



Managers' perspectives on restaurant food waste separation intention: The roles of institutional pressures and internal forces

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ABSTRACT

The hospitality industry, particularly restaurants, generates a large amount of food waste daily. This study draws upon institutional theory using the lens of isomorphic pressures and two internal factors, corporate social responsibility (CSR) and restaurant size, to investigate what drives food waste separation intention in the restaurant sector of a developing economy. Data collected from 395 restaurant managers show that normative, coercive, and mimetic pressures positively impact intention; isomorphic pressures are mediated by CSR to achieve higher intention; and the crucial interaction between restaurant size and CSR significantly strengthens food waste separation intention. The study contributes to institutional theory by offering a novel integrated model to explain the respective mediating and moderating roles that CSR and restaurant size play between institutional pressures and behavioral intention in food waste management.

1. Introduction

An estimated 720–811 million people faced hunger in 2020, while food waste is valued at \$400 billion annually (United Nations Food and Agriculture Organization, 2020, 2021). In terms of environmental impact, food waste in landfills generates methane, which contributes up to 8% of global greenhouse gas emissions (Kaplan, 2021). Recognizing the link between food poverty and food waste, the United Nations incorporated food waste into its Sustainable Development Goals (SDG 12): Responsible Consumption and Production (United Nations Sustainable Development Goals, 2015). The United Nations Food and Agriculture Organization (2020) however reported that “only 11 countries have so far included food loss in their Nationally Determined Contributions. None of them included food waste”. Thus, urgent and rigorous studies of food waste by various stakeholders and countries are needed.

The hospitality sector alone accounted for 18.15% of global food waste in 2019 (Loth, 2021). The extant literature examining food waste in the hospitality industry has focused on diverse areas, including waste handling, consumer attitudes, demographic factors (Dhir et al., 2020), serving styles (Filimonau et al., 2020), sustainability (Carino et al., 2020), hospitality operations (Filimonau and De Coteau, 2019), food planning practices in hotel kitchens (Leverenz et al., 2021), food waste

management in hotel food services (Dhir et al., 2020), and guest food waste behaviors, preferences, and attitudes (Okumus et al., 2020). However, little is known about the underlying factors that encourage, drive, and impede food waste separation intention in restaurants. Limited research has focused on food waste determinants in the hospitality industry (Huang et al., 2020), with most studies skewed toward developed countries (Dhir et al., 2020).

This study aimed to address these research gaps by exploring an appropriate model to investigate food waste separation intention in restaurants operating in a developing country. We employed institutional isomorphism, a concept derived from institutional theory, as a theoretical framework to examine this behavioral intention. Organizations attempting to gain legitimacy and resemblance with one another (isomorphism) can be forced to comply or act similarly within the same set of environmental conditions (DiMaggio and Powell, 1983). Three primary mechanisms or pressures lead to institutional convergence: coercive (arises from legal or political regulatory pressures), mimetic (copying behavior because of organizational uncertainty), and normative (initiated by professional groups through socializing and interacting relationships). In addition to examining external institutional pressures, we extended the framework by incorporating two internal forces: corporate social responsibility (CSR) and restaurant size. Few studies have considered these two internal forces in explaining behavioral

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intention at the organization level. CSR in the food industry concerns food safety, food security, and environmental and social sustainability (Fuchs et al., 2009), while restaurant size relates to resources and labor. Both factors are important enablers that trigger food waste separation intention. In response to the above-mentioned issues, this study specifically examined CSR's environmental dimension.

Using external and internal perspectives, this study explains how organizations behave environmentally, specifically why food waste contributors such as restaurants separate food waste. We propose two research objectives: to examine the mediating effects of CSR between isomorphic pressures and restaurant food waste separation intention and to examine the moderating effect of restaurant size between CSR and food waste separation intention.

Drawing upon institutional theory, this study contributes to the literature by considering the role of CSR's environmental dimension in explaining organizational change decisions such as restaurant food waste separation intention. It also investigates CSR as a mediator between isomorphic pressures and restaurant food waste separation intention in a developing economy, which, to the best of our knowledge, has not been examined before. Further, this study is one of the few that examine the moderating effect of restaurant size between CSR and food waste separation intention. The inclusion of restaurant size as a conditional factor is crucial to evaluate the extent to which a restaurant's characteristics explain its behavioral intention. Finally, while many studies have applied the theory of planned behavior (Coşkun and Yetkin Özbük, 2020; Ng et al., 2021; Visschers et al., 2016) and social practice theory (Gangbauer et al., 2013; Leray et al., 2016) to investigate food waste separation, this study is novel by applying institutional theory to investigate behavioral intention toward food waste separation.

2. Literature review and hypothesis development

2.1. Challenges in food waste separation

In recent years, food has been wasted because of the movement and transport restrictions due to COVID-19 pandemic (United Nations Food and Agriculture Organization, 2020). Jamal et al. (2019) elucidated that food waste separation poses six major challenges: the lack of national awareness campaigns, the lack of resources to educate businesses, the unapproved usage of food waste, regulatory requirements for composting, the lack of space for bins within business premises, and appropriate collection times. These challenges have become more critical in restaurants, as they operate in a competitive environment, hindering them from collaborating by sharing knowledge and resources to implement food waste separation practices. Fogarty et al. (2021) studied food service businesses and found two major challenges faced by restaurant managers/owners in food waste separation. First, sorting compostable from non-compostable materials prevents food service businesses from separating food waste. This is mainly because sorting these materials takes time, as it is difficult to easily place them into separate bins. Second, a lack of kitchen space prevents restaurant managers/owners from engaging in sustainable practices.

