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An Assessment of Women-Owned Small Business Caterers' Awareness and Attitudes toward Green Practices in Pulau Pinang

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Abstract

The aim of this study is to explore the response of catering suppliers to environmental sustainability initiatives. The sample was collected from women-owned small businesses catering, and the Partial Least Squares Structural Equation Modeling (PLS-SEM) method was used. The study found that attitudes play an important role in influencing the behavior of catering suppliers' sustainable practices. The finding also indicates that the caterers engaged in environmentally friendly techniques for processing food waste. However, their techniques varied. The results of this study can serve as a valuable guide for conducting green practice action research in the context of policy.

Keywords: : Professional Catering; Women Entrepreneur; Green Practices; SDGs

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1.0 Introduction

A vision toward a developed nation requires a high level of understanding regarding environmental sustainability among the community. However, despite various campaigns conducted by the government, most Malaysians still lack awareness of efforts to cultivate responsibility in managing waste and recycling with effective methods. According to the Malaysian Ministry of Housing and Local Government (MHLG), household food waste is as high as 8,745 tons/day, reaching 3,192,404 tons/year. These figures account for more than 38.32% of all waste generated, while restaurants generate 941,608 tons per year (23.35%) (Jereme et al., 2017).

As shown in Figure 1, Selangor recorded the highest gross output in food and beverage services, followed by Kuala Lumpur, Johor, and Pulau Pinang (DOSM, 2020). However, the spread of the Covid-19 pandemic and the implementation of the Movement Control Order

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(MCO) is expected to have a negative impact on Food and Beverage services, as the only food allowed to be sold a takeaway, drive-thru, or through food delivery services by certain companies such as Grab Food and Food Panda, whereas dine-in is not allowed.

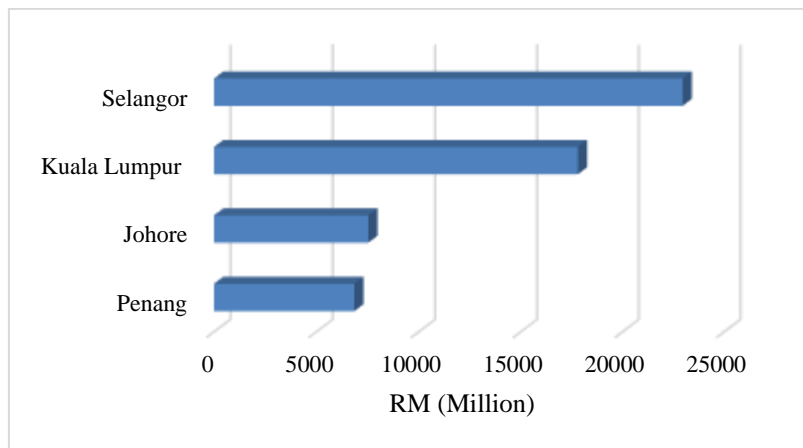


Fig 1: Gross output of food and beverage services
(Source): DOSM, 2020

The global spread of the Covid-19 pandemic exerts significant influence on the global economy. Among the economic sectors suffering losses, the service industry, especially the catering sector, is significantly impacted (Wu et al., 2021). With the growth of employment opportunities in the formal sector running at a half growth rate of job seekers, Pulau Pinang Islanders increasingly seek out cash income through self-employment or other income-generating activities. The informal sector is also increasingly absorbing urban workers. The participation of women in the informal sector is growing, with almost half of all women working for money engaged in self-employment. Income-earning activities in which women in the urban sector are involved include catering services. This is particularly relevant as some restaurants have had to close their businesses due to customers' absence and to reduce operating costs.

Table 1: Food Premises Registration by State in Malaysia.

