

Guest supply pressures on environment: a hotel case study

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ABSTRACT: Green environment is a strategic tool to enhance marketing strategy especially in tourism area. The objective of this study is to analyze the impacts of solid wastes disposed by hotels in Bali. To meet the objective of this research archival data from 6 hotels with different classifications and resort areas would be applied. Daily guest room supplies waste disposals would be taken from House Keeping Department of each hotel for six months observation. Electronic scale would be used to weigh each guest supplies disposed. It is hoped that the findings of this study would widen the horizon of stakeholders in tourism area in an effort to maintain green environment and hence improve the competitiveness of a tourism destination.

Keywords: green environment, solid wastes, daily guest room supplies, competitiveness.

1 INTRODUCTION

It is known from the literature that hotel industry contributes a big role in a country's economy. Hotel industry provides employment, offers products and services to society, and pays tax to support government activities. In providing products and services, hotel industry needs inputs like skilled employees, fresh produces, stationary supplies, guest supplies, cleaning supplies, electricity, fuel, and so on. In producing the offered product and services, hotel industry also disposes wastes to the environment. These wastes like carbon dioxide, chemical water, and solid waste from guest rooms would definitely harm the environment. The impacts of hotel wastes on the environment are still a challenging topic for empirical research.

Scholars like Chan & Mak (2004) and Charara et al. (2011) had conducted research in this area. Chan and Mak study investigated the impacts of diesel fuel consumption in Hong Kong hotels while Charara et al. (2011) studied the water consumption in hotels in Barbados. Study of Robinot & Giannelloni (2010) examined green attributes of a hotel to guests' overall satisfaction. Bali is a province of the Republic of Indonesia that relies its pro-

vincial income on tourism. Table 1 below gives a short picture of Bali's tourism industry.

Table 1. Bali Province tourism performances in 2016.

Variables	Performances
Direct foreign Arrivals	4,927,937
Room occupancy star hotel	54.47 %
Total room number star hotels	29,563
ALOS star Hotels	3.03 nights
Foreign tourist Expenditure	USD 143.92
/person/day	

Source: Bali Tourism Government Office. ALOS: Average Length of Stay

From table 1, it can be seen that in 2016, star hotels in Bali produced 48,792 room nights. In producing these room nights, star hotels also incurred wastes in the form of solid and liquid wastes that give pressure to the environment. From table 1, one could not be able to infer how severe the pressure to the environment due to solid waste from hotel guest room per day. This situation motivated us to do empirical research so that everyone will know how the solid wastes from hotel guest rooms affect the environment. Another point that to the best of our knowledge; this study was the first one conducted in star hotels in Bali covering Sanur, Nusa Dua, Seminyak, and Ubud area. By this, we could com-

pare the impacts for each area. Solid wastes from guest rooms consist of paper, plastics, and slippers. In this study, the focus would be on solid wastes of toilet paper and shower gel packaging.

From the above situation, the research question posed is how is the impact of solid waste from hotel guest rooms on the environment? In particular, how severe the impacts caused by disposal of toilet paper and shower gel packaging? The objectives of this research are the following: First, to investigate the impacts of toilet paper and shower gel packaging on the environment. Second, it is hoped that the findings of this study could be considered in determining green hotel policy and management. The findings of this research will contribute to the following: first, to provide empirical evidence on the impacts of toilet paper and shower gel packaging on the environment. Second, to give a new horizon of how hotel industry should contribute to minimizing the impacts of solid waste from hotel guest rooms.

