 2015). These nutritional attributes position eggs as a valuable resource in addressing malnutrition and food insecurity, particularly in developing regions where diverse nutrient sources may be scarce.

Concurrently, a growing global awareness of health-conscious and environmentally friendly food products, including free-range eggs. This trend is particularly evident among Taiwanese consumers, reflecting a broader international shift in consumer preferences. Several interrelated factors are significantly studying the evolving of global egg market. Cao *et al*. (2021) and Rondoni *et al*. (2020) highlight the increasing consumer awareness and concerns regarding animal welfare as a primary driver pushing the industry towards more hen-friendly production methods. Additionally, according to Legendre and Coderre (2018) the growing consumer demand for transparency in production processes reflects a desire for greater understanding and control over food sources. Furthermore, Żakowska-Biemans and Tekień (2017) note a marked increase in consumer preference for free-range eggs, indicating a substantial shift in market dynamics. While the motivations for purchasing free-range eggs are multifaceted, Situmorang *et al*. (2022) identify four key aspects driving consumer behavior in this domain: health consciousness, food safety concerns, animal welfare considerations, and price sensitivity. This evolving consumer landscape underscores the complex interplay between nutritional value, ethical considerations, and economic factors in food choice decisions.

Consumer preferences for egg types are undergoing shifts in various countries. In Australia, for instance, the egg industry has witnessed a substantial increase in free-range egg sales, rising from 37.3% to 59.0% of supermarket grocery chains' market sales value. Concurrently, there has been a notable decline in the sales value of caged hen eggs, dropping from 49.5% to 36.0% (Campbell *et al*., 2020; Egg, 2021). This trend reflects a growing consumer preference for more ethically produced eggs in developed markets. In Indonesia, a different dynamic is observed. According to data from the Ministry of Agriculture (2023), the production trend of free-range eggs has shown a consistent increase from 2019 to 2023, with an average growth rate of 41.14%. However, the consumption of free-range eggs has been fluctuating, with a decrease of 0.52% recorded in 2023. This discrepancy underscores the need to investigate strategies for stimulating consumer demand in Indonesia, and such research should focus on examining consumer attitudes and perceptions towards free-range egg products, with the ultimate goal of enhancing interest and stimulating purchase behavior among consumers.

However, international studies prioritize production aspects and animal welfare in the egg industry. Studies have explored the relationship between animal welfare and egg production, which was conducted in China and Chile. The researcher found that welfare indicators and income (per 10,000 hens) were generally better on free-range farms in China compared to cage farms. Improved parasite control and lower stocking densities could enhance hen welfare and profitability. Moreover, strong preference for products from animal production systems that prioritize animal welfare, which is important for the sustainability of egg production in Chile (He *et al*., 2022; Morales *et al*., 2020).

Additionally, research has examined the connection between animal welfare and premium egg pricing (Vukina and Nestic, 2020). The findings indicate that the premium for pure cage-free eggs is 1.5 cents per egg or about 7.8%. This is lower than in similar studies, likely due to limited awareness of animal welfare in Croatia and the use of enriched colony cage eggs as the baseline, which already meet higher welfare standards than conventional cage eggs.

Furthermore, multiple studies have investigated egg production aspects and livestock welfare (Bennett *et al*. (2016); (Bonnefous *et al*., 2022; Campbell *et al*., 2020; Dikmen *et al*., 2016; Lesnierowski and Stangierski, 2018; Yang *et al*., 2024). The result indicated that free-range use benefits bone health in pullets and hens, helps reduce keel deviations, and supports natural behaviors. It also improves hen's production, promoting overall well-being. However, there is a potential risk of infection from bacteria, viruses, and parasites. Preventive strategies include implementing biosecurity measures and boosting animals' defenses through proper nutrition.

Rahmani *et al*. (2019) evaluated Spanish consumers' preferences and willingness to pay for fresh hens' eggs from various production systems (caged, barn, free-range, or organic). Moreover, another study focuses on the factors free-range egg consumers believe are important for hen welfare. The result found that consumers chose free-range eggs, believing that happier and healthier hens produce bet-

ter-tasting eggs (Pettersson *et al*., 2016). In Kenya, research has focused on consumer willingness to pay for improved chicken welfare (Otieno and Ogutu, 2020). The researcher stated that consumer preferences revealed strong support for ethical chicken production practices, with consumers willing to pay significant premiums for various welfare measures: 30% more for certified transport, 72% extra for welfare-labeled products, 135% more for humane slaughter methods, and a substantial 236% premium for hormone-free chicken.

