Order and Finish It!: Understanding the Consumers' Food Waste Prevention Behaviour in Casual Restaurant

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Abstract. This study aims to investigate the food choice motives effect on casual restaurant consumers' intent to not waste food and their actual behaviour on food waste avoidance through the lens of Theory of Planned Behaviour (TPB). 587 Indonesian casual restaurant consumers involve as the respondents which their data have been analysed through the SmartPLS Software. This current study finds that 1) the consumers' food choices motives positively and significantly influence the consumers' intent for not wasting food, 2) the consumers' intent for not wasting food positively and significantly influences the consumers' actual behaviour on food waste prevention and 3) the consumers' intent to not waste food mediates the consumers' food choice motives and consumers' actual behaviour on food waste prevention. Not only suggesting valuable theoretical implications, but this research also provides managerial implications that will be useful for the casual restaurant in developing pro-environmental strategies.

Keywords: Food Waste, Sustainable Tourism, Green Restaurant

1 Introduction

The food waste issue has become crucial both in global and Indonesian contexts. Globally, it has been discovered that approximately 931 million tons of food have gone to waste every year [1]. Additionally, Indonesian societies are estimated to waste 300 kilograms of food yearly, placing Indonesia as the second most food waster country in the world [2]. It has been also calculated that annual food waste in Indonesia reaches 5 to 19 million tons which 44% of those number is decent food [3]. This phenomenon not only damages the environment, but it also has a substantial economic loss which equals to 5% of Indonesian annual Gross Domestic Products [3].

Some studies have discovered a strong connection between food waste and the hospitality industry. For example, [4] explains that this industry has served 1 billion food orders yearly which potentially become the major food waste contributor and, further, is also known for being the primary cause of 12% - 14% of food waste [5]. [6] and [7] have also confirmed that food waste is closely related and has become a significant issue in the hospitality sector. Realising the close relationship between tourism and hospitality sectors, the food waste issue will become crucial as

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the tourism industry grows, and so does the hospitality industry, which, by logical consequences, will also increase the amount of food waste [8], [9].

Indeed, governmental programs in some countries have been implemented to solve food waste problems. Some Countries, such as the UK with WRAP, Netherlands with "*Verspilling* is *Verrukkelijk*" Program, or New Zealand and Canada with the "Love Food Hate Waste" Program, have managed their way to fight for food waste [10]. However, implementing those programs still faces challenges throughout the supply chain process [10]–[12]. [13] explains that implementing food waste management in restaurant is often more expensive than simply throwing away the food. In other words, dealing with the food waste and designing appropriate solutions suitable for many stakeholders are totally challenging.

Considering the above fact, this study bases its argument on several studies. [14] elaborates that besides being influenced by the hospitality industry business strategy, hospitality industry consumers' behaviour related to food waste is strongly affected by their food choice motives. [15] also explains that, in the hospitality industry, food choice motives can influence the consumers' intent to not waste food. Therefore, using TPB approach, this current study will examine the food choice motive impact on consumers' intention and actual their behaviour in avoiding food waste. Further, this study also will contribute in theoretical and practical contexts by enriching the body of knowledge in hospitality industry and offering practical suggestions for stakeholders to develop the food waste initiatives in the casual restaurant setting.

2 Literature Review

2.1 Food Choice Motives and Consumers' Intent to Not Waste Food in Restaurant

It has been known that motive is a mental state which can influence human behaviour through particular conditions. [16] explains that consumers' motives can impact their behavioural intention. TPB has long explained this argument. [17] has elaborated that human motivation and intention can be used to foresee human behaviour.

In this study, food choice motives refer to several factors that motivate consumers to choose particular food to eat [18]. [19] has found that food choice motives, comparing to other factors influencing one's choice, have stronger connection to the consumers' food selection in the restaurant. Furthermore, the restaurant consumers' willingness to not waste food in this current study relates to an action to not waste food during or after the dining process [20]. Some studies have found that food choice motives have an influence on sustainable food consumption behaviour, including avoiding food waste [15], [21], [22]. Therefore, based on some former studies [7], [15], [23], [24] and TPB approach [17], food choice motives, namely sensory appeal, price sensitivity, health and safety concerns, and ethical concerns, have been identified which possibly relate to the consumers' intention in avoiding food waste.

