

Effects of Food Corporate Social Irresponsibility on Animosity and Boycott Behavior

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ABSTRACT

This research aims to analyze the influence of Food Corporate Social Irresponsibility (FCSI), animosity, and reluctance to buy on boycott behavior with consumers' altruistic value orientation as a moderating variable among food and beverage product consumers in West Sulawesi, Indonesia. The boycott phenomenon has increasingly become a global trend as a form of consumer protest against corporate actions deemed socially irresponsible. **Using a quantitative** approach with Structural Equation Modeling (SEM) analysis, data were collected through questionnaires from 200 respondents in West Sulawesi. **Research findings** indicate that FCSI has a positive and significant effect on animosity, and animosity has a positive and significant effect on reluctance to buy. However, FCSI does not significantly influence reluctance to buy, neither animosity nor reluctance to buy significantly affects boycott behavior, and FCSI does not significantly influence boycott behavior. **Additionally**, consumers' altruistic value orientation does not prove to moderate the relationship between animosity and boycott behavior, nor between reluctance to buy and boycott behavior. **The results suggest that** although FCSI can trigger animosity and reluctance to buy, these factors do not necessarily drive consumers to engage in boycott behavior, providing insights for companies in managing reputation and developing more effective communication strategies to address the negative impacts of consumer perceptions regarding corporate social irresponsibility.

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1. INTRODUCTION

Boycott behavior has increasingly become a form of consumer response to corporate actions perceived as socially irresponsible, particularly in the food industry where ethical, religious, and safety concerns are highly salient [1, 2]. Although prior studies have established links between Food Corporate Social Irresponsibility (FCSI), negative emotions, and consumer resistance, empirical evidence remains mixed regarding whether such emotional reactions translate into actual boycott behavior. Moreover, limited attention has been given to the role of personal moral values and contextual factors in shaping this process, especially within digitally connected and morally sensitive communities [3, 4]. Addressing this gap, the present study examines the relationships between FCSI, animosity, reluctance to buy, and boycott behavior, while incorporating consumers' altruistic value orientation and the local context of West Sulawesi, Indonesia.

Several studies have confirmed that consumers who are aware of unethical corporate behavior tend to express their dissatisfaction through negative word of mouth negative word-of-mouth (NWOM) and boycotting [5]. Previous studies found that in the food industry context, operational failure and ethical failure have distinct consequences the former more strongly triggers boycott behavior, while the latter drives NWOM. Moral emotions are central to consumer responses to Corporate Social Irresponsibility (CSI). One of the most common emotional reactions is animosity, a feeling of hostility or anger toward a company [6, 7]. Animosity has been shown to reduce consumer loyalty and purchase intentions, particularly when firms are perceived to neglect their social responsibilities. In geopolitical or international contexts, animosity toward business entities can significantly affect buying intentions, as evidenced in studies on boycotts of products from China, Japan, and Russia [8, 9]. Alongside animosity, consumers also exhibit reluctance to buy as a form of rejection toward products that conflict with their personal values, including ethical and environmental concerns. Misalignment between consumer values and corporate image often results in resistance.

Beyond emotional responses, this study also considers consumers' altruistic value orientation as a key factor in explaining boycott behavior [10]. Consumers with high social and environmental concern are more likely to actively reject products from companies that act unethically. Research by suggests that altruistic values strengthen negative reactions to corporate initiatives perceived as profit driven [11–13]. In cases of inauthentic Corporate Social Responsibility (CSR), altruistic consumers are often more skeptical and resistant. These values also significantly drive boycott behavior toward products that harm the environment or violate social ethics.

Although numerous studies have explored the relationship between FCSI and consumer behavior, a gap remains in understanding the role of consumers' personal values particularly altruistic orientation in influencing the intensity and persistence of boycott actions [14, 15]. Much of the existing literature focuses on emotional aspects such as animosity or distrust, with limited attention given to how internal moral values reinforce consumer reactions to CSI, especially in the context of food products, which are closely linked to religious norms and ethical consumption [16].

This study is closely aligned with the Sustainable Development Goals (SDGs), particularly SDGs 12 (Responsible Consumption and Production) and SDGs 16 (Peace, Justice, and Strong Institutions). By examining consumer responses to FCSI, this research highlights how ethical concerns, animosity, and reluctance to buy reflect increasing consumer awareness of responsible consumption practices [17, 18]. The findings support SDGs 12 by demonstrating that consumers actively evaluate corporate behavior and express resistance toward irresponsible production practices, even when such resistance does not fully materialize into boycott actions. Furthermore, the study contributes to SDGs 16 by illustrating how consumer reactions to corporate involvement in unethical or unjust practices represent a form of social accountability and civic engagement [19, 20]. Although boycott behavior is not always enacted, the presence of moral disapproval and ethical scrutiny indicates the growing role of consumers in promoting justice, transparency, and institutional responsibility through market based actions.

2. LITERATURE REVIEW

2.1. FCSI on Consumer Animosity

Food Corporate Social Irresponsibility (FCSI) refers to actions by companies in the food industry that contradict social norms, ethics, or public expectations, such as labor exploitation, environmental pollution, or participation in controversial political issues [21]. Such practices often lead to negative consumer perceptions of the company, which may escalate into emotional hostility, commonly referred to as consumer animosity. Demonstrated that unethical conduct in food company operations can provoke strong emotional reactions, particularly anger resulting in consumers' unwillingness to engage with the brand [22, 23]. Regret theory suggests that consumers may also act to avoid the regret associated with purchasing from socially irresponsible companies. To ensure both currency and theoretical rigor, this study prioritizes recent empirical literature published from onwards. Earlier references are retained selectively and solely to support foundational theories that remain central to the conceptual framework [24, 25]. Therefore, the hypothesis developed is FCSI has a positive effect on consumer animosity toward food products associated with unethical practices in West Sulawesi, Indonesia [26]

2.2. The Effect of Animosity on Boycott Behavior

Consumer animosity represents a negative emotional response toward companies perceived to violate ethical or social norms [27]. Prior studies suggest that animosity may motivate avoidance and protest behavior, including boycotts, particularly in contexts of political or ethical conflict [28]. However, empirical findings remain inconsistent, indicating the need for further examination across different product categories and cultural settings [29, 30]. Therefore, the hypothesis developed is animosity positively influences boycott behavior among consumers of food products associated with unethical practices in West Sulawesi, Indonesia.

