

Linen Management Based on Green Productivity in Renaissance Bali Uluwatu Resort & Spa

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Abstract: This study aims to determine the management of linen based on Green Productivity at Renaissance Bali Uluwatu Resort & Spa and to analyze linen needs at Renaissance Bali Uluwatu. This research data collection method was carried out by observation, interviews, and documentation. Determination of the selected informants is the right informant to know the expected information, namely Housekeeper or Assistant Housekeeper as key informants in obtaining information and Room Attendant as operational actors to obtain information on linen usage. Data collection using structured interviews directly face to face. The data analysis technique uses descriptive qualitative and quantitative analysis in which the author analyzes, describes, and summarizes various conditions, and the data collected is the result of data processing from the problems studied. The results of this study indicate that Green Productivity-based linen management at Renaissance Bali Uluwatu Resort & Spa can reduce liquid waste emissions, maximize renewable energy, and maximize the quantity of room cleaning. However, there are still things that need to be considered, namely using plastic wrap and the sorting of dirty linen is less attention to spot linens that have been washed previously. The results of the linen needs at Renaissance Bali Uluwatu Resort & Spa all types of linen do not meet the required parstock 3 par linen standards so that the productivity of the Room Attendant is not optimal, one of which is the Housekeeping Department does not have full rights to carry out the linen washing process and linen orders must be assisted by De Partie.

Keywords: green productivity, linen management, housekeeping department

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Introduction

Hotel is one of the supporting facilities for tourism activities which is managed by the owner professionally by providing accommodation, food and beverage services and other supporting facilities needed by customers (Sukriadi et al., 2021). Renaissance Bali Uluwatu Resort & Spa as a 5-star hotel in the form of a Chain under the management of Marriott International in Bali has 208 rooms with 7 different types. In the context of industrial activities in environmental-based activities, Marriott International has a target in 2025, namely 15% reduction in water use, 30% reduction in carbon, 45% reduction in waste disposal and 50% reduction in food waste, 30% renewable electricity, until the target of 100% hotels have certification recognized as sustainable standards (Sorenson, 2020).

Treatment management for hygiene and sewage treatment has developed very advanced. Companies engaged in the service industry must be required to carry out activities that are better in terms of operations and prioritize the environmental sector, so that the industry can run better so that it requires several green and sustainability aspects such as: Green Economy, Green Building, Green Tourism to Green Productivity. The focus of green productivity is the evaluation and improvement stage in terms of productivity and protection of the environment, and promoting continuous improvement. This can be done such as: carrying out the process in the best possible system, replacing materials, modifying the process or technology in the system, reducing the concentration of waste, and recycling or recovering, so that innovation is the main key to iterative evaluation actions (Waluyo, 2012).

The development of Green Productivity in Indonesia, clean production was discussed and implemented in 1994. The Green Industry Program started around 2005. Has a special task force, namely the Green Industry Center and the Environmental Assessment Agency for Policy, Climate, and Industrial Quality Assessment, established in 2009 attached to the Ministry of Energy and Mineral Resources (Dr. Ning Yu et al., 2014). The in-

creasingly stringent development of the hotel business to maintain cleanliness and beauty requires sophisticated equipment, equipment and more personal services. To support these activities by having linen used for room equipment (Sukriadi et al., 2021).

Housekeeping department is a very important component of service accommodation and provides a good relationship between accommodation management and guests. The duties of housekeeping are to maintain linen inventory, ensure linen cleanliness, process in linen processing (Mahardika et al., 2020). Hotels have many items that need to be managed so that they are ready to be reused and the most common items include Sheets King and Twin, Pillow Cases, Pillow Protectors, Duvet Covers, Pillows (Microfibre / Polyester), Bath Towels, Hand Towels, Colored Towels Spa, Bath Mats, Face Towels, Bathrobes (Crosbie, 2012).