2 RESEARCH LITERATURES

Scholars have done several studies on the impacts of wastes produced by the hotel industry. Chan & Mak (2004) conducted a study to examine the pollutant emitted by diesel fuel in Hong Kong hotels. Their study found that floor area was a major and statistically variable in explaining the pollutant emission. Another important finding of their study was that green measures were still a passive tool in enhancing green awareness. Enz & Siguaw (1999) conducted a study to examine the impacts of environment best practice amongst hotels. They found that all of the hotels' cost savings, operating efficiencies, and excellent marketing opportunities are derived from their environmental practices. Insch (2011) conducted a study to analyze the impacts of applying green destination brand on positioning strategy. Using an in-depth case study of New Zealand's destination, his study found that green environment was a core of its brand. In linking this study to the hotel as a final destination, hotel management should in such a way elevate green concept application as to enhance its marketing strategy. Chan & Lam (2001) conducted a field study to know the impact of municipal solid wastes produced by hotel industry in Hong Kong. Using 20 midscale hotels as samples in 1996, their study found that solid wastes made of plastic material were ranked the first and newspapers was ranked the second. In doing their study, they used an electronic scale to weigh the waste produced by the Hong Kong hotel industry. Based on the findings of their study, they suggested that the Hong Kong hotel management should impose green indicators to indi-

cate the maximum acceptable amount of solid waste produced. This study was inspired by all studies cited above. Yet, it differs in its focus. The focus of this study is to estimate the amount of toilet paper and shower gel packaging in different types of hotel in Bali.

3 RESEARCH METHODS

Archival data were used to answer the research question. Solid waste data were taken from daily housekeeping report of the respective hotels. Solid wastes under the study were toilet paper and shower gel packaging. These solid wastes were chosen because amongst guest supplies used in the hotel; these wastes had the highest frequency of replenishment, hence giving relatively higher pressure to the environment. Sample hotels were 6-star hotels: two located on Sanur Area, one on Nusa Dua area, two on Seminyak, and one on Ubud Area. These six hotels were chosen as samples of this research due to the willingness of the management of these hotels to support this study by providing empirical data. To estimate the weight of solid wastes disposed of toilet paper and shower gel packaging, the electronic scale was used.

4 EMPIRICAL RESULTS AND DISCUSSIONS

In this Descriptive Statistics section, steps in estimating waste disposal and conclusions are discussed.

By location: the lowest volatility for toilet paper (TP) consumption was Sanur Area with a coefficient of variation (CV) of 17%. While the highest volatility was sample hotels in Seminyak area with a coefficient of variation of 50%. For shower gel packaging (BG), the lowest volatility was Nusa Dua area with a coefficient of variation of 13 %, while the highest was Seminyak area with CV of 65 %. Nusa Dua area was the most stable one for its number of rooms occupied with a coefficient of variation of 8 % while Seminyak area was the most volatile with 44 % of the coefficient of variation for its room occupied. By star classification: 3-star hotel was the most stable one for its TP waste disposal while 4 and 5-star hotel with 46 % for their coefficient of variation for waste disposal of TP. For BG, 3-star hotel with the lowest volatility for its waste disposal with CV of 8% while 5-star hotels were the highest with 53% CV for its BG waste disposal. For a number of occupied rooms, 5-star hotels were the most stable one with 17% CV while 4-star hotels were the most volatile one with 55% CV. Finally, for all samples, the most volatile

waste disposal was BG with 64%CV which was close enough to TP with 63% CV.

The following steps were done to apply the formula (1). First, average room occupancy for each sample hotel was used to calculate a number of rooms occupied. For instance, if average monthly occupancy for January 2017 was 43%, and a number of rooms available per night were 200 rooms; then a number of rooms occupied for January 2017 was $(43\%)(200)(31) = 2,666$ rooms. Second, a factor of waste disposal was calculated. Assuming that in January 2017 total toilet paper placed in the guest rooms were 1,494 rolls. Using this data, the factor for toilet paper for January 2017 was $(1494)/(2666) = 0.56$. This factor means that each roll of toilet paper would be replenished every $(1)/(0.56) = 1.78$ days. In January 2017, total toilet paper wastes were $(1494)/(1.78) = 839$ rolls (rounded). Third, using an electronic scale, it was found that the net weight of toilet paper was 125.077 grams and its paper roll was 12.348 grams. Finally, using this example in January 2017, total wastes disposal for toilet paper were $(839)(125.077 \text{ grams}) = 104,939.60$ grams. Waste disposals for paper rolls were $(839)(12.348 \text{ grams}) = 10,359.97$ grams. Hence, total waste disposal for toilet paper and its paper rolls in January 2017 was 115,299.575 grams. The same procedures were applied to calculate total wastes of shower gel packaging for each hotel.

