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MARKETING | RESEARCH ARTICLE

Food traceability system as elevating good corporate social responsibility for fast-food restaurants

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Abstract: The assurance of food quality occurs through a process of “double branding” at food services. This study considers the relationship between consumers’ perceptions and attitudes toward restaurants that adopt food traceability system (FTS), brand image, and purchase intentions specifically as they pertain to fast-food restaurants. The purpose of this study is to investigate the relationship of perception of adopting FTS on attitudes toward brand and purchase intentions in fast-food restaurants. Data were collected via a questionnaire distributed at three Mosburger fast-food restaurants in Taipei, Taiwan. Data were collected using the convenient sampling method. In total, 360 patrons were asked to fill out a questionnaire and 301 valid copies were collected. The perception of adopting FTS can comprise motivation, fit, and timing. Fit and timing play key roles at influencing purchase intention and brand attitude, while brand image has a significant mediation role in the formation of purchase intention. With threats from disease and terrorism, FTS is a good corporate social responsibility practice for fast-food restaurants to build healthy and safe images. Fast-food restaurant marketers can build their brand using advertising images that convey emotional benefits such as the safety and healthiness of their products.

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PUBLIC INTEREST STATEMENT

Consumers bear the brunt of health-related consequences when restaurants and their suppliers make errors. The restaurant plays the role as a gatekeeper between the producer and the consumer in the food supply chain. With the advancement of information technology, many countries have introduced a food traceability system (FTS) to reduce the uncertainties originating during the food purchasing process by providing information about the whole process from farm to table in terms of quality and safety. The purpose of this study is to investigate the relationship of perception of adopting FTS on attitudes toward brand and purchase intentions in fast food restaurants. FTS is a good corporate social responsibility practice for fast food restaurants to build healthy and safe images. Fast food restaurant marketers can build their brand by using advertising images that convey emotional benefits such as the safety and healthiness of their products.

Subjects: Hospitality Management; Hospitality Marketing; Brand Management

Keywords: brand image; food safety; attitudes; fast-food restaurant; supply chain

1. Introduction

The trend of globalization has led to consolidation across many food categories at all level of the food supply chain, with food safety problems being one of the negative side effects (Roth, Tsay, Pullman, & Gray, 2008). With the advancement of information technology, many countries have introduced a food traceability system (FTS) to reduce the uncertainties originating during the food purchasing process by providing information about the whole process from farm to table in terms of quality and safety (Aung & Chang, 2014; Choe, Park, Chung, & Moon, 2009). Bosona and Gebresenbet (2013) define traceability “as a part of logistics management that captures, stores, and transmits adequate information about a food, feed, food-producing animals or substances at all stages in the food supply chain so that the product can be checked for safety and quality control, traced upward, and tracked downward at any time.” However, consumers’ interest in information recorded in food traceability systems is generally low. Due to the specific role of a restaurant as a gatekeeper between the producer and the consumer in the food supply chain, a comprehensive understanding of the impact of consumers’ perception toward FTS is of great relevance.

FTS can be used to distinguish the credence attributes from average products (Golan et al., 2004), such as organic, non-genetically modified, or point-of-origin foods, in order to charge a price premium. Consumers typically believe that traceability systems increase prices and that their effects could be overstated (Gracia & Zeballos, 2005; Grunert, 2005). Therefore, emphasizing FTS in restaurants may have the opposite effect in terms of restaurant customers’ choices, as the effects of FTS in restaurants may or may not affect their purchase intention.

With threats like disease and terrorism, food traceability throughout a supply chain has become a major concern in the food industry (Aung & Chang, 2014). Hence, there is an increasing demand by people taking part in various social activities for food companies to implement standards and certification programs as tools to promote sustainable development through their supply chains by influencing suppliers to adopt more environmentally and socially responsible practices (Hatanaka, Bain, & Busch, 2005). Companies spend a large amount of money not only on corporate social responsibility (CSR) activities, but also on publicizing their contributions to society. Because it is important to know about customers’ attitudes towards a brand, a well-known brand is an important product feature as it offers security and quality guarantees. The assurance of food quality occurs through a process of “double branding” at food services. It involves the restaurant acting as the buyer for consumers by seeking to protect the restaurant’s corporate brand and reputation and by actively evaluating the quality of brands it has on its shelves.