State	2013	2014	2015	2016	2017	2018
Perlis	621	292	147	447	343	304
Kedah	2126	2805	1500	1426	1546	739
Pulau Pinang	741	1053	1256	1390	2451	1053
Perak	2862	2031	1448	899	1364	631
Selangor	5170	5959	3274	3798	3821	1408
Negeri Sembilan	2332	1588	620	752	680	437
Melaka	1265	482	546	862	1141	491
Johor	5662	4238	1688	1926	2409	1063
Pahang	1156	1143	1289	1191	1412	814
Terengganu	776	1262	852	899	1170	738
Kelantan	1985	1512	1108	755	1063	409
W.P Kuala Lumpur & Putrajaya	2151	1485	744	768	1024	374
Sabah	1688	1281	1282	1147	1627	806
Sarawak	1783	1464	1268	1027	1342	722
W.P Labuan	120	152	59	215	87	72

Sources: Food Safety and Quality Division, Ministry of Health Malaysia (2019)

Table 1 indicates the number of food premises registered under the Ministry of Health Malaysia and Pulau Pinang shows a tremendously increasing number of food premises registered, from only 741 in 2013 to 2451 food premises registered in 2017. In contrast, other states in Malaysia show stagnant and downward trends in food premises.

Green practices have been developed to reduce the adverse environmental effects of operations (Jansson et al., 2010). Its practice has become essential in business activities due to increased awareness of the importance of environmental performance. Composting for landscaping, designating clear recycling bins classified by type, using recyclable materials such as plastic, minimizing food waste, and using green cleaning products are some of the green practices activities that can be identified. Green practices are classified as environmental management practices (EMPs). According to Eltayeb, Zailani, and Ramayah (2011), EMPs have been established to minimize negative environmental effects and, indirectly, to ensure that practitioners take good care of the natural environment.

The food waste reduction under the MCO provides evidence-based results to push the need for policies in Malaysia per the goals outlined in Sustainable Development Goals (SDGs) for global food loss and waste (Ismail et al., 2020). SDG 12 provides several targets to work towards more sustainable consumption and production patterns (UN, 2015). Sustainable and healthy food directly or indirectly supports most sustainable development goals. However, there is a need for a more coordinated and consistent mainstreaming of food

production into the SDG agenda. A hindrance to realizing green practice's comprehensive, transformative capabilities is the lack of a recognized regulatory framework and standards to guide countries to implement the SDGs effectively. Therefore, catering companies must foresee additional operating costs under this regulation, such as additional power consumption for storage and transportation to waste treatment companies. Therefore, this additional cost will increase the price of food services and reduce their competitiveness, especially in small towns, leading to non-compliance with regulations.

Nevertheless, existing studies on green practices have focused on the consumer perspective, with limited emphasis on the engagement of the caterers in sustainable environmental performance. Some examples are studies done by ÇavuGoğlu et al. (2020), Kumar & Saranya (2020), and Sethi (2018). However, they are important aspects to be investigated, and the study from the producer perspective is also crucial since they are also a major contributor to food waste. Currently, the study on caterers is more related to food handling (Fariba et al., 2018), safety and hygiene (Ebdali et al.), and food waste (Michalec et al., 2018). Nevertheless, studies on the caterer's awareness and attitude towards green practice activities are still limited.

Thus, the present study draws on caterers' awareness and attitudes toward adopting green practices for environmental performance. This study investigates factors influencing caterer involvement in green practice in Pulau Pinang. The study examined the impact of external factors on individual beliefs, which lead to the practice of sustainable production. The hypothesized model was tested with data collected from women-owned businesses. This study offers empirical support by characterizing significant differences between their awareness and attitude levels. Confirming this would suggest that caterers differently value advantages resulting from green practices.

The remaining of this paper is structured as follows. The next section briefly reviews the literature and defines the hypothesis. Section 3 presents the research methodology to be applied in the study. Section 4 presents the results of hypothesis testing and effectiveness test. Finally, section 5 summarizes the research findings and concludes the paper.

2.0 Literature Review

Catering services represent a vital source of income generation. Past research has focused on important topics such as nutrition and food safety. It was only after the 1990s that environmental topics gradually began to receive attention. This research attempts to answer whether green practices strongly influence the company's behavioral intentions in the restaurant industry, especially for caterers and food stall owners. The importance of performance measurement can only provide limited data to inform the hospitality industry's resource allocation, and this shortcoming becomes more obvious when resources are limited.

