

Measuring Consumers' Attitude towards Food Labeling: A Study of Interest, Knowledge, Lifestyle, and Contextual View Point

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ABSTRACT

The purpose of food labels is to provide consumers with information that may influence their purchasing decisions. For example, consumers may want to know the ingredients, manufacturing and expiration dates, price, storage requirements, nutritional information, etc. Accurate labeling is essential for informing consumers about the nature and characteristics of the food product and for influencing their purchase decisions. The study was conducted in Rangpur district, Bangladesh, in 2024 to determine how consumer interest, knowledge, lifestyle, and contextual factors affect consumer attitudes toward food labeling in purchase decisions. A total of 300 respondents were interviewed. Both primary and secondary data were used for the study. The questionnaire was developed using a five-point Likert scale. SEM-PLS software was used for data analysis. The SEM results indicated that consumer Knowledge, lifestyle, and Contextual factors were significantly and positively associated with food labeling.

Key words: Consumer, Attitude, Food, Label, Food Labeling

INTRODUCTION

Food labels can help consumers understand specific products and provide information such as brand name, slogan, description, preparation, use, production date, expiration date, and other information (Amponsah et al., 2018). In addition, food labels also contain information such as trademarks, certifications, company logos, country of origin, quantity, price, weight, user guides, batch numbers, risk factors, regulatory descriptions, and other information (Charlebois et al., 2014). Labels support consumers to build awareness of the food they eat. When purchasing a product, consumers want to know what ingredients it contains, whether it is environmentally friendly, its color, design, manufacturing, expiration date, the country of origin, etc. Therefore, food labeling is considered the most effective marketing tool. Encourage potential buyers to incentivize purchasing decisions.

Food labels allow consumers to make healthier choices at the time of purchase. Food labeling is mandatory in most countries because it enables consumers to make healthy choices and protects consumers and their rights.

However, food labeling practices vary from country to country. In the United States, Canada, Australia, and New Zealand, it is mandatory, but in developing countries such as Bangladesh, there is currently no such requirement. Regulations requiring food labeling will create new areas of competition by increasing consumer awareness and stimulating demand for new product attributes.

PROBLEM STATEMENT

Food labels that are easy to understand and explain are based on reliable and robust evidence. For consumers who purchase food products, these labels are the first choice and are easy to understand. However, due to a lack of knowledge among governments and policymakers about consumer attitudes and behaviors toward food labeling, implementing national-level policies has encountered challenges. Therefore, in some cases, it is difficult to determine the most appropriate arrangement.

The label should provide detailed, accurate information about the food's nature and characteristics without misleading consumers. Therefore, understanding

consumers' labeling behavior is a prerequisite for designing food labeling regulations, improving public health, and increasing the food industry's profits. When designing food labels, manufacturers should follow the rules set by the relevant authority in the specific country or region. However, there is no literature on the food labeling behavior of Bangladeshi consumers. Complex lifestyles, loyalty to particular brands, and the complexity of food labels are the main reasons consumers are not interested in them. Therefore, understanding the determinants of consumer use of food labels is crucial. By identifying these factors, it is possible to delineate consumer groups that do or do not use food labels. However, few studies have highlighted this important determinant of food labeling, which is among the most influential factors influencing consumer responses. Despite research interest in consumer buying behavior, there is little information on the influence of labels on consumer buying decisions. Therefore, this study examines consumer attitudes towards food labeling and the impact of food labeling on consumer responses in Bangladesh

Research Questions

- What are the determinants of food choices that contribute to measuring the consumers' attitude toward food labeling?
- How are the determinants of food choices significantly related to the consumers' attitude toward food labeling?
- To what extent is consumers' attitude toward food labeling significantly related to consumers' response to food purchasing?

Objectives of the Study

- To identify the determinants of food choices that contribute to measuring the consumers' attitude toward food labeling.
- To examine the significant relationship between food choice determinants and consumers' attitudes toward food purchases.
- To explore the relationship between consumers' attitudes toward food labeling and their responses to food purchases.

JUSTIFICATION OF THE STUDY

Food labeling is a population-based method that enables consumers to make healthier choices by providing information at the time of purchase. In most countries, food labeling is mandatory for two main reasons: it allows consumers to make healthy choices and protects their rights (Cowburn & Stockley, 2005). Consumers are increasingly considering information about the safety of food and the attributes of the process (how the food is produced) when making purchase decisions. Producers, processors, and retailers can choose to mark these attributes voluntarily, be required to do so by government

regulations, or use a combination of these methods. The market effect depends on consumers' perception of attributes, the benefits and costs of labeling companies, and the goals of government policies.