Lang et al. (2020) and Principato et al. (2018) found that restaurant owners' attitude and behavior play a key role in food waste management, while Filimonau et al. (2019) emphasized the critical responsibility of targeted governmental support to ensure effective food waste management in restaurants. Consumer expectations, industry associations, and management support could drive food waste separation practices in restaurants (Mak et al., 2018; Tavill, 2020). As such, external and internal forces influence restaurants' food waste separation intention.

2.2. Institutional theory and conceptual framework

Following the pioneering work of North (1990) and Scott (1995), a significant strand of the literature has contributed to the development of

institutional theory (Garrone et al., 2018). Institutional theory explains how institutions influence organizations and vice versa (Puffer and McCarthy, 2015). Institutions refer to the "humanly devised constraints that structure human interaction" (North, 1990, p. 3) and comprise formal laws and regulations, including informal controls such as cultural norms (North, 1990; Puffer and McCarthy, 2015). By acting in accordance with the standards and expectations of the institutional context, an organization improves its chances of survival significantly. The institutional context also helps organizations protect or improve their legitimacy (DiMaggio and Powell, 1983; Scott, 1995), which is accompanied by economic benefits (Zhu and Sarkis, 2007). It also explains how organizations should behave when facing social choices such as displaying food waste separation behavior.

DiMaggio and Powell (1983) highlighted the roles of coercive, normative, and mimetic isomorphism in influencing an organization's decision-making process. Isomorphic pressures explain how "systems of organizations become more and more alike" (Rhoades and Sporn, 2002, p. 356). Through the process of isomorphism, organizations operating within similar institutional structures embrace similar forms of behavior, boosting a firm's stability and survival and enabling institutional legitimacy (DiMaggio and Powell, 1983). The pressure to gain or ensure legitimacy pushes organizations to engage in environmentally friendly behavior (Wang et al., 2018). Pressures are often exerted by self-interested stakeholders. Prior environmental management studies in the hospitality industry have highlighted the inclinations toward a homogenization process, where firms follow changes in the institutional environment (Delmas and Toffel, 2004; Ouyang et al., 2019). A recent literature review on circular economy of food waste by Ouro-Salim and Guarnieri (2021) proposed a model to generate and reduce food waste through institutional theory but there is no empirical result.

A few studies have examined the relationships between isomorphic pressures and environmental behavior. Lin and Sheu (2012) revealed that coercive and mimetic isomorphism influence the manufacturing industry to adopt green practices. Raab et al. (2018) found that US restaurant managers are pressured to adopt sustainable practices because of competition in the market (mimetic). However, they found no impact from employees or societal expectations. Masocha and Fatoki (2018) also showed coercive pressure on sustainable practices among small businesses. Daddi et al. (2016) revealed that coercive pressure does not influence the adoption of environmental innovation, while mimetic and normative pressures do. These mixed results from prior studies indicate the possibility of a missing link to explain the direct relationship between isomorphic pressures and environmental behavior, including food waste separation intention.

2.3. Coercive, normative, and mimetic pressures and CSR

Coercive pressure emanates from both formal and informal sources. They are exerted on firms by the organizations they depend on and the cultural expectations of the environments they operate in (DiMaggio and Powell, 1983). Organizations include the local community, government, peers, and media. However, coercive pressures originate primarily from governments and their agencies that impose obligatory regulatory policies, including penalties and fines for failing to observe those policies. Coercive pressure has a significant direct influence on firms' environmental behavior, including corporate environmental responsibility, CSR reporting, green supply chain management, and environmental innovation practices (Li, 2014; Zou et al., 2019).

Normative pressure originates from professionalization and involves the socialization of a firm within its institutional environment (Colwell and Joshi, 2013). To gain social legitimacy, firms must abide by their industrial standards and norms. Initially, compliance with industrial norms may be voluntary for firms, however, it may become obligatory when the norms become institutionalized or legislated (Zhu et al., 2016). Although normative pressure was initially thought to arise from firms' professional groups and associations, consumer demands are also

a fundamental source (Chu et al., 2017; Zhu and Geng, 2013). Consumer demands stem from concerns about and subsequent perceived moral obligation regarding environmental sustainability (Chen and Tung, 2014). Growing consumer demand for green products influences firms' engagement in social and environmental sustainability significantly (Li, 2014). Normative pressure exerts the greatest explanatory power in voluntary sustainability reporting (Martínez-Ferrero and García-Sánchez, 2017). Firms are obliged to operate in ways that enhance society and the environment due to demands and pressures from both customers and society.

Mimetic pressure arises when firms compete, as it influences them to imitate competitors' successful practices and copy the behaviors of organizations with which they have social ties. Mimetic pressure also motivates firms to engage in CSR (Daddi et al., 2016; Li, 2014). Firms are often particularly attentive to changes in the corporate environmental practices of successful competitors (Zhu and Geng, 2013). In the hospitality industry, where intense competition and elevated uncertainty exist, mimetic pressure influences restaurants to adopt CSR behaviors of other organizations.