The Food and Agriculture Organization (FAO) has launched the 'Global initiative on food loss and waste reduction', aiming to reduce food wastage throughout the food system by raising awareness. In addition, social capital in local food distribution networks needs to be created to address the problem of food waste (Lombardi & Costantino, 2020). Unfortunately, the inefficient distribution of information related to recycling is a failure of large-scale community participation in efforts to control waste (Feo et al., 2020).

Management of waste cooking oil (WCO) recently has become a severe challenge for both developed and developing countries. WCO, also known as used cooking oil (UCO) or recycled vegetable oil (RVO), is the residue from cooking oil obtained after using edible oils for food preparation (Azman et al., 2012; Kabir et al., 2014; Zahoor et al., 2020). Cook (2015) assesses the green practices implemented in the food services of Texas hospitals. The results show that the most common sustainable practices are recycling cooking oil and fat and paper recycling. Less common practices are composting food scraps and using organic dairy products.

Food waste is produced along the various stages of the food supply chain (Parfitt et al., 2010). Marcantonio, Twum, and Russo (2021) indicated that the main factor influencing the increase in food waste during Covid-19 is the disruption of the sales channel. The food sector has been identified as a sector with great potential to prevent food waste, so food waste in this sector has recently received increased attention in research (Filimonau & Coteau, 2019; Malefors, 2019; Papargyropoulou et al., 2019). Recent research has deepened the understanding of the driving factors that lead to food waste (Heikkilä et al., 2019; Silvennoinen et al., 2019) and provided suggestions on food waste prevention strategies for attitudes and behaviors. Although their views, methodologies, and contributions are different, all of the above studies emphasize the lack of sufficient evidence on Malaysia's green practices in handling food waste in the catering industry. This is the research gap that the present study attempts to address.

The theories used to underpin this study are taken from the combination of the Theory of Planned Behavior (Ajzen, 1991) and the Theory Acceptance Model (TAM) (Davis, 1985). Most consumer research on green practices keeps mounting (Zhang & Dong, 2020). Therefore, the study's findings have added to the growing literature on environmentalism and food service attitudes and behaviors in the catering industry. The results of this study have many implications for the restaurant industry, including showing successful restaurants' green practices and how attitude positively impacts green practices.

2.1 Research Hypothesis Development

The study by Sethi (2018) indicates that attitude can be a positive or negative evaluation of individual action. Attitude is a set of beliefs about a specific object, which can be transformed into an intention to act. In other words, the more positive the attitude, the stronger the intention to perform the activities. Several studies also show a strong attitude towards environmental protection (Han et al., 2020; Hwang & Lyu, 2020; Kumar & Saranya, 2020). According to planned behavior theory (TPB), individuals' beliefs lead to actual behaviors. ÇavuGoğlu et al. (2020) conclude in their study that it is very important for hotel companies to develop and implement green activities to reduce financial costs and improve efficiency.

Several recent studies investigate the antecedents of firm engagement in green practice, including awareness (Rezaei et al., 2019; Ojo & Fauzi, 2020). Their studies indicate that awareness of green practices leads to a positive disposition toward adopting green behavior. Mishra et al. (2014) found that awareness is strongly associated with individuals' pro-environmental behaviors. Mohiuddin et al. (2018)

also reported the significant impact of awareness on people's attitudes and intentions toward purchasing green vehicles. In their study, Ojo & Fauzi, 2020 indicates that Green IT (GIT) attitudes and practices were significantly related to environmental IT performance. In line with the green practice context, we argue that the more an individual is aware of the environmental implications, the more they engage in green practice. Hence, the following hypotheses are proposed:

- H1: There is a relationship between green activities and attitudes
- H2: There is a relationship between green activities and green practices
- H3: There is a relationship between attitudes and green practices.
- H4: There is a relationship between Environmental awareness and attitudes.
- H5: There is a relationship between Environmental awareness and green practices.