In many countries, the use of food labels is increasingly becoming a regulatory tool to inform consumers and influence the food quality market. Labeling policies can replace more restrictive forms of government regulation and can also serve as a supplement to other policies. In either case, the government can use labeling policies to achieve food quality goals, encourage product market competition, and provide consumers with information and protection from dishonesty. Consumers are paying more attention to balanced, healthy eating. In addition, their requirements for food-related information and for safe, high-quality food are increasing. In this case, food labeling plays a vital role because it provides all mandatory information about food ingredients, safety, and quality food. Labels offer information about food ingredients, nutritional characteristics, preparation, storage, etc. (Dalen, 1996).

If consumers, or at least some consumers, value food labeling, labeling strategies will be helpful in food companies. Increased consumer demand for high-quality products, along with greater awareness of and trust in those qualities, can also be an opportunity for businesses to build a competitive advantage. To obtain this advantage, they should provide consumers with differentiated, high-quality food products and the information they need to make more informed product choices. This quality difference is mainly achieved through food labels, because, unless other information is provided, the characteristics of these high-quality food products are proprietary attributes that cannot be disclosed to consumers before purchase and consumption (Caswell et al., 2002; Uddin et al., 2019). Therefore, the use of reliable labels allows food companies to signal quality or possess specific, unobserved, desirable attributes (McCluskey & Loureiro, 2003).

THEORETICAL UNDERPINNING

A theoretical framework helps to determine the variables to be used and measured, and to justify the expected statistical relationship. A theoretical framework is a conceptual model that shows how researchers understand the relationships among logical or theorized structures, which are considered essential factors in research (Sekaran, U., 2006).

In this research, the researcher developed a modified conceptual model based on Grunert and Wills (2007), which is informed by two streams of research relevant to analyzing the effects of nutrition information on consumers: consumer decision-making theory and attitude formation and change theory. Consumer decision theory (Peter et al., 1999; Solomon et al., 2006; Bettman et

al., 1998) concerns the process of determining product choices when multiple options are available and how choices are affected by information attitudes. Formation and change theory concerns how consumers process the information they are exposed to, understand its meaning, and evaluate whether it has positive or negative significance for them. This is usually considered a prerequisite for information acquisition and any influence on their behavior (Eagly & Chaiken, 1993; McGuire, 1985).

Considering this approach, this study modified the model by combining four influencing factors- Interest, Knowledge, Lifestyle, and Contextual variables- that affect consumer attitude, and consumer attitude also affects consumer response to food labeling. Based on the above discussion, the research model developed for this study is shown in Figure 1.

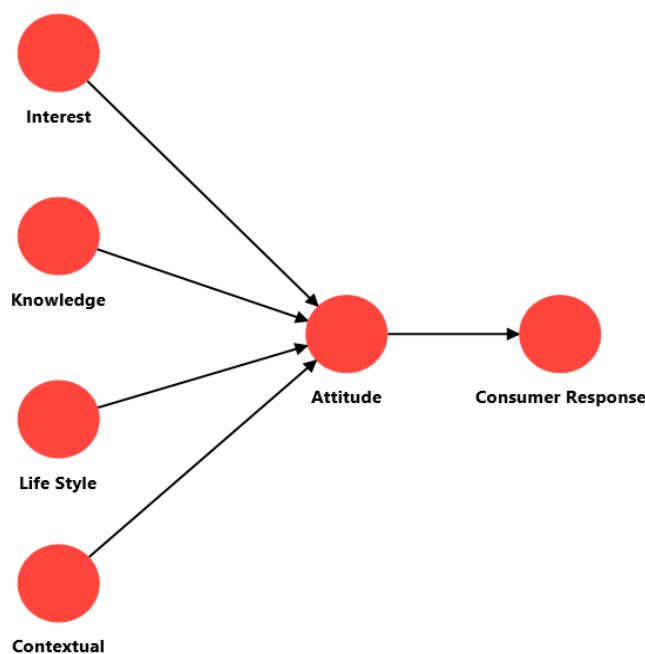


Figure 1: Conceptual Framework for the study
Source: Grunert & Wills (2007), modified and developed by the researcher

Hypotheses of the

From the conceptual framework, the following hypotheses have been developed for this study, which will investigate several aspects of the constructs and the relationships between them:

Hypothesis:

- H₁ There is a positive and significant relationship between the interest of consumers and attitude towards food labeling.
- H₂ There is a significant positive relationship between consumer knowledge and attitude towards food labeling.
- H₃ There is a significant positive relationship between lifestyle determinants of consumers and their attitude towards food labeling.

- H₄ There is a significant positive relationship between contextual determinants of consumers and attitude towards food labeling.
- H₅ There is a significant positive relationship between consumers' attitude towards food labeling and consumers' response to food labeling.