TPB elaborates that attitude toward behaviour, subjective norms, and perceived behavioural control are the consumers' intention predictors. [17], [25]. Specifically, [25] explains that attitude toward the behaviour means one's evaluation of whether a particular action will be beneficial or not. While the subjective norm is a social pressure that becomes one's evaluation to conduct or not

to conduct particular actions, TPB also explains that perceived behavioural control refers to one's consideration in determining whether the particular behaviour can be done easily or not [17], [25].

The TPB predictors are then equalled with the four aforementioned food choice motives. Specifically, sensory appeal, including visuality, taste, aroma, or food texture, contextualise as perceived behavioural control [15] as discovered by [26] as well as [27] that sensory appeal will drive consumers to not waste food. Therefore, this study hypothesises that:

H1 Sensory Appeal (SA) significantly and positively influences consumers' intent to not waste food (IAFW) in restaurants

As the second food choice motive, price is consumers' evaluation of whether or not a food purchase is worth buying [23]. [15] explains that consumers with high price sensitivity will happily buy high-quality products. This study, based on the TPB approach, then contextualises price sensitivity with attitude toward behaviour. [23] discovers that consumers with price sensitivity tend not to waste food as they buy adequate quantities. Therefore, this study hypothesises that:

H2 Price Sensitivity (PS) significantly and positively influences consumers' intent to not waste food (IAFW) in restaurants

Safety and health concern on food is also the consumers' evaluation in purchasing products [15]. In the context of food consumption, safety and health concerns are valuable factors for the consumer [23], which equalises safety and health concerns as attitudes toward behaviour through the lens of TPB. [28] and [29] explain that the consumers' willingness to finish their food is also influenced by their consideration of food safety and health. Therefore, this study hypothesises that:

H3 Health and Safety Concern (HSC) significantly and positively influences consumers' intent to not waste food (IAFW) in restaurants

This study incorporates subjective norms and perceived behavioural control as ethical concerns, that can drive consumers to prevent food waste [15]. [14] finds that ethical concerns can drive consumers not to waste food as it can harm the environment. Therefore, this study hypothesises that:

H4 Ethical Concern (EC) significantly and positively influences consumers' intent to not waste food (IAFW) in restaurants

2.2 The Influence of Consumers' Intent to Not Waste Food on the Actual Food Waste Behaviour Prevention in Restaurant

Because it is believe that intention can form behaviour [17], [25], this current study suggests that consumers with the purpose of to not waste food in the restaurant will likely have the actual food waste prevention behaviour during their dining or post-dining process. Some previous studies have affirmed the significant influence of intent for not wasting food on the food waste prevention behaviour. As an example, it is discovered by [20] that intention to not waste food forms family's actual behaviour in avoiding food waste which drives this research indicating the intention to predict consumers' actual action to prevent food waste. [30], [31], and [32] have also found the strong effect of consumers' intent to not waste food toward the consumers' actual behaviour in preventing food waste. Further, while [33] has found that customers who waste food in restaurant

often order meal inadequately, oppositely [34] explains that customers who conduct food waste prevention behaviour usually ask for take-away boxes to bring the leftovers home and order food based on their need only. Therefore, this study hypothesises that:

H5 Customers' intent to not waste food (INWF) significantly and positively influences actual food waste prevention behaviour (FWPB)

2.3 The Mediating Effect of Consumers' Intent to Not Waste Food

Additionally, based on TPB, this research also suggests that the intent to not waste food will mediate the relation between food choice motives and food waste prevention behaviour in restaurants. As explained by [25] that consumers with vigorous motives related to particular behaviour will much more likely conduct the behaviour. A previous study has confirmed that sensory appeal, price sensitivity, health and safety concerns, and ethical concerns have become important predictors for environmentally friendly food consumption behaviour [20], [35]–[37]. Therefore, this study hypothesises that:

H6-1 Customers' intent to not waste food (INWF) mediates the relation between sensory appeal (SA) and customers' actual food waste prevention behaviour (FWPB)

H6-2 Customers' intent to not waste food (INWF) mediates the relation between price sensitivity (PS) and customers' actual food waste prevention behaviour (FWPB)

H6-3 Customers' intent to not waste food (INWF) mediates the relation between health and safety concerns (HSC) and customers' actual food waste prevention behaviour (FWPB)

H6-4 Customers' intent to not waste food (INWF) the relation between ethical concern (EC) and customers' actual food waste prevention behaviour (FWPB)

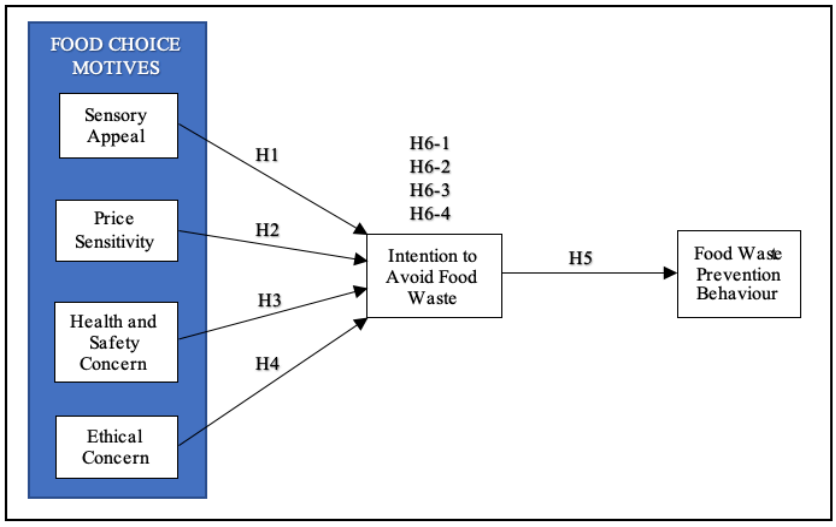

Fig. 1. Proposed Research Model

3 Research Method

The questionnaire has been developed based on previous studies to gather the data. The questionnaire consists of two part in which the first part is asking the demographic and consumers' dine-out behaviour and the second part includes all the question regarding the research instrument. In total, respondents are asked to answer 23 questions which consist of 3 questions for the sensory appeal [39], 4 questions for the price sensitivity [23], 5 questions for the health and safety concern [15], 5 questions for ethical consideration [14], [40], 4 question for intent to not waste food [20] as well as 4 questions for food waste prevention behaviour [15]. Those 23 questions are asked through a *5-point Likert Scale*. Additionally, the questionnaire is distributed online through Google Form.

Through the purposive sampling technique, there are 587 casual restaurant consumers have involved in this study as the respondents. Further, the data analysis was conducted in SmartPLS 3.2.9 software in which the data validity (convergent and discriminant validities) and reliability (composite reliability) have been evaluated, and the research hypotheses have been tested through the software.

4 Result and Discussion

4.1 Respondent Characteristics

The study population is those who have dine-out with family and friends in casual restaurants, specifically casual restaurants in Indonesia. Different from other classifications such as luxury, fine dining, and fast food restaurants, casual restaurants have a moderate price, semi-standardised varied menus and an informal atmosphere [38]. Within Indonesian context, casual restaurant, in this study, is equalised with *Rumah Makan* as both have similar characteristics. *Rumah Makan* is a common restaurant in Indonesia; therefore, it is assumed that it will be easy to find the respondents who dine-out along with family and friends.

The majority of respondents are women (339 Respondents), while men are 248 respondents. In context of age category, 18-29 years old category is 339 respondents in total followed by 30-29, 40-49, 50-59 and >60 categories with 208, 29, 10 and 1 respondents, respectively. **Table 1** below displays the complete respondents' demography data.