Several previous studies have extensively discussed the production of commercial and native chicken and their relation to animal welfare. However, despite the abundance of international research, studies focusing on consumer perception, consumer behavior, subjective norms, and willingness to pay for free-range eggs in Indonesia remain scarce. In this study, the willingness-to-pay (WTP) estimates indicate the price premium or the maximum amount that existing or prospective consumers are prepared to pay for free-range eggs. Insight into consumers' WTP can enable policymakers and various stakeholders to develop and implement more socially acceptable policy measures that support sustainable food production. This statement is supported by (Li and Kallas, 2021), who stated that willingness to pay is a useful way to understand consumers' views and preferences for sustainable features in food products. On the other hand, subjective norm-focused expectations pertain to an individual's perceptions of how they should regard significant others and their motivation to conform to these perceived expectations. Here, family, friends, and peers serve as influential relationships that shape an individual's behavior. Research further suggests that subjective norms arise from beliefs about the importance of key referents and the drive to align with their expectations. These relationships have been substantiated by various studies in consumer behavior and social psychology (Al-Swidi *et al*., 2014; Ryan, 1982; Sheppard *et al*., 1988).

Moreover, consumer behaviors involve examining how individuals select, use, and dispose of products, services, ideas, or experiences to fulfill their desires and needs (Keller, 2009). For instance, this study could explore consumers' motivations and obstacles to buy free-range eggs, the influence of labeling and certification on purchasing decisions, and the effect of ethical or environmental considerations on consumer preferences.

In line with the statement, this investigation seeks to address this gap by exploring the influence of consumer perception, including demographic factors, attitudes, subjective norms, and perceived behavioral control, on consumers' purchasing behavior regarding free-range chicken eggs in East Java. The study aims to provide novel and comprehensive insights into how these various antecedents affect the purchasing behavior of free-range chicken eggs, thereby contributing valuable information to producers in this sector. Specifically, this research examines the impact of demographic factors, attitudes, subjective norms, and perceived behavioral control on consumers' willingness to pay, and purchasing decisions. The researchers hypothesize that these factors, along with consumers' willingness to pay, will show significant positive effects on buying decisions for free-range eggs. This targeted focus on East Java's market will not only contribute to academic literature but also provide valuable practical insights for local egg producers seeking to better understand their consumers' behavior.

MATERIALS AND METHODS

Research Location, Respondent and Data Collection

A purposive sampling method was employed to select locations for data collection (Jumani and Sukhabot, 2021), targeting consumers from five cities and regencies in East Java including Surabaya, Malang, Batu, Blitar, and Kediri. These areas were chosen as they represent the largest regions within the province. Moreover, East Java is the third-highest- ranked region in Indonesia in terms of egg production and consumption. Specifically, Surabaya, Malang, Batu, Blitar, and Kediri are the areas with the highest free-range egg production in East Java, with annual outputs of 7,106.99 kg, 1,456,662.73 kg, 20,418.00 kg, 1,573,290.9 kg, and 784,806.96 kg, respectively, in 2022 (BPS, 2023).

This research utilized a non-probability sampling method, specifically convenience sampling, also known as accidental sampling. In this approach, the researcher selects samples based on their accessibility and availability. Convenience sampling was chosen to streamline the research process, considering the wide and diverse population of free-range egg consumers across different age groups and genders. The choice of this method is based on the ease of accessing participants and the simplicity of data collection. A total of 510 respondents participated in this study. While convenience sampling offers practical advantages, it has limitations, such as potential bias and limited generalizability. To mitigate these concerns, purposive sampling was used to select locations, and convenience sampling to gather data from consumers within those chosen areas. This approach ensures more focused data collection while maintaining efficiency. The final step involved selecting specific respondents, namely consumers of free-range eggs.

The research design incorporated both primary and secondary data sources. Primary data were gathered from March to August 2024 by face-to-face interviews with respondents, employing a questionnaire as the data collection instruments to ensure uniformity and comprehensiveness. The survey questionnaire encompasses various aspects, in-

cluding consumer demographics, consumers' attitudes, subjective norms, perceived behavioral control, willingness to pay, product stability, habitual buying, people recommendation, and repurchase intention. Before distributing the questionnaires, this study tested their validity and reliability to ensure they adequately represented the model were using. Additionally, before the enumerators conducted interviews with the respondents, each enumerator performed a trial interview to confirm their understanding, ensure clarity, and anticipate any potential issues. Moreover, Secondary data were obtained from literature, including journals, documents, and books pertaining to consumer attitudes and willingness to pay for free-range eggs.

Data Analysis

Descriptive analysis: This study employed descriptive analysis, a methodological approach designed to ascertain the value of independent variables, whether singular or multiple, without establishing comparisons, correlations, or inter-variable associations. The descriptive analytical framework primarily utilized measures such as mean values and frequency distributions expressed as percentages. These mean values are subsequently categorized into interval scales, as presented in Table 1.

Table 1: Categories of respondent answer scores.

No	Answer Score Range	Category
1	1.00 - 1.80	Very Low
2	1.81 - 2.60	Low
3	2.61 - 3.40	Moderate
4	3.41 - 4.20	High
5	4.21 - 5.00	Very High

Statistical data analysis: To assess the influence of demographic factors, attitudes, subjective norms, and perceived behavioral control on consumers' purchasing behaviors for free-range eggs, structural equation modeling was conducted using SmartPLS 4.0. The analysis aim is to determine which constructs have a significant impact on consumers' purchasing behavior concerning free-range eggs. This analytical framework allows for a comprehensive examination of the interrelationships among the study's key constructs. PLS-SEM is particularly appropriate for this research, given its ability to handle complex models with multiple latent variables and its robustness in exploratory research contexts.