Baumann-Pauly et al. (2013) defined CSR as a consolidation of environmental, social, and ethical considerations in business conduct, aligned with stakeholder interests. This definition implies that organizations not only operate for efficiency but also focus on responsibility. One of the main arguments in support of CSR is warding off government intervention (Carroll et al., 2018). Institutions are assumed to both enhance and hamper the implementation of CSR policies. Institutional theory recognizes that a firm's decision to assume CSR is complicated when "the external environment consists of influential, but diverse regulations, norms and cognitive models" (D'Aunno et al., 2000, p. 682). It is often impossible for firms to conform to all pressures; however, not all institutional forces or pressures have the same impact on firm behavior; the impact depends on how relevant the pressures are for the firm.

Institutional pressures affect CSR implementation (Jackson and Apostolakou, 2010; Marquis et al., 2007). Corporate behaviors and activities seek to influence social and non-social stakeholders positively and move beyond economic benefits. Organizations are consciously coordinated social units that are vulnerable to institutional pressures if they affect or influence firms' goals. Further, as institutions influence the norms that firms apply, institutional isomorphism can explain the CSR behavior of businesses, specifically the environmental perspective examined in this study (Dash and Mishra, 2017). CSR scholars concur that governments (Knudsen and Brown, 2015), industry associations (Marques, 2017), the media (Prabhakar and Mishra, 2013), standards and norms (McFarland et al., 2008), and mimicry of practices (Cormier et al., 2005) all exert institutional pressure on firms' CSR. These pressures drive organizations to undergo processes that eventually converge with those of similar players in their shared business environment. Thus, we hypothesize:

Hypothesis 1. Coercive pressure is positively related to CSR.

Hypothesis 2. Normative pressure is positively related to CSR.

Hypothesis 3. Mimetic pressure is positively related to CSR.

2.4. CSR and food waste separation intention

Żelazna et al. (2020) indicated that firms that take social responsibility seriously work to reduce their negative impact on the environment. Similarly, firms that demonstrate high CSR levels engage in pro-environmental behavior (Afsar and Umrani, 2020; Korschun et al., 2014). CSR is a vital driver of employee green behavior in the hotel industry, driving environmental management initiatives (AlSuwaidi et al., 2021). As such, firms' CSR participation has a positive influence on environmental performance such as the food waste separation intention of hotels (Anser et al., 2020). Food waste separation

initiatives require additional effort, knowledge, expertise, experience, and, sometimes, technology. Thus, it is reasonable to expect that firms' participation in environmentally driven CSR positively influences food waste separation intention. Thus, we hypothesize:

Hypothesis 4. CSR has a positive influence on food waste separation intention.

2.5. Mediating effect of CSR

The impacts of institutional pressures on pro-environmental behavior are mixed (Daddi et al., 2016; Lin and Sheu, 2012; Raab et al., 2018). Several studies using institutional pressures to explain behavioral intention have considered the role of mediators to explain these mixed results. For example, Zhang et al. (2018) used top management support as a mediator to explain the influence of isomorphic pressures on a firm's energy-saving behavior, while Alziady and Enayah (2019) revealed that the adoption of green information technology influences the relationship between isomorphic pressures and the intention to continue usage. These studies suggest that for institutional pressures to translate into behavioral intention, a mediator is needed. Thus, we contend that the environmental dimension of CSR is a possible mediator between isomorphic pressures and food waste separation intention.

The hospitality industry generates copious amounts of food waste daily (Tostvint et al., 2016). Disposing food waste in landfills results in the fast depletion of landfill space, leads to odor nuisance, and produces greenhouse gases and leachates that severely pollute the environment. Governments face immense public pressure to protect the environment (Zou et al., 2019) and implement coercive, obligatory regulations with penalties, fines, and taxes to encourage organizations to exhibit environmentally conscious behavior. In restaurants, proper internal CSR practices focused on the environment would improve their food waste separation intention (Zhu et al., 2016). Hence, we hypothesize:

Hypothesis H5a. The influence of coercive pressure on food waste separation intention is mediated by CSR.

Similarly, organizations may be pressured to conform and converge with others to undertake pro-environmental behavior. However, external pressure alone will not contribute to food waste separation unless the firm prioritizes protecting stakeholder interests by adopting environmentally driven CSR practices. The pressure from industry bodies, consumers, the media, and the community would motivate more environmental practices (Afsar and Umrani, 2020; Martínez-Ferrero and García-Sánchez, 2017). Behaviors that consider the interests of other stakeholders also support major efforts such as food waste separation. Thus, we hypothesize:

Hypothesis H5b. The influence of normative pressure on food waste separation intention is mediated by CSR.

Restaurants operate in a competitive environment and many use CSR to retain and satisfy customers (Lee et al., 2020; Rhou and Singal, 2020). Mimetic pressure encourages restaurants to copy the practices of other competitors they identify as successful to gain competitive advantage (Saeed et al., 2018). When CSR practices are implemented as part of a strategy to overcome competition, the experience and knowledge gained from such practices in turn stimulate food waste separation intention. We thus propose:

Hypothesis H5c. The influence of mimetic pressure on food waste separation intention is mediated by CSR.

2.6. Moderating effect of size

For many organizations, especially small and medium-sized enterprises, adopting CSR practices requires additional resources to normal operational expenses (Russo and Tencati, 2009). For example,

implementing sustainable food waste practices requires additional labor with special expertise, time, and new operating procedures. These requirements suggest that larger firms would find it easier to allocate sufficient resources to undertake such efforts. In addition to having more resources than smaller firms (Gupta, 1969), larger firms have higher standards of institutional compliance (Roome and Wijen, 2006) and more procedures (Chen and Hambrick, 1995), thereby ensuring better CSR implementation (Donaldson, 2001). Youn et al. (2015) demonstrated that firm size moderates the CSR effect and restaurants' corporate financial performance. On the contrary, Darnall et al. (2010) found that smaller firms are more responsive to internal and regulatory stakeholder pressures in adopting pro-environmental behavior. As Ouyang et al. (2019) found that the strength of the positive relationships between specific institutional pressures differs by hotel size, we hypothesize:

Hypothesis 6. Restaurant size moderates the relationship between CSR and food waste separation intention.