LITERATURE REVIEW

Interest and Attitude

According to a study published in the International Journal of Environmental Research and Public Health (Liu et al., 2018), there is a strong link between interest in food labels and attitudes towards them. People who are more interested in food labels have more positive attitudes towards food labels, the study found. The study also found that people who knew more about food labels were more likely to have a favorable view of them. These results suggest that interest in food labels can play an essential role in shaping attitudes towards them, and that educating individuals about them may contribute to more positive attitudes. A study by Lee and Park (2019) found that attitudes toward food labels had a significant positive effect on consumers' interest in food labels. Specifically, they found that attitudes such as "food labels are useful" and "food labels are trustworthy" were positively associated with interest in food labels. Additionally, they found that "difficulty in understanding food labels" negatively affected people's interest in them. This suggests that simply having a positive attitude toward food labeling increases interest in food labeling.

Knowledge and Attitude

Various studies have investigated the relationship between knowledge about food labels and attitudes towards them. For example, a survey by Kwon, Kim, and Kim (2016) found that people who know food labels have more positive attitudes towards them, while those who know less are more likely to have negative attitudes. The study also found that people with more knowledge were more likely to read food labels and understand the nutritional information on them. Furthermore, another study by Kim et al. (2017) found that greater knowledge of food labels was associated with increased consumer confidence and understanding of food label information. Furthermore, a study by Park et al. (2018) found that the higher the level of knowledge about food labeling, the more positive the attitudes toward it. According to a study by Khan et al. (2021), Food labeling knowledge is related to individual attitudes towards food labeling. The study found that greater understanding of food labeling was associated with more positive attitudes towards it, primarily because participants' trust in the food industry influenced their attitudes. The authors suggest that education campaigns targeting health and nutritional literacy are needed to increase consumer confidence in

food labeling. Additionally, greater consumer knowledge and trust in food labeling may lead to more positive attitudes and greater use of food labels.

Lifestyle determinants and attitude

According to a study by Kim et al. (2020), lifestyle determinants, such as health awareness, label-reading skills, and trust in food labels, significantly influence consumer attitudes towards food labeling. The study found that health awareness and label-reading skills were positively correlated with consumer attitudes toward food labels, whereas trust in food labels was negatively correlated. Personal determinants such as age, gender, and education level influence individual attitudes toward food labeling (Tang et al., 2020). The authors found that older, male, and more educated people were more likely to understand the information on food labels. On the other hand, younger people, women, and people with less education are more likely not to know or misunderstand information on food labels. Additionally, the study found that people with positive attitudes toward food labels were more likely to make healthier food choices and follow food label recommendations.

Contextual Determinants and Attitude

The relationship between contextual determinants and attitudes toward food labeling has been extensively studied, with generally consistent results. Contextual determinants of food labeling influence consumers' attitudes toward it. For example, a study by Ozalp et al. (2017) showed that label type, nutritional advice, and label color are all essential contextual determinants of consumer attitudes towards food labeling. In particular, the study found that consumers have more positive attitudes toward labels that provide nutritional advice and those with bright colors. In addition, the study found that the perceived usefulness of information on food labels significantly affects consumer attitudes toward labels. Therefore, contextual determinants of food labeling, such as type, nutritional advice, color, and perceived usefulness of label information, influence consumer attitudes towards food labeling.

Attitude and Consumer Response:

According to Shrivastava, B. (2016), attitudes towards food labeling directly influence consumers' reactions to it. The study concluded that consumers are more sensitive to food labels that appear informative, inspiring, and attractive. Labels with attractive designs and informative details are more likely to be noticed, understood, and remembered by consumers. Additionally, the study concluded that labels with positive attitudes tend to elicit more positive responses from consumers than those with negative attitudes. Thus, attitudes towards food labeling are an essential factor in shaping consumer responses. Attitudes towards food labeling have been found to play a crucial role in shaping consumer responses to it

(Verbeke & Vermeir, 2017). Specifically, consumers tend to respond more positively to higher quality food labels (Cox, 2007). In addition, attitudes towards food labeling have been found to influence purchasing decisions, as consumers are more likely to buy foods with more positive labels (Hui & Hanks, 2018). Therefore, it is clear that attitudes towards food labeling can significantly affect consumer responses.

METHODOLOGY OF THE STUDY

This study was descriptive in nature and quantitative in approach. All customers who purchase products with labeling are interested in this subject. The researcher purposively selected Rangpur district as the study area to obtain data conveniently and facilitate meaningful conclusions of greater interest. Both primary and secondary data have been neatly acquired for further synchronization. To collect primary data, this study used a field survey method to directly interview the respondents using a structured questionnaire developed from various literature reviews. A five-point Likert scale was used to evaluate consumers' responses to food labeling.