This study utilized Partial Least Square (PLS) analysis. PLS is effective for measuring latent variables, which cannot be directly observed, through their associated indicators (manifest variables) while accounting for measurement error. This method enables a more detailed and comprehensive analysis of the indicators associated with latent variables, identifying the strength of their relationships, from the most to the least influential, while considering the level of error involved. According Hair *et al*. (2017) PLS-SEM offers advantages for handling complex models, smaller sample sizes, non-normal data distributions and is predictive or exploratory research in nature. This method has been extensively used in social science research to illustrate relationships among multiple variables (Purwanti *et al*., 2023; Sohail, 2023; Wang *et al*., 2022). Although PLS-SEM has gained increasing popularity in the research literature, certain academics criticize the method for its perceived lack of rigor and question its appropriateness for analyzing relationships between latent variables (Hair *et al*., 2011).

Research focus and operational definition of variables: The variables employed in this study comprise consumer demographics, attitudes, subjective norms, perceived behavioral control, willingness to pay (WTP), purchase intention, and purchase decision. Consumer demographics are subdivided into several aspects: gender, age, income, educational level, and ethnicity. Considering the importance of understanding how socio-demographic factors influence individual decision-making, this study assesses the role of these characteristics in determining consumer behavior regarding the purchase of free-range eggs. Evolutionary psychology suggests that females and males differ in their decision-making processes due to the different ways they approach social interactions (Saad and Gill, 2000). Additionally, age has become an increasingly important socio-demographic characteristic to consider as the buying power of millennials grows and the senior market expands (Chi, 2011).

Furthermore, the attitude variable consisted of cognitive, affective, and conative components. Subjective norms are divided into two aspects: normative beliefs and motivation to comply. Moreover, the perceived behavioral control variable was divided into two parts: control beliefs and power of factors. Consumers' willingness to pay (WTP) was also measured as a research variable. Willingness to pay (WTP) acted as a mediating variable, moderating the effect of demographic factors, attitudes, subjective norms, and perceived behavioral control on consumers' purchasing behavior. Also, the purchase decision was identified through several indicators, such as product stability, people recommendations, repurchase intention, habitual buying. Table 2 presents detailed descriptions of the indicators for each latent variable, which are evaluated using a Likert scale from 1 to 5.

RESULTS AND DISCUSSION

Measurement Model Evaluation

Composite validity test: The measurement scales employed in this study were adapted from established instruments in the relevant literature. These scales underwent

Table 2: Description indicator of each construct in structural equation modeling (SEM).

Construct	Indicator	Measure
Consumer's Demographic (X1)	Gender is an aspect I consider when purchasing and consuming free-range chicken eggs (X1.1)	Likert Scale 1-5
	Age is a factor I consider when purchasing and consuming free-range eggs (X1.2)	
	Income is a factor I consider when purchasing and consuming free-range chicken eggs (X1.3)	
	The level of education I have influenced my decision to purchase and consume free-range chicken eggs (X1.4).	
	Ethnicity is an aspect I consider when purchasing and consuming free-range chicken eggs (X1.5).	
Consumers' attitude (X2)	I am confident in the quality of free-range chicken eggs (X2.1)	
	I believe that the quality of free-range chicken eggs is different from other types of eggs (X2.2)	
	I feel proud to purchase and consume free-range chicken eggs (X2.3)	
	I experience benefits from consuming free-range chicken eggs (X2.4)	
	I will continue to purchase and consume free-range chicken eggs even when other types of eggs are available (X2.5)	
	I continue to purchase and consume free-range chicken eggs because of their high quality (X2.6)	
	I choose free-range chicken eggs because they are affordable (X2.7)	
	I choose free-range chicken eggs because they come in a variety of brands and packaging options (X2.8)	
Subjective Norm (X3)	My family considers free-range chicken eggs to be a high-quality product when I purchase and consume them (X3.1)	
	Friends and close relatives influence me to view free-range chicken eggs as a quality product when I purchase and consume them (X3.2)	
	Business colleagues agree with my decision to purchase and consume free-range chicken eggs (X3.3)	
	Influential people around me believe that I should purchase free-range chicken eggs (X3.4)	
	My family, friends, and relatives purchase and consume free-range chicken eggs (X3.5)	
Perceived Behavioral Control (X4)	I do not rely on anyone when purchasing free-range chicken eggs at any given time in the future (X4.1)	
	I do not limit my purchase of free-range chicken eggs to at least once a season (X4.2)	
	I will buy free-range chicken eggs whenever I wish (X4.3)	
	I do not face any obstacles or barriers when purchasing free-range chicken eggs (X4.4)	
Willingness to Pay (Y)	Free-range chicken eggs are suitable to be used as a daily food ingredient (Y1.2)	
	Free-range chicken eggs are products that can compete in terms of price and quality (Y1.3)	
	I will meet my needs by purchasing free-range chicken eggs (Y1.4)	
	I always purchase free-range chicken eggs using an online shopping application (Y1.5)	
	I always purchase free-range chicken eggs at modern markets (Y1.6)	
	I always purchase free-range chicken eggs at traditional markets (Y1.7)	
	I feel that free-range chicken eggs sold at prices of Rp. 2,800 - Rp. 3,000 per egg are reasonable for the quality and benefits they provide (Y1.8)	
	I purchase free-range chicken eggs in quantities of more than 1 kilogram per month (Y1.10).	
Product Stability (Z1)	I purchase free-range chicken eggs because they align with the price and quality I expect (Z1.1)	
	I like free-range chicken eggs because they meet my desires and needs (Z1.2)	
	I purchased free-range chicken eggs because they offer the best quality and health benefits compared to other types of eggs (Z1.3)	
	I am confident that purchasing free-range chicken eggs is the right decision (Z1.4)	
	I evaluate other types of eggs besides free-range chicken eggs (Z1.5)	
Habitual Buying (Z2)	I always seek information before deciding to purchase eggs (Z2.1)	
	I purchase free-range chicken eggs after obtaining information about the product that matches its description (Z2.2)	
	I am interested in buying free-range chicken eggs after learning that many other consumers purchase and consume them (Z2.3)	
	Free-range chicken eggs are my first choice in meeting my needs (Z2.4)	