2.3. The Effect of FCSI on Reluctance to Buy

Reluctance to buy is a psychological response in which consumers feel uncertain, anxious, or uncomfortable toward a product often due to the company's negative reputation or unethical business practices [31, 32]. In the food sector, corporate reputation greatly influences perceived risk and trust in the product offered. Found that poor product performance and ethical violations within the food industry contribute to consumer resistance, manifesting as hesitation or outright rejection. Such reluctance not only reflects concerns over product quality but also signals moral disapproval of the company's behavior [33]. Therefore, the hypothesis developed is FCSI has a positive effect on reluctance to buy food products associated with unethical practices in West Sulawesi, Indonesia.

2.4. The Effect of Reluctance to Buy on Boycott Behavior

Reluctance to buy reflects a negative consumer attitude toward products tied to unethical companies [34, 35]. According to the Theory of Planned Behavior such negative attitudes like distrust or doubt shape intentions, which then drive actual behavior, including product boycotts. Showed that misalignment between consumer personal values and company image is a critical trigger for resistance, which can escalate into overt boycott actions. In this regard, reluctance to buy is not merely a passive rejection but can evolve into active participation in boycott movements [36, 37]. Therefore, the hypothesis developed is reluctance to buy positively affects boycott behavior toward food products associated with unethical practices.

2.5. The Direct Effect of FCSI on Boycott Behavior

When FCSI involves violations of moral values such as religion, human rights, or humanitarian concerns, consumers may immediately resort to boycott behavior [38]. Prior research indicates that boycotts can be triggered directly, without the mediation of emotions like anger or animosity, particularly when moral sensitivity is high. In Indonesia, this phenomenon is reinforced by normative legitimacy such as the Indonesian Ulema Council (MUI) Fatwa No. 83 of 2023, which explicitly urges Muslims to refrain from purchasing products linked to injustice against Palestine [39, 40]. This suggests that moral and religious solidarity can independently prompt boycott behavior. Therefore, the hypothesis developed is FCSI has a direct effect on consumer boycott behavior.

2.6. The Effect of Animosity on Reluctance to Buy

Animosity, as a form of negative emotion or hostility toward an unethical company, affects how consumers evaluate and respond to products [41, 42]. This hostility not only influences boycott decisions but also initiates early stage resistance, such as hesitation or skepticism in purchasing. Found that consumers with high levels of animosity exhibit strong tendencies to question a product's legitimacy even before explicitly deciding to avoid it. Hence, reluctance to buy can emerge as an early outcome of rising animosity toward a brand or company [43]. Therefore, the hypothesis developed is animosity positively influences reluctance to buy food products associated with unethical practices [44].

2.7. Moderating Role of Altruistic Value Orientation on the Animosity Boycott Relationship

Consumers with high altruistic value orientation exhibit heightened sensitivity to issues of social justice, ethics, and humanity [45, 46]. They tend to display stronger moral commitment when responding to social violations, including through emotional reactions such as animosity. Empirical evidence supports the notion that altruistic values amplify the relationship between animosity and collective action like product boycotts. Altruistic individuals are more likely to convert emotional hostility into real world behavior such as refusing to purchase or publicly opposing unethical brands [47, 48]. Therefore, the hypothesis developed is altruistic value orientation positively moderates the relationship between animosity and boycott behavior toward food products associated with unethical practices in West Sulawesi, Indonesia.

2.8. Moderating Role of Altruistic Value Orientation

Consumers with high altruistic values not only hesitate to purchase from unethical companies but are also more inclined to take concrete action by participating in boycott movements as a form of social concern and moral responsibility [49]. This value orientation strengthens the transition from passive attitudes, such as reluctance to buy, into more active forms of resistance, reflecting moral intentions to protect broader societal and environmental interests rather than merely personal preferences. In this context, altruistic value orientation plays an important role in shaping how ethical concerns are translated into actual consumer behavior. Therefore, the hypothesis developed is that altruistic value orientation positively moderates the effect of reluctance to buy on boycott behavior toward food products associated with unethical practices in West Sulawesi, Indonesia.

2.9. Conceptual Framework

To enrich this explanatory model, altruistic value orientation is introduced as a moderating variable that strengthens the emotional and attitudinal pathways toward action [50, 51]. Specifically, consumers with a high sense of altruism are more likely to transform animosity into boycott behavior, and convert reluctance to buy into an active refusal to support unethical brands. This inclusion acknowledges the role of personal moral frameworks in consumer decision making, particularly in morally sensitive communities. Overall, Figure 1 captures the complex interplay between corporate irresponsibility, emotional and cognitive responses, and ethical consumer activism in the form of product boycotts [52].

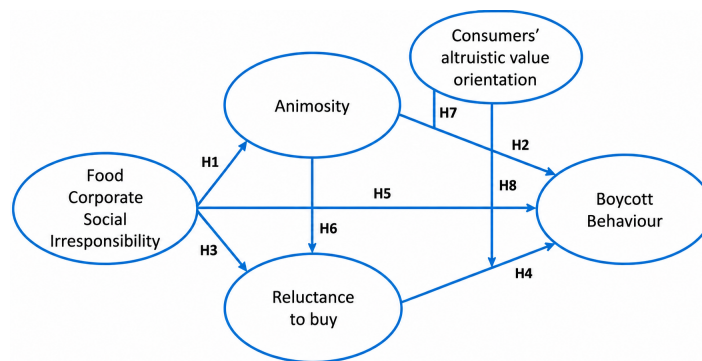


Figure 1. Conceptual Framework of the Study

Figure 1 presents illustrates the proposed conceptual framework examining the relationships between FCSI, animosity, reluctance to buy, and boycott behavior, with altruistic value orientation included as a moderating variable. The framework outlines the hypothesized direct and moderating effects tested in this study [53].

3. RESEARCH METHODS

3.1. Population and Sample

The population of this study consists of food product consumers in West Sulawesi who have adequate awareness of ethical issues, sustainability concerns, and Food Corporate Social Irresponsibility (FCSI), particularly information obtained through digital media and various online platforms that frequently report or discuss unethical corporate practices. Respondents were selected using purposive sampling based on several predetermined criteria, namely that they have previously or are currently consuming food products, possess sufficient awareness and understanding of unethical corporate behavior related to food companies, and are willing to voluntarily participate in the research process [54].

The determination of the sample size was conducted using the Lemeshow formula for populations with an unknown total size, applying a 95% confidence level ($Z = 1.96$), an assumed proportion of boycott behavior of 10% ($P = 0.1$) to represent conservative prevalence, and a margin of error of 5% ($d = 0.05$), which resulted in a minimum required sample of 139 respondents. To enhance the robustness, accuracy, and reliability of the data analysis and to reduce potential sampling error, the final number of respondents was increased to 200 individuals who fully met all the established selection criteria and completed the questionnaire properly.