A simple random sampling method was used for conducting the study. All the customers from diverse groups were treated as samples in the study area. The targeted sample size was 350. In this connection, the researcher distributed 350 questionnaires to respondents, and 310 were completed. After screening all responses, 300 samples were finally ready for analysis. Primary data were collected over 4 months from March to June 2024. On the other side, secondary data were collected from books, published journals, articles, and research papers. The collected primary data from the respondents were processed in SPSS (Statistical Package for the Social Sciences) and analyzed using SmartPLS-4 (Partial Least Squares) software to obtain a more comprehensive analysis and develop a model for the study. The demographic characteristics of the respondents were analyzed using the simple percentage method. Structural Equation Modeling (SEM) was used to establish the measurement and structural models. Path coefficients were used to assess the relationship between independent and dependent variables.

DATA ANALYSIS AND FINDING

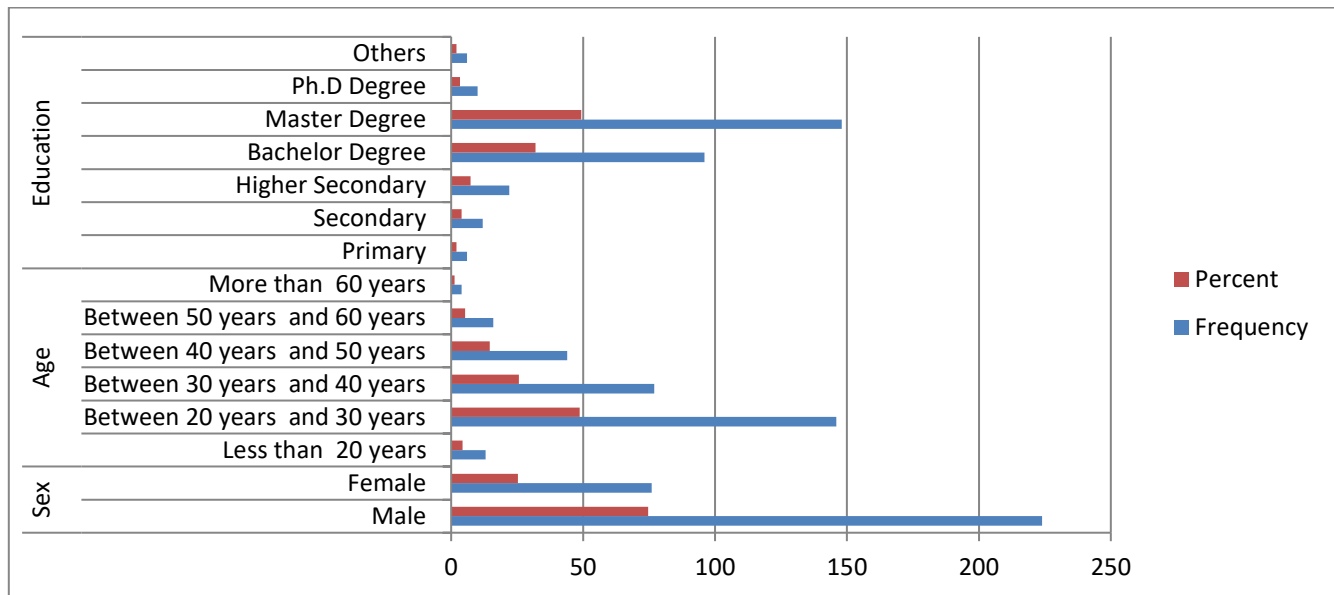
This chapter begins with a demographic profile of the survey participants. These analyses followed the widely accepted reporting style for PLS analysis, as suggested by previous studies. PLS-SEM (Partial Least Squares - Structural Equation Modeling) is an advanced multivariate analysis method used to examine the relationships between independent and dependent variables by capturing their shared variance (Hair et al., 2017). The PLS-SEM analysis included both measurement and evaluation of the structural model.

Respondents Demographics

In this section, we describe the demographic statistics of the respondents.

Table 1: Demographic Profile of the Respondents

	Sex		Age						Education						
	Male	Female	Less than 20 years	Between 20 and 30 years	Between 30 and 40 years	Between 40 and 50 years	Between 50 and 60 years	More than 60 years	Primary	Secondary	Higher Secondary	Bachelor Degree	Master Degree	Ph.D. Degree	Others
Frequency	224	76	13	146	77	44	16	4	6	12	22	96	148	10	6
Percent	74.7	25.3	4.3	48.7	25.7	14.7	5.3	1.3	2.0	4.0	7.3	32.0	49.3	3.3	2.0



Graph 1: Demographic Profile of the Respondents

Sex Distribution: Males make up the majority of the sample, accounting for 74.7% of the population (224 out of 300). Females represent 25.3% of the population (76 out of 300).