	I decide to purchase free-range chicken eggs after evaluating several alternative options (Z2.5)
People Recommendation (Z3)	I purchase free-range chicken eggs based on recommendations and suggestions from others (Z3.1)
	I recommend free-range chicken eggs to my family, relatives, and others (Z3.2)
	I purchase free-range chicken eggs based on the experiences of others (Z3.3)
	I buy free-range chicken eggs because I am following the current trend of healthy living (Z3.4)
Repurchase Intention (Z4)	My demand for free-range chicken eggs is high (Z4.1)
	I find that free-range chicken eggs are easily available and sold in the market (Z4.2)
	I feel that free-range chicken eggs are sold in various packaging options, making them easy to carry (Z4.3)
	I am satisfied after purchasing and consuming free-range chicken eggs (Z4.3)
	I am always loyal and continue to purchase free-range chicken eggs (Z4.4)
	I purchase free-range chicken eggs in quantities that are relatively consistent with my previous purchases (Y4.5)

modifications to align with the study's objectives, pilot results, and expert recommendations, ensuring content validity. The indicators for a latent variable are considered acceptable if their factor loadings exceed 0.5. The reliability of individual items was assessed, meeting the > 0.5 threshold as recommended by Hair Jr *et al.* (2021) and Wong (2013). Ideally, a factor loading > 0.7 indicates that an indicator is valid in measuring its construct. However, in empirical research, factor loadings > 0.5 are still considered acceptable. Recent studies in the field of social sciences continue to use indicators with factor loadings > 0.5 (Amudjie *et al.*, 2023; Atemoagbo, 2024; Minh and Tien, 2024; Purwanti *et al.*, 2023). The findings, based on Figure 1, demonstrate that the factor loadings for all constructs exceed the threshold of 0.5. This suggests a statistically significant relationship between individual items and their respective constructs. Such results indicate that each item serves as a reliable indicator of its associated construct, providing strong evidence for the measurement model's validity.

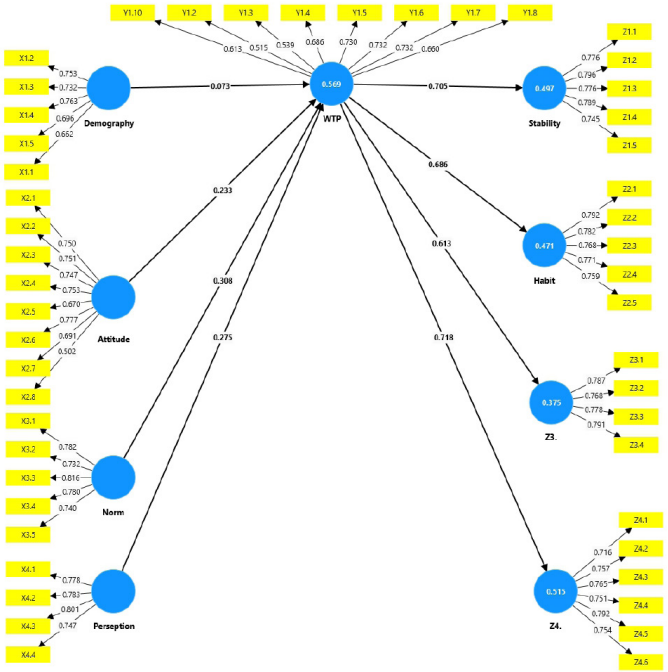

Figure 1: The result of structural equation model.

Discriminant validity and convergent validity: Table 3 explains the result of Cronbach's Alpha coefficients range from 0.773 to 0.856, with the values surpassing the standard threshold of 0.7. Importantly, Composite Reliability (CR) values exceed 0.7 for all constructs, signifying strong internal consistency (Henseler *et al.*, 2014). Although Cronbach's Alpha values below 0.7 may be deemed acceptable in some contexts (Triwidyati and Tentama, 2020), the CR values further support convergent validity. CR assesses the overall reliability of a set of items within a construct or latent variable.