A less than optimal linen circulation system can exacerbate the problem of limited linen which has an impact on housekeeping productivity in preparing room sales and the next factor is the lack of Linen Runners who are in charge of distributing clean linen to linen storage, and picking up dirty linen brought by Room Attendants. This task is very important because of the smooth flow of work from the laundry to the room and vice versa (Mahardika et al., 2020)

Based on the description above, the authors are interested in conducting research related to linen management at Renaissance Bali Uluwatu Resort & Spa as an effort to solve problems that occur in linen management processing with the Green Productivity method in the Housekeeping Department. Therefore, the author analyzes the problems that occur with the title "Linen Management Based on Green Productivity at Renaissance Bali Uluwatu Resort & Spa".

Method

This research was carried out for six months at the Renaissance Bali Uluwatu Resort & Spa by taking green productivity objects in linen management at the Renaissance Bali Uluwatu Resort & Spa. Research variable is an attribute, value/nature of the object, individual/activity that has a lot of certain variations between one and another that has been determined by the researcher to be studied and searched for information and conclusions drawn (Ridha, 2017). The variables identified and examined in this study were Green Productivity, Room Linen Needs, Inventory Linen, and Par Stock Linen.

The type of data used according to (Sugiyono, 2015) namely qualitative data which means data in the form of words, schemes, and images such as personal documents, notes, words and actions of respondents, documents and quantitative data which means research data in the form of numbers measured using statistics as a test tool for calculating, related to the problem being studied. researched to produce a conclusion. While the data sources used according to (Arikunto, 2013) namely primary data which means data obtained from direct observations, interviews, and documentation conducted on the object of research and secondary data which means data obtained from other sources, such as documents, related to the object under study, also supports the research object. primary data sources that have been obtained from the field.

The key informant method chosen was the high-ranking officers in the styling department such as the Housekeeper or Assistant Housekeeper as key informants to obtain information on management and management thoughts and plans, and Room Attendants as operational actors to obtain information on linen usage activities. The method of data collection in this research is through observation, interviews, and documentation.

The data analysis technique used in this research is descriptive qualitative and quantitative. Qualitative descriptive is used to analyze, describe, and summarize various conditions, situations and various data collected in the form of interviews or observations regarding the researched problems that occur in the field. (Winartha, 2006:155).

Result and Discussion

This sub-chapter discusses the results of the analysis of data and interviews obtained from the Renaissance Bali Uluwatu Resort & Spa hotel, and processed to obtain answers to the problems analyzed to obtain linen management carried out at the hotel based on Green Productivity and room linen needs.

Green Productivity-based linen management at Renaissance Bali Uluwatu Resort & Spa

Green Productivity-based linen management at Renaissance Bali Uluwatu Resort & Spa can be described through the results of observations and interviews with informants, namely Herodion Dwi Krishartok as Housekeeping Manager in the Housekeeping department at the Renaissance Bali Uluwatu Resort & Spa Hotel supported by direct observation for 6 months at Renaissance Bali Uluwatu Resort & Spa. The following is an explanation of the management of green productivity-based linen at the Renaissance Bali Uluwatu Resort & Spa.

Hotel Renaissance Bali Uluwatu Resort & Spa is part of the Marriott Group, in carrying out green activities it is recommended for guests staying to change linen on the third day (attachment 2), because one time washing linen really requires a lot of water and a lot of electricity to run the machine. , with these recommendations greatly helped so that environmental protection can be implemented. In addition, the Room Attendant can shorten the time in cleaning the room in the occupied room type, so that it can clean more rooms.

Inventory to monitor the total number of linens in the area to count stained and torn linens, as well as to check linens that might be repurposed to reduce waste in changing linens that at first glance cannot be used anymore due to stains that are difficult to remove or torn which can be obtained during inventory activities, by means of stains that are difficult to remove, spotting can be done, namely special cleaning to clean it with special cleaning agents for the stain area because it is a strong drug, and sewing areas that may be covered when installing linen in the room so that it can be reused without reducing the initial appearance of the linen when installed in the room. Regular linen washing which is carried out every day still uses outside vendors from the Texkleen company such as sending linen from outside for cleaning linen, until linen is returned to the hotel for reuse. Ordering linen and making linen is not from Housekeeping but from outside so that Housekeeping does not have the authority to order.