Age Distribution: The young adult population (48.7%, almost half) dominated the sample, with the largest age group being 20–30 years. The second-largest group is 25.7% (30–40 years), showing a strong presence of adults in early mid-life. 40–50 years: 14.7%; moderate representation of the population. Few minors or teenagers 4.3% which is less than 20 years. Age 50–60 years: 5.3% of the small older adult group. Over 60 years, 1.3% minimal senior representation.

Education Distribution: The largest group is master's degree holders (49.3%), followed by bachelor's degree holders (32%), and the smallest group is those with complete primary education (2%).

Model Assessment

Two types of models were analyzed using innovative PLS software. First, the measurement model, also called the outer model; second, the structural model, also called the inner model.

Measurement Model

The measurement model evaluation first assesses the indicators' reliability. Factor loadings measure reliability; internal consistency is measured by Cronbach's alpha, Roa-A, and composite reliability Roa-C. On the other hand, convergent validity is assessed using average variance extraction (AVE), and discriminant validity is assessed using the HTMT ratio, the Fornell-Larcker criterion, and cross-loadings. The results of the measurement model are shown below to establish a quality standard for it.

Factor Loading

In partial least squares structural equation modeling (PLS-SEM), factor loadings are the correlations between observed and latent variables (Hair et al., 2017). It is used to measure the degree of correlation between observed and latent variables. In general, factor loadings of 0.70 or higher are considered an adequate threshold; however, researchers should also consider the context of their study and the type of data used to determine an appropriate threshold (Hair et al., 2017). Factor loadings reflect how well the observed metrics capture the underlying structure, and they should exceed a threshold (usually 0.7) to be considered valid (Chen et al., 2017).

