The Effect of Smart Society Living Standard and Restaurant Consumer Food Waste Awareness on Food Waste Reduction

Rita Martini
Politeknik Negeri Sriwijaya
Palembang, Indonesia
martinirita65@gmail.com

Sari Lestari Zainal Ridho
Politeknik Negeri Sriwijaya
Palembang, Indonesia
sarilestari@polsri.ac.id

Agung Anggoro Seto
Politeknik Negeri Sriwijaya
Palembang, Indonesia
agung.anggoro.seto@polsri.ac.id

Dika Setiagraha
Politeknik Negeri Sriwijaya
Palembang, Indonesia
dika.setiagraha@polsri.ac.id

Astika Ulfah Izzati
Politeknik Negeri Sriwijaya
Palembang, Indonesia
astika.ulfah.izzati@polsri.ac.id

Abstract— **The purpose of this study was to evaluate the factors that affect the consumer food waste awareness in restaurants, as an effort to develop the tourism sustainability. Data were collected through the distribution of questionnaires to tourists, the people that part of the smart society, who use restaurant services on their trips. The sampling technique used is convenience sampling. Analysis of the data was carried out using the Simultaneous Equation Model technique. The results showed that there was a significant positive effect of standard of living, regulation and level of awareness on reducing food waste in restaurants. The implications of this study show the importance of awareness and understanding of tourists regarding regulations, as well as their standard of living in reducing food waste as an effort to build a sustainable tourism environment.**

Keywords— *Smart Society, Living Standard, Restaurant, Consumer*

I. INTRODUCTION

Garbage is an environmental problem, including the tourism environment. Based on data from the Ministry of Environment and Forestry, the Directorate General of Waste, Waste and B3 Management, the Directorate of Waste Management, that the composition of the largest waste in Indonesia. In 2020, food waste is 40.79%. This figure is higher than the previous year, 1990 where the total composition of food waste was 39.90%. Lampung is one of the popular tourist destinations in Indonesia, which has a similar percentage of food waste composition with national conditions.

The total composition of food waste in Lampung in 2019 was 37.74% and increased to 40.70% in 2020. Data shows that the food wasted every year is almost equivalent to the number of poor people in Indonesia. A fairly high amount of food waste is contributed by various companies, where one of the major contributors is restaurants [1]. The restaurant is one of the tourism businesses providing food and beverage services [2].

Service providers, restaurant managers, are considered responsible for a significant amount of food waste [3]. However, not only service providers, but service users such as tourists, awareness is believed to be needed to reduce restaurant food waste [3] in order to ensure the creation of sustainable tourism, especially in environmental/ecological indicators or dimensions [4]. Thus, tourism business stakeholders, as stakeholders, of course need to be an important part in efforts to reduce food waste which is a form of support for the development of a sustainable tourism environment. Including stakeholders are users of tourism services, namely consumers, namely tourists who use restaurant services when travelling. Users of tourism services today, who travel almost from all walks of life. Even like a lifestyle among the younger generation which is a smart society.

Smart society is a society that exists today, known as society 5.0 [5], [6], which aims to manage economic and social problems in an integrated system and focus on individual needs and interests, through the development of social equality and sustainable development [6]. Smart society, which is a society that focuses on the needs and interests of the individual, is expected to maintain awareness and a lifestyle that affects the reduction of food waste, as a party responsible for the sustainability of environmental development. But not the other way around, having a consumption pattern of throwing away food if it is not spent. Because based on previous research, among the factors that influence the reduction of food waste is the level of awareness and lifestyle [3].

Furthermore, previous research, which previously evaluated things that affect the reduction of food waste, found that not

only awareness, but also applicable regulations and the standard of living of the tourists also affected the presence of food waste [3]. This is reinforced by similar studies that examine the effect of personal attitudes and/or personal behaviour on food waste [7], [8], as well as research that examines awareness of the presence of leftovers in restaurants [9]. Based on the problems, and the results of previous studies that have been described, this study aims to adapt previous research, but examined specifically with case studies on smart society which is a generation that is very familiar with technology.

So the purpose of this study is to analyze the reduction awareness of restaurant food waste and the variables that influence it, which consist of living standards, tourist level of awareness and regulation. In order to achieve this goal, the formulation of the problem proposed in this study, namely whether there is an influence of standard of living, regulation and tourist awareness on reducing restaurant food waste.

II. METHODOLOGY

This study aims to analyze the effect of standard of living, level of awareness, perceptions of rules and regulations, tourists as restaurant service users on food waste in restaurants in Lampung Province. The method used in this study is a quantitative descriptive method by examining the relationship between variables of level of awareness, perceptions of rules and regulations, and the standard of living of tourists as restaurant service users on food waste. In this study, the statistical test used the Structural Equation Modelling (SEM) technique.

Researchers can simultaneously test and estimate the relationship between variables with many indicators [10]. SEM is an analytical technique to confirm rather than explain. the purpose of a study using SEM is to determine whether a particular model is valid or not, although SEM analysis often includes elements used to explain [11].