Linen management through from dirty linen to clean linen refers to the linen flow along the laundry room inside the hotel and outside vendors. This cycle has nine steps, namely; collect dirty linen, carry dirty linen to the laundry, sort, wash, squeeze, finish, fold, store, move linen to the place of use. In the Dirty Lena classification, it must be sorted based on the level of dirtiness and the type of fabric. When classifying gross grades, flax is divided into three categories: light, medium and very dirty.

1. Receiving

Is the handover stage of dirty linen in a special reception room or that has been determined for reception on a daily basis.

2. Sorting

This is the stage of grouping linen based on its type and calculated before being sent to the laundry vendor.

3. Delivery

The delivery process to the laundry vendor, which has been weighed to be recorded for cost calculation.

4. Washing

This is the stage of washing linen with a special machine, with various stages such as:

a. Free wash is washing without cleaning agents, only pure water.

b. Washing is washing with chemical alkali, detergent, chlorine.

c. Drain is the process of removing water on a special machine with low extract.

d. Main wash is the first rinse to remove chemical residue, alkali, detergent and chlorine using ox-sour and ox-soft chemicals.

e. The final extract is the removal of water at high speed.

5. Extracing

At this stage, squeezed with an extractor machine, to remove water from the washed material.

6. Drying

At this stage, drying is carried out by adjusting the time and machine temperature according to needs, thus each drying is required to be in accordance with the type of linen fiber so as not to damage the texture and fiber of each different type of linen.

7. Ironing

The stages of smoothing are carried out for types of linen sheets with large sizes such as fitted sheet king, top sheet king, duvet cover king, fitted sheet twin, top sheet twin, duvet cover twin to make it neater by using a roller ironing machine.

8. Sorting and Folding

At this stage, it is carried out to select and separate linen that still has special stains that cannot be removed so that it can be separated from clean linen that is ready to use and damaged linen.

9. Delivery and Storing

All linen that is clean and tidy, along with all linen that is old and damaged due to repeated machine-washing processes, is returned to the linen room section accompanied by a calculation of delivery, the amount sent when the linen room is dirty must be returned in the correct amount. same.

Based on direct observations that researchers did at Renaissance Bali Uluwatu Resort & Spa on linen management activities based on Green Productivity at the laundry as follows:

Table 1. Linen Management at Renaissance Bali Uluwatu Resort & Spa

No	Activities	Implementation
1	Dirty Linen Receipt Dirty	Linen from the area Operations are collected in a special room that has been provided with adequate ventilation.
2	Sorting Dirty Linen	- Dirty linen is separated according to the type of linen received - Dirty linen has been separated according to the level of soiling but the process is not carried out immediately, resulting in increasingly difficult to remove dirt.
3	Dispatch of Dirty	Linen Dirty linen is calculated and has been entered in a place where the data is used repeatedly, but the calculation of dirty linen is less accurate, resulting in loss.
4	Linen Washing	Dirty linen is washed <i>regularly</i> with minimal use of cleaning agents, but is combined with heavily stained linen so that it is re-cleaned.
5	Rinsing	Linen is rinsed using a special tool until it is moist so that it speeds up the drying process with a large quantity.
6	Drying	Linen is naturally dried under the hot sun if it is delivered within a day, and put in a tumble dryer if it is shipped quickly.
7	Ironing	Ironing is done in less detail so that the reception gets sloppy results and is still wrinkled.
8	Folding and Receiving	Linen was folded neatly, did not see the stain in detail, so it was sent to <i>the store</i> , wrapped in a thin plastic wrap.
9	Storage	Linen Clean linen is stored behind the <i>Housekeeping Office</i> , close to supervision, has adequate ventilation and is stored in a separate, clean and tidy environment.