Table 1. Operational Definition

Variable	Operational Definition	Indicators	Sources
Food Corporate Social Irresponsibility	Consumers' perception of unethical practices by food companies, such as labor exploitation, use of harmful materials, environmental damage, and misleading marketing.	The product is irresponsible toward environmental impact, Inadequate action to ensure product safety, Use of environmentally harmful raw materials, Misleading marketing claims, Neglect of workers' welfare	[3, 34]
Animosity	Negative emotions such as hostility, anger, and distrust felt by consumers toward companies engaged in unethical or controversial practices.	Displeasure with products linked to unethical behavior, Discomfort in purchasing due to moral or religious reasons, Refusal to support unethical companies, Perceived lack of social concern by the company, Anger due to negative impact caused by the product	[8, 29, 37]
Reluctance to Buy	Consumers' hesitation or unwillingness to purchase products associated with unethical or controversial issues.	Hesitation to buy due to moral or religious concerns, Product price causes reluctance to buy, Preference for ethically neutral products, Discomfort with production and marketing practices	[7, 10]
Boycott Behavior	Actual consumer actions to avoid purchasing or using products as a protest against unethical practices.	Intention to stop buying the product, Planning to avoid product based on religious rulings, Discomfort after learning of ethical violations, Recommending others not to buy the product	[7, 31, 36]
Altruistic Value Orientation	Prosocial values that drive consumers to act for the benefit of others or society, especially in supporting CSR and sustainability.	Choosing environmentally friendly products despite higher prices, Favoring companies concerned with social and environmental welfare, Avoiding products that fail ethical or sustainability standards, Feeling responsible to support socially responsible companies	[33, 37]

As presented in Table 1, This study defines and operationalizes each research variable based on relevant theoretical foundations and empirical indicators that have been widely applied in previous studies. FCSI is measured through consumers' perceptions of unethical practices, misleading marketing activities, and social or environmental harm caused by companies, while animosity reflects consumers' negative emotional responses such as anger and moral disapproval toward irresponsible companies. Reluctance to buy is indicated by hesitation in making purchase decisions, and reduced purchase intentions toward unethical food products, whereas boycott behavior is captured through actual consumer actions such as refusing to purchase, switching to alternative brands, and encouraging others to avoid certain products. Meanwhile, altruistic value orientation is operationalized through consumers' concern for environmental protection, and ethical responsibility, which reflects their tendency to prioritize collective well being over personal benefit in consumption decisions. Together, these operational definitions ensure that each construct is measured consistently, accurately represents the underlying concepts, and aligns well with the conceptual framework of the study.

3.2. Operational Definitions and Measurement

This study employs a set of clearly defined constructs to examine the influence of FCSI on consumer behavior, particularly animosity, reluctance to buy, and boycott behavior, in the context of food product consumption. In addition, the role of altruistic value orientation is explored as a moderating variable that may influence how strongly FCSI affects these consumer responses. Each variable is operationalized using indicators derived from established and widely accepted literature to ensure conceptual clarity and empirical validity of the measurement.

As shown in Table 1, FCSI is defined as consumers' perceptions of unethical corporate practices in the food industry, such as environmental damage or labor exploitation, and is measured through five key indicators that represent these unethical dimensions. Animosity refers to consumers' negative emotional responses toward unethical companies and is captured through indicators that reflect moral discomfort and active rejection of such firms. Reluctance to buy encompasses cognitive hesitation and unwillingness to purchase products that are linked to ethical concerns or irresponsible corporate behavior. Boycott behavior is defined as actual consumer actions to abstain from purchasing or using products as a form of protest, and is measured through behavioral intentions as well as recommendations to others to avoid certain products or brands.

Finally, altruistic value orientation reflects prosocial values and consumer motivations to support socially and environmentally responsible companies, indicating a preference for collective welfare over personal benefit in consumption decisions. All variables are measured using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This scale enables the researcher to assess the strength and intensity of consumer attitudes, perceptions, and behavioral intentions in a consistent and quantifiable manner, thereby facilitating robust statistical analysis across all constructs.

3.3. Data Analysis Technique

This study employs Structural Equation Modeling (SEM) using IBM SPSS AMOS, a technology based statistical software, as the primary analytical tool. SEM is particularly suitable for testing complex causal relationships between latent variable constructs that are not directly observable and their associated manifest indicators. SEM enables researchers to simultaneously assess measurement and structural models, making it an effective analytical technique for theory testing and validation in behavioral and social science research conducted in digital and data driven environments.

The SEM procedure in this study follows a structured sequence, development of the theoretical model, construction of the path diagram using analytical software, translation of the diagram into structural equations, selection of the input matrix and estimation method, assessment of model identification, evaluation of model fit through goodness of fit indices generated by the system, and interpretation and modification of the model if necessary.

Model fit is evaluated using multiple fit indices as recommended in SEM methodology. Overall model fit is assessed using several goodness of fit indices, including a non significant Chi square ($p \geq 0.05$), indicating no substantial difference between observed and estimated covariance matrices. RMSEA values smaller than 0.08 indicate acceptable fit, while GFI and AGFI values greater than 0.90 are considered satisfactory. A CMIN/DF ratio less than 2.00 indicates good fit, and TLI and CFI values greater than 0.95 reflect excellent fit. These indices are evaluated collectively to determine the adequacy of the proposed model in representing the underlying data structure and to validate the theoretical assumptions and hypotheses tested in this study.

4. RESULTS AND DISCUSSION

4.1. Descriptive Analysis

4.1.1. Respondent Profile Analysis

Before conducting structural model testing, it is essential to understand the demographic characteristics of the respondents, as these attributes may influence how individuals perceive and respond to issues related to Food Corporate Social Irresponsibility (FCSI). This section provides a descriptive analysis of respondents' profiles, including gender, age, and education level. These demographic variables help contextualize the findings and offer insights into the representativeness and potential biases of the sample.