Table 1. Respondent Demography

No	Variables	Frequency	%
1	**Gender**		
	Men	248	42,2
	Women	339	57,8
	Total	587	

2	**Age**		
	18-29	339	57,8
	30-29	208	35,4
	40-49	29	4,9
	50-59	10	1,7
	>60	1	0,2
3	**Occupation**		
	Student	156	26,6
	Private Sector	126	21,5
	Self-Employed	71	12,1
	Academicians (Lecturer, Teacher, etc)	62	10,6
	State-Owned Enterprise/Civil Servant/Military/Police	95	16,2
	Others	77	13,1
4	**Monthly Income**		
	<Rp.3.500.000	225	38,3
	Rp.3.500.000 - Rp.5.500.000	148	25,2
	Rp.5.500.001 - Rp.7.500.000	104	17,7
	Rp.7.500.001 - Rp.10.000.000	58	9,9
	>Rp.10.000.001	52	8,9
5	**Number of Family Usually Dining Out with in the Last 6 Months**		
	1-4 Persons	320	54,5
	5-6 Persons	180	30,7
	7-8 Persons	59	10,1
	9-10 Persons	11	1,9
	> 10 Persons	17	2,9
6	**Number of Friend Usually Dining Out with in the Last 6 Months**		
	1-4 Persons	288	49,1
	5-6 Persons	178	30,3
	7-8 Persons	67	11,4
	9-10 Persons	25	4,3

	> 10 Persons	29	4,9
7	**Dining out along with Family frequency during the Last 6 Months**		
	1 Time	74	12,6
	2-3 Times	203	34,6
	4-5 Times	113	19,3
	6-7 Times	53	9,0
	> 7 Times	144	24,5
8	**Dining out along with Friend frequency during the Last 6 Months**		
	1 Time	70	11,9
	2-3 Times	215	36,6
	4-5 Times	115	19,6
	6-7 Times	49	8,3
	> 7 Times	138	23,5

4.2 Reliability and Validity

To measure the construct reliability and validity, this section will elaborate the four-step processes to evaluate the research instrument's reliability and validity. The first step is evaluating the indicator reliability by measuring the outer loading. [42] explains that, as a rule of thumb, the outer loading should be 0,708 or higher.

As can be seen in **Table 2**, all of the instruments in SA, PS, HSC, EC, INWF and FWPB, based on the rule of thumb, can be categorised to have the significant outer loadings.

Table 2. Outer Loading

	SA	PS	HSC	EC	INWF	FWPB
SA1	0,825					
SA2	0,792					
SA3	0,757					
PS1		0,829				
PS2		0,843				
PS3		0,795				
PS4		0,768				

HSC1	0,708			
HSC2	0,744			
HSC3	0,769			
HSC4	0,777			
HSC5	0,817			
EC1		0,786		
EC2		0,867		
EC3		0,854		
EC4		0,851		
EC5		0,761		
INWF1			0,882	
INWF2			0,861	
INWF3			0,742	
FWPB1				0,761
FWBP2				0,804
FWBP3				0,827
FWBP4				0,757

Cronbach's alpha and composite reliability will be measuring in the second step to evaluate the internal consistency reliability. While the acceptable value of Cronbach's alpha is not less than 0,70, the composite reliability values to be stated as having internal consistency reliability is higher than 0,60 [43]. Table 3 shows that Cronbach's Alpha values for SA, PS, HSC, EC, INWF and FWPB are 0,705, 0,824, 0,821, 0,882, 0,772, and 0,796 respectively which can be concluded to fulfil the standard value. **Table 3** also shows the composite reliability values of each instrument, which are higher than the rule of thumb (0,60). Therefore, it can be summarised that the research instruments have internal consistency reliability.