Source: Direct Observation of Renaissance Bali Uluwatu Resort & Spa (Data Processed).

Based on Table 1, it can be concluded that the laundry at Renaissance Bali Uluwatu Resort & Spa has carried out management activities according to the specified flow. However, there are things that must be considered by the laundry and de partie.

The runner (looks for dirty linen in the area) such as sorting, until the calculation is carried out by one person, so that the lack of attention to linen stains is difficult to remove, and the calculation is lacking in detail so that there is an error in counting and checking the linen on the runner section. At the reception of dirty linen into clean linen is not done on time, so the work of the room attendant is very hampered resulting in less than optimal room procurement, indirectly affecting the front office in holding room sales.

Campaign green there are several variables in Table 1. that have implemented environmentally friendly concepts such as minimizing the use of cleaning materials that are less environmentally friendly, maximizing the use of natural resources in the drying process, and maximizing the quantity of dirty linen washing at one time. However, it is necessary to pay attention to details in the reception process which still uses plastic wrap from outside, washing, to after washing so that there is no repetition of washing and getting an optimal productivity scheme, and using clean linen wraps that are more environmentally friendly so that the application is environmentally friendly to the maximum.

From the results of observations and interviews (attachments) that have been carried out, Green Productivity is divided into three indicators which are described in the table, namely:

Table 2. Linen Management with *Green Productivity* at Renaissance Bali Uluwatu Resort & Spa.

NO	Indicators <i>Green Productivity</i>	Implementation
1	Minimization of emissions and waste	<ul style="list-style-type: none"> a. Linen in the installed rooms has prioritized environmental friendliness, such as changing linens in <i>stay over</i> on the third day, and spraying <i>disinfectants</i> so that the cleanliness and health of guests can be maintained. b. Room linens that are difficult to remove can still be done <i>spotting</i>, namely special cleaning on stains that are difficult to remove, and torn linens can be sewn back. c. Linen washing activities have used the cleaning rate automatically by the machine, so there is no excessive pollution. d. Still using plastic wrap on clean linen when linen comes from the <i>laundry</i>.
2	Minimize the use of scarce resources and forms of renewable energy.	<ul style="list-style-type: none"> a. Drying already uses sunlight on <i>Penvuvian regular</i>. b. The washing process is carried out with water used in accordance with the levels and quantities that are determined automatically by the machine when washing and rinsing. c. <i>staff</i> always turn off lights and machines after work d. Linen washing is done twice on stains that are difficult to remove, because they are mixed with other linen during <i>regular washing</i>.
3	Minimizing the Life Cycle of Product or Service Costs	<ul style="list-style-type: none"> a. On linen, stains that are difficult to remove can be overcome by <i>spotting</i> linen activities to minimize the change of new linen, torn linen can be maximized by sewing on torn linen so that it can be reused without compromising aesthetics during the process of <i>making beds</i> in the room. b. The cleaning machine is checked regularly every 3 months to avoid heavy damage. c. There is a lack of linen so that the productivity <i>room attendant</i> is not maximal in the <i>check out / Expected Arrival</i> d. <i>Room attendant</i> can do more room cleaning from 12 rooms to 22 rooms e. The use of cleaning materials has been carried out in accordance with predetermined levels and automatic mixing by machine, so that the linen is not easy to thin.

Source: Direct Observation and Interview with Renaissance Bali Uluwatu Resort & Spa (Data Processed).

Table 2. describes the results of direct observations and in-depth interviews with the *Housekeeping Manager* to obtain information on *Green Productivity* at Renaissance Bali Uluwatu Resort & Spa.

