

Bagus Dadang Prasetyo, ST., MT.

by Retno Dewi Prisusanti

Submission date: 18-May-2021 01:00PM (UTC+0900)

Submission ID: 1588520520

File name: 11604_Prasetyo_2020_E_R.pdf (428.84K)

Word count: 4436

Character count: 18926



Analysis of Food Waste That Contains Carbohydrate Starch in Hospital

Bagus Dadang Prasetyo^a, Qomariyatus Sholihah^b, M.Sasmito Djati^c, Marjono^d, ^aStudent of Doctoral Program in Environmental Science Brawijaya University, Malang, East Java, Indonesia, ^{b,c,d}Lecturer at Brawijaya University, Malang, East Java, Indonesia, Email: ^ajendbagus@gmail.com, ^bqomariyatus@ub.ac.id, ^cmsdjati@ub.ac.id, ^dmarjono@ub.ac.id

Hospital "X" provides class A health service. Its service activities produce positive and negative impacts. One of them is food waste originating from hospitalisation. This research aims to obtain quantitative potential of food waste that contains carbohydrate starch (rice waste) and its utilisation. The method used is Absolute Deviations and then analysed using SEM. The results obtained from the arising of rice waste amounted to 36.25% or 0.29 kg per patient per day, and as a comparison of inpatients dispose of food waste an average of 953 grams per day in Portuguese hospitals (Dias-Ferreira, Santos and Oliveira, 2015) and food served to inpatients in hospitals, amounting to 41.6% wasted not utilised (Schiavone, Pelullo and Attena, 2019).

Key words: *Waste, food, carbohydrates, hospital, absolute deviations.*

Introduction

Hospitals with class A at least provide services that include medical services, pharmaceutical services, nursing and midwifery services, clinical support services, non-clinical support services, and inpatient services (Peraturan Menteri Kesehatan Republik Indonesia Nomor 56, 2014). The implementation of eco-hospitals is the reduction of waste (Peraturan Menteri Kesehatan Republik Indonesia Nomor 7, 2019). Food waste is a challenge for most hospitals, which is not just a matter of cost but also in terms of nutrition (Ofei *et al.*, 2015). Our research shows concern about the results of the percentage of food waste that requires hospital manager assertiveness. This hospital food waste not only has environmental and economic consequences, but has patient health consequences due to malnutrition. (Schiavone, Pelullo and Attena, 2019).

The issue of food waste is increasingly being discussed and considered. Even some articles have written down the value of the quantity of food wasted (Hooge *et al.*, 2017). Food waste



is something that can be eaten as human consumption and discarded, lost, degraded, and consumed by pests on the way to consumers. Food waste has an important influence on natural resources and environmental protection (Otles, Semih; Despoudi, Stella; Bucatariu, Camelia; Kartal, 2015). Food waste can be interpreted as all food, food parts that cannot be eaten, removed from the food supply chain and then discarded, so that it can be defined briefly that all food is lost or discarded, although it is still suitable for human consumption (Aschemann-witzel and Hooze, 2018). Food waste is produced from a variety of different behaviours, from planning, purchasing, storage, preparation to serving and when consuming (Roodhuyzen *et al.*, 2017).

Food waste can occur on all supply chain trips, and as much as 35% at the level of final consumption (Chalak *et al.*, 2020). In Europe, approximately 100 kg of food is wasted as per capita waste per year. It is estimated that around 52% is lost at the consumer level, 30% of food in the UK and 9.2% in Sweden is wasted because it has expired (Ceuppens *et al.*, 2016). Globally, approximately one third of food for human consumption is wasted, which is around 1.3 billion tons per year (Schanes, Dobernig and Gözet, 2018). Food waste in the household averages 614-1220 g / week (Herpen *et al.*, 2019). Wasted food waste ranges from 194-389 kg / person / year on a global scale and 158-298 kg / person / year on a European scale (Corrado and Sala, 2018). Inpatients dispose of food waste an average of 953 grams per day in Portuguese hospitals (Dias-Ferreira, Santos and Oliveira, 2015). Research says that food from hospitals contributes to 50% of all waste. Environmental factors, the patient's clinical condition, food and diet are included in the recommendations for the high levels of waste in the hospital (Goonan *et al.*, 2014). Food served to inpatients in hospitals, amounting to 41.6% was wasted not utilised. This figure is higher than the previous research which is around 25-40% (Schiavone, Pelullo and Attena, 2019). Vegetable and fruit waste is discharged flowing into rivers, landfills to produce leachate and methane emissions and biodegradability that can be an environmental threat (Mullen *et al.*, 2015). High food waste can cause adverse environmental impacts, one of which is greenhouse gases (Parizeau, Massow and Martin, 2015). Food causes about one third of the total which causes greenhouse gas emissions (Aschemann-witzel *et al.*, 2015). Only a few researchers have investigated the role of food consumption in producing food waste (Schanes, Dobernig and Gözet, 2018). Reducing food waste is an action needed for more sustainable food security (Aschemann-witzel *et al.*, 2015). A company has begun to become socially responsible, namely through food supply chain actors who have acted to avoid and reduce food waste (Aschemann-Witzel, de Hooze and Normann, 2016).