The target population in this study is the younger generation who are part of the smart society, who have travelled as tourists/tourists who use restaurant services in Lampung Province. The sampling technique used purposive sampling technique, namely taking a number of samples from the entire population in this study with certain considerations. Because the population is unknown, in this study the sample size was determined using the Roscoe method, which stated that one of the appropriate sample sizes in the study was between 30 to 500[12]. Therefore, the data in this study were collected through a survey by distributing questionnaires, obtained 105 people who meet the requirements as respondents. This number has met the feasibility of a study.

III. RESULT AND ANALYSIS

In this section, the results of the processed data that have been collected through surveys will be presented, including a discussion of the results, namely their conformity with previous research. It will also describe the test results which are part of the stages of the analytical method used in this study, such as the results of the validity and reliability tests. However,

before that, descriptive data and interpretations related to the respondent's characteristic data will be displayed.

A. Validity and Reliability Test Results

Validity testing was conducted to determine the correlation between each question item (indicator) and the total score of all questions (factor). The indicator is said to be valid when the correlation (r) > 0.50. Besides, to test the reliability, the reliability coefficient used is Cronbach's Alpha. Cronbach's Alpha is a reliability coefficient calculated by the Alpha formula made by Cronbach. This test was conducted to determine the reliability (level of confidence) between the question items (all indicators) to the total score of all questions (factors). All indicators are said to be reliable when Cronbach's Alpha Value > 0.60.

From this research instrumental testing results, the correlation coefficient of all indicators is greater than 0.50, so that the validity test can be concluded that all indicators are valid (accurate). In addition, the most dominant indicator of the Standard of Living (LS) variable is LS5 ("don't worry about the price of wasted food") with a correlation of 0.840. The indicator of the most dominant Awareness Level (AL) variable is AL2 ("It feels good to clean the refrigerator and freezer") with a correlation of 0.877 each. The Rules and Regulations (RR) variable has a dominant indicator, namely PR4 ("Residents will understand more about food waste if the law on this matter is implemented") with a correlation of 0.888 each.

The Food Waste Reduction Variable (FWR) also has a dominant indicator, namely FWR1("I feel it is my duty to reduce food waste as much as possible") with a correlation of 0.824. In addition, Cronbach's alpha values for Standard of Living (LS), Level of Awareness (AL), Rules and Regulations (RR), and Food Waste Reduction (FWR) are 0.870, 0.935, 0.907, and 0.896, respectively, so that this reliability test can be used. Concluded that all indicators are said to be reliable (trustworthy). Thus, testing the validity and reliability of the constructs of all indicators is concluded to be valid and reliable.

B. Testing Model Assumptions

The SEM method generally has the assumption that the data is normally distributed in Univariate and Normal Multivariate. Using a confidence interval of 99% which gives a significant level value is = 100% - 99% = 1%, so the data is said to have a Univariate Normal distribution when the value of c.r. is within -2.58 to 2.58 (-2.58 c.r. 2 ,58); then the data is said to have a Multivariate Normal Distribution when c.r. 2.58.

Based on the results of this AMOS output, the test resulted that all c.r.univariate is within -2.58 to 2.58 so that the test concludes that all data are Univariate Normal distribution; while the value of c.r. multivariate is less than 2.58 (worth 2.288), so the test concludes that the data has a Multivariate Normal distribution. In other words, the data is normally distributed in Univariate Normal and Multivariate Normal, so the estimation method used is the standard ML method.

C. SEM Model Coefficient Results

In this research, the measurement equation is used to analyze the relationship between the constructs and their items. Factor loading values were measured using standardized estimates values at AMOS output. Based on the research output, for construct validity, the Standardized Estimate value is described as the factor loading value which is valid if the factor loading value is >0.50. At the output of Standardized Regression Weights, all loading factor values are greater than 0.50, so all factor loadings are said to be valid.

D. Interpretation of Path Coefficients in SEM model

The results of the hypothesis are shown in Table 1 showing the results of hypothesis testing. Table 1 shows the results of hypothesis testing in the direct relationship of several constructs. Of the 3 hypotheses formulated, all hypotheses were significant with p-value < 0.05. In addition, the largest estimation result (0.939) is given between **RR** and **FWA**.

Table 1. The Path Relationship Among The Construct

Hypothesized Paths	Estimate	C.R.	P	Result
H1: LS ->FWR	0,567	3,809	< 0,001***	Siqnificant
H2: AL ->FWR	0,157	1,936	0,053*	Siqnificant
H3: RR ->FWR	0,939	5,575	< 0,001***	Siqnificant

Note: ***, **, and * denote the two-tail statistical significance at 1%, 5%, and 10% respectively (Source: Research data processing)

$$FWR = 0,567 \ LS + 0,157 \ AL + 0,939 \ RR + e$$

In the structural equation, the test gets the following results:

Based on this research result, it is obtained a significant effect of Standard of Living on Reduction of Food Waste of 0.567. The higher the value of the Standard of Living, the higher the value of Food Waste Awareness; conversely, the lower the standard of living, the lower the value of Food Waste Awareness.