From the results of observations that the authors classify towards *Green Productivity* , it can be described as follows:

a. Emissions and Waste

From the results of observations and interviews related to linen management based on *Green Productivity* with indicators of Minimizing emissions and waste are:

1. Minimizationthird, if guests stay *long stays* and spray *disinfectant* so that the health of guests is maintained to minimize the reduction of washing waste can be maximized.
2. Room linens that have hard-to-remove or torn stains can be reused after *spotting* if they get hard-to-remove stains, and torn linens can be re-stitched without compromising on the good appearance of the linen when installed.
3. The use of cleaning agents is automatic by the machine to mix with water for washing linen so that there is no excessive liquid waste pollution.
4. Still using plastic wrap for clean linen every day and using paper to label the type of linen and the amount of linen in the clean linen wrap.

b. Minimize Use of Rare Resources and Renewable Forms of Energy.

From the results of observations and interviews related to the management of *green productivity* on the indicators for Minimizing the Use of Rare Resources and Renewable Energy Forms, namely:

1. The use of renewable energy forms has been carried out in drying activities such as using sunlight if cleaning is carried out in a day.
2. The use of water has been used in accordance with the levels and quantities that are determined automatically by the machine when washing and rinsing.
3. After work and *shifts* always turn off all cleaning machine tools after washing linen and *guest laundry activities*.
4. sorting *Soil* not optimal so that linen stains are difficult to remove with torn linen being mixed in with *regular* washing so that linen washing is carried out twice on torn linen and stains are difficult to remove for *spotting activities*.

c. Minimization of Product or Service Cost Life Cycle

From the results of observations and interviews related to linen management based on Minimization of Product or Service Cost Life Cycle, namely:

1. On linen, stains that are difficult to remove can be overcome by *spotting* linen activities to minimize the change of new linen, if you get torn linen it can be maximized by sewing on torn linen so that it can be reused without reducing aesthetics during the process of *making beds* in the room.
2. Cleaning tools and machines are always checked and *minor* so that the cost of heavy repairs on cleaning tools can be minimized.
3. There was a lack of linen in the store resulting in *attendant* less than optimal
4. Procurement of linen material shortages can cooperate with *vendors* so that room sales are faster and more maximized.
5. The use of cleaning agents has been determined according to the washing procedure so that the linen is not easily thin and can be used for a long time.

So it can be concluded that the indicators above indicate that the implementation of *green productivity* has implemented a *green* at the Renaissance Bali Uluwatu Resort & Spa hotel running optimally, but there are several things that have not been implemented and are being designed through evaluation by the *housekeeping department*, such as an evaluation *Housekeeping Meeting Week*, which has only been held twice, was attended and acknowledged by the *General Manager*, and *Human Resource Department*.

Management of linen needs at Renaissance Bali Uluwatu Resort & Spa

The ideal linen requirement is 3 par for each room (1 is in circulation, 1 is stored in *the store*, and 1 is in the washing stage). Before knowing the linen par needs, you must know the standard of linen installation in each type of room and the number of installations in the room, then carry out *inventory* to determine the actual amount of linen throughout the hotel, so that you can calculate par linen.

1. Standards for Linen Installation and Actual Linen Inventory are suitable for use.

Before getting the results of the *linen parstock* so that you get the actual total to get conclusions from research on linen needs, you must know the standard for linen installation in a total of 208 rooms in the installation of *King, Twin, Towel, and Bathrobe* (attachment 4).

Table 3. Number of Linen Installations at Renaissance Bali Uluwatu Resort & Spa

No	Name Item	DLX King (30)	DLX Twin (70)	JSK (51)	ESK (43)	Loft Suite (8)	Premiere Loft Suite (5)	President Villa (1)
1	Bath Towel	2	3	3	3	4	4	14
2	Hand Towel	2	3	2	2	4	4	14
3	Face Towel	2	3	2	2	4	4	14
4	Bath Mat	1	1	1	1	2	2	7
5	Fitted Sheet King	1		1	1	1	1	2
6	Top Sheet king	1		1	1	1	1	2
7	Duvet Cover King	1		1	1	1	2	8

4	Pillow Case King	4		4	4	4	8	9
Pillow	Protector King	4		4	4	4	4	8
10	Fitted Sheet Twin		2					2
11	Top Sheet Twin		2					2
12	Duvet Cover Twin		2					2
13	Pillow Case Twin		4					4
14	Pillow Protector Twin		4					4
15	Bathrobe L	1	1	1	1	1	2	6
16	Bathrobe S	1	1	1	1	1	2	6

Source: Inventory Linen Renaissance Bali Uluwatu Resort & Spa.