Table 3. Cronbach's Alpha, Composite Reliability, AVE, and Forner-Larcker Criterion

Cronbach's Alpa	Composite Reliability	AVE	Construct	Forner-Larcker Criterion					
				SA	PS	HSC	EC	IAFW	FWPB
0,705	0,834	0,627	SA	**0,792**					
0,824	0,884	0,655	PS	0,326	**0,809**				
0,821	0,875	0,584	HSC	0,366	0,225	**0,764**			

0,882	0,914	0,680	EC	0,281	0,281	0,559	**0,825**		
0,772	0,869	0,690	IAFW	0,331	0,277	0,459	0,373	**0,831**	
0,796	0,867	0,620	FWPB	0,376	0,363	0,487	0,435	0,691	**0,788**

For evaluating the construct validity, the measurement of average variance extracted (AVE) and the Forner-Larcker Criterion must be conducted. While the former measurement evaluates convergent validity, the latter is discriminant validity. Table 3 shows that AVE values for SA, PS, HSC, EC, IAFW, and FWPB are 0,627, 0,655, 0,58, 0,680, 0,690, and 0,620 respectively, which are higher than 0,50 as the minimum value [42]. Additionally, based on the Forner-Larcker Criterion values in table 3, it can be seen that each instrument has a satisfactory value as it shows a higher number than its correlation with other instruments [42]–[44]. Therefore, it can be concluded that each instrument possesses adequate validity value.

4.3 Hypotheses Testing

This section will elaborate the result of proposed hypotheses, both the main effects from H1 to H5 and the mediating effects from H6-1 to H6-4 as a result of Bootstrapping Process (**FIGURE 2**). Initially, through the bootstrapping process, it has been found that the R^2 of Intention to Avoid IAFW is 0,268, and FWPB is 0,551. Further, through table 5, it can be concluded that SA, PS, HSC and EC are positively and significantly related to IAWF in which the P Values are 0,001, 0,000, 0,000, 0,010, and 0,000, respectively which are less than 0,005. Additionally, IAWF) is also positively and significantly related to the FWPB as the testing shows the 0,000 of P Values (< 0.005). Therefore, it can be concluded that the hypotheses testing supports the H1, H2, H3, H4, and H5.

Table 4. Summary of Hypotheses Testing (Direct and Indirect Effect)

Hypotheses	Relationship Test	Original Sample	P values	Result
	Direct Effect			
H1	SA -> IAFW	0,131	0,001	Supported
H2	PS -> IAFW	0,131	0,000	Supported
H3	HSC -> IAFW	0,322	0,000	Supported
H4	EC -> IAFW	0,108	0,010	Supported
H5	IAFW -> FWPB	0,534	0,000	Supported
	Indirect Effect			
H6-1	SA -> IAFW -> FWPB	0,07	0,013	Supported

H6-2	PS -> IAFW -> FWPB	0,07	0,000	Supported
H6-3	HSC -> IAFW -> FWPB	0,172	0,001	Supported
H6-4	EC -> IAFW -> FWPB	0,057	0,002	Supported

Furthermore, table 5 also indicates that H6-1, H6-2, H6-3, and H6-4 are also supported. It is found that IAFW mediates the relation SA, PS, HSC, EC, and FWPB in which the P Values are 0,013, 0,000, 0,001, and 0,002, respectively (< 0.005).