Risk influences attitude within the Theory of Planned Behavior (TPB) (Corral, 2003; Yoon, 2011). A firm's risk orientation has been an important aspect influencing engagement in green practice but is limited in the catering sector. This study can contribute to the firm's risk literature concerning caterers in the green practice context. In addition, it provides an insight to assess uncertainty and risk in an industry. The measurement can assess risk orientation based on its impacts in different contexts and perspectives. This research uses risk-oriented items as the antecedents that influence the attitude of catering suppliers to participate in green practices. According to Rohrmann (2005), risk orientation can be defined as a person's general preference for making decisions under uncertain circumstances. Robichaud and Anantatmula (2011) and Lu et al. (2013) also associated risk in green building projects. Therefore, the following hypothesis is proposed:

- H6: There is a relationship between risk orientation and attitudes
- H7: There is a relationship between risk orientation and green practices

The restaurant and food service industry is a sector with a lack of transparency. It is still less attractive to academics due to the difficulties of empirical analysis rather than the lack of interest in this sector. Hence, this study aims to assess the awareness and attitude among caterers in Pulau Pinang, Malaysia. The research is still in its early stages in assessing caterers' awareness and attitudes toward green practices, not to mention the scarcity of literature on the subject. This study shed significant light on the green practice act from the producer's perspective and policy intervention.

3.0 Methodology

This research investigates caterers' awareness and sustainable production, or green practices. Questionnaires were distributed to 52 female caterers. A seven-point Likert scale ranging from strongly disagree (on scale 1) to strongly agree (on scale 7) was used to get quantitative data. Women-Owned small business caterers' Pulau Pinang, Malaysia, was selected based on access and availability. The selected interviewees did not aim to understand the whole catering sector comprehensively. Instead, it offers opportunities to test how these variables affect green practice among the caterers. The green practice adoption among the caterers was studied from when they purchased raw food supplies until they ultimately managed their food waste.

For data collection, a self-administered questionnaire survey was used for the analysis and delivered by hand to the caterers. There are two advantages of this survey method for the study. Firstly, Creswell (2013) acknowledged that upon studying a population sample, the method provides a quantitative explanation of trends, attitudes, or opinions of the population in question. The researcher gained an in-depth understanding of the caterer's engagement in green practices for this study. Secondly, the survey method helps to increase the quality of responses, as the self-administered questionnaire method provides the respondent with greater anonymity. This convenience may help the respondent answer more correctly and avoid being biased by the presence of an interviewer. The researcher received 52 completed surveys from 52 participant caterers for this research.

Qualitative data collection and analysis methods complement quantitative methods. The qualitative data were collected through focus groups. Through focus groups, opportunities to capture and contemplate respondents' feelings, facial expressions, views, and beliefs can be achieved more optimally (Gundumogula, 2020). In-depth structured and informal unstructured interviews were conducted with the 52 caterers. The latter were conducted while collecting quantitative data. Interviews allow for verification of data collected through other methods and provide opportunities to seek clarification of the behavior recorded in the questionnaire.

4.0 Findings

This study investigates factors influencing caterers' involvement in green practices in Pulau Pinang. The study examined the impact of external factors on individuals' beliefs, which lead to sustainable production practices. The measurement model was analyzed to identify the relationships between constructs and items and the relationships between constructs. The reflective model was measured using structural equation modeling (SEM) in the Smart-PLS software version 3.0. Four variables had reflective items: green practice (GP) awareness (4 items), activities (3 items), risk orientation (5 items), and attitude (4 items).

4.1 Respondent Profile

This section discusses the respondent's profiles who participated in this study. The profile was analyzed using SPSS, which was a frequency test. First, the result of the demographic profile is summarized in Table 2, and the demographic profile was respondent age, level of education, and business age.

