

PREDICTING THE DETERMINANTS OF INTENTION TO REDUCE FOOD WASTE WITH FUZZY SET ANALYSIS

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Abstract: This study aims to predict the factors that drive the emergence of intentions to reduce food waste with a planned behavior theory approach. The study was carried out in Malang, East Java. The information was gathered through social media using a survey method with convenience sampling. The study employs fuzzy set qualitative comparative analysis (FsQCA). The research findings indicate four conditions in the subjective norm, perceived behavioral control, and feeling of guilt variables which are the core conditions needed to form an intention to reduce food waste. In addition, three of the four states were closely related to the general perception of caring and showed a tendency towards interpersonal and human-environmental awareness. Therefore, the recommended recommendation is a campaign movement that emphasizes community participation by adopting ideal food-management values that are simultaneous and supported by stimulation through public communication related to the minimization of food waste.

Keywords: *Food Waste, FsQCA, Reduce Waste, Planned Behavior.*

<http://dx.doi.org/10.21776/ub.agrise.2022.022.2.7>

Received 10 November 2021

Accepted 29 April 2022

Available online 30 April 2022

INTRODUCTION

There are 25.14 million poor people in Indonesia, where food contributes to the poverty line by 71.64% in urban communities and 76.48% in rural communities (BPS, 2020). The high level of food contribution to the poverty line indicates the weak ability of the poor to meet basic needs in the form of food. Furthermore, it is noted that Indonesia has a population affected by malnutrition (undernourished) of 24.1 million people; this number is the largest in the Southeast Asia region (United Nations Environment Programme, 2021). Allegedly this occurs due to the uneven distribution of food and the impact of indirect effects caused by the problem of food waste that is not resolved at the consumer level. If this problem is not resolved, it will have the potential to cause the worst effect, namely an increase in social inequality (Parizeau et al., 2015).

Indonesia is ranked 53 out of 67 countries in the food waste index; the components assessed

include the amount of food waste at the end consumer level and policies related to food waste. On average, every Indonesian citizen throws away about 300 kg of food per year, making Indonesia a developing country with high food consumption (The Economist & Intelligence Unit, 2018). Indonesia's ranking in the context of food waste generation contradicts the poverty and malnutrition rates described earlier. However, producing food waste will waste resources allocated to construct food and harm the environment and the economy (Thyberg & Tonjes, 2016). Furthermore there is a possibility that there will be risks in the social aspect because wasted food is related to the degradation of the main components of the strategy on world food security, which will harm the social aspects of society (Gao et al., 2018).

Food waste is a condition where there is a decrease in the quantity or quality of food due to decisions and actions of retailers, restaurants/restaurants, and end consumers (FAO et

al., 2017). Consumers (individuals), as one of the actors in the food supply chain, often make decisions about food waste according to their understanding. From a subjective point of view, food waste is unavoidable because individuals intentionally tolerate food waste on the assumption that it is reasonable and customary. Individuals take a perspective by only focusing on maximizing the "level of enjoyment" rather than optimizing food consumption according to needs.

Research focuses on the factors driving the intention to reduce food waste in individuals. Identify the factors that drive individual preferences to reduce food waste. This study uses the theory of planned behavior (TPB), which was first introduced by Ajzen (1991) to predict intentions in individuals. Attitude, subjective norm, and perceived behavioral control are assumed to explain individual intentions. The feeling of guilt will be added to the research model because it is known to help explain the intention to reduce food waste in individuals (Soorani & Ahmadvand, 2019). The explanation for each independent variable is explained as follows:

- a. *Attitude* is defined as the extent to which individuals evaluate favorable or unfavorable actions in performing a behavior. For example, "will this action or will not have positive consequences?". In addition, attitude will reflect that the individual's intention to perform certain behaviors will increase if the individual's attitude towards certain behaviors becomes better (Ajzen, 2005; El-Deeb et al., 2021).
- b. *Subjective norm*, subjective norm is defined as social pressure to do or not to do specific behavior. For example, "do the people closest to me think I should or shouldn't do this?". Subjective norms indicate the importance of social references used to evaluate motivational intentions and behaviors; choices to perform certain behaviors increase when subjective norms tend to be more favorable (Ajzen, 2005; El-Deeb et al., 2021).
- c. *Perceived behavioral control*, perceived behavioral control is defined as an individual's perception of the level of ease in encouraging the emergence of an intention and performing certain behaviors. For example, "it is easy or difficult for me to do this behavior." Perceived behavioral control consists of two further aspects, namely internal and external behavioral control. Perceived behavioral internal control describes how individuals see themselves in terms of knowledge, skills, discipline, and ability to perform a behavior. External perceived behavioral control describes how

individuals feel about other factors that influence the intended behavior, such as the availability of resources, time, and interpersonal relationships (Ajzen, 2005; El-Deeb et al., 2021).

- d. *Feeling of guilt*, feeling of guilt is defined as a perception that can encourage the intention to make improvements due to the impact resulting from certain behaviors, whether carried out by the individual concerned or by other individuals. For example, guilt is known to significantly influence their intention to reduce food waste and behave pro-environmentally (Soorani & Ahmadvand, 2019).

This study will use the FsQCA analysis method, which was first introduced by Ragin (2000). FsQCA is an analytical tool that can identify problems by calculating the necessary conditions to produce specific outcomes (Ragin, 2000). FsQCA is an analysis method based on a set relationship consisting of a set of values that describe the degree of membership of each case in a particular category or condition. FsQCA can deal with problems by producing asymmetry, equifinality, and causal complexity (Zhang & Zhang, 2019). However, the use of FsQCA as an analytical method is still relatively new, especially in Indonesia.

This study has the main objective to determine the factors of each independent variable (attitude, subjective norm, perceived behavioral control, and feeling of guilt) that produce the outcome of the intention to reduce food waste. In achieving this goal, each factor in the independent variable is converted into a specific proposition. Each independent variable will be tested using the FsQCA test rule in the next step. Finally, the results of the analysis will be examined and interpreted.

RESEARCH METHOD

The research was conducted in Malang City, East Java. The location selection was carried out purposively with the consideration that Malang City is a large city (>800,000 inhabitants) that produces the second largest food waste in Indonesia (Andini & Kurnia, 2020). Data collection of respondents using a survey method with a questionnaire through convenience sampling. Determination of sample size assumes that a good minimum sample for FsQCA analysis is at least 50 respondents (Greckhamer et al., 2013). Malang City has five sub-districts, namely Klojen, Kedungkandang, Lowokwaru, Sukun, and Blimbing; in each sub-district, a minimum sample of 10 respondents will be taken to meet a minimum number of 50 respondents from all districts. The research

sampling was carried out in March-May 2021, and the final results obtained were 155 respondents.

The measurement scale used in this study was built from previous qualitative and quantitative studies that discussed the relationship between human behavior and food waste. Attitude, subjective norm, perceived behavioral control, and Intention to reduce food waste were adopted from Soorani & Ahmadvand (2019) research which consists of 15 items. Feelings of guilt were adopted from Abdelradi (2018), which consists of three items. All items were measured on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Data Analysis

FsQCA is an analytical tool that can identify the necessary and sufficient conditions to produce specific outcomes (Ragin, 2000). Essential requirements are needed to achieve a result. Still, these conditions do not always stand alone, while sufficient conditions always lead to their results, and several alternative sufficient conditions may exist. FsQCA is an analysis based on a set relationship consisting of a set of values that describe the degree of membership of each case in a particular category or condition. For example, the membership score in the fuzzy set case is worth 0 to 1. In the terminology set, the sufficient condition set is a subset of the outcome set, and the outcome set is a subset of the necessary condition set (Ragin, 2008).

The FsQCA method can focus on combinatorial estimates to determine outcomes rather than other analytical methods that are not independent (e.g., SEM). In addition, FsQCA can test the interaction effect of all possible combinations contained in all variables without considering the assumptions of nonlinear relationships, multicollinearity, and contrarian cases. The FsQCA method has several stages of analysis, including (1) data calibration, variables with ordinal or interval scales are converted into fuzzy scales with scores ranging from 0 to 1 with a direct calibration approach; (2) truth table, which

calculating the membership score of a case in a causal configuration; (3) identify the truth table results from the frequency threshold and consistency threshold values; (4) identify and interpret the resulting solutions (Pappas & Woodside, 2021). The analysis uses the help of FsQCA 3.1b software.