Table 2. Demographic Characteristics of Respondents

Characteristics	Category	Number of Respondents	Percentage
Gender	Male	144	72%
	Female	56	28%
Age	17–27 years	7	3.5%
	28–38 years	35	17.5%
	39–49 years	66	33%
	≥ 50 years	92	46%
Education	Senior High School	32	16%
	Diploma	16	8%
	Bachelor's Degree	82	41%
	Postgraduate	70	35%

Table 2 presents the demographic characteristics of the 200 respondents who participated in the study, providing an overview of the composition of the research sample, respectively. In terms of gender distribution, males accounted for the majority, representing 72% of the sample, while females constituted the remaining 28%. Regarding age, the data show a dominance of older age groups, with 46% of respondents aged 50 years or older and 33% belonging to the 39–49 year age group, indicating that most participants were in the middle-aged to older categories. Meanwhile, the younger groups aged 28–38 years and 17–27 years comprised 17.5% and 3.5% of the sample, respectively, showing that younger respondents were relatively underrepresented in the study.

In terms of educational background, most respondents had attained higher education, with 41% holding a Bachelor's degree and 35% a Postgraduate degree, reflecting a generally well educated sample. Respondents with a Senior High School education accounted for 16%, while those with a Diploma represented the smallest proportion at 8%. This demographic profile suggests that the study sample was predominantly male, middle aged to older, and highly educated, factors that may shape their level of awareness, patterns of judgment, and behavior responses toward ethical and sustainability related issues in the food industry.

Table 3. Descriptive Statistics of Variables

Variable	Theoretical Range	Actual Range	Mean	Standard Deviation
Food Corporate Social Irresponsibility	5–25	18.7–19.4	3.801	0.82033
Animosity	5–25	19.1–19.8	3.897	0.83683
Reluctance to Buy	4–20	15.4–16.2	3.885	0.80069
Boycott Behavior	4–20	15.5–15.9	3.935	0.78395
Consumers' Altruistic Value Orientation	4–20	15.6–16.8	4.063	0.72318

The descriptive statistics Table 3 shows that the Food Corporate Social Irresponsibility variable has a mean score of 3.801 with a standard deviation of 0.820, indicating that respondents tend to agree with the statements related to corporate irresponsibility in the food sector. The Animosity variable has a mean of 3.897 and a standard deviation of 0.837, reflecting a general agreement among respondents regarding feelings of hostility toward certain companies or products. The Reluctance to Buy variable has a mean of 3.885 and a standard deviation of 0.801, suggesting that respondents somewhat agree with being hesitant to purchase products from irresponsible companies. Meanwhile, the Boycott Behavior variable shows a mean of 3.935 with a standard deviation of 0.784, indicating a relatively high level of agreement toward engaging in boycotts as a form of response. Lastly, the Consumers' Altruistic Value Orientation variable records the highest mean score of 4.063 with a standard deviation of 0.723, suggesting that respondents generally possess strong altruistic values in making their consumption decisions. Overall, all five variables reflect a tendency among respondents to agree with statements concerning ethical behavior and social responsibility in consumption.

Table 4. Reliability and Validity Testing Results

Variable	Construct Reliability (CR)	Highest Loading Factor	Lowest Loading Factor	Notes
Food Corporate Social Irresponsibility	0.822	0.789	0.698	All items valid (≥ 0.5), reliable (CR ≥ 0.7)
Animosity	0.882	0.843	0.716	All items valid and reliable
Reluctance to Buy	0.866	0.897	0.559	All items valid, item with 0.559 still acceptable
Boycott Behavior	0.823	0.836	0.780	Strong construct reliability and valid items
Consumers' Altruistic Value Orientation	0.751	0.732	0.548	Acceptable reliability, all items valid

The results of the validity and reliability testing in Table 4 show that all variables meet the acceptable thresholds for construct validity and internal consistency reliability. The variable FCSI has a critical ratio (CR) value of 0.822, with loading factors ranging from 0.698 to 0.789, indicating good reliability and valid indicators. The Animosity variable demonstrates a high CR of 0.882, with loading factors between 0.716 and 0.843, suggesting that all items are both reliable and strongly valid. The Reluctance to Buy variable has a CR of 0.866, with the highest loading at 0.897 and the lowest at 0.559. Although one item falls slightly below the ideal threshold of 0.6, it is still acceptable within exploratory research contexts. The Boycott Behavior variable shows a CR of 0.823, with consistently strong loading factors between 0.780 and 0.836, reflecting excellent internal consistency and convergent validity. Lastly, the Consumers' Altruistic Value Orientation variable has the lowest CR at 0.751, but still meets the minimum threshold for reliability, with loading values ranging from 0.548 to 0.732. Overall, all constructs exhibit sufficient levels of reliability and validity, making them suitable for further analysis in the structural model.

4.2. Model Fit Testing

Table 5. Model Fit Indices

Fit Index	Cut off Value	Test Result	Evaluation
CMIN/DF	<2	1.370	Good
Sig. Probability	>0.05	0.071	Good
RMSEA	<0.08	0.009	Good
GFI	>0.90	0.961	Good
RMR	<0.05	0.023	Good
TLI	>0.95	0.957	Good
CFI	>0.95	0.931	Marginal
AGFI	>0.95	0.900	Marginal

Table 5 presents the goodness of fit analysis, indicating that the structural model achieves an overall acceptable fit with the observed data. Several indices support the model's validity, including CMIN/DF 1.370, which is below the cut off value of 2, and a significance probability value of 0.071, which exceeds the 0.05 threshold, suggesting the model is statistically adequate. Furthermore, RMSEA 0.009, GFI 0.961, RMR 0.023, and TLI 0.957 all fall within favorable ranges, indicating good model fit. However, two indices, CFI 0.931 and AGFI 0.900, are slightly below the recommended cut off value of 0.95, reflecting marginal fit and suggesting potential areas for further model refinement. Overall, the model demonstrates a strong fit with minor areas that could benefit from adjustment.

4.3. SEM Analysis

Structural Equation Modeling (SEM) was employed to examine the causal relationships among the latent variables in this study. Data analysis was conducted using the latest version of Analysis of Moment Structures (AMOS) software with the maximum likelihood estimation approach. SEM enables the simultaneous testing of both the measurement model and the structural model, offering a comprehensive understanding of model fit and the relationships among constructs. The following Figure 2 presents the results of the structural model analysis using SEM in AMOS:

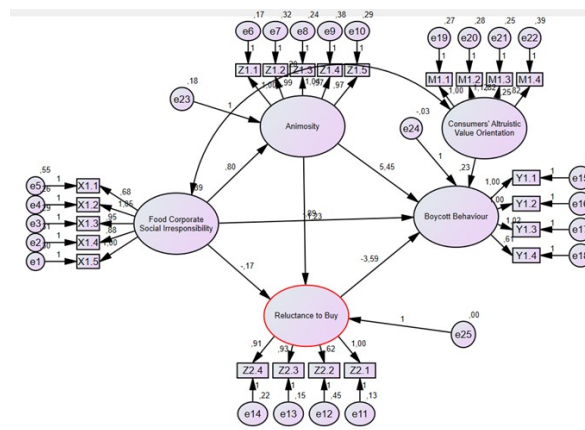


Figure 2. Structural Model Results Using SEM AMOS

Figure 2 presents the SEM results of the proposed model. The diagram displays standardized path coefficients and significance levels, illustrating the relationships among Food Corporate Social Irresponsibility, animosity, reluctance to buy, altruistic value orientation, and boycott behavior.

