



Structural Relationship Between Attributes of Corporate Social Responsibility, Trust, and Positive Emotion in the Case of a Food Delivery Application System

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ABSTRACT

Purpose: The purpose of this research is to expand the explanatory power of stakeholder theory and explore the validity of its application in the area of food delivery application systems.

Design/methodology/approach: The attributes of stakeholder theory are price fairness, healthiness, environmental packaging, restaurant welfare, and delivery person welfare. The explained attributes of this work are trust and positive emotion. A total of 343 samples were used for data analysis using Amazon Mechanical Turk for data collection. This work implemented structural equation model analysis to test the research hypotheses.

Findings: The results revealed that price fairness and restaurant welfare positively affected trust and that delivery person welfare positively impacted positive emotion.

Research limitations/implications: This study is worthwhile to ensure the explanatory power of stakeholder theory in the area of food delivery application systems.

Originality/value: The study investigated stakeholder management effects on trust and positive emotions in the food delivery application systems. This research aims to analyze the influence of stakeholder management on trust and positive emotions in food delivery application systems. Additionally, it explores the sustainability of future AI platform businesses.

Keywords: Food delivery application system, Stakeholder theory, Trust, Positive emotion, Artificial intelligence, Platform business

I. Introduction

Scholars have contended that stakeholder management is critical for business sustainability. A representative instrument of stakeholder management is corporate social responsibility(CSR). Such an argument could be applied to the case of the food delivery application

business. According to the DoorDash, Inc. ESG Update (2023), the main stakeholders of food delivery applications are the environment, customer, delivery person, and restaurant. By possessing the largest market share in the food delivery application business, DoorDash has dedicated a large amount of resources to stakeholder management for sustainable business (DoorDash, Inc. ESG Update, 2023). Despite the enormous amount of resource allocation, it is still unclear whether this resource allocation is effective or not. To answer such a question, this research investigates the effect of stakeholder management

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in the area of food delivery application services.

This study employs trust and positive emotion to test the effect of stakeholder management. Prior research has argued that emotion could become the starting point for positive reactions from the market (Pérez & Rodríguez del Bosque, 2015; Chonpracha et al., 2020; Kang et al., 2020). Additionally, scholars have claimed that trust is an essential attribute to ensure the effect of corporate social responsibility execution (Fatma et al., 2015; Kim, 2019; Yu et al., 2021). Indeed, many studies have examined the impact of corporate social responsibility using both emotion (Pérez & Rodríguez del Bosque, 2015; del Mar García-De los Salmones & Perez, 2018; Xie et al., 2019) and trust (Martínez & Del Bosque, 2013; Fatma et al., 2015; Kim, 2019) as explained attributes. Given the fertile evidence, this research selects both attributes as the dependent variable.

The DoorDash, Inc. ESG Update (2023) addressed that the main stakeholders of the food delivery application business are consumers, the environment, restaurants, and delivery persons. Prior studies also found that consumers regard both price and nutrition as important elements in the food business (Matute-Vallejo et al., 2011; Wei et al., 2018; Shim et al., 2021; Iazzi et al., 2022). This could be applied to the food delivery application business. This aspect leads this work to adopt both price fairness and healthiness as attributes for consumer-related stakeholder management (Kwak & Choi, 2015; Mazhenova et al., 2016; Hoang et al., 2022). The recent ESG integration solutions shown by information and communication technology (ICT) companies require corporate social responsibility to evolve one step further in the era of the fourth industrial revolution, which is implemented by 5G mobile communication, artificial intelligence (AI), and big data. Moreover, the DoorDash, Inc. ESG Update (2023) documented that environmental packaging, restaurants and delivery person welfare are the focal points of business. This study thus adopts environmental packaging, restaurant welfare, and delivery person welfare as other domains to examine.

This research might contribute to the literature

by ensuring the accountability of stakeholder theory in the context of the food delivery application system business. Moreover, the value of this research is clarifying the influential stakeholders in the area of food delivery application business. This could serve as a guideline for businesses by informing resource allocation by food delivery business managers.

II. Review of the Literature

A. Emotion

Scholars have alleged that emotion is a consumer reaction to stimuli in the process of transaction (Westbrook & Oliver, 1991; Laros & Steenkamp, 2005). Numerous studies have explored emotion as the main attribute. For instance, Kemp et al. (2012) ensured the effect of advertising on emotion; King and Meiselman (2010) examined the impact of food on consumer emotion. Sherman et al. (1997) additionally inspected the influence of store atmosphere on consumer emotion. Moreover, Kang et al. (2020) attested to the effect of story-telling on consumer emotion in the domain of advertising, and Chonpracha et al. (2020) demonstrated the role of visual cues on consumer emotion in the food business. Regarding the review of the literature, emotion has been used as an attribute to examine consumer reactions. Platform businesses such as delivery application systems are likely to utilize AI in the emotional realm. Generative artificial intelligence such as chatbots is a means to quickly improve services by analyzing consumers' feelings and feelings based on accumulated data (Leung & Wen, 2020; Zhang, J., Chen et al., 2024).

B. Trust

Prior studies have argued that trust is a consumer status with credibility toward a product or system (Jarvenpaa et al., 2000; Sirdeshmukh et al., 2002; Wang et al., 2014). Many studies have employed

trust for investigation. As an example, McKnight et al. (2002) explored the influential attributes on trust in the area of website service. Teo and Liu (2007) also examined the determinants of trust employing e-commerce users. Nguyen and Pervan (2020) demonstrated the effect of corporate social responsibility on trust in the retail domain. Additionally, Irshad et al. (2020) studied the characteristics of consumer trust in the case of social media. A review of the literature implies that consumer trust has been widely examined in diverse domains. Artificial intelligence, big data, and hyper-connected society strengthen trust between companies and consumers (Özdemir, & Hekim, 2018).