In summary, we propose CSR as a mediating factor between the three isomorphisms and food waste separation intention of restaurants. We also suggest restaurant size as a moderating factor that influences how CSR supports food waste separation intention. The study's proposed conceptual framework is illustrated in Fig. 1.

3. Methodology

3.1. Sample and data collection

This study used survey data collected from 395 Malaysian restaurant managers. Following the Food Hygiene Regulations 2009, all restaurants in Malaysia are assigned grades based on their sanitary practices. We selected restaurants with grades A and B located in Kuala Lumpur. These enterprises are more likely to be involved in environmental practices due to pressure from competitors, customers, and governmental regulations (Delmas and Toffel, 2004). We also required survey respondents to have at least one year of restaurant work experience and be familiar with restaurant daily operations and CSR practices related to the environment. Few restaurants operating in Malaysia require chefs to possess specialized qualifications and chefs are usually employed based on experience. The restaurants approached in this study have small operations and employ chef/kitchen supervisors with standard cooking skills. Managers instead of chefs make the major operational decisions, including on food waste management. As such, restaurant managers were selected as the respondents. Two research assistants approached

800 restaurant managers who fit the criteria, asking them to participate in the study and providing an online link to the survey. Several procedures were adopted to safeguard participants' rights. Participants were not required to disclose their names when completing the survey online and the invitation statement with the survey link made clear the complete confidentiality of their responses. It also highlighted that the study intended to analyze aggregate instead of individual data patterns and that participation was voluntary.

Owing to the nature of self-administered surveys, it was necessary to consider if any potential non-response bias existed in the study data. Consistent with the well-accepted argument that late respondents share similarities with non-respondents (Armstrong and Overton, 1977; Farooq and Salam, 2020), an independent group t-test was performed and the values for the focal constructs across early (first 100 respondents) and late respondents (last 100 respondents) were compared using IBM SPSS (version 26.0). There was no significant ($p > 0.05$) variance in the mean values of either subgroup, confirming that non-response bias was not a major concern in this study. Common method bias is another concern in cross-sectional studies. To control for this bias, we followed the recommendations of Podsakoff et al. (2003). As noted above, respondents were managers with sufficient knowledge of restaurant operations. All questions were non-sensitive, clear, and specific; this factor combination suggests a low likelihood of deceitful answers. We also applied Harman's one-factor test (Harman, 1976), which resulted from exploratory factor analysis with all the 17 items extracted into five factors (i.e., coercive, normative, and mimetic pressures, CSR, and intention). The highest proportion of variance explained by a single factor was far below 50%. Therefore, the probability of common method bias was low in this dataset.

3.2. Measures

Assessments of the focal constructs used items drawn from previous studies. The 5-point Likert anchors for each scale ranged from 1 ("strongly disagree") to 5 ("strongly agree"). As most studies of food waste in the restaurant sector have examined consumers or patrons' perspectives, studies from restaurants' perspectives and their food waste management intention are scarce. The dimensions of isomorphic pressures (normative, mimetic, and coercive) were adapted from Chu et al. (2017), with green environmental practices reframed as food waste management practices. Three items were used to measure coercive pressure, which arise from governments and collective industry associations, such as those usually found in the restaurant industry. Normative, and mimetic pressures were each measured by three items focused

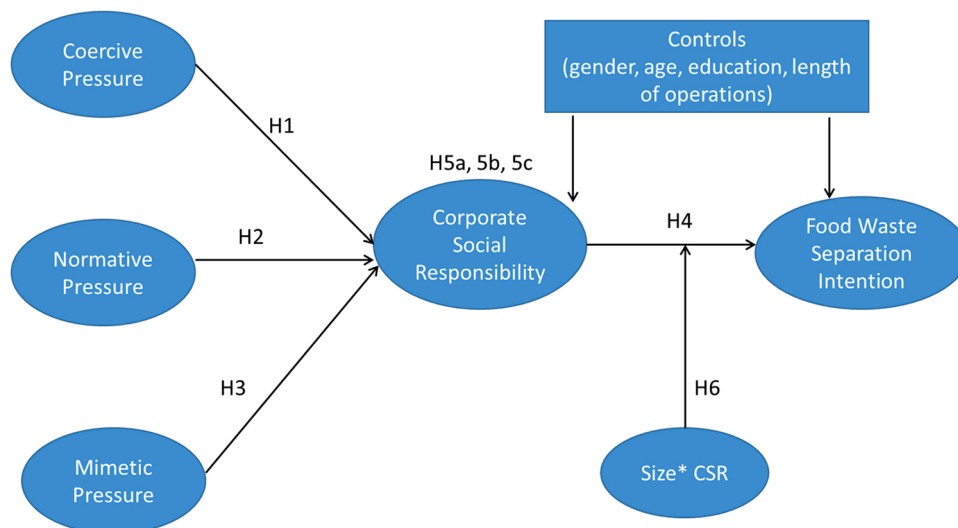


Fig. 1. Research model.