4.3.1. Analysis of Indicator and Variable Relationships with Latent Constructs

Moreover, Animosity exerts a strong and significant positive effect on Reluctance to Buy ($CR = 11.614$, $p < 0.001$). This highlights the mediating role of emotional reactions in shaping consumer behavior, where feelings of hostility or resentment directly contribute to consumer hesitation or avoidance in purchasing products associated with corporate misconduct. In contrast, the direct effect of FCSI on Reluctance to Buy was found to be negative and marginally non significant ($CR = -1.911$, $p = 0.056$). Although the direction of the relationship aligns with expectations suggesting that perceived irresponsibility reduces purchase intention the lack of statistical significance implies that the impact of FCSI alone may not be sufficient to deter purchasing behavior without the presence of affective mediators such as animosity.

Interestingly, the analysis revealed that none of the direct paths leading to Boycott Behavior were statistically significant. Specifically, the influence of FCSI ($CR = -0.299$, $p = 0.765$), Animosity ($CR = 0.274$, $p = 0.784$), and Reluctance to Buy ($CR = -0.224$, $p = 0.822$) on Boycott Behavior were all non significant. The non significant relationships observed between animosity, reluctance to buy, and boycott behavior warrant a more nuanced interpretation from a consumer behavior and Corporate Social Responsibility (CSR) perspective. Rather than indicating consumer indifference, these findings suggest the presence of a well documented attitude behavior gap, where moral disapproval and negative affect do not automatically translate into collective action. In the context of essential goods such as food products, consumers may experience ethical discomfort while simultaneously prioritizing functional needs, habitual consumption patterns, and limited availability of substitutes. From a CSR standpoint, this implies that moral evaluations of corporate irresponsibility operate primarily at the attitudinal level, whereas behavioral responses are constrained by situational feasibility and perceived personal impact. Furthermore, the absence of significant effects indicates that boycott behavior may require additional social activation mechanisms such as perceived consumer effectiveness, social endorsement, or digital mobilization beyond individual emotions or values alone. Thus, the non significant findings refine existing CSI boycott models by demonstrating that emotional and moral reactions are necessary but insufficient conditions for sustained boycott participation.

Table 6. Regression Weights of the Structural Model

Path	C.R.	p-value	Significance
FCSI → Animosity	8.840	***	Significant
FCSI → Reluctance to Buy	-1.911	0.056	Not Significant
Animosity → Reluctance to Buy	11.614	***	Significant
Animosity → Boycott Behavior	0.274	0.784	Not Significant
Reluctance to Buy → Boycott Behavior	-0.224	0.822	Not Significant
FCSI → Boycott Behavior	-0.299	0.765	Not Significant

Table 6 presents the regression weight estimates derived from the SEM analysis, examining the direct effects among the latent constructs in the structural model. The findings provide insight into the strength and significance of each hypothesized relationship. The results indicate a statistically significant and positive relationship between FCSI and Animosity (CR = 8.840, $p < 0.001$). This suggests that consumers' perceptions of unethical corporate practices such as environmental harm, labor exploitation, or deceptive marketing in the food industry provoke heightened emotional responses, specifically animosity, toward the offending companies.

4.3.2. Moderation Analysis

To test the moderating role of Consumers' Altruistic Value Orientation, interaction terms were included in the structural model. The analysis focused on examining whether altruistic values strengthen or weaken the relationships between key antecedent variables and Boycott Behavior. The results of the moderation analysis are presented in Table 7.

Table 7. Regression Weights (Moderation Effect)

Relationship	Estimate	S.E.	C.R.	p-value	Significance
Boycott Behavior ← Animosity × Altruistic Value	0.000	0.000	0.443	0.658	Not Significant
Boycott Behavior ← Reluctance × Altruistic Value	0.000	0.000	-0.046	0.964	Not Significant

Table 7 presents although the moderating effects of consumers' altruistic value orientation were found to be statistically insignificant, these findings provide important theoretical and empirical contributions to the CSI and boycott literature. First, the results challenge the dominant assumption that strong moral or altruistic values automatically intensify the translation of negative emotions or purchase reluctance into active boycott behavior. This suggests that ethical consumption behavior is not solely value driven but is also constrained by situational, structural, and practical considerations. Second, the insignificant moderation effects highlight the existence of an attitude behavior gap, where moral awareness and prosocial values do not necessarily lead to collective action such as boycotts, particularly in essential product categories like food. Third, this study contributes to theory refinement by demonstrating that altruistic value orientation may function as an antecedent of ethical concern rather than as a behavioral catalyst. By empirically documenting these non significant effects, this research encourages scholars to reconsider the boundary conditions of value based models and to explore alternative moderators such as perceived consumer effectiveness, social norms, availability of substitutes, and collective efficacy. Therefore, the insignificant moderation findings do not represent a limitation but rather

offer meaningful insights that advance a more realistic and context sensitive understanding of ethical consumer behavior.

4.4. The Effect of FCSI on Animosity and Reluctance to Buy

The findings indicate that FCSI has a significant positive effect on consumer animosity toward food companies associated with unethical practices in West Sulawesi. FCSI includes violations of business ethics, environmental harm, labor exploitation, and the use of unsafe materials, which can trigger negative emotional responses from consumers. This result is consistent with previous studies showing that unethical corporate behavior in the food industry reduces trust and increases hostility toward companies that fail to meet social and ethical expectations. High consumer sensitivity to public health and environmental issues in West Sulawesi further strengthens this emotional reaction.

However, the study finds that FCSI does not significantly influence consumers' reluctance to buy. Although consumers may be aware of unethical practices, this awareness does not necessarily translate into hesitation to purchase. Statistical results show that the relationship between FCSI and reluctance to buy does not meet the significance threshold (estimate = -0.174, CR = -1.911). This indicates that ethical awareness may be psychologically salient but behaviorally constrained by market realities and daily consumption needs. Practical considerations such as price, brand loyalty, product availability, and personal preferences continue to play a dominant role in food purchasing decisions, thereby weakening the impact of ethical concerns on actual buying behavior. Therefore, while FCSI successfully triggers emotional reactions, it does not automatically lead to reduced purchasing intention.