C. Stakeholder Theory

Stakeholders are the subjects who are related to a certain business (Friedman & Miles, 2002; Laplume et al., 2008; Parmar et al., 2010; Freudenreich et al., 2020). According to stakeholder theory, maintaining a positive relationship with stakeholders is an avenue to accomplish the sustainability of business (Freudenreich et al., 2020; Dmytriiev et al., 2021; Shah & Guild, 2022). Scholars have also alluded that stakeholder management is implemented by the execution of corporate social responsibility (Dmytriiev et al., 2021; Waheed & Zhang, 2022). Moreover, the extant literature has addressed that the power of stakeholders varies depending on business characteristics (Sweeney & Coughlan, 2008; Cordeiro & Tewari, 2015; Theodoulidis et al., 2017). Therefore, it is imperative to allocate resources to important stakeholders for business sustainability because resources are constrained (Freeman et al., 2021; McGahan, 2021; Kayikci et al., 2022).

Considering the food delivery application business, consumers are the main stakeholders because they purchase the product (Sen et al., 2016; Li et al., 2020). Consumers pay for the product, so the price level is an essential component (Ferreira et al., 2010; Matute-Vallejo et al., 2011). Price fairness indicates offering acceptable price levels from the perspective

of consumers (Matute-Vallejo et al., 2011; Shim et al., 2021). Indeed, numerous studies have documented that price fairness is a critical attribute for consumer decision-making and building positive perceptions (Matute-Vallejo et al., 2011; Shim et al., 2021). Moreover, consumers value their health condition more with improved living standards (Hartmann, 2011; Wei et al., 2018; Iazzi et al., 2022). Such a trend leads consumers to pursue healthier food because it promotes health conditions (Wei et al., 2018; Meena & Kumar, 2022; Moon & Ji, 2023). Because food delivery application services are linked with food offerings, food healthiness is likely to affect market evaluation. Indeed, the extant literature has argued that food delivery application systems offer unhealthy food for consumers (Bates et al., 2020; Eu & Sameeha, 2021). In addition, individuals are increasingly concerned about the natural environment because of climate crises and natural disasters (Ahmed et al., 2020; Shahzad et al., 2020). This could be applied to food delivery service because it makes a large amount of food and plastic garbage (Gupta & Duggal, 2021; Talwar et al., 2023). As a solution, environmental packaging is recommended by prior studies (Arunan & Crawford, 2021; Jang et al., 2023). Next, the food delivery application business supply chain includes both restaurants and food delivery persons (Nurgazina et al., 2021; Li et al., 2020). In detail, restaurant cooked food is delivered to consumers by delivery persons (Gupta, 2019; Saad, 2021; Hakim et al., 2022; Wen et al., 2022). It can be inferred that restaurants and delivery persons are crucial stakeholders in the food delivery application business. Integrating the literature review, consumers regarding price and healthiness, environmental pieces, restaurants, and delivery people are regarded as essential stakeholders in this work.

D. Hypothesis Development

Previous research has documented that stakeholder management exerts a significant effect on market perception. Shim et al. (2021) demonstrated that CSR

activities are positively associated with consumer perception. Chung and Lee (2019) also claimed that CSR is a critical aspect of positive consumer emotion. Shao et al. (2022) performed a literature review, and the findings indicate that CSR plays a significant role in building the positive emotions of consumers. Pérez and Rodríguez del Bosque (2015) also found that consumer emotion is positively influenced by CSR implementation. Additionally, Han et al. (2020) explored airline service customers, and the results showed that CSR exerted a positive impact on emotion. Next, prior studies claimed that CSR causes consumer trust. Specifically, Nguyen and Pervan (2020) inspected consumers in the retail domain and found that consumer trust is positively affected by CSR execution. Tian et al. (2020) similarly unveiled the positive effect of CSR on consumer trust by using an experimental design. Yu et al. (2021) also explored organic food consumers, and the results implied that CSR played an essential role in establishing trust. Additionally, Castaldo et al. (2009) revealed that CSR exerted a positive impact on trust in fair trade products. Considering the literature review, this research proposes the following hypotheses:

- H1a:** Price fairness positively impacts positive emotion.
- H1b:** Price fairness positively impacts trust.
- H2a:** Healthiness positively impacts positive emotion.
- H2b:** Healthiness positively impacts trust.
- H3a:** Environmental packaging positively impacts positive emotion.
- H3b:** Environmental packaging positively impacts trust.
- H4a:** Restaurant welfare positively impacts positive emotion.
- H4b:** Restaurant welfare positively impacts trust.
- H5a:** Delivery personnel welfare positively impacts positive emotion.
- H5b:** Delivery person welfare positively impacts trust.

III. Method

A. Research Model and Data Collection

Figure 1 shows the research model. Trust is positively affected by price fairness, healthiness, environmental packaging, restaurant welfare, and delivery person welfare. Moreover, positive emotion is positively influenced by price fairness, healthiness, environmental packaging, restaurant welfare, and delivery person welfare.

For data collection, this study employed Amazon Mechanical Turk (<https://mturk.com>). Amazon Mechanical Turk is a widely used data collection platform for consumer behavior research. Numerous studies have demonstrated that the quality of data is appropriate for statistical inference (Leon et al., 2023; Li et al., 2023; Nanu & Rahman, 2023). Given its popularity, this study chose Amazon Mechanical Turk as the instrument of data collection. Moreover, most panel of the Amazon Mechanical Turk was US based, and they are English based panels. Because American market commonly used food delivery using various companies: Door Dash, Uber eats, Grub hub, and etc., the panel might be suitable for the perception of food delivery app. The data collection period was from August 1st to 6th in 2023. Consequently, a total of 343 observations were collected for the data analysis.