It was estimated that total wastes disposal for toilet paper, paper rolls, and shower gel packaging from January to June 2017 for 6 sample hotels amounted to 8,989,009,047.470 grams. Out of this number, toilet paper contributed the most = 8,180,804,730.99 grams = 91.01%; followed by roll paper 807,635,111.320 grams = 8.98%, and shower gel packaging 569,205.166 grams = 0.01 %. Simply stated, the biggest waste disposal was toilet paper, then followed by its complementary product; its paper roll. While shower gel packaging only contributed waste disposal amounted to 0.01%. Monthly waste disposals revealed the following: the highest volume of solid waste disposals were produced by sample hotels located in Sanur area. This is due to the hotels in Sanur area had the highest room occupancy and consumption factor for toilet paper compared to other sample hotels in other areas. While the least volume was produced by hotel samples in Seminyak area. It is known from the literature that the government and international institutions on sustainable environment already issued a guideline for

environmental management in an effort to achieve green environment. Due to the dynamics of every business activities especially in the hospitality business, it would be better to always bear in mind that nature should be preserved by minimizing solid waste disposals.

5 CONCLUSIONS

First, that toilet paper was the biggest waste disposals produced by hotel compared to other solid wastes. Second, in percentage, toilet paper contributed 91.01% of total wastes, while roll paper only 8.98%, and shower gel packaging 0.01 %. Finally, it is too premature to state whether the impact of solid waste disposals from these 6 sample hotels is severe or not to physical Bali environment, since the standard for this situation is not yet determined when this study was conducted. As this study used only six hotels as a sample then its conclusions could not be generalized. On the other hand, only 2 kinds of solid waste disposal were used on this study, while there are other solid waste disposals that contribute to an environmental pressure that could be analyzed like plastic caps, toothbrushes, paper, and so forth. Based on these limitations, it is strongly recommended to conduct a more comprehensive study on waste disposals produced by hotels in Bali.

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APPENDICES

Table 1. Descriptive statistics on variables used in this study

	By Location											
	Sanur			Seminyak			Nusa dua			Ubud		
	TP	BG	Occ.	TP	BG	Occ.	TP	BG	Occ.	TP	BG	Occ.
Mean	2863	2064	5241	2252	1882	4819	6017	5667	9324	1200	N/A	1889
Median	2950	2000	5262	1729	1416	4568	5300	6000	9381	1200	N/A	1889
Mode	3120	1900	6485	N/A	N/A	N/A	5250	6000	N/A	N/A	N/A	N/A
StdDev.	489	559	2227	1124	1217	2112	1890	753	700	355	N/A	616
Minimum	2000	1250	2660	925	773	2182	3750	4500	8111	750	N/A	1189
Maximum	3500	3100	8917	4100	4714	7560	9000	6500	10102	1650	N/A	2799
C.V.	0.17	0.27	0.42	0.50	0.65	0.44	0.31	0.13	0.08	0.30	N/A	0.33
	By Star Classifications											
	3 star			4 star			5 star					
	TP	BG	Occ.	TP	BG	Occ.	TP	BG	Occ.			
Mean	1454	902	2881	2339	2489	3969	4488	3825	8273			
Median	1535	907	2888	2500	2464	3050	3615	3600	8514			
Mode	N/A	N/A	N/A	3200	N/A	N/A	3120	6000	6485			
Std Dev.	316	74	531	1081	905	2200	2064	2021	1381			
Minimum	925	773	2182	750	1460	1189	2160	1250	10102			
Maximum	1832	987	3615	4100	4714	7560	9000	6500	99277			
C.V.	0.22	0.08	0.18	0.46	0.36	0.55	0.46	0.53	0.17			
	All Samples											
	Toilet paper			Bath gel			Occupied rooms					
Mean	2908			2712			5222					
Median	2890			2250			4884					
Mode	3120			6000			6485					
Std Dev.	1818			1744			2816					
Minimum	750			773			1189					
Maximum	9000			6500			10102					
C.V.	0.63			0.64			0.54					

TP: Toilet paper. BG: Bath gel packaging. Occ.: Occupied rooms. StdDev.: Standard Deviation. C.V.: Coefficient of Variation.

N/A: Not Available