Based on these thoughts, this research focuses on “Analysis of Food Waste That Contains Carbohydrate Starch in Hospital”.



Method

Research Methods

The first step in this research begins with the idea through the literature, a study of food waste flow systems that contains carbohydrate starch (rice waste) in hospitals. Inpatient services produce rice waste which is the arising and observed data for eight consecutive days. These evaluations and calculations are carried out starting from sorting, keeping and collecting. Nurse assistants monitored by the head of the room do sorting, keeping and collecting in each room, involving cleaning service (CS). CS has the responsibility in the process of collection, transportation and weighing which is then transported to a temporary shelter. This weighing process will be the data arising (kg).

The method of collecting field data is carried out according to the schedule of transporting garbage to the Temporary Shelter (TPS) by CS every morning and afternoon. Data of arising of rice waste is taken every transportation period. The frequency of sampling was carried out for eight consecutive days.

Statistical Analysis

Statistical analysis using Originpro software, which is homogeneity of morning and afternoon of arising of rice waste data for eight consecutive days, was tested using Levene's Test (Absolute Deviations), with the results of population variations are or are not significantly different. Originpro is also used to test regression between latent variables. Analysis to test the relationship between latent variables and indicators uses SEM WarpPLS approach.

Results and Discussion

Rice Waste Analysis

Data recapitulation of arising of rice waste for eight consecutive days in the morning (table 3.1), comes from rice served at 200 g per patient in the morning and 300 g per patient in the evening. Arising of rice waste in the afternoon (table 3.2), comes from rice served at 300 g per patient:



Table 3.1: Data recapitulation of arising of rice waste (morning)

Inpatients Room	Days to							
	1	2	3	4	5	6	7	8
1	0.5	2	1.5	1.5	2	3	0.6	3
2	5	4	3.5	3.5	3	2	5	3
3	3	3.5	4.5	2	1	0	0.4	2
4	2.5	7	3	2.5	3	4	3	5
5	3	2.5	3	3	3.5	3.5	2	3
6	7.5	7	5	4.5	4.5	3.5	8	5
7	0.6	0.5	0	0	0	0	0.3	0
8	0.5	0.5	0	0	0	0	0.6	0
9	2	2	3.5	1	1	1.5	0	3
10	1.5	1	2.5	3	3.5	4	2	2
11	0.5	1.5	1.5	1.5	1.5	1.5	1	2
12	1	1	0.1	0.1	0.1	0.1	0	1
13	2.5	1	3	3.5	4	4.5	3	3
14	2.5	2.5	5	3.5	3	3.5	3	3
15	0.4	3	3	2	2	2	2	2
16	0.5	1	1	1	2	2.5	1	2.5
17	1.5	1	2	2	2	2	1.5	2
18	3.5	4	2	2.5	3	3	4	5
19	1.5	1	1.5	1.5	2	1	2	1.5
20	1	0	0.5	0.5	1	2	1.5	2
Average	2.05	2.30	2.31	1.96	2.11	2.18	2.05	2.50
STDev	1.78	1.98	1.57	1.30	1.33	1.45	1.94	1.40
Total (kg)	41	46	46.1	39.1	42.1	43.6	40.9	50
BOR (%)	41.99	42.07	38.65	37.41	40.25	42.55	43.97	50.53

Source: Survey Data

Inpatients rooms 4, 6 and 18 have the highest of arising of rice waste. This is due to the higher quantity of patients, as explained in table 3.3

Table 3.2: Data recapitulation of arising of rice waste (afternoon)