B. Illustration of Measurement Items

Table 1 shows the measurement items. Most items use a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Trust is measured by a semantic differential 5-point scale (e.g., 1 = untrustworthy, 5 = trustworthy). This study employs previous studies for the measurement. All variables consist of four items. Moreover, three scholars were consulted to develop the measurement items for restaurant welfare and delivery person welfare. Price fairness refers to how reasonably consumers perceive the price level in a food delivery application system (Konuk, 2019;

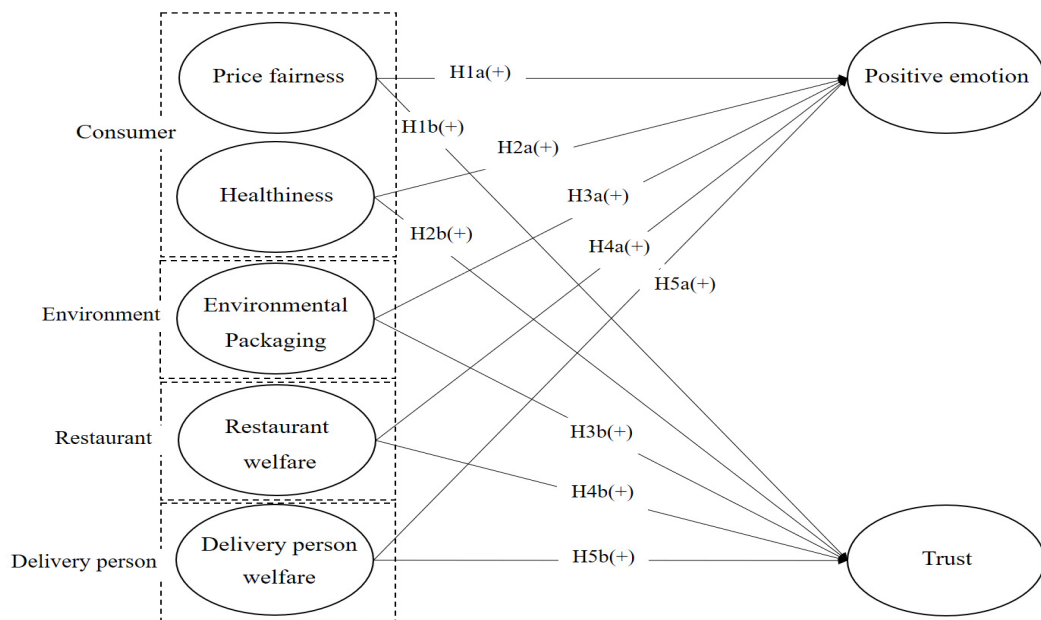


Figure 1. Research model

Table 1. Description of measurement items

Construct	Code	Item
Price fairness	PF1	The price of food is adequate in food delivery app.
	PF2	The price of food is rational in food delivery app.
	PF3	The price of food is fair in food delivery app.
	PF4	The price of food is acceptable in food delivery app.
Healthiness	HL1	Foods in food delivery app are healthy.
	HL2	Foods in food delivery app promotes my health condition.
	HL3	Foods in food delivery app are nutritional.
	HL4	Foods in food delivery app are good for health.
Environmental packaging	EP1	The packaging in food delivery app is eco-friendly.
	EP2	The packaging in food delivery app is environmental.
	EP3	The packaging in food delivery app is good to protect environment.
	EP4	The packaging in food delivery app minimizes garbage.
Restaurant welfare	RW1	System of food delivery app helps restaurant management.
	RW2	System of food delivery app improves restaurant profit.
	RW3	System of food delivery app is useful for profit of restaurant.
	RW4	System of food delivery app enhances restaurant financial condition.
Delivery person welfare	DW1	Food delivery app system improves welfare of delivery people.
	DW2	Food delivery app system focuses on welfare of delivery people.
	DW3	Food delivery app system takes care of delivery people.
	DW4	Food delivery app is beneficial from the perspective of delivery people.
Trust	TR1	Food delivery app is (untrustworthy-trustworthy)
	TR2	Food delivery app is (not credible-credible)
	TR3	Food delivery app is (unreasonable-reasonable)
	TR4	Food delivery app is (dishonest-honest)
Positive emotion	PE1	Use of food delivery app is joyful.
	PE2	I am pleased by using food delivery app.
	PE3	It is delighted to use food delivery app.
	PE4	Using food delivery app makes me feel better.

Liao et al., 2020). Healthiness is defined as how consumers assess food healthiness in food delivery applications (Huang & Lu, 2016; Chan & Zhang, 2022). Environmental packaging is defined as how consumers evaluate packaging as eco-friendly in food delivery application system services (Prakash & Pathak, 2017; Song et al., 2023). Next, restaurant welfare is defined as how the food delivery application system contributes to the profit of restaurants from the perspective of consumers; delivery person welfare is how the food delivery application system values delivery persons from the viewpoint of consumers. Trust is defined as the credibility of the food delivery application of users (Sirdeshmukh et al., 2002; Guerreiro & Pacheco, 2021). Finally, positive emotion is consumers' feelings toward the food delivery application system (Rocklage & Fazio, 2020; Casalo et al., 2021). In addition, this study includes demographic information questions: gender, age, employment, monthly household income, and weekly food delivery application use frequency.