Table 2: Respondent's profile (N=52)

Types	Demographic variables	Number of respondents	Percentage
Respondent Age	less than 20 years	5	9.62
	21-30	6	11.54
	31-40	10	19.23
	41-50	13	25.00
	More than 50 years old	18	34.62
Level of Education	Primary School	1	1.92
	Secondary School	45	86.54
	College	2	3.85
	University	4	7.69
Business Age	less than 5 years	26	50.00
	6-10 years	8	15.38
	11-15 years	2	3.85
	16-20 years	8	15.38
	more than 20 years	4	7.69
	new startup business	4	7.69

Based on 52 respondents, the level of respondent's education mainly was a secondary school with a percentage of 86.54%. In contrast, the lowest was a primary school with 1.92%. The business age can be divided into six categories, and 50% of businesses operate for less than five years, and 7.69% of the respondent has a new startup in business, 3.85% of firms were aged between 11-15 years, 15.38% of firms were age between 16-20 years and 7.69% firms were age more than 20 years. Next, most respondents accounted for 34.62% of ages more than 50 years old, while respondents less than 20 were only 9.62%. The measurement model was analyzed to identify the relationship between constructs and items; and the relationship between constructs.

The reflective model had been measured using the structural equation model (SEM) in Smart-PLS software version 3.0. The measurement model for a structural model that used in subsequent analysis. Four variables had reflective items: Green Practice (GP) awareness, activities, risk orientation, and attitude. There were four items for GP awareness, three items for activities, five items for risk orientation, five items for attitude, and four items for green practice.

Composite reliability (CR) is the index used to measure internal consistency. Previously, Cronbach's alpha (α) was used to measure internal consistency, but there are two weaknesses when using this approach. First, when using SEM, it is unsuitable to assume every indicator will yield the same loading, whereas Cronbach's alpha assumes all indicators equally belong to the construct (Werts, Linn, and Joreskog, 1974). Secondly, Hair et al. (2017) stated that Cronbach's alpha is inclined to underestimate the internal consistency reliability, as it is sensitive to the number of items. Therefore, three acceptable values for composite reliability introduced by Gefen et al. (2000) were used. CR values of more than 0.60 are acceptable in exploratory research, while values above 0.70 can be defined as satisfactory, and values less than 0.60 indicate a lack of reliability.

Table 3 shows Cronbach's alpha, Rho-A, Composite Reliability, and Average Variance Extracted (AVE) for the latent variables (Attitude, Activities, Green practice, Awareness, and Risk management). All latent variables were constructively valid according to Cronbach's alpha, Rho-A, and composite reliability values, with values above 0.70.

Table 3: Indicators of latent construct validity

Variables	Cronbach's Alpha	Rho-A	Composite Reliability (CR)	Average Extracted (AVE)	Variance
Attitude	0.843	0.890	0.889	0.619	
Activities	0.853	0.865	0.910	0.772	
Green practice	0.728	0.744	0.831	0.554	
Awareness	0.924	0.934	0.946	0.815	
Risk management	0.830	0.874	0.870	0.535	

(Source:) Smart-PLS Output

The next step is to analyze the assessment of collinearity among indicators. The criterion used was the Variance Inflation Factor (VIF), and the VIF values were less than 5. Hair et al. (2017) highlight that if the VIF value is five or higher, there will be a potential for collinearity problems, and one should then consider deleting the indicators one at a time. Based on the results in Table 4, all the item conditions satisfied the VIF values of less than 5, thus suggesting no collinearity issues.

Table 4. Inner Variance Inflation Factor (VIF) Values

Latent Variable	Attitude	Green practice
Attitude		3.037
Activities	3.053	3.599
Awareness	2.770	2.903
Risk management	1.739	2.956

(Source:) Smart-PLS Output

This survey aims to test the relationship model of the influence of potential variables (attitude, activities, awareness, and risk management). These variables are taken from the combined models of TPB and TAM, and a valid indicator measures each factor. The outer model is a formative measure of the first-order latent variable model. The measurement model needs to evaluate the reliability and validity of each latent variable. The validity can be evaluated by convergent validity, which describes the goodness of fit in the measurement results of each indicator.