Table 3. describes the standard for linen installation in each room at Renaissance Bali Uluwatu Resort & Spa with room types *Deluxe Suite, Junior Suite, Executive Suite, Loft Suite, Premiere Loft Suite, President Villa* to be the basic data to find out 1 par used.

Table 4. Total Number of Linen Installations at Renaissance Bali Uluwatu Resort & Spa

No	Item Name	DLX King	DLX Twin	JSK	ESK	Loft Suite	Premiere Loft Suite	President Villa	Total
1	Bath Towel	60	210	153	129	32	20	14	618
2	Hand Towel	60	210	102	86	32	20	14	524
3	Face Towel	60	210	102	86	32	20	14	524
4	Bath Mat	30	70	51	43	16	10	7	227
5	Fitted Sheet King	30		51	43	8	5	2	139
6	Top Sheet king	30		51	43	8	5	2	139
7	Duvet Cover King	30		51	43	8	5	2	139
8	Pillow Case King	120		204	172	32	20	8	556
9	Pillow Protector King	120		204	172	32	20	8	566
10	Fitted Sheet Twin		140					2	142
11	Top Sheet Twin		140					2	142
12	Duvet Cover Twin		140					2	142
13	Pillow Case Twin		280					4	284
14	Pillow Protector Twin		280					4	284
15	Bathrobe L	30	70					6	218
16	Bathrobe S	30	70					6	218

Source: Renaissance Bali Uluwatu Resort & Spa (Data Processed).

Table 4. describes the total number of linen installations in the total room types, all linens installed with all types of room types in the hotel area. After the researchers found out the standard for installing different types of rooms with a total of 208 rooms, then carrying out inventory of linen installed in all rooms, linen stored in the *pantry*, being washed in the *laundry* and linen that was not suitable for use so that it could be analyzed further.

Table 5. Linen Inventory at Renaissance Bali Uluwatu Resort & Spa

Item Name	Installed	Pantry	Laundry	New	Damaged	Total
Bath Towel	351	27	1167	148	176	1869
Hand Towel	327	75	521	155	107	1185
Face Towel	302	23	332	400	173	1230
Bath Mat	160	61	263	36	341	861
Fitted sheet King	28	13	87	0	105	233
Top Sheet King	81	16	124	30	136	387
Duvet Cover King	45	13	113	40	148	359
Pillow Case King	271	82	699	208	231	1491
Pillow Protector King	340	1	240	0	0	581
Fitted sheet Twin	36	35	170	0	58	299
Top Sheet Twin	73	45	317	30	27	492
Duvet Cover Twin	59	27	231	26	49	392
Pillow Case Twin	92	80	819	152	60	1203
Pillow Protector Twin	58	0	0	0	0	58
Bathrobe L	169	16	90	30	0	305
Bathrobe S	121	13	25	10	0	169

Source: Inventory Linen Renaissance Bali Uluwatu Resort & Spa (Data Processed).

Table 5. describes the results of inventory on all linen owned by the hotel, namely linen installed, linen stored in the *pantry*, currently being washed, new linen arriving after the inventory, and damaged. After the researchers got real data in the field from inventory by manual counting throughout the hotel area above, then calculating proper linen for linen circulation activities, with the formula:

$$\text{Total Hotel Linen} - \text{Damaged Linen} = \text{Suitable Linen for Use}$$

Example:

Type Hand Towel: $[1869 - 176 = 1693]$

Table 6. Eligible Linen at Renaissance Bali Uluwatu Resort & Spa

Item Name	Eligible for Use	Item Name	Eligible for Use
Bath Towel	1693	Pillow Protector King	581
Hand Towel	1078	Fitted sheet Twin	241
Face Towel	1057	Top Sheet Twin	465

Bath Mat	520	Duvet Cover Twin	343
Fitted sheet King	128	Pillow Case Twin	1143
Top Sheet King	251	Pillow Protector Twin	58
Duvet Cover King	211	Bathrobe L	305
Pillow Case King	1260	Bathrobe S	169

Source: Data Inventory Linen Renaissance Bali Uluwatu Resort & Spa (Data Processed) .