C. Data Analysis

This work used frequency analysis for survey participants' information. Confirmatory factor analysis was performed to ensure the convergent validity of the measurement items. The extant literature has documented that the thresholds for convergent validity become loading > 0.5 , average value extracted

(AVE) > 0.5 , and construct reliability (CR) > 0.7 (Fornell & Larcker, 1981; Hair et al., 2010). Then, the mean values and standard deviations for the constructs were calculated. The correlation matrix was employed to examine the relationship. Moreover, discriminant validity was tested by the comparison between the square root of AVE and the correlation coefficient. Namely, if the square root of AVE was greater than the correlation coefficient, the constructs were discriminant validity (Fornell & Larcker, 1981; Hoyle, 1995; Hair et al., 2010). To test the research hypotheses, this study implemented a structural equation model. The goodness of fit for confirmatory factor analysis and the structural equation model was tested by the following criteria: root mean square residual (RMR) < 0.05 , normed fit index (NFI) > 0.8 , relative fit index (RFI) > 0.8 , incremental fit index (IFI) > 0.8 , Tucker-Lewis index (TLI) > 0.8 , and comparative fit index (CFI) > 0.8 (Fornell & Larcker, 1981; Hoyle, 1995).

IV. Results

Table 2 shows the profile of the survey participants, and the number of observations is 343. The percentage of males is 60.6 percent. The proportion of 20-29 and 30-39 is approximately 69.6 percent. The percentage of employment is 98.0 percent. Additionally, monthly

Table 2. Profile of survey participants (N=343)

Item	Frequency	Percentage
Male	208	60.6
Female	135	39.4
20-29	102	29.7
30-39	137	39.9
40-49	72	21.0
50-59	15	4.4
Older than 60	17	5.0
Unemployed	7	2.0
Employed	336	98.0

Table 2. Continued

Item	Frequency	Percentage
Monthly household income		
Less than \$2,000	34	9.9
\$2,000~\$3,999	52	15.2
\$4,000~\$5,999	93	27.1
\$6,000~\$7,999	64	18.7
\$8,000~\$9,999	47	13.7
More than \$10,000	53	15.5
The weekly frequency of application usage		
Less than 1 time	46	13.4
1~2 times	148	43.1
3~5 times	125	36.4
More than 5 times	24	7.0

household income is depicted in Table 2. Moreover, 43.1 percent of survey participants used food delivery applications 1-2 times a week, and 36.4 percent of survey participants used food delivery applications 3-5 times a week.

A. Results of Confirmatory Factor Analysis and Mean and Standard Deviation of Variables

Table 3 shows the results of the confirmatory factor analysis. The goodness of fit indices indicate that the outcome is statistically acceptable. Factor loading values are greater than 0.5, and CR and AVE values are greater than the threshold. Additionally, the mean and standard deviation values are presented in Table 3 (price fairness (mean = 4.01, SD = 0.68), healthiness (mean = 3.82, SD = 0.81), environmental packaging (mean = 3.80, SD = 0.93), restaurant welfare (mean = 4.13, SD = 0.63), delivery person welfare (mean = 3.96, SD = 0.72), trust (mean = 4.12, SD = 0.64), and positive emotion (mean = 3.98 SD = 0.71)).

B. Correlation Matrix and Results of Hypothesis testing

Table 4 is the correlation matrix. Price fairness

positively correlates with healthiness ($r = 0.676$, $p < 0.05$), environmental packaging ($r = 0.707$, $p < 0.05$), restaurant welfare ($r = 0.628$, $p < 0.05$), delivery person welfare ($r = 0.771$, $p < 0.05$), trust ($r = 0.691$, $p < 0.05$), and positive emotion ($r = 0.774$, $p < 0.05$). Trust also positively correlates with healthiness ($r = 0.585$, $p < 0.05$), environmental packaging ($r = 0.569$, $p < 0.05$), restaurant welfare ($r = 0.659$, $p < 0.05$), delivery person welfare ($r = 0.685$, $p < 0.05$), and positive emotion ($r = 0.743$, $p < 0.05$). Positive emotion positively correlates with healthiness ($r = 0.678$, $p < 0.05$), environmental packaging ($r = 0.693$, $p < 0.05$), restaurant welfare ($r = 0.646$, $p < 0.05$), delivery person welfare ($r = 0.798$, $p < 0.05$), and trust ($r = 0.703$, $p < 0.05$).

Table 5 exhibits the results of hypothesis testing. Regarding the results, price fairness exerted a positive effect on trust ($\beta = 0.366$, $p < 0.05$). Restaurant welfare positively affected trust ($\beta = 0.506$, $p < 0.05$), and delivery person welfare positively impacted positive emotion ($\beta = 0.989$, $p < 0.05$).

C. Discussion

This research examined the stakeholder management effect on trust and positive emotion in the domain of food delivery apps. The results showed that price

fairness exerted a positive effect on both trust and positive emotion in the case of a food delivery application system. Additionally, restaurant welfare positively affected trust, and delivery person welfare positively impacted the positive emotions of food delivery application users. By upgrading the system

based on big data, algorithms can be designed and leveraged as much as they want in a way that maximizes the benefits and well-being of consumers (Erevelles et al., 2016). Considering magnitude, price fairness exerted the strongest effect on trust, while positive emotion was most strongly influenced by

Table 3. Confirmatory factor analysis

Construct	Code	Loading	Mean(SD)	CR	AVE
Price fairness	PF1	0.800	4.01(0.68)	0.837	0.564
	PF2	0.727			
	PF3	0.760			
	PF4	0.712			
Healthiness	HL1	0.823	3.82(0.81)	0.890	0.669
	HL2	0.837			
	HL3	0.777			
	HL4	0.833			
Environmental packaging	EP1	0.841	3.80(0.93)	0.909	0.714
	EP2	0.851			
	EP3	0.873			
	EP4	0.813			
Restaurant welfare	RW1	0.753	4.13(0.63)	0.814	0.524
	RW2	0.678			
	RW3	0.769			
	RW4	0.690			
Delivery person welfare	DW1	0.741	3.96(0.72)	0.833	0.556
	DW2	0.739			
	DW3	0.761			
	DW4	0.741			
Trust	TR1	0.745	4.12(0.64)	0.837	0.563
	TR2	0.753			
	TR3	0.735			
	TR4	0.768			
Positive emotion	PE1	0.765	3.98(0.71)	0.831	0.553
	PE2	0.682			
	PE3	0.812			
	PE4	0.710			