4.5. The Effect of Animosity, Reluctance to Buy, and Altruistic Values on Boycott Behavior

The results show that neither animosity nor reluctance to buy has a significant direct effect on boycott behavior. Although animosity reflects strong negative emotions toward unethical companies, these emotions do not necessarily translate into active boycott participation. This finding contrasts with previous studies suggesting that animosity can encourage boycott behavior, but in this context, emotional dissatisfaction appears to remain at the attitudinal level rather than developing into collective action. Similarly, reluctance to buy represents a passive form of resistance that does not automatically escalate into organized boycott behavior, which contradicts assumptions derived from the Theory of Planned Behavior and value ethics mismatch theory.

Furthermore, altruistic value orientation does not moderate the relationship between animosity or reluctance to buy and boycott behavior. Although altruistic consumers are theoretically more concerned with social and environmental welfare, the findings indicate that moral values alone are insufficient to drive boycott actions. Several contextual factors may explain this outcome, including limited access to ethical product alternatives, price sensitivity, habitual consumption patterns, and the absence of strong social or digital mobilization mechanisms. In the Indonesian context, particularly in West Sulawesi, social norms and economic realities may exert stronger influence on consumer behavior than individual moral convictions. Overall, these results highlight a critical gap between ethical awareness, emotional reactions, and collective behavioral responses, contributing theoretically by showing that emotional and moral concerns require supporting social and technological mechanisms to be transformed into effective boycott behavior.

5. MANAGERIAL IMPLICATIONS

The findings of this study provide several important managerial implications for firms in the food industry, particularly in managing Corporate Social Responsibility (CSR), reputation, and consumer trust. First, the absence of a direct effect of animosity and reluctance to buy on boycott behavior suggests that negative consumer sentiments do not automatically result in active market punishment. For managers, this indicates a critical opportunity to intervene through timely and transparent CSR communication before negative attitudes escalate into coordinated consumer actions.

Second, firms should prioritize proactive reputation management by clearly communicating ethical standards, food safety practices, and social responsibility initiatives. Since consumers may continue purchasing essential food products despite moral discomfort, consistent and credible CSR messaging can help mitigate reputational damage and preserve consumer trust. Managers are encouraged to leverage digital platforms and social media not merely for promotional purposes, but as channels for ethical disclosure, dialogue, and responsiveness to public concerns.

Third, the findings imply that trust plays a mediating role between ethical evaluations and actual consumer behavior. Companies that demonstrate accountability, corrective actions, and long term commitment to responsible production are more likely to prevent attitudinal negativity from transforming into behavioral resistance. Therefore, managerial efforts should focus on building trust based relationships rather than assuming that the absence of boycotts reflects consumer acceptance.

Overall, this study highlights that managing CSR in the food industry is less about reacting to boycotts and more about addressing early stage consumer animosity and reluctance through strategic communication, transparency, and ethical consistency.

6. CONCLUSION

This study examined consumer responses to food-related corporate social irresponsibility by focusing on animosity, reluctance to buy, and boycott behavior within an ethically sensitive consumption context. The findings demonstrate that while corporate social irresponsibility significantly triggers negative emotional and attitudinal reactions, these responses do not necessarily translate into active boycott behavior. This highlights the presence of an attitude behavior gap in ethical consumption, particularly for essential products such as food. Furthermore, the results show that altruistic value orientation does not significantly strengthen the relationship between negative consumer reactions and boycott behavior, suggesting that moral values alone are insufficient to mobilize collective consumer action. These findings contribute to the literature by challenging prevailing assumptions that emotional and moral disapproval automatically lead to behavioral resistance. From a practical perspective, the study underscores the importance for firms to proactively manage CSR communication, reputation, and consumer trust to prevent attitudinal negativity from escalating into long term reputational damage. Overall, this research offers a more nuanced understanding of consumer responses to corporate irresponsibility and provides insights relevant to both scholars and practitioners concerned with responsible consumption and ethical business practices.

7. DECLARATIONS

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7.3. Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon request.

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7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