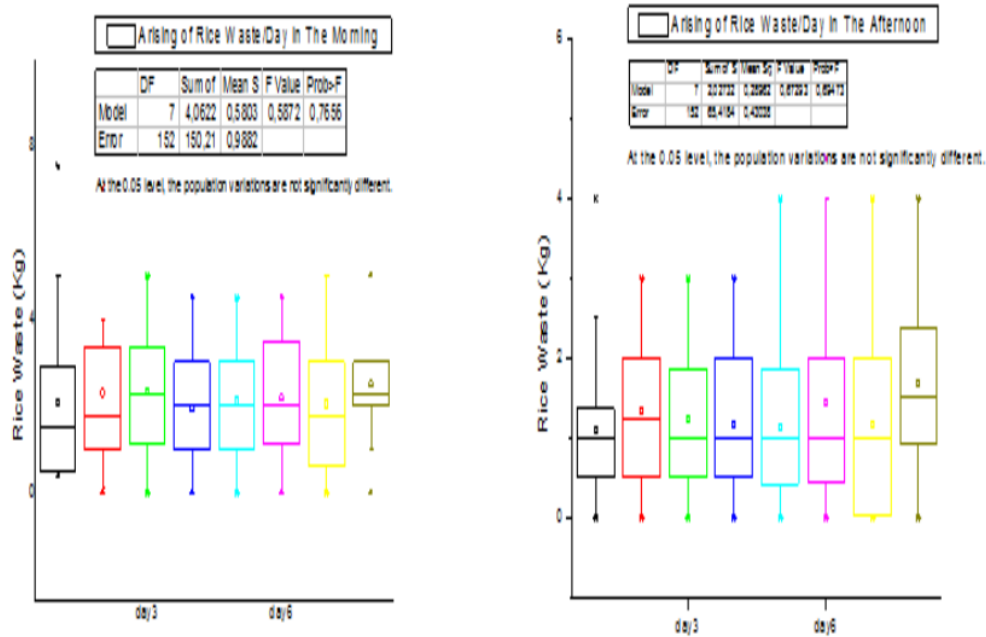
Inpatients Room	Days to							
	1	2	3	4	5	6	7	8
1	0.5	1	0.5	1	0.5	1	0.6	0.9
2	2.5	2	1.5	2	2	1.5	2	1
3	1	2	2	1	0.4	0	0.1	0.8
4	0	3	3	3	4	4.5	4	4
5	1	2	2.5	2	2	3	2	2
6	3	2	3	3	3	4	4	4
7	0	0	0.5	0	0	0	0	0
8	0	0	0	0	0	0	0	0
9	1	0.5	1.5	0.5	0.6	0.7	0	1
10	1	2	1.5	2	1.5	2	2	3
11	4	1	1.5	1	1	2	1	1.5
12	0.6	0.5	0.5	0	0	0	0	0.4
13	1	0.5	0.5	0.5	1	2	1	1.5
14	1	1.5	1	1.5	1	1	0	1.5
15	1.5	3	0.5	1	0.5	0.4	0.5	2.5
16	0.5	1.5	1	1.5	1	1	1	1.5
17	1	0.5	1	0.5	0.6	0.6	0.6	2
18	1.5	3	2.5	2	2.5	3	2	4
19	0.6	1	0.5	1	1	1	1.5	1
20	0.5	0	0	0	0	1	1	1
Average	1.11	1.35	1.25	1.18	1.13	1.44	1.17	1.68
STDev	1.02	1.00	0.94	0.94	1.08	1.32	1.22	1.24
Total (kg)	22.2	27	25	23.5	22.6	28.7	23.3	33.6
BOR (%)	42.07	42.07	38.65	37.41	40.25	42.55	43.97	50.53

Source: Survey Data

Higher and lower value of arising of rice waste is caused by the number of patients as described in Figures 3.2 and 3.3, namely latent variable patients affect latent variable Rice.

The results of Levene's Test and ANOVA data of arising of rice waste each room in the morning and afternoon, *Graph 3.1*:

Graph 3.1. Arising of Rice Waste in The Morning and Afternoon



Data of arising of rice waste in the morning and afternoon was tested using the Levene's Test (Absolute Deviations) Originpro software, having population variations are not significantly different. Data recapitulation of arising of rice waste during the day for eight consecutive days is listed in table 3.1, table 3.2 and graph 3.1 above.

Variable Analysis

Variable analysis is used to test the relationship between latent variables. The recapitulation data of latent variable of Rice (arising of rice waste) is presented as in Tables 3.1 and 3.2, recapitulation data of latent variable of patients and BOR in Tables 3.3 and 3.4:



Table 3.3: Data Recapitulation of Patient (morning and afternoon)

Inpatients Room	Days to							
	1	2	3	4	5	6	7	8
1	4	6	6	8	10	11	10	10
2	10	9	7	8	8	9	10	8
3	12	8	9	5	3	1	2	6
4	33	32	32	31	31	33	39	41
5	11	10	12	11	11	12	13	14
6	26	25	25	26	25	26	31	31
7	5	5	2	2	2	2	2	2
8	1	1	1	1	1	1	3	4
9	6	8	7	2	6	6	1	9
10	19	18	18	18	19	19	23	26
11	14	15	12	13	14	15	14	15
12	3	2	1	1	1	1	1	4
13	12	12	11	11	12	14	15	14
14	13	14	10	9	9	9	9	13
15	9	12	5	4	4	5	6	12
16	10	12	11	11	12	11	12	15
17	3	2	4	4	4	6	8	12
18	28	26	25	25	34	36	28	27
19	10	11	12	12	12	13	11	11
20	8	8	8	9	9	10	10	11
Average	11.85	11.80	10.90	10.55	11.35	12.00	12.40	14.25
STDev	8.63	8.21	8.34	8.56	9.42	9.96	10.45	9.85