Note: SD stands for standard deviation, Goodness of fit indices: $\chi^2 = 1284.391$, $df = 329$, $\chi^2/df = 3.904$ RMR = 0.039 NFI = 0.824 RFI = 0.802 IFI = 0.866; TLI = 0.845 CFI = 0.865 RMSEA = 0.092, CR stands for construct reliability, AVE is average variance extracted

Table 4. Correlation matrix

	1	2	3	4	5	6	7
1. Price fairness	0.750						
2. Healthiness	0.676*	0.817					
3. Environmental packaging	0.707*	0.831*	0.844				
4. Restaurant welfare	0.628*	0.422*	0.393*	0.723			
5. Delivery person welfare	0.771*	0.703*	0.743*	0.651*	0.745		
6. Trust	0.691*	0.585*	0.569*	0.659*	0.685*	0.750	
7. Positive emotion	0.774*	0.678*	0.693*	0.646*	0.798*	0.703*	0.743

Note: *p<.05, diagonal is square root of AVE.

Table 5. Results of hypotheses testing

Path	Beta	t value	p value
Price fairness à Trust	0.356**	2.17	0.030
Price fairness à Positive emotion	0.361*	1.93	0.053
Healthiness à Trust	0.187	1.49	0.135
Healthiness à Positive emotion	0.170	1.16	0.248
Environmental packaging à Trust	-0.163	-0.94	0.347
Environmental packaging à Positive emotion	-0.344	-1.30	0.193
Restaurant welfare à Trust	0.287*	1.65	0.099
Restaurant welfare à Positive emotion	-0.217	-0.77	0.438
Delivery person welfare à Trust	0.320	1.08	0.277
Delivery person welfare à Positive emotion	1.141**	2.29	0.022

Note: *p<.1, **p<.05, Goodness of fit indices: $\chi^2 = 1287.760$, $df = 330$, $\chi^2/df = 3.902$ RMR =0.039 NFI=0.827 RFI=0.802 IFI=0.865; TLI=0.845 CFI=0.864

restaurant welfare. The results also revealed that healthiness and environmental packaging did not exert a significant effect on either trust or positive emotion. It can be inferred that environmental packaging and healthiness might become less important aspects from the viewpoint of food delivery application users. Compared to other attributes, the mean values of both attributes were relatively lower. This indicates that consumers are somewhat skeptical of healthiness and environmental packaging. Specifically, consumers are likely to assess food as slightly unhealthy in food delivery application systems, and Bates et al. (2020) contended that food healthiness is a weakness of food delivery application systems. Moreover, consumers might be skeptical of the food delivery application system in terms of environmental effects because it could produce an enormous amount of garbage. It is necessary to apply convergence technology that can check whether food and food materials are contaminated for food hygiene through smart diagnosis technology.

V. Conclusion

A. Theoretical and Practical Implications

Although there are various stakeholders related

to food delivery applications, scholars have scantily implemented research investigating the stakeholder management effect on consumer appraisal. Moreover, the extant literature also claims that the impact of stakeholders varies because the dynamics of stakeholders vary depending on business characteristics (Sweeney & Coughlan, 2008; Cordeiro & Tewari, 2015; Theodoulidis et al., 2017). Given the research gap, this research sheds light on the literature by demonstrating the accountability of stakeholder theory in the domain of food delivery application systems. Additionally, this research contributes to the literature by disclosing the market perception for stakeholder management in the domain of food delivery applications.

This work presents practical implications. First, this study presents the direction for the investment decision for the food delivery application business from the perspective of consumer behavior. In detail, it might become inefficient to invest in both healthiness and environmental packaging. However, food delivery application managers might need to contemplate resource allocation for offering rational prices and taking care of welfare for both restaurant managers and delivery persons. This is because such attributes might be useful to improve the user perception of food delivery applications. In addition, restaurant managers might be able to consider the dedication of resources for trust. This could be

accomplished by marketing communication, such as advertising. Next, food delivery application managers might achieve more efficient resource allocation by focusing on price fairness and delivery person welfare for trust and positive emotion, respectively. Social responsibility through AI-based delivery application systems is also becoming more important as a new management strategy beyond the simple sharing of redistribution of social resources. Sustainable corporate management strategies are centered on people. The impact of AI-based delivery application systems on corporate social responsibility (CSR) can be further extended in that customized services are available.

B. Suggestion for Future Research

This study has some limitations. First, this research employed only two explained attributes to test the effect of stakeholders. Future research might be able to consider more diverse dependent variables related to ICT. Moreover, this study only demonstrated the linear impact of stakeholder-associated attributes on consumer reaction. Future research might be able to contemplate more diverse relationships: curve, linear, and moderating effects. Such an effort might be able to contribute to the literature by presenting an in-depth understanding of food delivery application system user behavior.