Table 6. describes the linen suitable for use so that it can be circulated in the hotel area. Knowing the proper linen to use in order to be able to calculate the *parstock* of linen after carrying out an inventory in calculating the entire damaged and stained linen.

Linen *Parstock* to find out the hotel's linen needs each require 3 par of ready linen, 1 par in the guest room, 1 par which is dirty in the washing place, 1 par which is clean in the wash. The ideal number of par linens, is as much as 3 to 5 par hotel. After the researcher got the basic information for standard linen installation in each room type with a total of 208 rooms, the actual linen calculation in the entire hotel area, then *linen parstock* , with the actual calculation. Because it has seven types of rooms with different set ups, they have been totaled in the Calculation Table 6, so we only need the formula:

Standard Number of Room Linen Installed x Parstock = Sheet

Linen Sheets Parstock 1: Adequate Linen = Total Par Linen

Example: 1. Bath Towel [618 x 3 = 1674 Sheets]

1. Bath Towel [618:1693 = 2.74 Par]

Table 7. Par Linen Calculation at Renaissance Bali Uluwatu Resort & Spa

Item Name	Eligible	Linen Installed Linen	1 Par	2 Par	3 Par	Total Par Linen
Bath Towel	1693	618	618	1116	1674	2.74
Hand Towel	1078	524	524	1048	1572	2.06
Face Towel	1057	524	524	1048	1572	2.02
Bath Mat	520	227	227	454	681	2.29
Fitted sheet King	128	139	139	278	417	0.92
Top Sheet King	251	139	139	278	417	1.81
Duvet Cover King	211	139	139	278	417	1.52
Pillow Case King	1260	556	556	1112	1668	2.27
Pillow Protector King	581	556	556	1112	1668	1.04
Fitted Sheet Twin	241	142	142	284	426	1.70
Top Sheet Twin	465	142	142	284	426	3.27
Duvet Cover Twin	343	142	142	284	426	2.42
Pillow Case Twin	1143	284	284	568	852	4.02
Pillow Protector Twin	58	284	284	568	852	0.20
Bathrobe L	305	218	218	436	654	1.40
Bathrobe S	169	218	218	436	654	0.78

Source: Data Inventory Linen Renaissance Bali Uluwatu Resort & Spa (Data Processed).

Table 7. explains the par linen calculation to compare linen procurement standards, with the actual par linen in the hotel area as a whole which is known from each type of linen that is still suitable for use. Generally, linen circulation is based on the following conditions:

- a. One *parstock* installed in the room.
- b. One *parstock* is on the *floor station* or *housekeeping pantry*.
- c. One *parstock* in the process of washing in the *laundry*.

Thus, a good minimum *parstock* is 3 (three) times the requirement. However, some hotels that have high room occupancy rates and good management have up to 4 (four) *parstocks*, i.e. one *parstock* is in the linen warehouse. So for the need for linen that is sufficient for operations and runs optimally, 3 *par* linens are needed (1 *par* in circulation, 1 *par* in washing process, and 1 *par* in *pantry*).