Table 5: Hypothesis Testing

	Hypothesis	Beta (Direct effect)	Std. Err.	t-value	p-value	Results
H1	Green Activities → Attitude	0.426	0.148	2.887	0.004	Significant
H2	Green Activities → Green Practice	0.417	0.262	1.588	0.113	Not significant
H3	Attitude → Green Practice	0.648	0.209	3.101	0.002	Significant
H4	Awareness → Attitude	-0.211	0.125	1.690	0.092	Not significant
H5	Awareness → Green Practice	-0.150	0.234	0.640	0.522	Not significant
H6	Risk Management → Attitude	0.632	0.130	4.857	0.000	Significant
H7	Risk Management → Green Practice	0.405	0.196	2.061	0.040	Significant

The result of the above variables is an extension of the previous research on the fundamental variables of planned behavior theory. In this study, two variables, environmental activities and green practice, were added and further explored. Seven direct relationships between the constructs were hypothesized. Table 5 shows the relationship between this study's exogenous and endogenous constructs. Based on the assessment of the path coefficient, as shown in Table 6, only four factors have significant relationships with green practice and attitude. Thus, only H1, H3, H6, and H7 are supported.

Based on the findings, there is no significant relationship between environmental awareness and the green practices of caterers operators. The results contradict Rezaei et al. (2019) and Ojo & Fauzi's (2020) research. Caterers may be aware, but this is not the determining factor in their actions. We discovered that an individual's environmental behavior is influenced by other factors such as cost, space, and limitation of time.

Despite its limitations, this study identified that risk management and attitudes towards the environment positively and significantly impact green practices among the women-owned small business caterers in Pulau Pinang. The main actors and implementers of these strategies should be businesses in the catering sector, as innovation and leadership in managing food waste, incorporating biodegradable disposables and different recyclable materials, and incorporating a seasonal menu by the operators has the potential for significant cost savings. Choosing energy-efficient equipment and implementing sustainable practices that reduce energy consumption while preparing, cooking, and storing food can also facilitate environmental protection. A more extensive presentation of the green practice among caterers is conducted in a semi-structured interview which can be found in appendix 1. The information from the qualitative also suggests that the caterers were involved in green practices for handling food waste, but their methods differed. A continuous awareness program related to protecting the environment will improve caterers' actions in practicing sustainable production.

As aforementioned, the goal of this study was not only to support the main agenda and the implementation of the United Nations Sustainable Development Goals by fostering climate-friendly diets in society but also to assess how caterers implement, monitor, and manage food-related environmental practices. These green practices profoundly impact SDGs 6 (Clean Water and Sanitation) and 12 (Sustainable Production and Consumption), especially from a Malaysian perspective.

5.0 Conclusion

This research aimed to investigate the impact of green practices on the attitude and behavior of catering service providers in Pulau Pinang, Malaysia. This aim was met by understanding the antecedents and outcomes in explaining caterers' engagement in green practice. The results of this study show that participative attitude and risk orientation are positively related to catering businesses' green practice behavior among the caterers in Pulau Pinang, while the activities in recycling have a positive and significant impact on attitudes. This paper provides new empirical evidence to highlight green practices' significant opportunity and scope in the catering sector. By identifying the factors of green practice behavior, strategies can be developed for increasing the implementation of green practices among the caterers. The research findings provided local authorities with insightful guidelines for developing and implementing green operations and initiatives for an emerging base of caterer businesses. Food waste prevention strategies should tackle how the catering sector operates and is organized. Food waste prevention measures target the systematic production of food waste due to the restaurants' operations being within the restaurants' control. However, this study focused exclusively on women-owned small business caterers' caterers in Pulau Pinang, which limits the generalizability of the results. Thus, we suggest that future research may replicate this particular study in different states, especially those with the highest gross output of food and beverage services, such as Selangor, Kuala Lumpur, and Johor.

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Paper Contribution to Related Field of Study

The findings from this study imply crucial policy recommendations that the government can address to enhance the sustainability of the environment.

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