To ensure the reliability of research data to minimize errors in subsequent tests. Research data is considered reliable if it meets the assumption of precision in the measurement. Reliability was tested using the Cronbach's alpha method on each item in the data to measure the strength of data consistency. The acceptable value of Cronbach's alpha ranges from 0.70 to 0.95 (Tavakol & Dennick, 2011). Table 1 shows that each test item has a value range of 0.704 to 0.854, so it can be concluded that each research item has met the reliability requirements.

Common Method Variance

The common method variance (CMV) test aims to avoid the causes of errors in measurement by looking at the variance in the data. The test uses Harman's single-factor test technique; this technique is often used in research on human behavior (Gonçalves et al., 2016; Mohamed et al., 2020). All items of the research construct were factor analyzed to determine whether the majority of variance could be explained by one common factor. The CMV test is considered problematic if the eigenvalues of all research variables indicated by the first-order factor produce a variance value of more than 50% (Fuller et al., 2016). Using the PCA (principal component analysis) method, the test results found that 5 factors had an eigenvalue above 1.0, which contributed 69.877% of the variance. It was known that the first-order factor had the largest contribution with a value of 36.959% variance. So, it can be concluded that there is no symptom of common method bias in this research data.

Table 1. Descriptive Statistics and Reliability Test

	Dimension	Mean	Median	Std. deviation	CA
Intention (Int)	Int1	4.35	5.00	0.84	0.788
	Int2	4.19	4.00	0.87	
	Int3	4.03	4.00	0.95	
Attitude (Att)	Att1	4.43	5.00	0.80	0.747
	Att2	4.35	4.00	0.78	
	Att3	4.51	5.00	0.76	
Subjective Norms (SN)	SN1	4.36	5.00	0.86	0.761
	SN2	4.43	5.00	0.68	

	Dimension	Mean	Median	Std. deviation	CA
Perceived Behavioural Control (PBC)	SN3	4.04	4.00	0.94	0.704
	SN4	3.26	3.00	1.14	
	SN5	3.35	3.00	1.13	
	SN6	4.48	5.00	0.69	
	PBC1	4.32	4.00	0.76	
	PBC2	4.24	4.00	0.94	
Feeling of guilty (FG)	PBC3	4.22	4.00	0.76	0.854
	FG1	4.56	5.00	0.68	
	FG2	4.43	5.00	0.74	
	FG3	4.33	4.00	0.79	

Note. CA = cronbach's alpha.

Source: Primary Data (2021)

RESULTS AND DISCUSSION

The research variable consists of four propositions that are hypothesized to result in an intention to reduce food waste. The analysis uses the QCA methodology, which allows the factors in the independent variables (attitude, subjective norm, PBC, and feeling of guilt) to be correlated with one another. Each model will produce alternative solutions that determine the intention to reduce food waste. Furthermore, each alternative solution that appears will produce a combination of key factors that trigger the dependent variable (intention to reduce food waste). The following is a propositional model that will be tested:

$$\text{Intention (Int)} = f(\text{Att1}, \text{Att2}, \text{Att3})$$

$$\text{Intention (Int)} = f(\text{SN1}, \text{SN2}, \text{SN3}, \text{SN4}, \text{SN5}, \text{SN6})$$

$$\text{Intention (Int)} = f(\text{PBC1}, \text{PBC2}, \text{PBC3})$$

$$\text{Intention (Int)} = f(\text{FG1}, \text{FG2}, \text{FG3})$$

The first step is to analyze the necessity of the causal conditions for the outcome (Zhang & Zhang, 2019). Conditions with a consistency above 0.8 indicate "almost always necessary." This condition may be part of all insufficient conditions (Gonçalves et al., 2016; Pappas & Woodside, 2021). The condition with a consistency value above 0.65 indicates "usually necessary or informative" (Zhang & Zhang, 2019). It is shown in Table 2 that the attitude proposition, the consistency score is above 0.90. subjective norm proposition, the score ranges from 0.60 to 0.90. PBC proposition, the score ranges above 0.80. Finally, the feeling of guilt proposition, the score ranges from 0.80 to 0.90. The four propositions show that the overall consistency value is above 0.80, except for two conditions, namely SN4 and SN5. So it can be concluded that most conditions produce a consistency value necessary for the intention.