on the extent of food waste management practices pushed by customers or competitors. CSR measures, taken from [Ağan et al. \(2016\)](#), included four items that evaluated the extent to which a restaurant’s CSR involvement was related to the environment. Food waste separation intention was measured using four items adapted from [Thoradeniya et al. \(2015\)](#). These adapted measures have been used to examine environmental and sustainable practices and have been validated and tested; thus, they were deemed appropriate for this study. Finally, firm size was measured by the number of employees (1 =1–10 employees; 2 =11–20 employees; 3 =21–30 employees; 4 =31–40 employees; 5 =more than 40 employees). The research model also included four control variables: gender (1 =male), age (in years), education level (1 =high school, 2 =foundation/A level, 3 =Bachelor’s degree, 4 =Master’s degree, 5 =doctorate), and length of operation (in years). Past research (e.g., [Koivupuro et al., 2012](#); [Ng et al., 2021](#)) has shown that some of these variables are related to food waste separation intention; not all were directly relevant to our hypotheses.

3.3. Data analysis

This study used Smart PLS 3.0 structural equation modeling (PLS-SEM) to validate the measurement model and analyze the hypothesized relationships in the structural model. PLS-SEM, a vigorous and developed second-generation SEM technique, also referred to as a variance-based approach ([Hair et al., 2017](#)), was chosen for its ability to test complex multivariable relationships simultaneously while accounting for measurement errors. It is also commonly used in empirical research in this field ([Diaz-Ruiz et al., 2018](#); [Farooq and Salam, 2020](#)).

4. Results

A total of 434 of the 800 restaurant managers who fit the criteria responded, generating a response rate of 54.2%. During screening, data were checked for incomplete responses and missing values; 39 questionnaires were excluded and the remaining 395 used for the data analysis. [Table 1](#) presents the profiles of the surveyed managers and their managed restaurants’ characteristics.

4.1. Measurement model

Following [Hair et al. \(2017\)](#), we first examined the measurement

Table 1
Profiles of the respondents and restaurants.

Characteristic	Frequency	%
<i>Gender</i>	234	59.2
Male	161	40.8
Female		
<i>Age</i>	92	23.3
18–24	184	46.6
25–34	98	24.8
35–44	21	5.3
45 and above		
<i>Education level</i>	271	68.5
A-level or lower	86	21.8
Bachelor’s degree	32	8.1
Other professional certificate	6	1.6
Postgraduate degree		
<i>Restaurant’s age</i>	310	78.4
10 years or below	50	12.7
11–20 years	20	5.1
21–30 years	15	3.8
More than 30 years		
<i>Restaurant size</i>	212	53.7
1–10 employees	136	34.4
11–20 employees	21	5.3
21–30 employees	9	2.3
31–40 employees	17	4.3
More than 40 employees		

model and assessed its reliability and convergent and discriminant validity. In PLS-SEM, composite reliability (CR) is used as a reliability index alpha with a recommended threshold of 0.8, indicating strong reliability ([Chin and Gopal, 1995](#)). Cronbach’s α is commonly used to assess the reliability of internal consistency. The recommended coefficient alpha level is 0.7 or higher ([Nunnally, 1978](#)). The Cronbach’s α coefficients and CR values in this study ranged from 0.735 to 0.911 and 0.851–0.937, respectively ([Table 2](#)). Therefore, all the study scales exhibited satisfactory internal consistency. Convergent validity can be evaluated in two ways. First, we validated whether items were significantly related to the corresponding constructs (i.e., if item loadings were significant). Second, we examined if the average variance extracted (AVE) values for every construct were above the recommended threshold value of 0.5 ([Chin, 2010](#)). The high outer loadings varied between 0.733 and 0.925 and all the AVE indices were above the threshold of 0.5, ranging from 0.656 to 0.789 ([Table 2](#)). These results indicate that the measures used in this study had an acceptable degree of convergent validity.

The Fornell–Larcker criterion and heterotrait-monotrait (HTMT) ratio were used to evaluate the discriminant validity of the constructs. The Fornell–Larcker criterion results demonstrated that the square roots of all the AVE values were higher than the estimated correlation between the constructs in this study ([Table 3](#)). Similarly, all the HTMT values were below the critical level of 0.9, indicating that discriminant validity was established ([Henseler et al., 2015](#)).

Taken together, these findings fulfilled all the criteria for determining the reliability and validity of the study’s measurement model. In terms of multicollinearity, we followed the suggestion of [Wilden et al. \(2013\)](#) in using variance inflation factors (VIFs). Multicollinearity did not seriously interfere with the PLS estimation, as the VIFs ranged from 1.0 to 3.811, well below the cut-off value of 5 ([Hair et al., 2010](#)).