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References

- Ahmed, M., Zehou, S., Raza, S. A., Qureshi, M. A., & Yousufi, S. Q. (2020). Impact of CSR and environmental triggers on employee green behavior: The mediating effect of employee well-being. *Corporate Social Responsibility and Environmental Management*, 27(5), 2225-2239.
- Arunan, I., & Crawford, R. H. (2021). Greenhouse gas emissions associated with food packaging for online food delivery services in Australia. *Resources, Conservation and Recycling*, 168, 105299.
- Bates, S., Reeve, B., & Trevena, H. (2020). A narrative review of online food delivery in Australia: Challenges and opportunities for public health nutrition policy. *Public Health Nutrition*, 26(1), 262-272.
- Casaló, L. V., Flavián, C., & Ibáñez-Sánchez, S. (2021). Be creative, my friend! Engaging users on Instagram by promoting positive emotions. *Journal of Business Research*, 130, 416-425.
- Castaldo, S., Perrini, F., Misani, N., & Tencati, A. (2009). The missing link between corporate social responsibility and consumer trust: The case of fair trade products. *Journal of Business Ethics*, 84, 1-15.
- Chan, E., & Zhang, L. S. (2022). Is this food healthy? The impact of lay beliefs and contextual cues on food healthiness perception and consumption. *Current Opinion in Psychology*, 46, 101348.
- Chonpracha, P., Ardoin, R., Gao, Y., Waimaleongora-Ek, P., Tuuri, G., & Prinyawiwatkul, W. (2020). Effects of intrinsic and extrinsic visual cues on consumer emotion and purchase intent: A case of ready-to-eat salad. *Foods*, 9(4), 396.
- Chung, S., & Lee, S. Y. (2019). Visual CSR messages and the effects of emotional valence and arousal on perceived CSR motives, attitude, and behavioral intentions. *Communication Research*, 46(7), 926-947.
- Cordeiro, J. J., & Tewari, M. (2015). Firm characteristics, industry context, and investor reactions to environmental CSR: A stakeholder theory approach. *Journal of Business Ethics*, 130, 833-849.
- del Mar Garcia-De los Salmones, M., & Perez, A. (2018). Effectiveness of CSR advertising: The role of reputation, consumer attributions, and emotions. *Corporate Social Responsibility and Environmental Management*, 25(2), 194-208.
- Dmytriiev, S. D., Freeman, R. E., & Hörisch, J. (2021). The relationship between stakeholder theory and corporate social responsibility: Differences, similarities, and implications for social issues in management. *Journal of Management Studies*, 58(6), 1441-1470.
- DoorDash, Inc. ESG Update. (2023). Our commitment to grow and empower local economies. https://s22.q4cdn.com/280253921/files/doc_downloads/2023/DoorDash-ESG-update-2022.pdf

- Eu, E. Z. R., & Sameeha, M. J. (2021). Consumers' perceptions of healthy food availability in online food delivery applications (OFD apps) and its association with food choices among public university students in Malaysia. *Frontiers in Nutrition*, 8, 674427.
- Fatma, M., Rahman, Z., & Khan, I. (2015). Building company reputation and brand equity through CSR: The mediating role of trust. *International Journal of Bank Marketing*, 33(6), 840-856.
- Ferreira, D. A., Avila, M. G., & De Faria, M. D. (2010). Corporate social responsibility and consumers' perception of price. *Social Responsibility Journal*, 6(2), 208-221.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Freeman, R. E., Dmytriiev, S. D., & Phillips, R. A. (2021). Stakeholder theory and the resource-based view of the firm. *Journal of Management*, 47(7), 1757-1770.
- Freudenreich, B., Lüdeke-Freund, F., & Schaltegger, S. (2020). A stakeholder theory perspective on business models: Value creation for sustainability. *Journal of Business Ethics*, 166, 3-18.
- Friedman, A. L., & Miles, S. (2002). Developing stakeholder theory. *Journal of Management Studies*, 39(1), 1-21.
- Guerreiro, J., & Pacheco, M. (2021). How green trust, consumer brand engagement and green word-of-mouth mediate purchasing intentions. *Sustainability*, 13(14), 7877.
- Gupta, M. (2019). A Study on Impact of Online Food delivery app on Restaurant Business special reference to zomato and swiggy. *International Journal of Research and Analytical Reviews*, 6(1), 889-893.
- Gupta, V., & Duggal, S. (2021). How the consumer's attitude and behavioural intentions are influenced: A case of online food delivery applications in India. *International Journal of Culture, Tourism and Hospitality Research*, 15(1), 77-93.
- Hair, J., Anderson, R., Babin, B., & Black, W. (2010). *Multivariate data analysis: A global perspective* (Vol. 7). Upper Saddle River, New Jersey, NJ: Pearson.
- Hakim, M. P., Libera, V. M. D., Zanetta, L. D. A., Nascimento, L. G. P., & da Cunha, D. T. (2022). What is a dark kitchen? A study of consumer's perceptions of deliver-only restaurants using food delivery apps in Brazil. *Food Research International*, 161, 111768.
- Han, H., Al-Ansi, A., Chi, X., Baek, H., & Lee, K. S. (2020). Impact of environmental CSR, service quality, emotional attachment, and price perception on word-of-mouth for full-service airlines. *Sustainability*, 12(10), 3974.
- Hartmann, M. (2011). Corporate social responsibility in the food sector. *European Review of Agricultural Economics*, 38(3), 297-324.
- Hoang, H. C., Chovancová, M., & Hoang, T. Q. H. (2022). The theory of planned behavior and food choice questionnaire toward organic food of millennials in Vietnam. *Global Business and Finance Review*, 27(4), 81-96.
- Hoyle, R. (1995). *Structural equation modeling: Concepts, issues, and applications*. Sage.
- Huang, L., & Lu, J. (2016). The impact of package color and the nutrition content labels on the perception of food healthiness and purchase intention. *Journal of Food Products Marketing*, 22(2), 191-218.
- Iazzi, A., Ligorio, L., Vrontis, D., & Trio, O. (2022). Sustainable development goals and healthy foods: Perspective from the food system. *British Food Journal*, 124(4), 1081-1102.
- Irshad, M., Ahmad, M. S., & Malik, O. F. (2020). Understanding consumers' trust in social media marketing environment. *International Journal of Retail & Distribution Management*, 48(11), 1195-1212.
- Jang, Y., Kim, K. N., & Woo, J. (2023). Post-consumer plastic packaging waste from online food delivery services in South Korea. *Waste Management*, 156, 177-186.
- Jarvenpaa, S. L., Tractinsky, N., & Vitale, M. (2000). Consumer trust in an Internet store. *Information Technology and Management*, 1, 45-71.
- Kang, J. A., Hong, S., & Hubbard, G. T. (2020). The role of storytelling in advertising: Consumer emotion, narrative engagement level, and word-of-mouth intention. *Journal of Consumer Behaviour*, 19(1), 47-56.
- Kayikci, Y., Kazancoglu, Y., Gozacan-Chase, N., & Lafci, C. (2022). Analyzing the drivers of smart sustainable circular supply chain for sustainable development goals through stakeholder theory. *Business Strategy and the Environment*, 31(7), 3335-3353.
- Kemp, E., Bui, M., & Chapa, S. (2012). The role of advertising in consumer emotion management. *International Journal of Advertising*, 31(2), 339-353.
- Kim, S. (2019). The process model of corporate social responsibility (CSR) communication: CSR communication and its relationship with consumers' CSR knowledge, trust, and corporate reputation perception. *Journal of Business Ethics*, 154(4), 1143-1159.
- King, S. C., & Meiselman, H. L. (2010). Development of a method to measure consumer emotions associated with foods. *Food Quality and Preference*, 21(2), 168-177.
- Konuk, F. A. (2019). The influence of perceived food quality, price fairness, perceived value and satisfaction on customers' revisit and word-of-mouth intentions towards organic food restaurants. *Journal of Retailing and Consumer Services*, 50, 103-110.
- Kawk, Y. M., & Choi, S. (2015). Corporate social responsibility and financial constraints: Evidence from Korean firms. *Global Business & Finance Review (GBFR)*, 20(2), 15-26.
- Laros, F. J., & Steenkamp, J. B. E. (2005). Emotions in consumer behavior: A hierarchical approach. *Journal of business Research*, 58(10), 1437-1445.
- Laplume, A. O., Sonpar, K., & Litz, R. A. (2008). Stakeholder theory: Reviewing a theory that moves us. *Journal of Management*, 34(6), 1152-1189.
- Leon, S., Chen, C., & Ratcliffe, A. (2023). Consumers'