Source: Survey Data



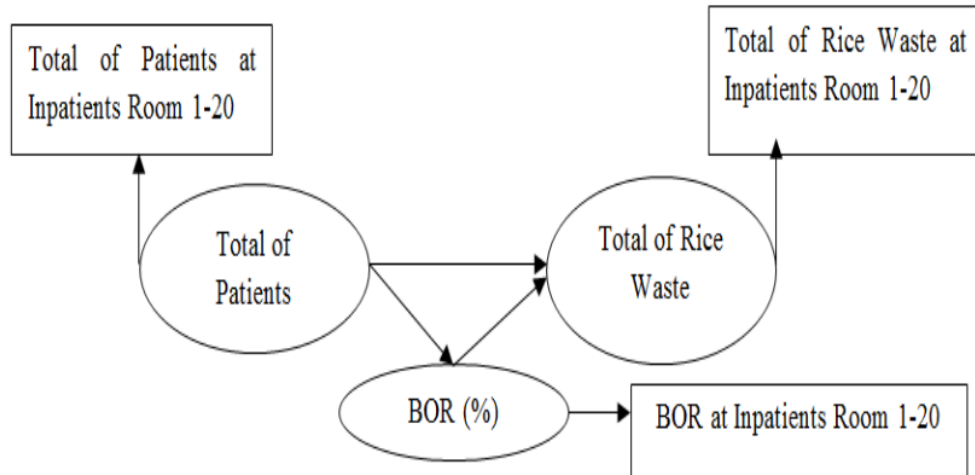
Table 3.4: Data Recapitulation of BOR morning and afternoon (%)

Inpatients Room	Days to							
	1	2	3	4	5	6	7	8
1	21.05	31.58	33.33	44.44	55.56	61.11	55.56	55.56
2	50	45	35	40	40	45	50	40
3	34.29	22.86	25.71	14.29	8.57	2.86	5.71	17.14
4	56.9	55.17	55.17	53.45	53.45	56.9	67.24	70.69
5	30.56	27.78	33.33	30.56	30.56	33.33	36.11	38.89
6	42.62	40.98	40.98	42.62	40.98	42.62	50.82	50.82
7	62.5	62.5	25	25	25	25	25	25
8	11.11	11.11	11.11	11.11	11.11	11.11	33.33	44.44
9	20	26.67	23.33	6.67	20	20	3.33	30
10	44.19	41.86	41.86	41.86	44.19	44.19	53.49	60.47
11	34.15	36.59	29.27	31.71	34.15	36.59	34.15	36.59
12	50	33.33	16.67	16.67	16.67	16.67	16.67	66.67
13	70.59	70.59	64.71	64.71	70.59	82.35	88.24	82.35
14	59.09	63.64	45.45	40.91	40.91	40.91	40.91	59.09
15	37.5	50	20.83	16.67	16.67	20.83	25	50
16	40	48	44	44	48	44	48	60
17	13.64	9.09	16	16	16	24	32	48
18	58.33	54.17	51.02	51.02	69.39	73.47	57.14	55.1
19	41.67	45.83	50	50	50	54.17	45.83	45.83
20	61.54	61.54	61.54	69.23	69.23	76.92	76.92	84.62
Average	41.99	41.91	36.22	35.55	38.05	40.60	42.27	51.06
STDev	17.00	17.15	15.47	18.02	19.76	22.16	21.81	17.53

Source: Survey Data

Model of the relationship between latent variables and their indicators in Figure 3.1:

Figure 3.1. Model Latent Variable and Their Indicators



Furthermore, the model processed using WarpPLS software produces the following models in Figure 3.2 and Figure 3.3:

Figure 3.2. Latent Variable Model of Arising of Rice Waste in The Morning (Software WarpPLS)