Table 2. Overview of The Necessary Conditions

Condition	Intention Reduce Food Waste (Int)	
	Consistency	Coverage
Att1	0.911744	0.978362
Att2	0.915223	0.986681
Att3	0.926229	0.971116
SN1	0.896479	0.972578
SN2	0.922466	0.975742
SN3	0.828529	0.981001
SN4	0.619072	0.997027
SN5	0.651378	0.996524
SN6	0.93482	0.978376
PBC1	0.897828	0.978488
PBC2	0.872764	0.976874
PBC3	0.881781	0.982594
FG1	0.93624	0.968633
FG2	0.918915	0.977566
FG3	0.895129	0.97888

Source: Primary Data (2021)

The second step is to analyze the sufficient conditions with construction, refinement, and truth table analysis (Zhang & Zhang, 2019). This study uses an intermediate solution that produces a theoretically plausible counterfactual solution model (Scarpi et al., 2021; Zhang & Zhang, 2019). The frequency thresholds generated in each condition are 1, except for the feeling of guilt proposition, which is 2, and the consistency thresholds are 0.98, 0.99, 0.98, and 0.97 in the Att, SN, PBC, and FG propositions. Table 3 shows that the intermediate solutions for the four outcome conditions are informative because the consistency and coverage values exceed the acceptable minimum values (Ragin, 2008).

Causal recipe of attitude proposition (Att). The results show three lines of combination models that intend to reduce food waste; each combination

is shown in Table 3. The causal recipe shows a high consistency value of 0.97, while the coverage value explains 92% of the intention to reduce food waste. In addition, the results show that each condition has the same presence frequency (maximum two models), but no need appears in all models.

Causal recipe of subjective norm (SN). The results show that three model pathways generate intentions to reduce food waste. Overall, the solution has high consistency and coverage with 0.99 and 0.72 (72%). Furthermore, there is a condition for the presence of SN6 that appears in all three models; this indicates that this condition is essential for the intention to reduce food waste. While in other conditions, it can be present or absent, depending on the combination of each model. Table 3 describes the causal recipe subjective norm.

Table 3. Results of The Intermediate Solutions

Results of the intermediate solutions for intention reduce food waste explained by attitude			
Causal configuration	raw coverage	unique coverage	consistency
M1: Att1*Att2	0.878302	0.0210168	0.988177
M2: Att1*Att3	0.881497	0.024212	0.979642
M3: Att2* Att3	0.882349	0.0250641	0.98721
solution coverage:	0.927578		
solution consistency:	0.977771		
Results of the intermediate solutions for intention reduce food waste explained by subjective norm			
Causal configuration	raw coverage	unique coverage	consistency
M1: SN1*SN2*~SN4*~SN5*SN6	0.376598	0.13739	0.991587
M2: SN1* SN2*SN3* SN5* SN6	0.584352	0.335984	0.996127
M3: ~ SN1*~ SN2* SN3*~ SN4* SN5* SN6	0.110693	0.00773925	1
solution coverage:	0.729481		
solution consistency:	0.995639		
Results of the intermediate solutions for intention reduce food waste explained by perceived behavior control			
Causal configuration	raw coverage	unique coverage	consistency
M1: PBC1*PBC2	0.829381	0.0337973	0.982588
M2: PBC1*PBC3	0.838399	0.0428145	0.984903
solution coverage:	0.872196		
solution consistency:	0.979898		
Results of the intermediate solutions for intention reduce food waste explained by feeling of guilt			
Causal configuration	raw coverage	unique coverage	consistency
M1: FG1*FG2	0.908336	0.908336	0.978283
solution coverage:	0.908336		
solution consistency:	0.978283		

Source: Primary Data (2021)

Causal recipe of perceived behavioral control (PBC). The results show that two model pathways generate intentions to reduce food waste. Overall, the solution has high consistency and

coverage with 0.97 and 0.87 (87%). Furthermore, there is a condition of presence of PBC1 that appears in both models; this indicates that this condition is vital for the intention to reduce food waste. It is

present in all combinations of the two models in other situations. Table 3 describes the causal recipe for perceived behavioral control.