Table 3: The result of discriminant validity and convergent validity test.

Variables	Cronbach's alpha	Composite reliability	Average variance extracted
Demography (X1)	0,773	0,779	0,522
Attitude (X2)	0,856	0,863	0,504
Subjective Norm (X3)	0,829	0,831	0,594
Perceived behavioral control (X4)	0,782	0,783	0,604
WTP (Y)	0,807	0,819	0,531
Product Stability (Z1)	0,835	0,835	0,603
Habitual buying (Z2)	0,833	0,834	0,600
People Recommendation (Z3)	0,789	0,792	0,610
Repurchase (Z4)	0,850	0,851	0,572

Furthermore, Average Variance Extracted (AVE) values meet the minimum criterion of 0.5 for all constructs, reinforcing convergent validity (Ab Hamid et al., 2017; Larcker, 1981). Discriminant validity is confirmed using the Fornell-Larcker criterion, as the square root of each construct's AVE exceeds its correlations with other latent constructs (Table 4) (Hair Jr *et al.*, 2017). The multicollinearity check via Variance Inflation Factor (VIF) reveals values < 5 range from 1.247- 1954 for all indicators across the constructs (consumer demography, attitude, subjective norm, perceived behavioral control,

Table 4: Discriminant validity result.

	Attitude	Demography	Habit	Norm	Perseption	Stability	WTP	Recommendation	Repurchase
Attitude	0,845								
Demography	0,526	0,560							
Habit	0,665	0,491	0,906						
Norm	0,843	0,548	0,739	0,855					
Perception	0,833	0,348	0,561	0,755	0,820				
Stability	0,830	0,465	0,811	0,744	0,801	0,921			
WTP	0,795	0,488	0,833	0,814	0,795	0,844	0,865		
Recommendation	0,555	0,466	0,801	0,677	0,484	0,645	0,765	0,802	
Repurchase	0,780	0,491	0,825	0,666	0,698	0,851	0,859	0,722	0,665

willingness to pay (WTP), product stability, habitual buying, recommendation, repurchase), adhering to the recommended threshold (Hair *et al*., 2011; Vörösmarty and Dobos, 2020). The AVE indicates the proportion of variance a construct captures in relation to measurement error.

The Goodness of fit (GOF): The model's goodness of fit is evaluated using three indicators: standardized root means square residual (SRMR), chi-square, and Normed-fit index (NFI), as presented in Table 5. These indicators collectively suggest that the model employed in this study demonstrates adequate fit. The NFI, introduced by Bentler and Bonett (1980) as one of the earliest fit measures in structural equation modeling (SEM), ranges from 0 to 1, with values closer to 1 indicating superior fit. Generally, NFI values exceeding 0.9 are considered acceptable (Bentler and Bonett, 1980; Hu and Bentler, 1999).

Table 5: The result of goodness of fit test.

	Saturated Model	Estimated Model	Note
SRMR	0.061	<0.100	Fit
Chi-Square	3812.121, P< 0.05	Higher is better, P<0.05	Fit
NFI	0.773	Closer to 1.00	Fit

Source: This study, 2024.

Researchers have proposed various thresholds for the Standardized Root Mean Square Residual (SRMR) to assess model fit in structural equation modeling. Hu and Bentler (1999) suggest that an SRMR value under 0.10 indicates a good fit in covariance structure analysis. For partial least squares SEM (PLS-SEM), Henseler *et al*. (2014) recommend using SRMR to detect model misspecification. Generally, lower SRMR values signify better model fit. Many researchers consider a value of 0.05 or less to be ideal (Maydeu-Olivares *et al*., 2018; Shi and Maydeu-Olivares, 2020), while values up to 0.08 are often deemed acceptable (Hu and Bentler, 1999). Furthermore, a chi-square test coefficient with a p-value below 0.05 provides additional support for the model's fit (Yuan *et al*., 2016). Therefore, based on these results, the model represents the observed data well.

Structural Model Evaluation

R-square (R2): In the context of structural equation modeling utilizing partial least squares (PLS-SEM), coefficient of determination (R2) values of 0.67 (substantial), 0.33 (moderate), and 0.19 (weak) are interpreted as substantial, moderate, and weak, respectively (Chin, 1998). In this study, the coefficient of determination (R2) for the latent variable product stability, habit, purchasing habits, people recommendation, and repurchase product are 0.471, 0,497, 0.569, 0.375, and 0.515, respectively, which represents a moderate explanatory power. Specifically, the R^2 value of 0.471 for product stability signifies that 47.1% of its variance is explained by the independent variables, which include consumer attitude, consumer demographics, subjective norm, perception, and willingness to pay. Similarly, the R^2 value of 0.497 for habit shows that 49.7% of its variance is accounted for by the same set of predictors. The purchasing habits latent variable has an R^2 value of 0.569, meaning that 56.9% of its variance is explained by these independent variables, reflecting a moderate to strong explanatory capacity.