- perceptions of last mile drone delivery. *International Journal of Logistics Research and Applications*, 26(3), 345-364.
- Leung, X. Y., & Wen, H. (2020). Chatbot usage in restaurant takeout orders: A comparison study of three ordering methods. *Journal of Hospitality and Tourism Management*, 45, 377-386.
- Li, C., Miroso, M., & Bremer, P. (2020). Review of online food delivery platforms and their impacts on sustainability. *Sustainability*, 12(14), 5528.
- Li, J., Xu, X., & Ngai, E. W. (2023). Presentational effects of photos and text in electronic word-of-mouth on consumer decisions. *Internet Research*, 33(2), 473-499.
- Liao, G. Y., Tseng, F. C., Cheng, T. C. E., & Teng, C. I. (2020). Impact of gaming habits on motivation to attain gaming goals, perceived price fairness, and online gamer loyalty: Perspective of consistency principle. *Telematics and Informatics*, 49, 101367.
- Martínez, P., & Del Bosque, I. R. (2013). CSR and customer loyalty: The roles of trust, customer identification with the company and satisfaction. *International Journal of Hospitality Management*, 35, 89-99.
- Matute-Vallejo, J., Bravo, R., & Pina, J. M. (2011). The influence of corporate social responsibility and price fairness on customer behaviour: Evidence from the financial sector. *Corporate Social Responsibility and Environmental Management*, 18(6), 317-331.
- Mazhenova, S., Choi, J. G., & Chung, J. (2016). International tourists' awareness and attitude about environmental responsibility and sustainable practices. *Global Business & Finance Review (GBFR)*, 21(2), 132-146.
- McGahan, A. M. (2021). Integrating insights from the resource-based view of the firm into the new stakeholder theory. *Journal of Management*, 47(7), 1734-1756.
- McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). The impact of initial consumer trust on intentions to transact with a web site: A trust building model. *The Journal of Strategic Information Systems*, 11(3-4), 297-323.
- Meena, P., & Kumar, G. (2022). Online food delivery companies' performance and consumers expectations during Covid-19: An investigation using machine learning approach. *Journal of Retailing and Consumer Services*, 68, 103052.
- Moon, J., & Ji, Y. (2023). Structural relationship between taste, price fairness, and repurchase intention of fast food: Moderating effect of healthiness. *Global Business and Finance Review*, 28(5), 109-121.
- Nanu, L., & Rahman, I. (2023). The biophilic hotel lobby: Consumer emotions, peace of mind, willingness to pay, and health-consciousness. *International Journal of Hospitality Management*, 113, 103520.
- Nguyen, N., & Pervan, S. (2020). Retailer corporate social responsibility and consumer citizenship behavior: The mediating roles of perceived consumer effectiveness and consumer trust. *Journal of Retailing and Consumer Services*, 55, 102082.
- Nurgazina, J., Pakdeetrakulwong, U., Moser, T., & Reiner, G. (2021). Distributed ledger technology applications in food supply chains: A review of challenges and future research directions. *Sustainability*, 13(8), 4206.
- Özdemir, V., & Hekim, N. (2018). Birth of industry 5.0: Making sense of big data with artificial intelligence, "the internet of things" and next-generation technology policy. *Omics: A Journal of Integrative Biology*, 22(1), 65-76.
- Parmar, B. L., Freeman, R. E., Harrison, J. S., Wicks, A. C., Purnell, L., & De Colle, S. (2010). Stakeholder theory: The state of the art. *Academy of Management Annals*, 4(1), 403-445.
- Pérez, A., & Rodríguez del Bosque, I. (2015). An integrative framework to understand how CSR affects customer loyalty through identification, emotions and satisfaction. *Journal of Business Ethics*, 129, 571-584.
- Prakash, G., & Pathak, P. (2017). Intention to buy eco-friendly packaged products among young consumers of India: A study on developing nation. *Journal of Cleaner Production*, 141, 385-393.
- Rocklage, M. D., & Fazio, R. H. (2020). The enhancing versus backfiring effects of positive emotion in consumer reviews. *Journal of Marketing Research*, 57(2), 332-352.
- Saad, A. T. (2021). Factors affecting online food delivery service in Bangladesh: an empirical study. *British Food Journal*, 123(2), 535-550.
- Sen, S., Du, S., & Bhattacharya, C. B. (2016). Corporate social responsibility: A consumer psychology perspective. *Current Opinion in Psychology*, 10, 70-75.
- Shah, M. U., & Guild, P. D. (2022). Stakeholder engagement strategy of technology firms: A review and applied view of stakeholder theory. *Technovation*, 114, 102460.
- Shahzad, M., Qu, Y., Javed, S. A., Zafar, A. U., & Rehman, S. U. (2020). Relation of environment sustainability to CSR and green innovation: A case of Pakistani manufacturing industry. *Journal of Cleaner Production*, 253, 119938.
- Shao, J., Zhang, T., Wang, H., & Tian, Y. (2022). Corporate social responsibility and consumer emotional marketing in big data era: A mini literature review. *Frontiers in Psychology*, 13, 919601.
- Sherman, E., Mathur, A., & Smith, R. B. (1997). Store environment and consumer purchase behavior: mediating role of consumer emotions. *Psychology & Marketing*, 14(4), 361-378.
- Shim, J. M., Lee, W. S., Moon, J., & Song, M. (2021). Coffee shop corporate social responsibility (CSR) and reuse intention using triple bottom line theory. *British Food Journal*, 123(12), 4421-4435.
- Sirdeshmukh, D., Singh, J., & Sabol, B. (2002). Consumer trust, value, and loyalty in relational exchanges. *Journal of Marketing*, 66(1), 15-37.
- Song, J., Cai, L., Yuen, K. F., & Wang, X. (2023). Exploring consumers' usage intention of reusable express packaging: An extended norm activation model. *Journal of Retailing and Consumer Services*, 72, 103265.