REFERENCES

- [1] F. M. Kiyak and S. O. Dora, "The influence of social control and feelings of guilt in a religious context on consumer boycotts," *Journal of International Consumer Marketing*, vol. 37, no. 2, pp. 117–128, 2025.
- [2] P. Verma, "Animosity leads to boycott and subsequent reluctance to buy: evidence from sino indian disputes," *Review of International Business and Strategy*, vol. 32, no. 3, pp. 368–386, 2022.
- [3] J. C. Weiss, P. J. Barwick, S. Li, and J. L. Wallace, "Commercial casualties: political boycotts and international disputes," *Journal of East Asian Studies*, vol. 23, no. 3, pp. 387–410, 2023.
- [4] N. Akhtar, H. Khan, U. I. Siddiqi, T. Islam, and I. Atanassova, "Critical perspective on consumer animosity amid russia-ukraine war," *Critical Perspectives on International Business*, vol. 20, no. 1, pp. 49–70, 2024.
- [5] H. E. Riwayati, H. A. Rachman, S. Pramesworo, N. Yustisia, H. Umar, and M. Siahaan, "Unveiling the dynamics of financial literacy and inclusion in women digital loan decision making," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 7, no. 3, pp. 986–998, 2025, <https://doi.org/10.34306/att.v7i3.788>.
- [6] J. Xie, H. J. Choo, and H. K. Lee, "Effects of consumer animosity on boycotts: the role of cognitive-affective evaluations and xenocentrism," *Journal of Fashion Marketing and Management: An International Journal*, vol. 28, no. 1, pp. 45–60, 2023.
- [7] P.-H. Wu and S. Park, "The role of moral emotions when missions clash: harnessing gratitude and mitigating anger in sustainable food marketing," *Journal of Strategic Marketing*, pp. 1–22, 2025.
- [8] Y. Li and M. Zhao, "How the product-harm crisis influences consumer boycotts: the role of social distance," *Humanities and Social Sciences Communications*, vol. 12, no. 1, pp. 1–14, 2025.
- [9] W. Cao, X. Wang, Y. Feng, J. Zhou, and Z. Yang, "Improving maritime accident severity prediction accuracy: A holistic machine learning framework with data balancing and explainability techniques," *Reliability Engineering & System Safety*, p. 111648, 2025.
- [10] D. Derlina, S. Zuhra, S. Miwardi, R. H. Lubis, J. T. Purba, and S. Stephanie, "Tpack based differentiated problem posing to enhance entrepreneurial digital problem solving," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 7, no. 3, pp. 914–926, 2025, <https://doi.org/10.34306/att.v7i3.609>.
- [11] J. Kim, J. Rhee, S. Kang, M. Jung, J. Kim, M. Jeon, J. Park, J. Ham, B. H. Kim, W. C. Lee *et al.*, "Self-supervised machine learning framework for high-throughput electron microscopy," *Science Advances*, vol. 11, no. 14, p. eads5552, 2025.
- [12] X. Wang, X. Chu, Y. Xie, Y. He, H. Xu, and S. Xu, "Machine learning framework for evaluating fracturing-flooding effectiveness: From prediction to decision recommendations," *Fuel*, vol. 381, p. 133299, 2025.
- [13] R. Sivaraman, M.-H. Lin, M. I. C. Vargas, S. I. S. Al-Hawary, U. Rahardja, F. A. H. Al-Khafaji, E. V. Golubtsova, and L. Li, "Multi-objective hybrid system development: To increase the performance of diesel/photovoltaic/wind/battery system," *Mathematical Modelling of Engineering Problems*, vol. 11, no. 3, p. 837, 2024.
- [14] B. Jin and X. Xu, "Predictive modeling of peanut oil prices utilizing a gaussian process regression-based machine learning framework," *Advances in Data Science & Adaptive Analysis*, vol. 17, no. 3, 2025.
- [15] F. Dell'Anna, "Machine learning framework for evaluating energy performance certificate (epc) effectiveness in real estate: A case study of turin's private residential market," *Energy Policy*, vol. 198, p. 114407, 2025.
- [16] R. G. Rahmadani, O. D. Nurhayati, and D. M. K. Nugraheni, "Oriented enterprise architecture for enhancing digital governance and technopreneurship in regional governments," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 7, no. 3, pp. 942–956, 2025, <https://doi.org/10.34306/att.v7i3.769>.
- [17] T. Gu, H. Zhao, L. Yue, J. Guo, Q. Cui, J. Tang, Z. Gong, and P. Zhao, "Attribution analysis of urban social resilience differences under rainstorm disaster impact: Insights from interpretable spatial machine learning framework," *Sustainable Cities and Society*, vol. 118, p. 106029, 2025.
- [18] W. Zhao, Z. Chen, Y. Shang, Q. Wang, L. Wang, B. Liu, Y. Liu, and Y. Yang, "A physics-informed machine learning framework for accelerated discovery of single-phase b2 multi-principal element inter-metallics," *npj Computational Materials*, vol. 11, no. 1, p. 278, 2025.
- [19] P. Sanju, N. S. S. Ahmed, P. Ramachandran, P. M. Sajid, and R. Jayanthi, "Enhancing thyroid disease prediction and comorbidity management through advanced machine learning frameworks," *Clinical eHealth*, vol. 8, pp. 7–16, 2025.
- [20] M. Tayal, A. Singh, S. Kolathaya, and S. Bansal, "A physics-informed machine learning framework for

- safe and optimal control of autonomous systems,” *arXiv preprint arXiv:2502.11057*, 2025.
- [21] Y. Sudaryo, D. Hamdani, N. A. Sofiati, D. H. N. Sipahutar, and S. Sutisna, “Assessing the drivers of financial distress in Indonesian rattan SMEs through digital and financial perspectives,” *Aptisi Transactions on Technopreneurship (ATT)*, vol. 7, no. 3, pp. 904–913, 2025, <https://doi.org/10.34306/att.v7i3.534>.
 - [22] A. K. M. Masum, M. F. I. Khan, M. M. Hassan, A. K. Bitto, D. M. Farid, and T. Rahman, “Enhancing dengue fever diagnosis: A machine learning framework with stacking ensemble and SHAP explainability,” in *2025 International Conference on Quantum Photonics, Artificial Intelligence, and Networking (QPAIN)*. IEEE, 2025, pp. 1–6.
 - [23] A. Conti, C. Peukert, and M. Roche, “Beefing it up for your investor? engagement with open source communities, innovation, and startup funding: evidence from GitHub,” *Organization Science*, vol. 36, no. 4, pp. 1551–1573, 2025.
 - [24] G. Abuselidze and B. Sarjeladze, “Investor behavior in venture capital investment: An analytical study of Georgian and central-eastern European startup markets,” *European Journal of Sustainable Development*, vol. 14, no. 1, pp. 149–149, 2025.
 - [25] M. K. Srivastava, A. Dash, and I. Shaikh, “Funding innovation and risk: A grey-based startup investment decision,” *Evaluation Review*, vol. 49, no. 2, pp. 304–342, 2025.
 - [26] A. Kusumawati and R. S. Ishamiyya, “From intention to action: how boycott motivation influences consumer behavior toward Israel-affiliated brands,” *Journal of Consumer Sciences*, vol. 10, no. 3, pp. 484–508, 2025.
 - [27] M. Choiri, F. Setiawan, and A. Shofiyuddin, “Enhancing zakat learning outcomes using augmented reality and virtual reality technologies,” *Aptisi Transactions on Technopreneurship (ATT)*, vol. 7, no. 3, pp. 863–874, 2025, <https://doi.org/10.34306/att.v7i3.604>.
 - [28] A. Fitri, E. Listiana, B. Barkah, and A. Fitriana, “Do animosity, product judgment, and boycott participation influence purchase unwillingness?” *Garuda Kemdikbud RI*, 2024. [Online]. Available: <https://garuda.kemdikbuid.go.id/documents/detail/4868078>
 - [29] O. Gefen, J. Sulaeman, and D. Reeb, “Gender dynamics in startup investor selection: Exposing unseen biases,” in *Academy of Management Proceedings*, vol. 2025, no. 1. Academy of Management Valhalla, NY 10595, 2025, p. 20613.
 - [30] K. Sudhir, O. S. Yoo, and Z. Zhou, “Entrepreneurs and investors: Funding-induced distortions in lean start-up product experiments and innovation,” *Marketing Science*, 2025.
 - [31] M. Decuypere, S. Hartong, N. Brandau, L. Joecks, A. Loft-Akkoondi, C. Ortégón, T. Tierens, and L. Vanermen, “Maneuvering constellations of valuation: a critical investigation of the edtech startup sector,” *Critical Studies in Education*, vol. 66, no. 3, pp. 429–448, 2025.
 - [32] D. S. Rose, *Angel investing: the Gust guide to making money and having fun investing in startups*. John Wiley & Sons, 2025.
 - [33] A. Sutarman, R. Aprianto, R. Adyatama, K. C. Pokkali, and M. Yusup, “Influence of digital technology & data analytics on strategic decision making,” *Startuppreneur Business Digital (SABDA Journal)*, vol. 4, no. 1, pp. 12–23, 2025.
 - [34] F. Martielli, V. Laus, A. Salvi, and A. Kotaskova, “Unlocking funding success: intercultural entrepreneurship dynamics in European startups,” *International Entrepreneurship and Management Journal*, vol. 21, no. 1, p. 19, 2025.
 - [35] L. Voß, H. Cordes, and R. Lueg, “The impact of environmental sustainability on willingness to invest in startups: A survey among private investors,” *Sustainable Development*, vol. 33, no. 2, pp. 2672–2695, 2025.
 - [36] A. I. Ibeh, O. B. Oso, O. I. Alli, and A. O. Babarinde, “Scaling healthcare startups in emerging markets: A platform strategy for growth and impact,” *International Journal of Advanced Multidisciplinary Research and Studies*, vol. 5, no. 1, pp. 838–854, 2025.
 - [37] S. E. Bahraseman, M. D. Dashtabi, A. Karbasi, A. Firoozzare, F. Boccia, and Z. H. Nazeri, “Moving towards novel and sustainable foods: Investigating consumers’ intention to consume algae-based foods in a developing country,” *Appetite*, vol. 206, p. 107801, 2025.
 - [38] A. D. Garcia, A. M. Rosyid, M. Yusup, and M. Khasanah, “Product innovation of foodpreneurs towards customer loyalty,” *Startuppreneur Business Digital (SABDA Journal)*, vol. 4, no. 2, pp. 104–113, 2025.
 - [39] V. V. Pravosudov, B. R. Sonnenberg, C. L. Branch, V. K. Heinen, J. F. Welklin, G. A. Semenov, and S. A. Taylor, “Living on the edge: the evolution of spatial cognition in food-caching chickadees,” *Philosophical*