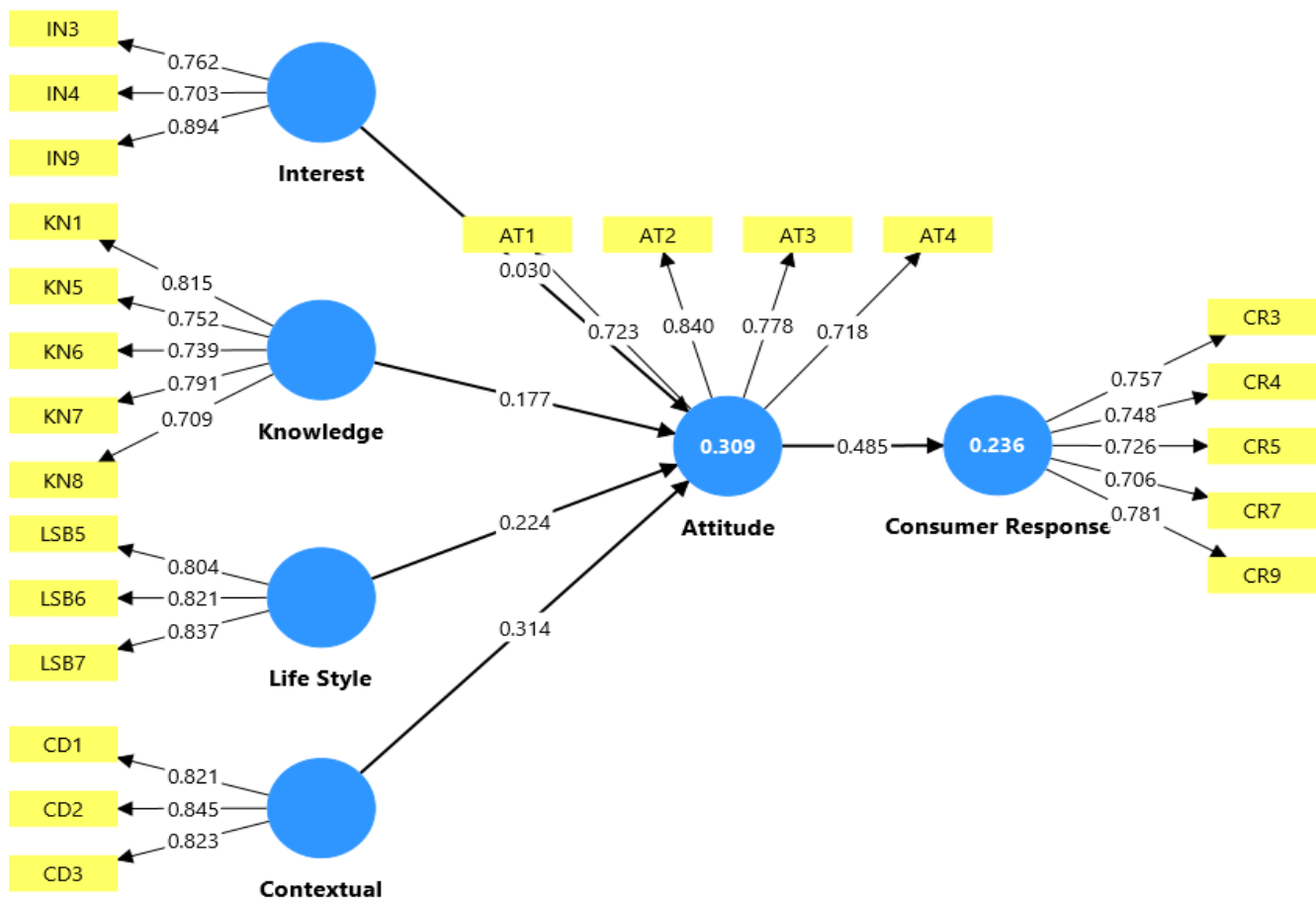


Figure 2: Measurement model

Table 2: Factor Loadings

	Attitude	Consumer Response	Contextual	Interest	Knowledge	Life Style
AT1	0.723					
AT2	0.84					
AT3	0.778					
AT4	0.718					
CD1			0.821			
CD2			0.845			
CD3			0.823			
CR3		0.757				
CR4		0.748				
CR5		0.726				
CR7		0.706				
CR9		0.781				
IN3				0.762		
IN4				0.703		
IN9				0.894		
KN1					0.815	
KN5					0.752	
KN6					0.739	
KN7					0.791	
KN8					0.709	
LSB5						0.804
LSB6						0.821
LSB7						0.837

Based on the analysis, all items in the measurement model exhibited loadings exceeding 0.70, ranging from 0.703 to 0.894. All items are significant at the 0.001 level.

Internal Consistency /Reliability Analysis

The most common methods for determining reliability are Cronbach's Alpha, Rho-A, and Rho-C. The PLS-SEM measurement model uses Cronbach's alpha to assess its quality, typically with a threshold of 0.7 (Garson, 2020). Rho-A is a reliability coefficient used to determine the internal consistency of measurement models in partial least squares structural equation modeling (PLS-SEM). The threshold for rho-A is generally considered to be 0.7 or higher, indicating that the measurement model is reliable. (Hair et al., 2014). Rho-C is a measure of composite scale reliability for measuring the internal consistency of underlying structures in partial least squares structural equation modeling (PLS-SEM). The generally accepted threshold for rho-C is 0.7 (Hair et al., 2018). Moreover, AVE (average variance extracted). Cronbach's alpha is a measure of the internal consistency (or reliability) of a scale or measurement model (Garson, 2020).

Table 3: Construct reliability and validity (Overview):

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)
Attitude	0.766	0.777	0.850
Consumer Response	0.803	0.825	0.861
Contextual	0.775	0.781	0.869
Interest	0.740	0.930	0.832
Knowledge	0.821	0.838	0.874
Life Style	0.757	0.759	0.861

Cronbach's alpha ranges from 0.740 to 0.821, while the composite reliability (rho_a) statistic ranges from 0.759 to 0.930, and the composite reliability (rho_c) statistic ranges from 0.832 to 0.874. All reliability indicators are above 0.70.

Convergent Validity- Average variance extracted (AVE)

AVE measures the average amount of variance a construct explains in its indicators (observed variables) relative to the total variance, and it ensures the indicators (items) of a construct really belong together. An acceptable threshold value is greater than or equal to 0.5.

Table 4: Convergent Reliability

	Average variance extracted (AVE)
Attitude	0.588
Consumer Response	0.554
Contextual	0.689
Interest	0.624
Knowledge	0.581
Life Style	0.673

Here, the AVE is greater than 0.5. So, convergent validity is established.

Discriminant Validity- Heterotrait Monotrait Ratio (HTMT)

HTMT is calculated as the squared loadings of the constructed indicators divided by the sum of their variances. A threshold of 0.85 is commonly used to assess the acceptability of HTMTs, with values below 0.85 indicating a good model fit (Hair et al., 2012).