- Sweeney, L., & Coughlan, J. (2008). Do different industries report corporate social responsibility differently? An investigation through the lens of stakeholder theory. *Journal of Marketing Communications*, 14(2), 113-124.
- Talwar, S., Kaur, P., Ahmed, U., Bilgihan, A., & Dhir, A. (2023). The dark side of convenience: How to reduce food waste induced by food delivery apps. *British Food Journal*, 125(1), 205-225.
- Teo, T. S., & Liu, J. (2007). Consumer trust in e-commerce in the United States, Singapore and China. *Omega*, 35(1), 22-38.
- Theodoulidis, B., Diaz, D., Crotto, F., & Rancati, E. (2017). Exploring corporate social responsibility and financial performance through stakeholder theory in the tourism industries. *Tourism Management*, 62, 173-188.
- Tian, Y., Hung, C., & Frumkin, P. (2020). An experimental test of the impact of corporate social responsibility on consumers' purchasing behavior: The mediation role of trust. *Corporate Social Responsibility and Environmental Management*, 27(6), 2972-2982.
- Waheed, A., & Zhang, Q. (2022). Effect of CSR and ethical practices on sustainable competitive performance: A case of emerging markets from stakeholder theory perspective. *Journal of Business Ethics*, 175(4), 837-855.
- Wang, L., Law, R., Hung, K., & Guillet, B. D. (2014). Consumer trust in tourism and hospitality: A review of the literature. *Journal of Hospitality and Tourism Management*, 21, 1-9.
- Wei, W., Kim, G., Miao, L., Behnke, C., & Almanza, B. (2018). Consumer inferences of corporate social responsibility (CSR) claims on packaged foods. *Journal of Business Research*, 83, 186-201.
- Wen, H., Pookulangara, S., & Josiam, B. M. (2022). A comprehensive examination of consumers' intentions to use food delivery apps. *British Food Journal*, 124(5), 1737-1754.
- Westbrook, R. A., & Oliver, R. L. (1991). The dimensionality of consumption emotion patterns and consumer satisfaction. *Journal of Consumer Research*, 18(1), 84-91.
- Xie, C., Bagozzi, R. P., & Grønhaug, K. (2019). The impact of corporate social responsibility on consumer brand advocacy: The role of moral emotions, attitudes, and individual differences. *Journal of Business Research*, 95, 514-530.
- Yu, W., Han, X., Ding, L., & He, M. (2021). Organic food corporate image and customer co-developing behavior: The mediating role of consumer trust and purchase intention. *Journal of Retailing and Consumer Services*, 59, 102377.
- Zhang, J., Chen, Q., Lu, J., Wang, X., Liu, L., & Feng, Y. (2024). Emotional expression by artificial intelligence chatbots to improve customer satisfaction: Underlying mechanism and boundary conditions. *Tourism Management*, 100, 104835.