Furthermore, the R^2 value for people recommendation is 0.375, indicating that 37.5% of the variance is explained by consumer attitude, demographics, subjective norms, perception, and willingness to pay, which still aligns with the moderate range. Lastly, the R^2 value for repurchase products is 0.515, suggesting that 51.5% of its variance is explained by the independent variables. These findings collectively confirm that the model provides a moderate degree of explanatory power for the studied latent variables, demonstrating its effectiveness in capturing the relationships among the factors considered.

Hypothesis test: The interrelationships among various factors influencing consumer purchasing decisions are elucidated in Table 6. The analysis reveals that attitude exerts

Table 6: Hypothesis test.

	Original sample (O)	Sample mean (M)	Standard deviation	T statistics	P values
Attitude -> Habit	0,160	0,164	0,044	3,638	0,000***
Attitude -> Stability	0,164	0,169	0,046	3,586	0,000***
Attitude -> WTP	0,233	0,238	0,061	3,807	0,000***
Attitude -> Recommendation	0,143	0,146	0,038	3,729	0,000***
Attitude -> Repurchase	0,167	0,171	0,045	3,718	0,000***
Demography -> Habit	0,050	0,052	0,025	2,001	0,045**
Demography -> Stability	0,051	0,053	0,025	2,077	0,038**
Demography -> WTP	0,073	0,075	0,035	2,066	0,039**
Demography -> Recommendation	0,045	0,046	0,022	2,010	0,044**
Demography -> Repurchase	0,052	0,054	0,026	2,026	0,043**
Norm -> Habit	0,211	0,209	0,039	5,431	0,000***
Norm -> Stability	0,217	0,214	0,036	5,975	0,000***
Norm -> WTP	0,308	0,303	0,053	5,769	0,000***
Norm -> Recommendation	0,189	0,186	0,035	5,320	0,000***
Norm -> Repurchase	0,221	0,218	0,039	5,613	0,000***
Perception -> Habit	0,189	0,188	0,033	5,673	0,000***
Perception -> Stability	0,194	0,194	0,037	5,219	0,000***
Perception -> WTP	0,275	0,274	0,049	5,626	0,000***
Perception -> Recommendation	0,168	0,168	0,031	5,493	0,000***
Perception -> Repurchase	0,197	0,197	0,036	5,522	0,000***
WTP -> Habit	0,686	0,687	0,036	19,320	0,000***
WTP -> Stability	0,705	0,706	0,030	23,115	0,000***
WTP -> Recommendation	0,613	0,613	0,032	19,009	0,000***
WTP -> Repurchase	0,718	0,718	0,027	26,494	0,000***

Note: **significant at 5%; ***significant at 1%.

significant positive effects on all examined constructs, including purchasing habit, product stability, willingness to pay (WTP), people recommendation, and repurchase intention, with notably high T-statistics and P-values below 0.001, underscoring its strong influence. In contrast, consumer demography demonstrates weaker but still statistically significant positive effects on the same constructs, with P-values less than 0.05. Furthermore, both subjective norm and consumer perception exhibit robust positive effects across all constructs, with P-values consistently below 0.001, indicating their substantial roles. Among all predictors, WTP emerges as the most influential factor, showing the strongest positive effects on purchasing habits, product stability, people recommendation, and repurchase intention, supported by exceptionally high T-statistics and significance levels. A detailed explanation of each construct's influence and its implications will be provided in the following paragraphs.

The initial analysis reveals a statistically significant positive correlation between attitude and purchasing habits, as evidenced by a t-statistic of 3.638 ($p < 0.01$). This finding suggests that consumers exhibiting more favorable attitudes are more likely to develop consistent purchasing habits. This result confirms the correlation between customer attitudes and purchase behaviors. This result aligns with the arguments of Amoako *et al.* (2020) and Zaremohzzabieh *et al.* (2021) who assert that youth purchasing behavior is shaped by their attitudes.

Additionally, the data indicate a positive relationship between attitude and product stability, with a t-statistic of 3.586 ($p < 0.01$). This statistically significant result implies that consumer attitudes exert a positive influence on their confidence in the product. Furthermore, the path from attitude to willingness to pay, serving as a mediating variable, demonstrates a positive coefficient with a t-statistic of approximately 3.807, also significant at the $p < 0.01$ level. This result indicates that attitude has a substantial and positive effect on consumers' willingness to pay. The findings imply that consumers who maintain positive attitudes toward a product exhibit a greater propensity to express willingness to pay for the product. Consumers perceive free-range eggs as healthier, more nutritious, and tastier compared to reg-

ular eggs, which drives their willingness to purchase them (Güney and Giraldo, 2020).