From the results of the study in Table 7, the authors can classify *par* linen as follows:

- d. *Par* linen 3 *par* is *Top Sheet Twin* as much as 3.27 *par*, and *Pillow Case Twin* as much as 4.02 *par* is said to be very sufficient for operations on the needs of the room.
- e. *inen* *par* 2.50 – 3.00 *par* is a *Bath Towel* of 2.74 *par*.
- f. 2.00 – 2.50 *par* is *Face Towel* of 2.02 *par*, *Hand Towel* of 2.06 *par*, *Pillow Case King* of 2.27 *par*, *Bath Mat* of 2.29 *par*, and *Duvet Cover Twin* of 2.42 *par*.
- g. *Linen* *par* of 1.50 – 2.00 is *Duvet Cover King* of 1.52 *par*, *Fitted sheet Twin* of 1.70 *par*, and *Top Sheet King* of 1.81 *par*.
- h. *Linen* *par* 1.00 – 1.50 *par* is *Pillow Protector King* of 1.04 *par*, and *Bathrobe L* of 1.40 *par*.
- i. *Linen* *par* 1 *par* is *Pillow Protector Twin* of 0.20 *par*, *Bathrobe S* of 0.78 *par*, and *Fitted sheet King* of 0.92 *par*.

From the classification results according to the *par* linen value, it can be seen that only *Top Sheet Twin* and *Pillow Case Twin* exceed 3 *parstocks*, namely 3.27 and 4.02. The types of linen that do not meet the *par* standard are *bath towels* as much as 2.74 *par*, namely *Face Towel* as much as 2.02 *par*, *Hand Towel* as much as 2.06 *par*, *Pillow Case King* as much as 2.27 *par*, *Bath Mat* as much as 2.29 *par*, *Duvet Cover Twin* as much as 2.42 *par*, *Duvet Cover King* 1.52 *par*, *Fitted sheet Twin* of 1.70 *par*, *Top Sheet King* of 1.81 *par*, *Pillow Protector King* of 1.04 *par*, *Bathrobe L* of 1.40 *par*, and the lowest less than 1 *par* is *Pillow Protector Twin* of 0.20 *par*, *Bathrobe S* of 0.78 *par*, and *Fitted sheet King* as much as 0.92 *par*.

Facts on the ground, which caused the handling of linen shortages to have not been optimally resolved, was that the *Housekeeping Management* did not directly handle ordering new linen so that it was hampered to order new linen, and the impact of Covid-19 had a very large impact on all work operations so that need to re-evaluate to reduce the impact such as the *Room Attendant* is not efficient in the work of preparing rooms that are ready to be sold to guests who want to stay, and the shortage of linen is still difficult to overcome.

Conclusion

Based on the previous chapter, the researcher can conclude that Green Productivity-based linen management at Renaissance Bali Uluwatu Resort & Spa has been carried out for long-stay guests, linen changes are carried out on the third day if it is still said to be feasible and clean to reduce the linen washing process more often, reduce liquid waste, and work productivity can clean more more rooms than before, which was originally 12 rooms, with green productivity it can be done more up to 22 rooms in a day. The linen washing process has also put forward environmentally friendly concepts such as the drying process is regularly carried out in the hot sun, the use of a predetermined cleaning dose to increase the linen washing cycle for longer use, always turn off all machines when it is working, and do spotting if stains are difficult. removed and sew on areas that can be covered when installing linen in the room.

The linen requirement process at Renaissance Bali Uluwatu Resort & Spa has been going well, as inventory activities have been carried out regularly to check the quantity and suitability of linen. The basis for determining the achievement of linen needs is a minimum of 3 *par* (washing process, in the area, and *pantry*) according to the type and installation in the room. Based on the results of data processing, the researchers got the overall data that only the *Top Sheet Twin* and *Pillow Case Twin* linens exceeded 3 *parstocks*, namely 3.27 and 4.02, and the lowest less than 1 *par* were *Pillow Protector Twin* as much as 0.20 *par*, *Bathrobe S* as much as 0.78 *par*, and *Fitted sheet King* as much as 0.92 *par*. linen is experiencing a lack of *par* linen than it should be during high season, because linen washing and linen orders are carried out outside the hotel so that there are problems in the process of providing rooms that should be cleaned and selling rooms back can be carried out in a day, but must be carried out in two days to wait for linen clean that comes.

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