Causal recipe of the feeling of guilt (FN).

The results show that one model pathway generates intentions to reduce food waste. The causal recipe has high consistency and coverage with 0.97 and

0.90 (90%). Furthermore, two conditions are present in the model, namely FG1 and FG2, which indicate that these conditions are essential for the intention to reduce food waste, while FG3 conditions are not present in the solution. Table 3 describes the causal recipe for perceived behavioral control.

Table 4. Causal Recipe of Each Proposition

	M1	M2	M3	Conclusion
Att1	•	•		Ø
Att2	•		•	Ø
Att3		•	•	Ø
SN1	•	•	◦	Ø
SN2	•	•	◦	Ø
SN3		•	•	Ø
SN4	◦		◦	Ø
SN5	◦	•	•	Ø
SN6	•	•	•	●
PBC1	•	•	-	●
PBC2	•		-	Ø
PBC3		•	-	Ø
FG1	•	-	-	●
FG2	•	-	-	●
FG3		-	-	Ø

Note. Black circles = presence of a condition, white circles = absence of a condition. Large black circles = a core-necessary condition of presence, "Ø" = a peripheral (not necessary) condition, blank spaces = don't care, "-" denotes the exclusion of conditions.

Source: Primary Data (2021)

The results of the FsQCA analysis are shown in Table 3, which produces intermediate solutions for each research variable. The solution of the attitude variable, for example, has three solution models that show that the intention to reduce food waste can be achieved by a combination of Att1 ("I seriously intend to reduce food waste"), Att2 ("I intend to encourage family, friends, and neighbors to reduce food waste"), and Att3 ("I intend to consume and recycle proper food waste to reduce food waste"). The combination relationship is configurational and equifinal. These conditions can produce the same outcome even though they have different combination forms such as the Att1 and Att2 combination models will produce intentional outcomes aligned with the Att1 Att3 combinations that produce the same outcome. Furthermore, there is no negation condition in each combination model, indicating that each combination positively affects the outcome.

The results of the FsQCA analysis show that four antecedent outcome conditions have a high level of presence. There are four conditions in the causal recipe subjective norm (SN6), perceived behavioral control (PBC1), and feeling of guilt (FG1

and FG2), which can be seen in Table 4. The four conditions have a high presence level, indicating that these conditions are core-necessary (though not sufficient) conditions to reduce food waste. For example, in the SN6 condition ("ideally, everyone needs to prevent and minimize food waste"), which is a condition that always appears in each subjective norm combination model, it can be concluded that this condition is a condition for the presence of an intention to reduce food waste.

The findings show that four core-necessary conditions produce intentional outcomes. Suppose it is observed that there are three conditions, namely SN6 ("Ideally, everyone needs to prevent and minimize food waste"), FG1 ("I feel guilty when I waste food, while not everyone can eat properly"), and FG2 ("I feel guilty because of the bad effects caused by food waste on the environment") which indicates there is a general perception of concern. The general concern perception shows that the intention to reduce food waste can be formed by equating perceptions between individuals with campaigns and activities that directly touch the community. Movements and actions to reduce food waste can be carried out by considering aspects

contained in the condition of PBC1 (“I can afford to buy food/food ingredients according to needs”), such as starting shopping activities that are as needed and followed by procedures for storing food/food ingredients appropriately and anticipating waste. The food that emerges from the buying activity fits the ideal food management model.