4.2. Structural model

To test the hypotheses, we used a bootstrapping procedure with a resampling rate of 5000 to obtain the standardized beta (β), t values, and p values ([Dijkstra and Henseler, 2015](#)). Bootstrapping generated 5000 resamples and corrected the biases within 95% confidence intervals. The proposed structural model had close to 38% explanatory power on food waste separation intention, compatible with prior research in the hospitality industry ([Hernández-Perlines et al., 2019](#); [Fig. 2](#)). Regarding the model fit, the standardized root mean square residual (SRMR=0.074) was below the threshold of 0.08 and rms Theta 0.143, suggesting the model fit the data ([Henseler et al., 2014](#)). Using blindfolding with the cross-validated redundancy approach, we also examined the Q-squared value for predictive relevance. All the Q-squared values (CSR=0.21; INT=0.27) were greater than the threshold value of 0, which shows that the predictors of each outcome have reasonable power and relevance ([Henseler et al., 2009](#)). The R-squared values also confirmed this predictive relevance (CSR=0.31; INT=0.38). The analyzed results of the direct effects show that coercive, normative, and mimetic pressures significantly and positively influenced CSR ($\beta = 0.174, p < 0.01$; $\beta = 0.405, p < 0.01$; $\beta = 0.120, p < 0.05$, respectively). Therefore, H1, H2, and H3 were confirmed. The significant relationship between CSR and food waste separation intention was also confirmed ($\beta = 0.589, p < 0.01$), supporting H4 ([Table 4](#)).

For H5, the results of the indirect effects showed that through CSR, coercive ($\beta = 0.103, p < 0.01$), normative ($\beta = 0.237, p < 0.01$), and mimetic pressures ($\beta = 0.069, p < 0.05$) significantly influenced food waste separation intention, therefore supporting the mediating role of CSR. To assess if CSR was a full or partial mediator, we further investigated the direct effect of the three institutional pressures on food waste separation intention. We found significant positive relationships between coercive ($\beta = 0.103, p < 0.05$), normative ($\beta = 0.239, p < 0.01$), and mimetic pressures ($\beta = 0.068, p < 0.05$) on food waste separation intention. However, the explanatory power of intention was slightly low

Table 2
Standardized factor loadings, AVE, and CR.

Factor (Cronbach's α)	Indicator	Outer loading	CR	AVE	Mean	SD	Source		
Coercive pressure (CP) $\alpha = 0.773$	CP1. Stringent government regulations on environmental protection force our company to implement food waste management practices.	0.843	0.868	0.687	3.780	0.858	Adapted from Chu et al. (2017)		
	CP2. The food waste management practices of our company are influenced by the regional government's environmental regulations.	0.853						3.965	0.756
	CP3. Potential conflicts between products/services and environmental regulations affect our company's food waste management practices.	0.789						3.904	0.713
Normative pressure (NP) $\alpha = 0.735$	NP1. The increasing environmental consciousness of consumers has spurred our company to implement food waste management practices.	0.849	0.851	0.656	3.785	0.788	Adapted from Chu et al. (2017)		
	NP2. Consumers have a strong influence on our company's food waste management practice implementation.	0.843						3.742	0.815
	NP3. For our company, establishing an environmentally friendly image is extremely important.	0.733						4.137	0.797
Mimetic pressure (MP) $\alpha = 0.847$	MP1. Our competitors' earlier implementation of food waste management practices provided a benchmark and guidance for the implementation of our company's food waste management practices.	0.818	0.907	0.766	3.382	0.795	Adapted from Chu et al. (2017)		
	MP2. Competitors have a strong influence on our company's food waste management implementation.	0.925						3.357	0.816
	MP3. The food waste management practices of our company are affected by competitors' environmental protection strategy.	0.878						3.494	0.879
CSR $\alpha = 0.854$	CSR1. Our company implements food waste management activities to minimize the company's negative impact on the natural environment.	0.845	0.901	0.678	3.899	0.771	Adopted from Ağan et al. (2016)		
	CSR2. Our company participates in activities that aim to protect and improve the quality of the natural environment.	0.856						3.977	0.798
	CSR3. Our company pays attention to the negative impacts of our products/services on the natural environment during the product development process.	0.851						3.949	0.798
	CSR4. Our company considers its social responsibility to future generations when making decisions.	0.782						4.114	0.818
Intention (INT) $\alpha = 0.911$	INT1. Our company is committed to engaging in or continuing food waste separation.	0.854	0.937	0.789	4.091	0.738	Adapted from Thoradeniya et al. (2015)		
	INT2. Our company plans to engage in or continue food waste separation.	0.925						4.117	0.768
	INT3. Our company intends to engage in or continue food waste separation.	0.899						4.160	0.762
	INT4. Our company is willing to engage in or continue food waste separation.	0.873						4.079	0.794

at 30%. As both the direct and the indirect effects were significant, these results suggested that CSR is a partial mediator.

The results for H6 indicated that the interaction of Size*CSR positively and significantly influenced food waste separation intention ($\beta = 0.091, p < 0.05$; [Table 4](#)), suggesting that the positive relationship between CSR and food waste separation intention is strengthened (weakened) when the restaurant is larger (smaller). Comparing the R^2 value of the direct effects ($R^2 = 0.332$) with moderating effect ($R^2 = 0.38$), the effect size f^2 of 0.57 was considered as medium ([Cohen, 1988](#)). Of the four control variables, length of operations had a significant negative impact on intention ($\beta = -0.105, p < 0.10$); however, none of the other control variables (age, gender, and education) had a significant impact ($\beta = 0.048, p > 0.01$; $\beta = -0.011, p > 0.01$; $\beta = -0.042, p > 0.01$, respectively; [Table 4](#)). This suggests that recently established restaurants exhibit a higher food waste separation intention. On the contrary, age ($\beta = 0.042, p > 0.01$), gender ($\beta = 0.044, p > 0.01$), education ($\beta = 0.0352, p > 0.01$), and length of operations ($\beta = 0.039, p > 0.01$) did not have a significant impact on CSR.