Table5: Discriminant Validity- Heterotrait Momotrait Ratio (HTMT)

	Attitude	Consumer Response	Contextual	Interest	Knowledge	Life Style
Attitude						
Consumer Response	0.579					
Contextual	0.604	0.549				
Interest	0.105	0.262	0.092			
Knowledge	0.509	0.473	0.633	0.070		
Life Style	0.493	0.761	0.375	0.120	0.437	

The HTMT results presented in the above table indicate that the HTMT ratio for all measured constructs remains below the recommended threshold of 0.85, thereby confirming the presence of discriminant validity among the constructs.

Discriminant Validity- Fornell-Larcker Criterion (FLC)

The FLC measures the strength between a structure and its index, with a typical threshold of 0.63, adjustable based on research context (Vieira, 2018).

Table 5: Discriminant Validity- Fornell-Larcker Criterion

	Attitude	Consumer Response	Contextual	Interest	Knowledge	Life Style
Attitude	0.767					
Consumer Response	0.485	0.744				
Contextual	0.471	0.452	0.830			
Interest	0.068	0.183	0.072	0.790		
Knowledge	0.416	0.389	0.503	-0.002	0.762	
Life Style	0.382	0.594	0.294	0.072	0.359	0.821

The above table shows that the square root of the AVE for a construct is greater than the correlation with all other constructs, and all values are greater than 0.7. So, discriminant validity is established.

Structural Model

Assessment of the structural model begins with evaluating model fit. Standard structural model assessment criteria include the coefficient of determination (R^2) and the statistical significance and relevance of the path coefficients.

Model Fit

Table 6: Model Fit

	Saturated model	Estimated model
SRMR	0.08	0.110
d_ULS	1.701	3.310
d_G	0.514	0.608
Chi-square	914.432	1017.359
NFI	0.676	0.639

Standardized Root Mean Square Residuals (SRMR):

SRMR is a measure of the adequacy of the fit of a structural equation model (SEM). It is defined as the average residual (unexplained variance) between observed and predicted values divided by the mean of the observed variable. The SRMR (Standardized Root Mean Square Residual) threshold is generally considered to be 0.08 (Cheung & Rensvold, 2002).

NFI: NFI stands for Normed Fit Index and measures how well a model fits the data (Hair et al., 2017). NFI is calculated by dividing the difference between the model's chi-square value and the baseline model's chi-square value by the baseline model's chi-square value. The higher the NFI, the better the model fit. The SRMR value for the model is 0.08, and the NFI is 0.676, both of which are good indicators of model fit.

Coefficient of Determination (R^2): R^2 represents the variance explained by each endogenous construct and measures the model's in-sample predictive power. It describes how much change in the dependent variable can be accounted for by one or more independent variables. R^2 value from 0 to 1, and higher values indicate greater explanatory power. In terms of Rsquare (R^2) values, Cohen (1988) stated that values between 0.02 and 0.12 were considered weak, 0.13 to 0.25 were deemed moderate, and 0.26 and above were considered significant. Falk and Miller (1992) suggested that R^2 values be larger than 0.10.

Table 7: R-square overview

	R-square	R-square adjusted
Attitude	0.309	0.300
Consumer Response	0.236	0.233

The present study shows that the R^2 values for attitude towards food labeling and consumers' response to food labeling are 0.309 and 0.236, respectively. Here, 30.9% of the change in attitude towards food labeling is explained by four exogenous variables, and five exogenous variables explain 23.6% of the shift in consumers' response to food labeling. The results show that R^2 for all endogenous constructs exceeds 0.23, indicating substantial explanatory power for the model.

Assess the Significance and Relevance of the Structural Model Relationships (Hypotheses Testing)

In this step, the significance and relevance of the structural model relationship have been assessed to test the hypothesized relationship. A bootstrapping approach with 5,000 bootstrap samples was used to evaluate the importance of the proposed pathways. The path analysis findings determine whether the proposed hypotheses are accepted or rejected. The hypothesized path coefficients, t-statistics, and significance levels for each proposed path are presented in the following table.

Table 8: Path Coefficient

	Beta Coefficient	T statistics (O/STDEV)	P values
Interest -> Attitude	0.030	0.437	0.662
Knowledge -> Attitude	0.177	2.823	0.005
Life Style -> Attitude	0.225	4.277	0.000
Contextual -> Attitude	0.314	4.593	0.000
Attitude -> Consumer Response	0.487	9.486	0.000

Note: β = Beta Coefficient, SD=Standard Deviation, T= t statistics, P=Probability (p) value