- Transactions B*, vol. 380, no. 1929, p. 20240120, 2025.
- [40] M. M. Hassan, Y. Xu, J. Sayada, M. Zareef, M. Shoaib, X. Chen, H. Li, and Q. Chen, "Progress of machine learning-based biosensors for the monitoring of food safety: A review," *Biosensors and Bioelectronics*, vol. 267, p. 116782, 2025.
 - [41] A. Mirza Alizadeh, M. Mohammadi, F. Hashempour-baltork, H. Hosseini, and F. Shahidi, "Process-induced toxicants in food: an overview on structures, formation pathways, sensory properties, safety and health implications," *Food Production, Processing and Nutrition*, vol. 7, no. 1, p. 7, 2025.
 - [42] A. Magdy and H. Hassan, "Foodstagramming unleashed: Examining the role of social media involvement in enhancing the creative food tourism experience," *Tourism and Hospitality Research*, p. 14673584241311295, 2025.
 - [43] A. Faturahman, N. S. Lubis, N. P. L. Santoso, A. Adiwijaya, M. Madisson *et al.*, "Impact of blockchain enhanced digital marketing on brand awareness of solar panels," *Blockchain Frontier Technology*, vol. 5, no. 1, pp. 1–12, 2025.
 - [44] I. Muda, R. Sivaraman, S. I. S. Al-Hawary, U. Rahardja, R. S. Bader, D. Kadarsyah, and P. Chaudhary, "Hub location-allocation in computer-based networks under disruption using whale optimization algorithm," *Industrial Engineering & Management Systems*, vol. 21, no. 3, pp. 503–515, 2022.
 - [45] B. Bilgiç, D. Tarhan, F. Ateş, Ç. Parkan Yaramış, L. Koenhems, and M. E. Or, "Investigation of trace and macro element contents in commercial cat foods," *Veterinary Medicine and Science*, vol. 11, no. 1, p. e70123, 2025.
 - [46] Y. L. Leung, R. L. Chan, D. K. Chiu, and T. Ruwen, "Investigating the consumption behavior of young adults using online food delivery platforms during the covid-19 pandemic," *Aslib Journal of Information Management*, vol. 77, no. 2, pp. 330–353, 2025.
 - [47] F. Visioli, D. Del Rio, V. Fogliano, F. Marangoni, C. Ricci, and A. Poli, "Ultra-processed foods and health: are we correctly interpreting the available evidence?" *European Journal of Clinical Nutrition*, vol. 79, no. 3, pp. 177–180, 2025.
 - [48] Q. Gao, Z. Feng, J. Wang, F. Zhao, C. Li, and J. Ju, "Application of nano-zno in the food preservation industry: antibacterial mechanisms, influencing factors, intelligent packaging, preservation film and safety," *Critical Reviews in Food Science and Nutrition*, vol. 65, no. 22, pp. 4327–4353, 2025.
 - [49] A. Rizky, R. W. Nugroho, W. Sejati, O. Sy *et al.*, "Optimizing blockchain digital signature security in driving innovation and sustainable infrastructure," *Blockchain Frontier Technology*, vol. 4, no. 2, pp. 183–192, 2025.
 - [50] M. Piochi, C. Franceschini, F. Fassio, and L. Torri, "A large-scale investigation of eating behaviors and meal perceptions in italian primary school cafeterias: The relationship between emotions, meal perception, and food waste," *Food Quality and Preference*, vol. 123, p. 105333, 2025.
 - [51] R. Kocaman, B. Benli, and H. K. Paksoy, "Ethnocentrism and consumer animosity: A systematic literature review and future research agenda using tccm framework," *International Journal of Consumer Studies*, vol. 49, no. 4, p. e70096, 2025.
 - [52] D. E. Holliday, Y. Lelkes, and S. J. Westwood, "Why depolarization is hard: Evaluating attempts to decrease partisan animosity in america," *Proceedings of the National Academy of Sciences*, vol. 122, no. 39, p. e2508827122, 2025.
 - [53] T. Krüger, S. Hoffmann, R. Mai, I. N. Nibat, W. Lasarov, M. S. Lee, and O. Trendel, "A longitudinal study of consumer animosity: the case of the us presidential elections," *International Marketing Review*, vol. 42, no. 5, pp. 859–886, 2025.
 - [54] L. Meria, C. S. Bangun, and J. Edwards, "Exploring sustainable strategies for education through the adoption of digital circular economy principles," *International Transactions on Education Technology (ITEE)*, vol. 3, no. 1, pp. 62–71, 2024.