In this study also obtained a significant effect on the level of awareness of Food Waste Awareness of 0.157. The higher the Awareness Level value, the higher the Food Waste Awareness value; conversely, the lower the Awareness Level value, the lower the Food Waste Awareness value. Furthermore, from the results of data processing obtained a significant effect of Regulations and Regulations on Reducing Food Waste of 0.939. The higher the value of Rules and Regulations, the higher the value of Food Waste Reduction; Conversely, the lower the value of Rules and Regulations, the lower the value of Food Waste Reduction.

The results of this study answer the questions posed in this study, namely whether there is an effect of standard of living, regulation and tourist awareness on reducing restaurant food waste? Based on the data processing carried out, the results show that there is a positive and significant influence on living standards, regulations and tourist awareness on reducing restaurant food waste. These findings are also consistent with the results of previous studies[3], [7]–[9].

This study is consistent with previous research in the context that the reduction of food waste is influenced by individual factors, although the individual factors studied, which affect the reduction of food waste are different or slightly different. For example, one previous study emphasized the importance of individual factors in the form of knowledge in reducing food waste in restaurants [9], while in this study the results showed individual factors in the form of awareness that influenced the reduction of food waste.

IV. CONCLUSION

This study aims to evaluate whether there is an effect of standard of living, tourist awareness and regulation on the reduction of restaurant food waste. Based on the data processing carried out, it can be concluded that there is a positive and significant influence on living standards, regulations and tourist awareness on reducing restaurant food waste. The results of this study indicate the importance of restaurant service users, in this case the tourists who are part of the smart society, who are travelling, to raise awareness, care about complying with regulations and have a standard of living that supports correct behaviour regarding food waste as a waste product efforts to reduce. In addition to recommendations for research implications for service users, this study also recommends related to future research, given the limitations of this study, such as the number of respondents, respondent criteria, number of variables used, types of variables used, types of data used. So that in the next research, research can be carried out with for example a larger number of respondents, and more different types of data.

REFERENCES

[1] H. Siaputra, N. Christianti, and G. Amanda, "Analisa Implementasi Food Waste Management Di Restoran 'X' Surabaya," J. Manaj. Perhotelan, vol. 5, no. 1, pp. 1–8, 2019, doi: 10.9744/jmp.5.1.1-8.

[2] F. M. Khan and R. Gupta, "ARIMA and NAR based Prediction Model for Time Series Analysis of COVID-19 cases in India," J. Saf. Sci. Resil., vol. 1, no. April, pp. 12–18, 2020, doi: 10.1016/j.jnlssr.2020.06.007.

[3] S. Juliana, A. Albattat, A. Jamaludin, R. Nurfarzana, S. Norazam, and S. M. Kamal, "Food wastage awareness among restaurant consumers in Subang Jaya," Int. J. Sci. Technol. Res., vol. 9, no. 1, pp. 1232–1236, 2020.

[4] World Tourism Organization, Indicators of Sustainable Development for Tourism Destinations. 2004.

[5] R. Foresti, S. Rossi, M. Magnani, C. Guarino Lo Bianco, and N. Delmonte, "Smart Society and Artificial Intelligence: Big Data Scheduling and the Global Standard Method Applied to Smart Maintenance," Engineering, vol. 6, no. 7, pp. 835–846, 2020, doi: 10.1016/j.eng.2019.11.014.

[6] K. Nagy and E. Hajrizi, "Building Pillars for Adapting Society 5.0 in Post-Conflict Countries," IFAC-PapersOnLine, vol. 52, no. 25, pp. 40–45, 2019, doi: 10.1016/j.ifacol.2019.12.443.

[7] E. Aktas et al., "A consumer behavioural approach to food waste," J. Enterp. Inf. Manag., vol. 31, no. 5, pp. 658–673, 2018, doi: 10.1108/JEIM-03-2018-0051.

[8] L. Lavén and J. Armbrecht, "Consumers' food waste behaviour in restaurants," no. June, 2017, [Online]. Available: https://gupea.ub.gu.se/handle/2077/52815.

[9] A. N. Ramadhita, M. Ekayani, and S. Suharti, "Apakah Konsumen Resto Hotel Mengetahui Isu Food Waste?," J. Ilmu Kel. dan Konsum., vol. 14, no. 1, pp. 88–100, 2021, doi: 10.24156/jikk.2021.14.1.88.

[10] H. Latan, Model Persamaan Struktural: Teori dan Implementasi AMOS 21.0. Bandung: ALFABETA, 2013.

[11] Y. Sarwono, "Pengertian Dasar Structural Equation Modeling (SEM)," J. Ilm. Manaj. Bisnis Ukrida, vol. 10, no. 3, p. 98528, 2010.

[12] Sugiyono, Metode Penelitian Kuantitatif. Bandung: ALFABETA, 2018.