- H₁ Assesses whether the consumer's interest significantly and positively affects the attitude towards food labeling. The result shows that consumer interest has no significant positive impact on attitude towards food labeling ($\beta = 0.030$, $t = 0.437$, $p = 0.662$). Hence, H₁ was not supported.
- H₂ Assesses whether consumer knowledge significantly and positively affects attitudes towards food labeling. The result shows that consumer knowledge has a significant and positive impact on attitude towards food labeling ($\beta = 0.177$, $t = 2.823$, $p = 0.005$). Hence, H₂ was supported.
- H₃ Assesses whether consumers' personal lifestyles significantly and positively affect their attitudes towards food labeling. The results show that consumers' lifestyle has a significant and positive impact on attitude towards food labeling ($\beta = 0.225$, $t = 4.277$, $p = 0$). Hence, H₃ was supported.
- H₄ Assesses whether contextual determinants of consumer attitudes towards food labeling

significantly and positively affect those attitudes. The results show that contextual determinants of consumers have a significant and positive impact on attitude towards food labeling ($\beta = 0.314$, $t = 4.593$, $p = 0$). Hence, H4 was supported.

- H₅ Assesses whether the consumer's attitude significantly and positively affects the consumer's response to food labeling. The results show that consumer attitude has a significant, positive impact on consumer response to food labeling. ($\beta = 0.487$, $t = 9.486$, $p = 0$). Hence, H5 was supported.

DISCUSSION

The results supported Hypothesis 2, indicating that consumers' knowledge significantly and positively influences their attitudes toward food labels. This suggests that individuals with greater knowledge in food-related areas are more likely to have positive attitudes toward food labels. This positive relationship reinforces the view that consumer engagement is a key factor in shaping perceptions of food labels, which are often used to convey nutritional, safety, or ethical information.

H₃ assessed that consumer lifestyles have a significant positive impact on attitudes toward food labels. Hypothesis 4 also indicates that consumers' contextual determinants have a significant positive effect on attitudes toward food labels. This suggests that consumer contextual determinants, such as product availability, point-of-sale environment, government regulations, and salesperson behavior, also influence food labeling.

The results strongly supported Hypothesis 5, indicating that consumer attitudes significantly and positively influenced consumer responses to food labels ($\beta = 0.487$, $t = 9.486$, $p = 0$). This suggests that individuals with positive attitudes toward food labels are more likely to engage in positive behavioral responses, such as reading or acting on label information. Furthermore, the strength of this relationship ($\beta = 0.487$) highlights the critical role of attitudes as a key predictor of consumer behavior in the context of food labeling.

On the other hand, the results did not support Hypothesis 1. The analysis revealed that this relationship was not statistically significant ($\beta = 0.030$, $t = 0.437$, $p = 0.662$). Suggesting that consumer interest alone may not be a strong predictor of attitudes toward food labels in this context. This finding contrasts with previous research that has found a positive correlation between consumer interest in food and positive attitudes toward food labels. The non-significant result highlights the need for future research to investigate further which conditions or other variables may influence how interest influences consumer attitudes.

IMPLICATION

Consumers are increasingly considering information about food safety and the attributes of the production

process when making purchase decisions. The market effect depends on consumers' perception of attributes, the benefits and costs of labeling companies, and the goals of government policies.

As knowledge, lifestyle, and environmental factors all contribute to more positive attitudes toward food labeling, these factors may enhance perceptions of food labeling. More positive attitudes can lead to better labeling, smarter purchases, and healthier diets. Based on the research findings, specific policy implications and recommendations for Bangladesh are outlined, such as conducting education and awareness campaigns, improving label design, using intuitive symbols, mandating labeling of particular elements (such as sugar, salt, and fat) on all packaged foods, and ensuring that labels are understandable even to consumers with low literacy levels. Finally, in many countries, the use of food labels is increasingly becoming a regulatory tool to inform consumers and influence the food quality market. Global best practices, such as traffic light systems, healthier choice labels, mandatory disclosures, and front-of-pack warnings, may offer valuable lessons for Bangladesh.

CONCLUSION

The path coefficient results revealed varying degrees of influence among the independent variables (Interest, Knowledge, Lifestyle, CONTEXTUAL) on the dependent variable, attitude, and, subsequently, on Consumer Response. The relationship between Interest and Attitude was found to be statistically insignificant. Knowledge has a significant and positive effect on attitude. The relationship between lifestyle and attitude is substantial and statistically significant. Among all predictors of Attitude, Contextual has the most substantial positive and significant effect. The path from Attitude to Consumer Response is critical and positive, with the highest beta and t-value in the model. This confirms that improvements or increases in attitude substantially enhance Consumer Response. The sample represents consumers from a district in Bangladesh; therefore, the findings are limited in generalizability to consumers in other districts. Finally, some other variables ignored by the researcher that influence consumers' responses. So there is a significant opportunity for future researchers to address gaps, such as exploring the limitations of interest and considering potential moderating or mediating variables, as well as other independent variables, to refine the model in this field.

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