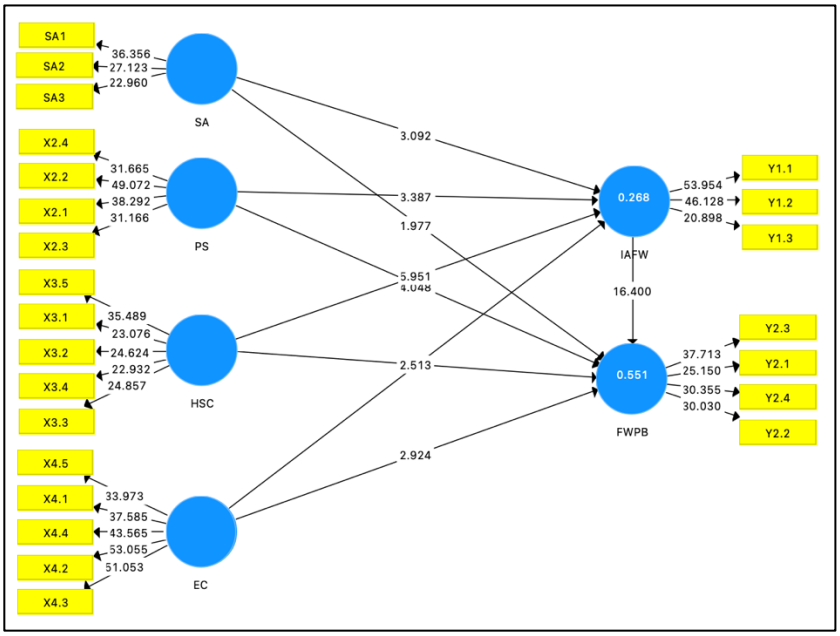

Fig. 2. Hypotheses Testing Result

4.4 Discussion

Through the theoretical underpinning of TPB, the current study has evaluated the construct of how food choice motives influence the customers' food waste prevention behaviour. This study has sampled casual restaurant customers, and it is found that sensory appeal, price sensitivity, health and safety concerns, along with the ethical concern, have a significant and positive influence on the customers' intent to not waste food which will also lead to the actual behaviour of food waste prevention. The findings enrich the utilisation of TPB in understanding customers' actual behaviour on food waste prevention in the context of dine-out in the casual restaurant.

This study also confirms some previous studies elaborating that sensory appeal [45], [46], sensitivity toward the price [23], consideration of food health and safety [20], as well as ethics [14], [15] have a strong influence and become the essential predictor of customers' intent to not waste food which continuously leads consumers to the actual behaviour of food waste prevention. This study has also evaluated the integration between food choice motives and measurement in TPB in which sensory appeal and consideration of ethics are conceptualised as the perceived behavioural control, price sensitivity and consideration of food health and safety as the attitude. Also, ethical consideration is conceptualised as a subjective norm [15].

Significantly, this study can contribute to both theoretical and practical implications. Firstly, this study can be stated as the first hospitality study explaining the strong relations of food choice motives, intention, and food waste prevention behaviour within a casual restaurant setting. Secondly, through the mediating effect measurement, this study also elaborates on the direct, significant, and positive relationship between food choice motives and costumer's actual behaviour to prevent food waste. Also, this study recalls previous conducted food waste studies, which explain that actual behaviour will be influenced by consumers' intention [15], [20], [30]. Consequently, consumers with high intentions of avoiding food waste will likely conduct food waste prevention behaviour which means improving the consumer's intention will play a crucial role.

As the practical implications, the restaurants are completely recommended to highlight the customers' food choice motives. As an example, the restaurant can prepare and serve the food in an appetising way which will increase consumers' intention to finish their food completely. However, as suggested by [45] and [47], if the restaurant cannot implement the former strategy, the restaurant can focus on the food health benefit. For example, food nutrition can be explained through the menu [15]. The free meal box for leftover food can also be offered to the customers, along with an explanation of how to treat it at home. In the context of price sensitivity, a special price can be offered for the patrons with no food waste. Otherwise, the extra charge based on food leftover can also be implemented. The latter is a typical strategy for preventing consumers wasting food in the buffet restaurant [48]. Lastly, to enhance the patrons' ethical concerns, the restaurant can use promotion media to explain their conducted pro-environmental programs [15].

5 Conclusion

This study has discovered a strong relationship between consumers' food choice motives, intention not to waste food, and actual behaviour in preventing food waste in the casual restaurant (*Rumah* Makan) setting. This study also has confirmed the integration of 4 different motives in choosing food: sensory appeal, price sensitivity, food health and safety consideration, and ethical concerns into the TPB instruments, which are attitude toward behaviour, perceived behavioural control, and subjective norm.

Even though the current study offers valuable contributions, it cannot be denied that the study still possesses some limitations which are essential for future studies. As explained previously, the R^2 for IAFW is only 0,268 (low), and FWPB is 0,551 (moderate). This indicates that although food choice motives can positively and significantly influence the consumers' intent to not waste

food, there is still a need to add more relatable instruments to enhance the R^2. Additionally, this study suggests that future studies should examine food waste avoidance action in home settings because of the crucial increasing trend of the utilisation of food delivery mobile apps [49], which can facilitate restaurant patrons ordering food at the restaurant but dining at home.

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