Restaurants are also often pressured to support healthy eating through new products and enhanced product labeling. Moreover, the moral and ethical status of the food industry is a reflection of the moral and ethical values of executives who lead food industry organizations (Early, 2002). Although control is related to trust and confidence, it does not affect purchase intention (van Rijswijk, Frewer, Menozzi, & Faioli, 2008). The green advertising literature suggests that more interest is being placed on green advertisements based on brand image rather than just focusing on green products (Nagar, 2015). This type of information is important, because consumers’ emotional response toward a brand may be a decisive factor in the purchase decision.

An advertising message develops attitudes toward a brand, which in turn exert an influence on brand image and purchase intentions. Fast food and ethnic restaurants have been mentioned most often as eating places for which respondents have the greatest food safety concerns (Henson et al., 2006). This study considers the relationship between consumers’ perceptions and attitudes toward restaurants that adopt FTS, brand image, and purchase intentions from a CSR perspective, and specifically as they pertain to fast-food restaurants. The purpose of this study is to (1) investigate the

effect of perception of adopting FTS on attitudes toward brand and purchase intentions in fast-food restaurants; (2) examine the mediating effect of attitudes toward a brand among perception, brand image, and purchasing intentions; and (3) verify whether there is a mediating effect of brand image on attitudes toward brand and purchasing intentions.

2. Research framework

2.1. *The effects of perceptions on attitudes toward FTS adoption*

CSR and sustainable consumption have become widespread topics in business and public discussions. Consumers are less sensitive to a retailer's performative attributes, such as assortment and price, than its CSR attributes (Arnold, Handelman, & Tigert, 1996). For example, some companies earmark a percentage of purchase prices to support a specific non-profit organization or cause (Varadarajan & Menon, 1988). Based on the assumption that consumers will patronize firms for their support of social programs, many organizations have adopted social causes. However, consumers may not blindly accept this social support as being sincere, and they may choose not to buy these firms' products. Consumers will avoid firms that are perceived as being insincere in their social involvement. Consumers also favor firms that are involved in social initiatives and may support them through purchases of their products (Sen & Bhattacharya, 2001; Simmons & Becker-Olsen, 2006). Thus, restaurants spend a large amount of money not only on FTS, but also on promoting FTS activities to their customers on site in order to promote menu items.

The relationship between perceived CSR activities and consumer behavior is indirect, mediated by brand attitude and behavior intention. According to Fishbein's theory of reasoned action (Fishbein & Ajzen, 1975), consumers' attitudes towards a brand serve as the mediator between their perception of ad/activity and their purchase intentions. Consumers evaluate CSR activities with regard to corporate motives (philanthropy-centered versus profit-centered), perceived fits (e.g. similarity between corporate missions and social initiatives), and specific timings of announcements (reactive versus proactive) (Becker-Olsen, Cudmore, & Hill, 2006). Aggressive and insincere CSR practices or activities foster negative consumer attitudes and reactions in terms of purchasing behavior (Sen & Bhattacharya, 2001). Perceived corporate motivation likely influences a consumer's attitude toward a firm and its social initiatives. When motivations are considered firm-serving or profit-related, attitudes toward the firms are likely to be poor; when motivations are considered socially positive, attitudes toward the firms are likely to be good (Becker-Olsen et al., 2006). FTS is viewed as standard practice of CSR in the food supply chain (Maloni & Brown, 2006). Based on the previous discussion, the following hypothesis is noted.

Hypothesis 1: Consumer-perceived motivation for adopting FTS positively affects consumer attitudes toward a fast food restaurant's brand.

Perceived fit in the CSR context is defined as the perceived link between a cause and the firm's product line, brand image, position, and/or target market (Becker-Olsen et al., 2006). Perceived brand fit is positively related with purchase intention (Ashton & Scott, 2011; Cha, Yi & Bagozzi, 2016). Consumers evaluate CSR activities with regard to other elements of the marketing mix, such as price or product quality (Mohr & Webb, 2005), and thus perceived CSR activities and traditional store attributes, such as merchandise assortment, price, or convenience of location, influence purchase intentions (Handelman & Arnold, 1999). High levels of perceived relatedness between firms and their initiatives enhance consumer attitudes towards firms/brands, because they view the actions of such firms that conform to their expectations as being appropriate (Becker-Olsen et al., 2006; Till & Busler, 2000). Based on the previous discussion, the next hypothesis is noted.