Increasing community participation in efforts to reduce food waste is one way that can be done. At least three strategies support the minimization of food waste with a community participation approach, especially in Malang City. First, intensify food waste management training for community and environmental cadres who handle food waste reduction campaign programs. Second, intensify information on handling, reducing, and recycling food waste through mass media and campaigns. Third, increasing the number of environmental cadres who interact directly with the community reduces food waste (Dhokhikah et al., 2015). Food waste is related to recycling efforts, such as converting it into compost to have practical value, and recycling campaign activities require supportive support from government agencies and NGOs and direct community involvement through environmental cadres (Trihadiningrum et al., 2017). In addition, excessive food donation is the right step to tackle food waste that arises due to food surplus in individuals or households. Food donation can overcome food vulnerability, especially in urban environments such as Malang City, people with high and middle economic strata can become actors to carry out food donation activities. A campaign movement is needed that can inform and accommodate food donation activities (Soma, 2017).

CONCLUSION

Referring to the study results, most respondents tend to support the minimization of food waste by looking at the results of descriptive analysis and FsQCA. It is known that there are three of the four antecedent conditions with a high level of presence (SN6, FG1, and FG2) that result in the outcome of an intention to reduce food waste; these conditions are closely related to general concern and tend to relationships between individuals and other individuals and individuals with the environment. The emergence of the intention to reduce food waste is due to the awareness that the problem of food waste does not only come from problems that arise individually. Therefore, people in Malang City need a simultaneous and stimulated movement with effective public communication to trigger public awareness to reduce food waste.

We suggest increasing community participation in efforts to reduce food waste by

- a. Intensifying food waste reduction training for community and environmental cadres;
- b. Intensifying information on handling, reducing, and recycling food waste through mass media and campaigns;
- c. Increasing the number of environmental cadres who interact directly with the community in reducing food waste activities;
- d. Conduct a food waste recycling campaign through environmental cadres; and
- e. Inform and accommodate food donation campaigns in urban environments.

REFERENCES

- Abdelradi, F. (2018). Food waste behaviour at the household level: A conceptual framework. *Waste Management*.
<https://doi.org/10.1016/j.wasman.2017.10.001>
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
[https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I. (2005). *Attitudes, Personality and Behaviour* (2nd ed.). Open University Press.
- Andini, A., & Kurnia, L. (2020). *Butuh Kolaborasi Atasi Sampah Makanan*. Lokadata.
<https://lokadata.id/artikel/butuh-kolaborasi-atasi-sampah-makanan>
- BPS. (2020). Laporan Bulanan Data Sosial Ekonomi Januari 2020. In *Katalog BPS*.
<https://www.bps.go.id/publication/2020/01/13/682b7dcd25c8b1e36816e528/laporan-bulanan-data-sosial-ekonomi-januari-2020.html>
- Dhokhikah, Y., Trihadiningrum, Y., & Sunaryo, S. (2015). Community participation in household solid waste reduction in Surabaya, Indonesia. *Resources, Conservation and Recycling*, 102, 153–162.
<https://doi.org/10.1016/j.resconrec.2015.06.013>
- El-Deeb, S., Correia, M., & Richter, C. (2021). A fuzzy set analysis of the determinants of intention to adapt and pro-environmental behaviour. *International Journal of Sociology and Social Policy*, 41(7/8), 786–804.
<https://doi.org/10.1108/IJSSP-03-2020-0058>
- FAO, IFAD, UNICEF, WFP, & WHO. (2017). The State of Food Security and Nutrition in the World 2017: Building Resilience for Peace and Food Security. In *Rome* FAO.
<https://doi.org/10.1080/15226514.2012.751351>
- Fuller, C. M., Simmering, M. J., Atinc, G., Atinc, Y.,