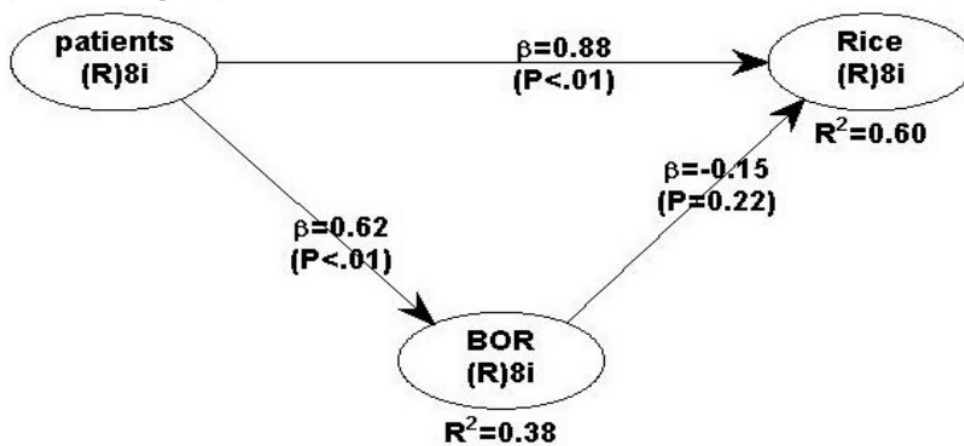
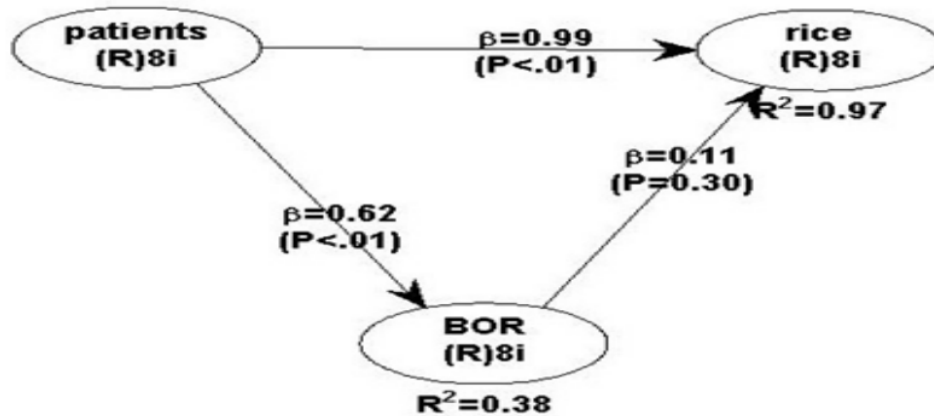


Figure 3.3. Latent Variable Model of Arising of Rice Waste in The Afternoon
(Software WarpPLS)



Based on the test results the direct effect in Figures 3.2 and 3.3 is known as follows:

1. Path coefficient from latent variable of patients (Total of Patients) to latent variable of BOR is positive. This shows that latent variable of patient has a positive effect on latent variable of BOR with a value of 0.62. p-values value <0.001 , which means it is smaller than 0.05 significance, then latent variable of patient significantly influences latent variable of BOR (in the morning and in the afternoon)
2. Path coefficient from latent variable of patients (Total of Patient) to latents variable Rice (Total of Rice Waste), is positive. This shows that latent variable of patients has a positive effect on the latent variable of rice with a value of 0.88 (in the morning) and 0.99 (in the afternoon). P-values of value <0.001 (morning and afternoon), means it is smaller than 0.05 significance, then the latent variable of patient significantly influences latent variable of rice.
3. Path coefficient from latent variable of BOR to latent variable of Rice, is negative (morning and afternoon). This shows that latent variable of BOR has no influence (negative) on the latent variable of Rice. P-Values value = 0.22 (morning) and 0.30 (afternoon), which means that it is greater than 0.05 significance, then latent variable of BOR does not significantly influence latent variable of Rice.

Based on the discussion of direct influence test numbers 1 through 3, it concludes that BOR is not a mediator variable.

Regression of Variables

The results of statistical regression analysis used Originpro between latent variables Patients (Total of Patients) with latent variable rice (Total of Rice Waste) at morning and afternoon:

Figure 3.4. Regression Total of Patients with Total of Rice Waste (morning)

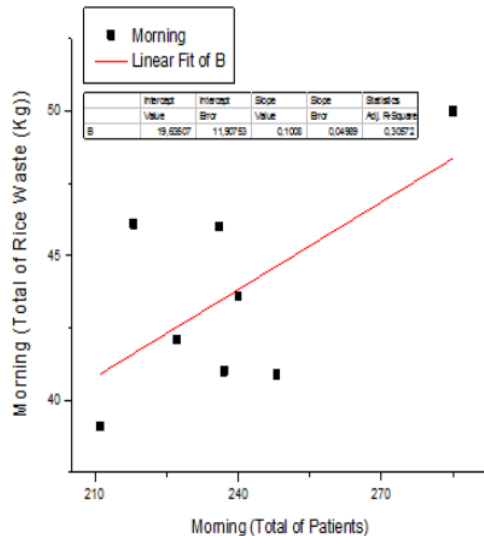


Figure 3.5. Regression Total of Patients with Total of Rice Waste (afternoon)