Hypothesis 2: Consumer-perceived fit for adopting FTS positively affects consumer attitudes toward a fast food restaurant's brand.

Firms often engage in social initiatives in reaction to natural disasters, consumer boycotts, pressure from non-governmental organizations (NGOs), or a number of other corporate crises. Consumers' responses to companies employing reactive CSR practices differ from their responses to companies enacting proactive initiatives (Becker-Olsen et al., 2006). Based on the previous discussion, the third hypothesis arises.

Hypothesis 3: Consumers' perceived timing of announcements for adopting FTS positively affects their attitudes toward a fast food restaurant's brand.

2.2. The relationships between attitudes toward purchase intention and brand image

Brand attitude can refer to an attitude that a consumer exhibits toward a particular brand. The marketing literature has highlighted the concept of brand attitude, because it is strongly believed that brand attitude influences customer behavior (Suh & Youjjae, 2006). When the CSR expectations of consumers' are exceeded, firms are rewarded with positive evaluations and an increase in consumers' behavioral intentions (Becker-Olsen et al., 2006). The relationship between attitudes toward brand image and purchase intention is thus hypothesized as follows:

Hypothesis 4: Consumer attitudes toward fast food restaurant brands with FTS are positively associated with consumer purchasing intention.

Brand image is a series of perceptions that a consumer formulates about a brand. Companies can embody the concept of green marketing in their products to obtain differentiation advantages for their products (Chen, Lai, & Wen, 2006). Restaurateurs typically try to establish a distinctive image that differentiates them from their competitors and communicates their products' benefits, positioning them in a specific target market. A favorable relationship exists between CSR practices and brand image, and so CSR can be a tool for building or maintaining a reputation (Lewis, 2003; McWilliams, Siegel, & Wright, 2006). Effective food safety management must be a core organizational strategy when building a brand image. Consumers' attitudes towards brands are strongly related to brand image (Faircloth, Capella, & Alford, 2001). The relationship between attitudes toward a restaurant and the restaurant's image is hypothesized as follows.

Hypothesis 5: Consumer attitude toward a fast food restaurant that adopts FTS positively affects brand image.

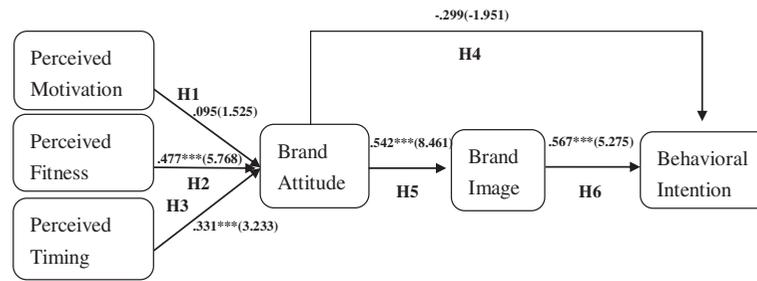
Brand image is an important key factor that influences consumers' purchase behavior. Consumers infer a certain product by brand image and then they make their purchase decision. Brand image is usually considered by consumers as an external cue to evaluate a product (Bigné, Sánchez, & Sánchez, 2001). Brand image is as a consumer's emotional response to a brand that results in the ability to differentiate among alternative offerings. Brand image is developed over time through advertising campaigns, packaging, sponsorship, word-of-mouth publicity, other marketing communication tools, and through a consumer's direct experience (Nagar, 2015). Similarly, restaurant image affects consumer behavioral intentions (Prendergast & Man, 2002). The relationship between attitudes toward restaurant, brand image, and purchase intention is hypothesized as follows:

Hypothesis 6: Brand image has a positive mediating effect on the relationship between attitudes toward brand and purchase intention.

Following the aforementioned hypotheses, Figure 1 presents the hypothesized framework.

Figure 1. Research framework and structural equation model.

Notes: (a) Model fit indices: $\chi^2 = 385.3$; $df = 136$; $p = 0.000$; CFI = 0.920; NFI = 0.882; NNFI = 0.899; IFI = 0.921; RMSEA = 0.078; GFI = 0.88; AFI = 0.83. (b) T-value for standardized path coefficients is omitted in parentheses. (c) * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.