- & Babin, B. J. (2016). Common methods variance detection in business research. *Journal of Business Research*, 69(8), 3192–3198.
<https://doi.org/10.1016/j.jbusres.2015.12.008>
- Gao, S., Bao, J., Liu, X., & Stenmarck, A. (2018). Life cycle assessment on food waste and its application in China. *IOP Conference Series: Earth and Environmental Science*, 108(4), 042037.
<https://doi.org/10.1088/1755-1315/108/4/042037>
- Gonçalves, H. M., Lourenço, T. F., & Silva, G. M. (2016). Green buying behavior and the theory of consumption values: A fuzzy-set approach. *Journal of Business Research*, 69(4), 1484–1491.
<https://doi.org/10.1016/j.jbusres.2015.10.129>
- Greckhamer, T., Misangyi, V. F., & Fiss, P. C. (2013). Chapter 3 The Two QCAs: From a Small-N to a Large-N Set Theoretic Approach (pp. 49–75). Emerald Group Publishing Limited.
[https://doi.org/10.1108/S0733-558X\(2013\)0000038007](https://doi.org/10.1108/S0733-558X(2013)0000038007)
- Mohamed, N., Taheri, B., Farmaki, A., Olya, H., & Gannon, M. J. (2020). Stimulating satisfaction and loyalty: transformative behaviour and Muslim consumers. *International Journal of Contemporary Hospitality Management*, 32(9), 2903–2923.
<https://doi.org/10.1108/IJCHM-04-2020-0330>
- Pappas, I. O., & Woodside, A. G. (2021). Fuzzy-set Qualitative Comparative Analysis (fsQCA): Guidelines for research practice in Information Systems and marketing. *International Journal of Information Management*, 58, 102310.
<https://doi.org/10.1016/j.ijinfomgt.2021.102310>
- Parizeau, K., von Massow, M., & Martin, R. (2015). Household-level dynamics of food waste production and related beliefs, attitudes, and behaviours in Guelph, Ontario. *Waste Management*, 35, 207–217.
<https://doi.org/10.1016/j.wasman.2014.09.019>
- Ragin, C. C. (2000). *Fuzzy-Set Social Science* (1st ed.). University of Chicago Press.
- Ragin, C. C. (2008). *Redesigning Social Inquiry Fuzzy Sets and Beyond*. The University of Chicago Press.
- Scarpi, D., Russo, I., Confente, I., & Hazen, B. (2021). Individual antecedents to consumer intention to switch to food waste bioplastic products: A configuration analysis. *Industrial Marketing Management*, 93, 578–590.
<https://doi.org/10.1016/j.indmarman.2020.09.006>
- Soma, T. (2017). Gifting, ridding and the “everyday mundane”: the role of class and privilege in food waste generation in Indonesia. *Local Environment*, 22(12), 1444–1460.
<https://doi.org/10.1080/13549839.2017.1357689>
- Soorani, F., & Ahmadvand, M. (2019). Determinants of consumers’ food management behavior: Applying and extending the theory of planned behavior. *Waste Management*, 98, 151–159.
<https://doi.org/10.1016/j.wasman.2019.08.025>
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach’s alpha. *International Journal of Medical Education*, 2, 53–55.
<https://doi.org/10.5116/ijme.4dfb.8dfd>
- The Economist, & Intelligence Unit. (2018). Food Sustainability Index 2018. In *Barilla Center for Food and Nutrition*.
https://foodsustainability.eiu.com/wp-content/uploads/sites/34/2019/05/Food-Sustainability-Index-2018_EIU_BCFN_17-May.xlsm
- Thyberg, K. L., & Tonjes, D. J. (2016). Drivers of food waste and their implications for sustainable policy development. In *Resources, Conservation and Recycling*.
<https://doi.org/10.1016/j.resconrec.2015.11.016>
- Trihadiningrum, Y., Laksono, I. J., Dhokhikah, Y., Moesriati, A., Radita, D. R., & Sunaryo, S. (2017). Community activities in residential solid waste reduction in Tenggilis Mejoyo District, Surabaya City, Indonesia. *Journal of Material Cycles and Waste Management*, 19(1), 526–535.
<https://doi.org/10.1007/s10163-015-0440-5>
- United Nations Environment Programme. (2021). *Food Waste Index Report 2021*. United Nations Environment Programme.
<https://www.unep.org/resources/report/unep-food-waste-index-report-2021>
- Zhang, H., & Zhang, Y. (2019). Comparing fsQCA with PLS-SEM: predicting intended car use by national park tourists. *Tourism Geographies*, 21(4), 706–730.
<https://doi.org/10.1080/14616688.2018.1540652>