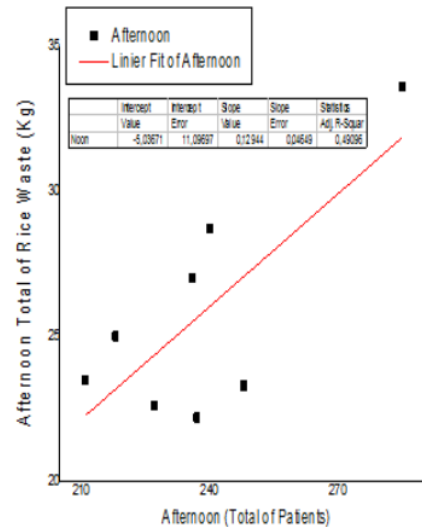


Figure 3.4 shows the equation $y = 0.1008x + 19.63507$ with Adj. R-Square 0.30572, Figure 3.5 equation $y = 0.12944x - 5.03671$ with Adj. R-Square 0.49096 where “x” is latent variable of patients and “y” is latent variable of Rice.

Arising of Rice Waste

Rice of 800 g per day is presented, resulting in the arising of rice waste from the calculation in the field for eight consecutive days, namely in the morning (arising of rice waste in the evening and morning) and afternoon is 36.25% or 0.29 kg / patient / day or 69.34 kg / day with a BOR of 42.19% and a total of 238 patients. Based on the calculation of the regression equation with 238 patients, the arising of rice waste is 43.63 kg (morning) and 25.77 (afternoon) so that the total is 69.40 kg / day or 0.29 kg / patient / day. Table 3.5 shows the average arising of rice waste and BOR as follows:

Table 3.5: Recapitulation of average arising of rice waste, total of patients dan BOR



Days to	Rice Waste	Total / Day	Total of Patients	Total / patients (3/4)	BOR (%)
1	2	3	4	5	6
1-mor	41	63.2	237	0.27	42.07
1-aft	22.2				
2-mor	46	73	236	0.31	42.07
2-aft	27				
3-mor	46.1	71.1	218	0.33	38.65
3-aft	25				
4-mor	39.1	62.6	211	0.30	37.41
4-aft	23.5				
5-mor	42.1	64.7	227	0.29	40.25
5-aft	22.6				
6-mor	43.6	72.3	240	0.30	42.55
6-aft	28.7				
7-mor	40.9	64.2	248	0.26	43.97
7-aft	23.3				
8-mor	50	83.6	285	0.29	50.53
8-aft	33.6				
		69.34	238	0.29	42.19

Source: Calculation Data

Note: mor is morning and aft is afternoon

Conclusion

Variable regression in the morning and afternoon, resulting in the remainder of inpatient service activities in the form of rice waste that can be utilised quantitatively to the next process as conveyed by journals and books as follows: making ethanol from raw materials of food waste, not only able to solve environmental problems, but can also provide renewable energy biofuels (Huang et al., 2015). Bioconversion by insects is a promising thing and provides an alternative to reduce food waste (Problem, 2019); (Nyakeri et al., 2017), and insects require large amounts of food waste on industrial production scale (Giroud et al., 2016). Therefore, researchers believe that there is a need for further research on the bioconversion of food waste in hospitals.

Acknowledgement



Bagus Dadang Prasetyo gratefully acknowledges RSPAD Gatot Soebroto, Hospital of RS dr. Soepraoen, foundation of Yayasan Wahana Bhakti Karya Husada, *Health Polytechnic RS dr. Soepraoen and Brawijaya University which have helped in this research.*