3. Research method

3.1. Data collection

Data were collected via a questionnaire distributed at three Mosburger (MOS) fast-food restaurants in Taipei, Taiwan. Mosburger (MOS), with a product range typical of most fast-food outlets, has started a trial operation of FTS and has promoted this system in its restaurants. The activities of global organizations are often better understood by the public and likely affect more consumers than those of their smaller competitors. We chose MOS as this study subject, because as of the end of 2016, it has about 1,700 restaurants in Japan, Asia, and the Pacific and Oceania. Restaurant visits were undertaken at various times to collect a representative sample during each meal of the day. Permission to collect data was obtained from store managers. Data were collected using the convenient sampling method. The participants were first asked if they had heard about FTS. The participants who have ever heard answered questionnaire directly and the others who have never heard the researcher explained what FTS is first then participants answered the questionnaire. In total, 360 patrons were asked to fill out a questionnaire, and 301 valid copies were collected.

3.2. Measurement

The questionnaire comprised three parts: (1) perceptions of why a restaurant adopts FTS; (2) attitudes toward a restaurant due to FTS, restaurant image, and purchase intention; and (3) participant characteristics. Part I queried respondents regarding their perception of a restaurant adopting FTS as a CSR activity. The perceptions were evaluated across three categories: motivation (3 items), fit (3 items), and timing (2 items), which were modified based on the work of Becker-Olsen et al. (2006). The perception responses are on a 7-point semantic differential scale as shown in Table 1. Part II addressed attitude toward a restaurant brand due to FTS adoption (Barone, Norman, & Miyazaki, 2007), brand image modified from Nagar (2015), and purchasing intention (Myers, Kwon, & Forsythe, 2013). To measure brand attitude, participants were asked to rate their overall impression of the brand on scales anchored by “unfavorable/favorable,” “bad/good,” and “negative/positive” (Lafferty & Goldsmith, 1999). Brand attitude responses are on a 7-point semantic differential scale. Brand image and purchase intention were measured by a Likert 7-point scale where 1 = very disagree and 7 = very agree. Part III was in regards to respondents’ main reasons for visiting the restaurant and their relevant personal information, such as age, gender, education, and visiting times.

3.3. Data analysis

SPSS 18.0 (Statistical Product and Service Solutions) and AMOS 18.0 (Analysis of Moment Structures) were used for data analysis in this study, which allowed the use of descriptive statistics to summarize perceived food traceability motivation, fit, timing, attitudes toward brand, brand image, and purchase intention. Frequency distributions of the sample profiles were tabulated with demographic information and experience of eating in fast-food restaurants. To ensure internal consistency and scale reliability, reliability analysis was conducted using Cronbach’s alpha test and Confirmatory Factor Analysis. Structural Equation Modeling tested the relationships among motivation, fit, timing, attitude toward brand, brand image, and behavioral intention.

Table 1. Measurement scale reliability and validity

Construct items	Mean	S.D.	CLS
<i>Motivation: Cronbach's α = 0.78; CR = 0.85; AVE = 0.54</i>			
Self-interested vs. community-interested	3.78	1.25	0.735
Firm-focused vs. customer-focused	4.07	1.39	0.683
Benefit-motivated vs. socially motivated	3.92	1.41	0.797
<i>Fit: Cronbach's α = 0.86; CR = 0.99; AVE = 0.63</i>			
Low fit vs. high fit	4.79	1.10	0.749
Dissimilar vs. similar	4.59	0.97	0.733
Insistent vs. consistent	4.72	1.04	0.840
Not complementary vs. complementary	4.82	1.05	0.845
<i>Timing: Cronbach's α = 0.64; CR = 0.95; AVE = 0.47</i>			
Proactive vs. reactive	4.91	1.19	0.672
After law vs. before law	4.30	1.07	0.697
<i>Attitude toward brand: Cronbach's α = 0.91; CR = 0.99; AVE = 0.73</i>			
Bad vs. good	5.39	1.10	0.829
Unattractive vs. attractive	4.91	1.23	0.882
Dislike vs. like	5.03	1.17	0.890
Oppose vs. support	5.37	1.19	0.826
<i>Brand image: Cronbach's α = 0.75; CR = 0.98; AVE = 0.60</i>			
Product is natural	4.60	1.67	0.622
Product is delicious	5.03	1.31	0.641
Product is healthy	4.63	1.57	0.682
<i>Behavior intention: Cronbach's α = 0.86; CR = 0.99; AVE = 0.62</i>			
Likelihood of choosing this restaurant is very high	4.30	1.13	0.741
Probability that I will choose this restaurant is very high	4.14	1.30	0.714
My willingness to choose this restaurant is very high	4.47	1.17	0.894

Notes: Completely standardized loadings (CLS); Composite reliability (CR); Average variance extracted estimate (AVE).