5. Discussion and conclusions

5.1. Conclusions

Using institutional theory and centering on isomorphic pressures, the

empirical findings of this study demonstrated that restaurant food waste separation intention is influenced by three isomorphic pressures (coercive, normative, and mimetic) at different magnitudes. Aligned with prior research conducted in different contexts (see [Daddi et al., 2016](#); [Martínez-Ferrero and García-Sánchez, 2017](#); [Zhu et al., 2016](#)), our findings showed that the pressures to conform through isomorphism impacted restaurant food waste separation intention. Besides confirming prior investigations of the influence of CSR on pro-environmental activities ([Afsar and Umrani, 2020](#); [Želazna et al., 2020](#)), we also found that CSR is a mediator between isomorphic pressures and food waste separation intention. The study also revealed that restaurant size shapes the CSR-motivated behavioral intention toward food waste separation, concurring with the findings of [Youn et al. \(2015\)](#) and [Darnall et al. \(2010\)](#).

5.2. Theoretical implications

Responding to calls for additional research on food waste separation in the hospitality sector ([Carino et al., 2020](#); [Kasavan et al., 2019](#)), especially in a developing economy, this study examined the determinants that influence food waste separation. First, the study supported the applicability of institutional theory along with the extended application of isomorphic pressures in predicting food waste separation intention. Prior studies of behavioral intention have generally relied on

Table 3
Measurement model. Discriminant validity.

Fornell-Larcker criterion Heterotrait-monotrait ratio (HTMT)												
	Age	GEN	Size	Edu	YRs	CP	NP	MP	CSR	INT	Age	INT
Age	1											
GEN	-0.042	1									0.042	
Size	0.081	0.009	1								0.081	
Edu	-0.030	0.053	-0.127	1							0.030	
YRs	-0.004	0.103	0.094	0.254	1						0.103	
CP	0.086	0.005	-0.078	-0.002	0.052	1					0.086	
NP	-0.079	0.042	-0.019	-0.038	0.041	0.334	1				0.075	
MP	-0.024	0.021	-0.023	0.025	0.045	0.408	0.457	1			0.052	
CSR	0.023	0.132	-0.025	0.012	0.104	0.352	0.513	0.371	1		0.021	
INT	0.073	0.046	-0.054	-0.059	-0.060	0.431	0.458	0.327	0.575	0.888	0.077	1

Notes: GEN=Generation; YRs=length of operations; CP=Coercive pressure; NP=Normative pressure; MP=Mimetic pressure; CSR=Corporate social responsibility; INT=Intention
*p < 0.05; **p < 0.01

the theory of planned behavior that emphasizes individual attitudes, social norms, and perceived behavioral control to predict food waste separation intention (Ng et al., 2021; Zhang et al., 2019). We expanded interest in this intention by incorporating the institutional context, as food waste generated from commercial sectors is as critical as household waste. The hospitality industry generates a particularly large amount of food waste daily. The competition and dynamic processes found in restaurants suggest a strong tendency to ensure business legitimacy and survival via sustainability practices (Filimonau et al., 2020). Although all three isomorphic pressures were positively related to food waste separation intention, normative pressure appeared to be the strongest, followed by coercive pressure; the weakest pressure was mimetic pressure. These results suggest an evolving professionalization process in the hospitality industry that has emphasized sustainability/green practices-influenced food waste separation intention.

Second, the study also helped bridge the research gaps by incorporating CSR as a mediator between the three pressures (coercive, normative, and mimetic) and food waste separation intention. CSR had a significant influence on food waste separation intention, corroborating prior studies that have linked CSR with environmental behavior (AlSuwaidi et al., 2021; Zelazna et al., 2020). The empirical analysis showed that CSR worked as an indirect link between the isomorphic pressures and behavioral intention, providing stronger explanatory power for the proposed conceptual model. The study's results offer additional legitimacy to behavioral intention research by connecting institutional theory and CSR to demonstrate that food waste separation intention can be influenced from an institutional perspective as well as by an internal motivator such as CSR. Our investigation, using external and internal forces, thus expanded our understanding of pro-environmental interests among organizations.