- Aschemann-witzel, J. et al. (2015) 'Consumer-Related Food Waste: Causes and Potential for Action', pp. 6457–6477. <https://doi.org/10.3390/su7066457>
- Aschemann-Witzel, J., de Hooge, I. D. and Normann, A. (2016) 'Consumer-Related Food Waste: Role of Food Marketing and Retailers and Potential for Action', *Journal of International Food and Agribusiness Marketing*. Taylor & Francis, 28(3), pp. 271–285. <https://doi.org/10.1080/08974438.2015.1110549>
- Aschemann-witzel, J. and Hooge, I. E. De (2018) 'Fine-Tuning the Fight Against Food Waste'. <https://doi.org/10.1177/0276146718763251>
- Ceuppens, S. et al. (2016) 'The heterogeneity in the type of shelf life label and storage instructions on refrigerated foods in supermarkets in Belgium and illustration of its impact on assessing the *Listeria monocytogenes* threshold level of 100 CFU / g', *Food Control*. Elsevier Ltd, 59, pp. 377–385. <https://doi.org/10.1016/j.foodcont.2015.06.009>
- Chalak, A. et al. (2020) 'The global economic and regulatory determinants of household food waste generation : A cross-country analysis', *WASTE MANAGEMENT*. Elsevier Ltd, 2020(2015). <https://doi.org/10.1016/j.wasman.2015.11.040>
- Corrado, S. and Sala, S. (2018) 'Food waste accounting along global and European food supply chains : State of the art and outlook', *Waste Management*. The Author(s), 79, pp. 120–131. <https://doi.org/10.1016/j.wasman.2018.07.032>
- Dias-Ferreira, C., Santos, T. and Oliveira, V. (2015) 'Hospital food waste and environmental and economic indicators - A Portuguese case study', *Waste Management*. Elsevier Ltd, 46, pp. 146–154. <https://doi.org/10.1016/j.wasman.2015.09.025>
- Giroud, L. et al. (2016) *Insect Mass Production Technologies, Insects as Sustainable Food Ingredients*. <https://doi.org/10.1016/B978-0-12-802856-8.00006-5>
- Goonan, S. et al. (2014) 'Getting a Taste for Food Waste : A Mixed Methods', *Journal of the Academy of Nutrition and Dietetics*. Elsevier Inc, 114(1), pp. 63–71. <https://doi.org/10.1016/j.jand.2013.09.022>
- Herpen, E. Van et al. (2019) 'Comparing wasted apples and oranges : An assessment of methods to measure household food waste', *Waste Management*. The Authors, 88, pp. 71–84. <https://doi.org/10.1016/j.wasman.2019.03.013>
- Hooge, I. E. De et al. (2017) 'This apple is too ugly for me ! Consumer preferences for suboptimal food products in the supermarket and at home', *Food Quality and Preference*. Elsevier Ltd, 56, pp. 80–92. <https://doi.org/10.1016/j.foodqual.2016.09.012>
- Huang, H. et al. (2015) 'Ethanol Production from Food Waste at High Solids Content with Vacuum Recovery Technology'. <https://doi.org/10.1021/jf5054029>
- Mullen, A. M. et al. (2015) *Classification and target compounds*. <https://doi.org/10.1016/B978-0-12-800351-0.00002-X>



- 7 Nyakeri, E. M. et al. (2017) 'Valorisation of organic waste material: Growth performance of wild black soldier fly larvae (*Hermetia illucens*) reared on different organic wastes', *Journal of Insects as Food and Feed*, 3(3), pp. 193–202. <https://doi.org/10.3920/JIFF2017.0004>
- 6 Ofei, K. T. et al. (2015) 'Effect of meal portion size choice on plate waste generation among patients with different nutritional status. An investigation using Dietary Intake Monitoring System (DIMS)', *Appetite*. Elsevier Ltd, 91, pp. 157–164. <https://doi.org/10.1016/j.appet.2015.04.043>
- 43 Otles, Semih; Despoudi, Stella; Bucatariu, Camelia; Kartal, C. (2015) Valorization, and Sustainability in the Food Industry, *Food Waste Recovery*. Elsevier Inc. <https://doi.org/10.1016/B978-0-12-800351-0.00001-8>
- 10 Parizeau, K., Massow, M. Von and Martin, R. (2015) 'Household-level dynamics of food waste production and related beliefs, attitudes, and behaviours in Guelph, Ontario', *Waste Management*. Elsevier Ltd, 35, pp. 207–217. <https://doi.org/10.1016/j.wasman.2014.09.019>
- 14 Peraturan Menteri Kesehatan Republik Indonesia Nomor 56 Tahun 2014 tentang Klasifikasi dan Perizinan Rumah Sakit
- Peraturan Menteri Kesehatan Republik Indonesia Nomor 7 Tahun 2019 tentang Kesehatan Lingkungan Rumah Sakit
- 35 Problem, W. (2019) *Food Waste Management: Solving the Wicked Problem*. <https://doi.org/10.1007/978-3-030-20561-4>
- 13 Roodhuyzen, D. M. A. et al. (2017) 'Putting together the puzzle of consumer food waste: Towards an integral perspective', *Trends in Food Science & Technology*. Elsevier Ltd. <https://doi.org/10.1016/j.tifs.2017.07.009>
- 12 Schanes, K., Dobernig, K. and Gözet, B. (2018) 'SC', *Journal of Cleaner Production*. Elsevier Ltd. <https://doi.org/10.1016/j.jclepro.2018.02.030>
- Schiavone, S., Pelullo, C. P. and Attenu, F. (2019) 'Patient evaluation of food waste in three hospitals in southern Italy', *International Journal of Environmental Research and Public Health*, 16(22). <https://doi.org/10.3390/ijerph16224330>

Bagus Dadang Prasetiyo, ST., MT.