4. Results

4.1. Characteristics of participants

In total, 301 participants completed the questionnaire, yielding a response rate of 84%. The sample consisted of 42.5% ($n = 128$) males and 57.5% ($n = 173$) females. In total, 45% ($n = 135$) were 25–34 years old and 37.5% ($n = 113$) were 18–24 years old. A large majority, 80% ($n = 140$), were unmarried. Of all respondents, 31% ($n = 93$) had a monthly income of US\$501–1000, 25.6% ($n = 77$) earned less than US\$200, 18% ($n = 54$) earned US\$1001–1500, 11% ($n = 33$) earned US\$201–500, and 14.4% ($n = 44$) earned more than US\$1500. Most of them, 75% ($n = 226$), had an undergraduate degree. In total, 78% ($n = 235$) of respondents visited this brand of fast-food restaurant 1 or 2 times per week. Most respondents, 68% ($n = 205$), had never heard of food traceability systems. In addition, the participants were representative in terms of other relevant variables such as relationship status and presence of children in the family. In terms of profession and employment status, a wide range of socioeconomic classes took part in this survey.

4.2. Perception of food traceability system as CSR activity at fast-food restaurants

Perceptions of FTS as a CSR activity were good on average. Perceptions of motivation, fit, and timing were rated 4–5 on the 7-point scale. The motivation for adopting FTS was deemed slightly profit-centered (3.74–4.07), the perceived fit between restaurant and FTS was moderate (4.59–4.82), and the perceived timing of an announcement was slightly proactive (4.30–4.91). Attitudes toward a

brand adopting FTS were positive (4.91–5.39), brand image was healthy (4.60–5.03), as was purchase intention (4.14–4.17).

4.3. Measurement scale for reliability and validity

Cronbach’s α , composite reliability, and average variance extracted were used to test for reliability and validity. All Cronbach’s α values, except that for timing belief, exceeded 0.7, which is the minimum value suggested by Nunnally (1978) for reliability. Each composite reliability score (0.85–0.99) exceeded the minimum requirement of 0.7, indicating adequate internal consistency. Furthermore, construct validity was satisfactory, because all items had high standardized factor loadings for their underlying constructs (range, 0.62–0.84) and were all significant at 0.001 (Table 1). The amount of variance explained by a factor was measured by average variance extracted (AVE). The AVE values near 0.50 (>0.45) are regarded as reasonable (Netemeyer, Bearden, & Sharma, 2003) for new scales. The fit of the specified model improved considerably to $\chi^2 = 371.75$ with 130° of freedom (*df*) (*p* value < 0.000), $\chi^2/df = 2.860$, RMSEA = 0.079, NNFI = 0.897, CFI = 0.922, and GFI = 0.888. All model parameters were statistically significant, their loadings were acceptable, and the coefficient of determination exceeded 0.45. Therefore, the final scale had convergent validity.

4.4. Impact of perception of food traceability system on purchase intention at fast-food restaurants

The structural model was examined to estimate the various relationships (Figure 1 and Table 2), with fit indices and path significance applied to evaluate the causal model (Anderson & Gerbing, 1988). Table 2 lists the model fit indices and standard path coefficients. Most model fit indices satisfied the recommended levels ($\chi^2 = 385.3$; *df* = 136; RMSEA = 0.078; *p* = 0.000; CFI = 0.920; NFI = 0.882; NNFI = 0.899; IFI = 0.921), suggesting that the structural model fits the data well.

The coefficient for the path fit-attitude toward brand (0.48) was larger than that for timing-attitude toward brand (0.33) and motivation-attitude toward brand (not significant). When fast-food restaurants use FTS as a CSR practice, their motivation was deemed to be slightly profit-centered (3.74–4.07), and compared to fit and timing, their motivation had less effect on consumer attitude toward the brand. Hence, perceived motivation had no effect on attitude toward a brand; thus, H1 is not supported, while H2 and H3 are supported.

