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Capacity Planning And Workforce Scheduling In The Housekeeping Department

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Abstract

This study aims to analyze labor capacity planning in the Housekeeping Department of Hotel Bumi Senyiur Samarinda, examine the workforce scheduling process within the same department, and evaluate the effectiveness of both practices in enhancing operational efficiency and room readiness. The research employs a quantitative descriptive method, which seeks to systematically describe the actual conditions of labor capacity planning and workforce scheduling using numerical data. The study focuses on Room Attendant (RA) staff within the Housekeeping Department. The results indicate that labor capacity planning is highly influenced by room occupancy rates, standard working time, and effective working hours. The average occupancy rate of 66.68% in 2024 reflects fluctuations in workload throughout the year. Based on the standard time calculations, the existing workforce capacity remains sufficient under normal occupancy conditions but experiences a labor shortage during peak occupancy periods (≥80%). Workforce scheduling using the Integer Linear Programming (ILP) method produces a more optimal schedule compared to the existing one. The ILP model successfully eliminates all understaffed days (achieving 100% fulfillment of workforce requirements) and ensures a balanced distribution of workload and working days among Room Attendant staff.

Keywords: Capacity Planning; Workforce Scheduling.

INTRODUCTION

The hospitality industry continues to evolve in response to globalization, technological advancement, and intensifying market competition. As service-oriented enterprises, hotels must maintain high service quality, operational efficiency, and customer satisfaction to remain competitive. Within this framework, operational management plays a crucial role in ensuring that service delivery processes are efficient, timely, and aligned with guest expectations. Among the core operational functions, housekeeping management is particularly central, as it directly influences room readiness, cleanliness standards, and the overall guest experience.

Hotel Bumi Senyiur Samarinda is a long-established four-star hotel in East Kalimantan Province faces increasing competitive pressure from newly emerging hotels and digital accommodation platforms. Despite its strong market presence, occupancy data throughout 2024 reveal fluctuating patterns and inconsistencies between guest volume and occupancy rate. Several periods of high guest arrivals did not correspond to proportional room occupancy, suggesting potential challenges in operational coordination. These dynamics point to underlying issues related to capacity planning, workforce distribution, and labor scheduling within the housekeeping department, particularly during peak periods and back-to-back bookings that require rapid room turnover. The recurring delays in room preparation, especially during check-in times or when guests check out later than expected, further indicate misalignment between operational demand and available workforce capacity. Such delays create bottlenecks in the room turnover process, increase workload pressure on housekeeping staff, and risk reducing service quality. These conditions reinforce the importance of adaptive capacity planning and flexible labor scheduling to ensure that staffing levels correspond effectively to fluctuating room demand. Previous studies across manufacturing, healthcare, and service industries. (Setiabudi et al., 2018; Liu et al., 2019; Hossain, 2023; Fatikasari et al., 2024) have demonstrated that integrated capacity planning and workforce scheduling significantly enhance productivity, operational flow, and service quality. However, empirical insights into these practices within the hotel sector particularly in Indonesian hospitality operations remain limited.

Literature Review

Operational Management

According to Rusell et al., (2020:4), operations management is the management of systems or processes that create goods and/or provide services. And then, according to Heizer et al., (2020:4), operations management is the set of activities that creates value in the form of goods and services by transforming inputs into outputs. Futhermore, according to Krajewski & Ritzman, (2021:6), operations management is the systematic design, direction, and control of processes that transform inputs into services and products for internal, as well as external, customers. Meanwhile, according to Stevenson, (2021:5), operations management involves the planning, coordinating, and executing of all activities that create goods or services.

Capacity Planning

According to Heizer et al., (2021:271), capacity planning is the process of determining the production capacity needed by an organization to meet changing demands for its products. Furthermore, according to Krajewski & Ritzman, (2021:321), capacity planning involves matching available resources to fluctuations in customer demand through long-term and short-term strategies. Meanwhile, according to Reid & Sanders, 2023:333), capacity planning is the process of establishing the output rate that can be achieved by a facility. If a company does not plan its capacity correctly, it may find that it either does not have enough output capability to meet customer demands or has too much capacity sitting idle.

Workforce Schedulling

According to Walker & Miller, (2018:193), work schedule planning must take into account guest check-in/check-out patterns, occupancy levels, and special requirements such as large groups or hotel events. Furthermore, according to Rusell et al., (2020:483), labor scheduling is essential in matching staffing levels with demand in service operations, especially where demand fluctuates hourly or daily. Meanwhile, according to Heizer, Render, & Munson, (2020:509), labor scheduling is essential in matching staffing levels with demand in service operations, especially where demand fluctuates hourly or daily.