ORIGINALITY REPORT

13%

SIMILARITY INDEX

27%

INTERNET SOURCES

40%

PUBLICATIONS

20%

STUDENT PAPERS

PRIMARY SOURCES

1	ijicc.net Internet Source	5%
2	Submitted to Universitas Brawijaya Student Paper	5%
3	Submitted to Leeds Beckett University Student Paper	1%
4	Submitted to University of Edinburgh Student Paper	1%
5	Submitted to Temple University Student Paper	1%
6	vbn.aau.dk Internet Source	1%
7	Submitted to University of Modena and Reggio Emilia Student Paper	1%
8	Annesha Makhal, Kirsten Robertson, Maree Thyne, Miranda Miroso. "Normalising the "ugly" to reduce food waste: Exploring the socialisations that form appearance	1%

preferences for fresh fruits and vegetables",
Journal of Consumer Behaviour, 2020

Publication

9	journal.ue-varna.bg Internet Source	1 %
10	Submitted to City University of Hong Kong Student Paper	1 %
11	Submitted to University of Leeds Student Paper	1 %
12	www.emerald.com Internet Source	1 %
13	Submitted to Anglia Ruskin University Student Paper	1 %
14	repository.unair.ac.id Internet Source	1 %
15	Siele Ceuppens, Sigrid Van Boxstael, Astrid Westyn, Frank Devlieghere, Mieke Uyttendaele. "The heterogeneity in the type of shelf life label and storage instructions on refrigerated foods in supermarkets in Belgium and illustration of its impact on assessing the Listeria monocytogenes threshold level of 100 CFU/g", Food Control, 2016 Publication	1 %
16	Submitted to University of St Andrews Student Paper	1 %

17	Submitted to Wageningen University Student Paper	<1 %
18	dokumen.pub Internet Source	<1 %
19	Submitted to University of Florida Student Paper	<1 %
20	researchers.mq.edu.au Internet Source	<1 %
21	curis.ku.dk Internet Source	<1 %
22	ejournal.umm.ac.id Internet Source	<1 %
23	www.researchgate.net Internet Source	<1 %
24	Submitted to Le Cordon Bleu Australia Student Paper	<1 %
25	etheses.whiterose.ac.uk Internet Source	<1 %
26	onlinelibrary.wiley.com Internet Source	<1 %
27	www.mdpi.com Internet Source	<1 %
28	"Food Waste Management", Springer Science and Business Media LLC, 2020	<1 %

29

Semih Otles, Stella Despoudi, Camelia Bucatariu, Canan Kartal. "Food waste management, valorization, and sustainability in the food industry", Elsevier BV, 2015

Publication

<1 %

30

orca.cf.ac.uk

Internet Source

<1 %

31

mafiadoc.com

Internet Source

<1 %

32

Submitted to Nottingham Trent University

Student Paper

<1 %

33

www.springerprofessional.de

Internet Source

<1 %

34

eu-refresh.org

Internet Source

<1 %

35

lib.dr.iastate.edu

Internet Source

<1 %

36

Ramona Teuber, Jørgen Dejgård Jensen. "Definitions, measurement, and drivers of food loss and waste", Elsevier BV, 2020

Publication

<1 %

37

repo-dosen.ulm.ac.id

Internet Source

<1 %

38

researchportal.port.ac.uk

Internet Source

<1 %

39

worldwidescience.org

Internet Source

<1 %

40

www.oecd.org

Internet Source

<1 %

41

"Information and Communication Technologies in Tourism 2018", Springer Science and Business Media LLC, 2018

Publication

<1 %

42

Submitted to Sheffield Hallam University

Student Paper

<1 %

43

Submitted to University of West London

Student Paper

<1 %

44

brage.bibsys.no

Internet Source

<1 %

45

digitalassets.lib.berkeley.edu

Internet Source

<1 %

46

jukuri.luke.fi

Internet Source

<1 %

47

uobrep.openrepository.com

Internet Source

<1 %

48

www.scribd.com

Internet Source

<1 %

49

"Sustainable Food Waste Management",
Springer Science and Business Media LLC,
2020

Publication

<1 %

50

Faradila Sintia, Susilawati ., Fathmawati ..
"Gambaran Higiene Sanitasi Pengelolaan
Makanan di Rumah Sakit ABC Kabupaten
Kubu Raya Kalimantan Barat", Jurnal Sehat
Mandiri, 2020

Publication

<1 %

51

Jessica Aschemann-Witzel, Ilona E. de Hooge,
Valérie L. Almli, Marije Oostindjer. "Fine-
Tuning the Fight Against Food Waste", Journal
of Macromarketing, 2018

Publication

<1 %

52

Adrian Vargas-Lopez, Clara Cicatiello,
Ludovica Principato, Luca Secondi. "Consumer
expenditure, elasticity and value of food
waste: A Quadratic Almost Ideal Demand
System for evaluating changes in Mexico
during COVID-19", Socio-Economic Planning
Sciences, 2021

Publication

<1 %

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off

Bagus Dadang Prasetiyo, ST., MT.

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15