Furthermore, the analysis reveals a positive relationship between attitude and product repurchase intention, significant at the $p < 0.01$ level. This indicates that consumers with favorable sentiments towards a product are more likely to make repeat purchases. In this case, consumer satisfaction with the product experience has been shown to significantly influence repurchase decisions (Slack *et al*., 2020). Then, the attitude has a significantly positive effect on people's recommendations, with a coefficient of 3.729 and a 1% significance level. This result indicates that individuals with favorable attitudes are significantly more likely to recommend the product to others. Consumers who express satisfaction with the perceived benefits and quality of free-range chicken products are more inclined to disseminate positive recommendations. These endorsements are communicated through various channels, including word-of-mouth interactions with friends and relatives, as well as broader dissemination to the general public via both interpersonal communication and mass media platforms (Rhee and Choi, 2020).

Consumer demographics also play a significant role in various aspects of consumer behavior. Demographic factors positively influence purchasing habits ($t = 2.001$, $p < 0.05$) and product stability ($t = 2.007$, $p < 0.05$) (Ogundijo *et al*., 2022). Demographic factors, including age, education, and income, significantly influence determinants of food selection and individual preferences. As individuals age, their dietary choices increasingly prioritize the nutritional value and overall quality of food products (Ogundijo *et al*., 2022). Moreover, sufficient income is crucial, as exemplified by the higher cost of free-range eggs compared to conventional eggs. Additionally, educational attainment plays a pivotal role in shaping nutritional knowledge and subsequent dietary behaviors. Research indicates a positive correlation between higher education levels and a greater propensity to select high-quality eggs for consumption (Ogundijo *et al*., 2021; Wardle *et al*., 2004).

Demographic factors demonstrate a significant positive correlation with consumers' willingness to pay. Specifically, educational attainment and income levels substantially influence dietary preferences (Ali and Ali, 2020). As individuals age, they become more aware of food safety and its health implications, which drives a higher willingness to pay for health-enhancing and wellness-oriented food products (Scarpato *et al*., 2017; Wang *et al*., 2018). Additionally, the data indicate that demographic factors positively and significantly affect both product recommendations ($t = 2.010$) and purchasing habits ($t = 2.026$). Researchers posit that ethnicity serves as a critical determinant influencing purchasing habits through consumer perceptions of distinct cultural values associated with rural or urban environments (Child *et al*., 2017). The consumption of free-range eggs, whether raw or cooked, is believed to contribute to the development and maintenance of bodily health, as well as aid in illness prevention and recovery (Situmorang *et al*., 2022; Wongprawmas *et al*., 2021). Consequently, consumers may develop habitual consumption patterns of free-range eggs, potentially leading to established purchasing habits. Additionally, this may encourage consumers to recommend free-range eggs to their social networks.

The next analysis reveals that subjective norms exert a statistically significant positive influence on multiple aspects of consumer behavior. Specifically, subjective norms demonstrate a positive effect on purchasing habits ($t = 5.431$, $p < 0.01$), product stability ($t = 5.975$, $p < 0.01$), willingness to pay ($t = 5.769$, $p < 0.01$), product recommendation ($t = 5.320$, $p < 0.01$), and repurchase intention ($t = 5.613$, $p < 0.01$). The strong positive relationship between subjective norms and purchasing habits suggests that consumers' buying patterns are significantly influenced by perceived social pressures and expectations (Jain, 2020). Similarly, the impact on product stability implies that social norms play a crucial role in shaping consumers' trust and belief in products (Bai *et al*., 2019). The significant effect on willingness to pay indicates that subjective norms may influence consumers' perceived value of products, potentially affecting price sensitivity (Ngah *et al*., 2021; Ngah *et al*., 2020). The positive relationship with product recommendation behavior suggests that social norms not only influence individual purchasing decisions but also play a role in word-of-mouth marketing and social influence processes. Finally, the significant impact on repurchase intention underscores the long-term effects of subjective norms on consumer loyalty and repeat business (Shan *et al*., 2020).

Furthermore, the study reveals compelling insights into the influence of perceived behavioral control on consumer behavior regarding free-range egg products. Notably, perceived behavioral control demonstrates a positive and statistically significant impact across several key aspects of consumer engagement. Firstly, it strongly affects consumer's product stability, with a substantial effect size of 5.673. This suggests that as individuals feel more in control of their purchasing decisions, they are more likely to maintain consistent buying patterns for free-range eggs. Secondly, perceived behavioral control significantly influences consumers' willingness to pay for free-range egg products, as evidenced by an effect size of 5.219. This indicates that consumers who perceive greater control over their choices are more inclined to invest in these premium products, possibly reflecting a stronger commitment to ethical or quality-focused consumption (Al Mamun *et al*., 2018; Sang *et al*., 2020; Schniederjans and Starkey, 2014). Thirdly, the study found that perceived behavioral control has a marked

impact on consumer recommendations, with an effect size of 5.626. This implies that individuals who feel more in control are more likely to endorse free-range egg products to others, potentially serving as influential advocates within their social networks (Hau and Kim, 2011).

Finally, perceived behavioral control demonstrates a significant positive effect on consumers repurchase intentions, with an effect size of 5.493. This indicates that consumers with higher perceived control are more likely to exhibit loyalty by repeatedly choosing free-range egg products (Loh and Hassan, 2022). Importantly, all these effects were statistically significant at the 5% level, underscoring the reliability of these findings. Collectively, these results highlight the critical role of perceived behavioral control in shaping various aspects of consumer behavior in the context of free-range egg products, from initial purchase decisions to long-term loyalty and advocacy.