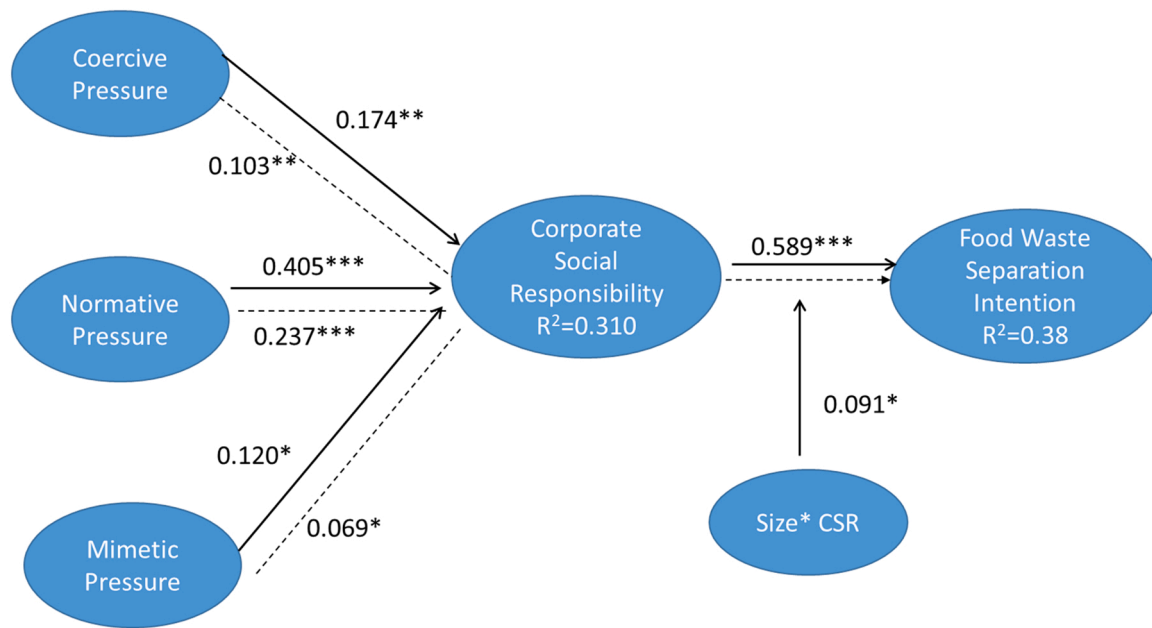
Consistent with research that has examined environmental management from an institutional perspective, we found that restaurant size matters (Darnall et al., 2010; Ouyang et al., 2019). Size clearly moderated the relationship between CSR and food waste separation intention. The empirical findings confirmed that when restaurant size was larger, the impact of CSR on intention was stronger, indicating that when a restaurant hires more employees, its involvement in CSR increases food waste separation intention. This study offers empirical support to the resources and capabilities view by showing that firm size influences behavioral intention. Although institutional pressures and the desire to embrace CSR are important, having sufficient resources such as employees also encourages restaurant food waste separation intention.

The inclusion of control variables in the structural model revealed a significant relationship between length of operations and intention, suggesting that younger (older) restaurants exhibit a higher (lower) food waste separation intention. Although younger restaurants may lack sufficient resources to implement environmental initiatives, they are keen to engage in greening activities to overcome the liability of newness (Shrivastava and Tamvada, 2019). Older restaurants could be hindered by long-established practices and operations that do not emphasize food waste management. Increased effort is thus needed to convince these mature industry players to take a proactive role regarding sustainability.

5.3. Practical implications

To continue tackling food waste challenges, governments should emphasize the importance of CSR when designing policies to motivate businesses such as restaurants to manage food waste. Incentives, including tax breaks, could be provided to firms that participate in CSR activities. Efforts should be made to establish relevant laws and regulations that require hospitality businesses to separate food waste. Coercive pressure would encourage more CSR adoption and higher food waste separation intention.

The strong influence of normative pressure suggests that additional professionalization and socialization measures are needed to manage



*p < .05, **p < .01, ***p < .001 (two-tailed)

Fig. 2. Results of the research model.

Table 4 Hypothesis assessment.

Hypothesis	Standard beta (β)	T-statistics (t-value)	Decision
Direct effects			
Coercive pressure → CSR	0.174 **	3.265	H1 Supported
Normative pressure → CSR	0.405 ***	7.677	H2 Supported
Mimetic pressure → CSR	0.120 *	2.280	H3 Supported
CSR → Food waste separation intention	0.589 ***	15.803	H4 Supported
Size*CSR → Food waste separation intention	0.091 *	1.978	H6 Supported
Indirect effects			
Coercive pressure → CSR → Food waste separation intention	0.103 **	2.982	H5a Supported
Normative pressure → CSR → Food waste separation intention	0.237 ***	7.207	H5b Supported
Mimetic pressure → CSR → Food waste separation intention	0.069 *	2.265	H5c Supported
Control variables			
Age → CSR	0.042	1.193	
Gender → CSR	0.044	2.45	
Education → CSR	0.044	0.352	
Length of operations → CSR	0.039	1.479	
Age → Food waste separation intention	0.048	1.15	
Gender → Food waste separation intention	-0.011	0.27	
Education → Food waste separation intention	-0.042	0.81	
Length of operations → Food waste separation intention	-0.105 **	2.62	

Note: Critical t-values *** 3.29 (p < 0.001); ** 2.58 (p < 0.01); * 1.96 (p < 0.05)

food waste. Professionalization could be derived from education and training; thus, it is important to incorporate the topics of sustainability and food waste management into training for entrepreneurs and

hospitality professionals. Strong networks and relationships among industry players should be encouraged to develop norms in CSR adoption as well as food waste separation. Restaurants, especially larger restaurants, should strengthen their company image by taking advantage of government policies, laws, and regulations. A holistic food waste separation approach in the hospitality sector requires cooperation, coordination, and collaboration among stakeholders.

5.4. Limitations and future research

Despite its important contributions, this study has several limitations that offer new avenues for research. We considered both external and internal factors in the theoretical model but did not include other elements such as the personal attitudes of the restaurant owners or national culture. We suggest that future studies examine other relevant factors to enrich the literature on food waste management. The study was also limited by measuring food waste separation intention and not the actual food waste separation behavior of restaurants. Although prior studies have found a high correlation between intentions and actual behaviors (e.g., Si et al., 2020), food waste separation intention may or may not be positively correlated with the final behavior. Future research should incorporate both actual behavior and food waste separation intention to increase the model's validity. Finally, the present study was conducted in only one city in one developing country. Hence, the findings may not be applicable to other developing countries with different cultural values. Thus, future research should replicate this study's theoretical model in other ASEAN countries such as Thailand, Indonesia, and Vietnam, which have similar contextual settings.

Declaration of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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