Table 2. Structural parameter estimates

Structural paths	Standardized coefficients	Standard error	t-statistics (C.R.)	p-value	Hypotheses result
Motivation → brand attitude	0.095	0.062	1.525	0.127	H1 not supported
Fitness → brand attitude	0.479	0.083	5.768	***	H2 supported
Timing → brand attitude	0.331	0.103	3.233	**	H3 supported
Brand attitude → behavioral intention	-0.299	0.153	-1.951	0.051	H4 not supported
Brand attitude → brand image	0.542	0.064	8.461	***	H5 supported
Brand image → behavioral intention	0.567	0.290	5.275	***	H6 supported

Model fit indices: $\chi^2 = 398.82$; *df* = 138; *p* = 0.001; CFI = 0.920; NFI = 0.884; NNFI = 0.901; IFI = 0.921

***p* < 0.01.

****p* < 0.001.

The brand image and purchase intention path (0.567) was significant; however, the path of attitude toward brand and purchase intention was insignificant, and brand image was a determinant of purchase intention. Clearly, brand image is a significant antecedent of brand loyalty. This confirms that a CSR initiative can enhance corporate image (Moon, 2007). Brand image should be carefully maintained, because it contributes to behavioral intention at fast-food restaurants. Assurance of food quality occurs through a process of “double branding,” which involves the restaurant/retailer acting as the buyer for the consumer by seeking to protect the restaurant/retailer’s corporate brand and reputation, and by actively evaluating the quality of brands it has on its shelves (Farm Foundation, 2004). A well-known brand is an important product feature, because it gives security and quality guarantees. Hypotheses 5 and 6 are therefore supported. Findings indicated that brand attitude and brand image had significant mediation roles in the proposed framework that explains the formation of customer loyalty. Brand image is important to the formation of purchase intention.

5. Conclusions and discussion

This study applied the CSR viewpoint to evaluate the effects of FTS on purchase intention at fast-food restaurants. CSR activities are related to customer purchases, but the path is not clear. This study built a model of how CSR activity affects purchase intention. Study results confirm that brand image plays an important role in purchase intention. From the CSR perspective, the perception can comprise motivation, fit, and timing. Fit and timing play key roles at influencing purchase intention and brand attitude, while brand image has a significant mediation role in the formation of purchase intention.

Due to the significance of “fit” in perception, “fit” should be considered more in-depth. Alliances between a brand and a social cause that trigger positive attitudes toward a sponsoring brand may be an effective marketing strategy, thus enhancing the outcome of product evaluations (Hamiln & Wilson, 2004) and brand attitude (Nan & Heo, 2007). However, not all brand–cause relationships result in a positive outcome for the brand. Congruence likely allows a brand to generate positive returns, whereas non-congruence may not be detrimental to a brand (Simmons & Becker-Olsen, 2006; Tomalieh, 2016). Notably, FTS is gaining importance in the food supply chain due to the fact that animal/plant-based consumables are required for existence and are also complex and labor-intensive products in food supply chains. While food service organizations and marketers of branded products invest a lot of time and money at promoting brands, they are also increasing their demands on suppliers.

This study further considers the mediating effect of brand image on the relationship between attitudes toward restaurant and purchase intention. Consumers are not interested in functional benefits such as information concerning farm to the table (Choe et al., 2009). A fast store has adopted FTS, the higher the degree of involvement an individual has and the more FTS mitigates his/her perceived uncertainty, the higher his/her purchase intention regarding fast foods than otherwise (Chen & Huang, 2013). In fact, only about one-third of the participants have ever heard of FTS. Consumers’ involvement or knowledge should be concerned. Brand image does play a key role in purchase intention under low involvement situation. With threats from disease and terrorism, FTS is a good CSR practice for fast-food restaurants to build healthy and safe images. Fast-food restaurant marketers can build their brand using advertising images that convey emotional benefits such as the safety and healthiness of their products. They can also point out the emotional benefits of food traceability, present consistency between fast-food restaurant brand and food traceability system, and proactively focus attention on food safety.

Although efforts were made to ensure validity, this study has several limitations. First, this study focused only on consumers who ate at one specific chain among many fast-food restaurants. Second, this study does not take into account the mediating role of demographic variables, such as gender, socioeconomic status, or age. Based on the limitations of the study, three suggestions are proposed for future research. First, future research can test the proposed model on other classifications of restaurants such as casual or fine dining. Second, a future study can take look into the mediating role of demographic variables. Third, future research could compare the perceptions of customers between those who frequently dine out versus those who rarely do.

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