As conclusion the study reveals compelling insights into the impact of consumers' willingness to pay on various aspects of consumer behavior in relation to a specific product or service. The findings demonstrate that consumers' willingness to pay has a positive and highly significant impact across multiple dimensions of consumer engagement and loyalty. The effect is particularly significant on people's repurchase intentions, with a remarkable coefficient of 26.494. This suggests that as consumers' willingness to pay increases, they are substantially more likely to make repeat purchases, indicating a strong link between perceived value and customer retention. Consumers who show a willingness to pay for free-range eggs demonstrate satisfaction with the perceived benefits derived from consuming these products, encompassing both quality attributes and functional advantages. This satisfaction engenders product trust, subsequently influencing consumers' decision-making processes and culminating in repurchase intentions for free-range eggs (Abumalloh *et al*., 2020; Mahadin *et al*., 2020; Miao *et al*., 2022).

The strongest effect is observed on product stability, with a coefficient of 23.115, implying that consumers willing to pay more tend to maintain more consistent purchasing patterns and brand loyalty. The desire to purchase prompts individuals to actively seek information about the product, including aspects such as price and quality, as observed in the case of free-range eggs. This information is typically gathered from close acquaintances or through social media platforms. Consequently, this acquired knowledge contributes to increased confidence and certainty in the product (Wertenbroch and Skiera, 2002).

Habitual buying behavior is also significantly influenced, with a coefficient of 19.320, suggesting that a higher willingness to pay is associated with the formation of strong purchasing habits. Similarly, people's likelihood to recommend the product or service is positively affected, as evidenced by a coefficient of 19.009, indicating that those willing to pay more are more inclined to become brand advocates. Consumers who are willing to pay higher prices for free-range eggs are more likely to repurchase these products and recommend to others (Bo and Yang, 2022). Importantly, all these effects were statistically significant at the 1% level, underscoring the robustness and reliability of these findings. Collectively, these results highlight the critical role of consumers' willingness to pay in shaping various facets of consumer behavior, from habitual purchasing and product stability to recommendation and repurchase intentions, providing valuable insights for marketing strategies and product pricing decisions.

CONCLUSIONS AND RECOMMNDATIONS

This study explored the influence of demographic variables, attitudinal factors, subjective norms, and perceived behavioral control on consumer purchasing behavior regarding free-range chicken eggs in East Java, Indonesia. By utilizing a sample of 510 respondents and employing structural equation modeling via the Partial Least Square (PLS) technique, the research demonstrated that consumer demographics, attitudes, subjective norms, and perceived behavioral control significantly affect willingness to pay (WTP), which, in turn, serves as a crucial mediating factor in shaping purchasing decisions.

The results demonstrate that WTP is crucial in mediating the relationship between consumer characteristics and purchasing outcomes, encompassing product stability, habitual purchasing, recommendations, and intentions repurchase. WTP's positive and significant effects suggest understanding and enhancing consumers' willingness to pay is vital for encouraging continued support for free-range eggs.

Based on these insights, the research recommends that industry stakeholders consider strategies to bolster consumer loyalty, such as loyalty programs or discounts that foster repeat purchases. Moreover, providing consumers on the benefits of free-range eggs could positively influence their willingness to pay and improve perceptions of the product, leading to more sustainable consumer behavior. These recommendations are essential for shaping marketing strategies and fostering long-term consumer engagement with free-range products.

This study faces several limitations. First, the cross-sectional design restricts the ability to observe changes in consumer behavior over time, limiting the understanding of evolving patterns. To address this, future research should employ longitudinal designs to track behavioral shifts more

effectively. Additionally, integrating qualitative methodologies such as interviews or focus groups may provide deeper insights into the underlying motivations of consumers. These methods would deepen the study of factors influencing free-range egg purchasing behavior, offering a more thorough view of consumer preferences and decision-making processes in this context.

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NOVELTY STATEMENTS

This study provides a combination of demographic factors, attitudes, subjective norms, and perceived behavioral control, alongside willingness to pay, creating a multifaceted understanding of the factors influencing purchasing behavior. In Addition, by concentrating on free-range chicken eggs, the research targets a niche product category, addressing a specific gap in consumer behavior studies related to ethical and sustainable food choices.

AUTHOR'S CONTRIBUTIONS

Ariani Trisna Murti: Conceptualization, Methodology, Software, Writing – original draft, Writing – review & editing.
Budi Hartono: Writing – review & editing, Supervision, Methodology, Data curation.
Hari Dwi Utami: Writing – review & editing, Supervision, Methodology, Visualization, Investigation.
Tri Wahyu Nugroho: Investigation, Validation, Data curation.
Tina Sri Purwanti: Conceptualization, Methodology, Software, Writing – original draft, Writing – review & editing.
Jaisy Aghniarahim Putritamara: Validation, Data curation, Project administration, Visualization, Writing – review & editing.

Conflict of Interest

The authors have declared no conflict of interest.

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