Research Conceptual Framework

This study is motivated by several operational issues, including delays in room preparation during guest check-in and late check-out by guests, which restrict the available time for room cleaning. These problems indicate that the capacity planning and workforce scheduling systems within the housekeeping department have not been functioning optimally. Delays in room readiness during check-in suggest a mismatch between the number of available staff and the actual workload, particularly during peak hours. Meanwhile, delays caused by late check-out highlight the lack of flexibility in workforce scheduling, which may affect overall service quality. If these conditions persist, they may lead to reduced customer satisfaction and negatively impact the hotel's reputation. Therefore, an in-depth analysis of the existing capacity planning and labor scheduling systems is necessary to identify appropriate solutions for enhancing operational efficiency within the housekeeping department.

Previous studies provide relevant insights supporting the need for improved operational planning. Liu et al., (2019) demonstrated that integrated scheduling which considers patient length of stay significantly improves hospital operational efficiency. Their findings emphasize the importance of combining scheduling and capacity planning approaches in healthcare management, showing that accounting for patient stay duration and unit capacity can reduce costs while improving performance. In contrast, research by Erlangga et al., (2023) revealed that capacity planning and production scheduling were not optimally implemented, resulting in imbalances between available capacity and production requirements. They highlight the need for scheduling that incorporates actual capacity to enhance efficiency and effectiveness. Additionally, Hossain, (2023) found that effective workforce scheduling can increase employee productivity, with balanced workloads, appropriate skill alignment, flexibility, effective communication, and a supportive work environment contributing positively to performance. Furthermore, the study by Fatikasari et al., (2024) on the scheduling of healthcare workers demonstrated improved operational efficiency, equitable workload distribution, and reduced worker fatigue, ultimately enhancing the quality of healthcare services.

METHOD

Research Design

This study employs a quantitative descriptive research design, which is appropriate for examining current operational practices and providing a factual, systematic overview of workforce capacity planning and scheduling within a housekeeping department. Hair and Brunsveld (2020) describe quantitative data as numerical representations of measurable characteristics, allowing objective analysis. Furthermore, descriptive research is intended to portray a situation by providing measurements of events or activities. Based on this perspective, the descriptive quantitative approach was selected because the study aims to analyze real operational conditions related to workforce capacity planning, workload distribution, and scheduling optimization. The use of numerical data such as occupancy rates, standard cleaning times, effective working hours, and daily staffing requirementsenables objective evaluation of operational efficiency and alignment between labor capacity and service demand.

Data Analysis

The data analysis in this study was conducted using a descriptive quantitative approach with two main components: (1) Workforce Capacity Planning, and (2) Workforce Scheduling. Capacity planning for room attendants who are directly involved in daily room operations was assessed using a time-based workforce capacity planning method, with all calculations performed using Microsoft Excel.

For workforce scheduling, the study employed the Integer Linear Programming (ILP) method. This method was selected because it provides an optimal solution to scheduling problems by incorporating various operational constraints, such as the number of available staff, minimum daily staffing requirements, and maximum allowable working days per employee with all calculations performed using phyton programming with Goggle Colab platform.

RESULTS AND DISCUSSION

Results

The primary focus of this study is on Room Attendants (RAs), who play a critical role in maintaining room cleanliness, orderliness, and readiness key factors that directly influence the quality of hotel service. Broadly, the findings of this research are divided into two main components, namely.

Capacity Planning

Capacity planning is the initial step in determining the ability of the workforce to complete the existing workload, particularly in the Room Attendant section. Using Microsoft Office Excel for the calculations, the room occupancy rate provides an overview of how effectively the available room capacity can be utilized throughout the year, as presented in Table 1 below.

Tabel 1. Occupancy Rate for Rooms

Month	Number of Available Rooms (Units)	Number of Rooms Sold (Units)	Occupancy Rate (%)
January	4.464	1.487	0,333
February	4.176	2.313	0,554
March	4.464	2.314	0,518
April	4.320	2.316	0,536
May	4.464	3.460	0,775
June	4.320	3.006	0,696
July	4.464	3.554	0,796
August	4.464	2.387	0,535
September	4.320	3.469	0,803
October	4.464	3.864	0,866
November	4.320	3.630	0,840
December	4.464	3.335	0,747
Average of occupancy rate			0,667

As shown in Table 3, the room occupancy rate exhibits variation throughout the year. The lowest occupancy was recorded in January at 0.33, while the peak occurred in October with a value of 0.86. This variation reflects fluctuations in accommodation demand, which are likely influenced by tourism seasonality, economic activities, and visitor dynamics during the observation period. Overall, the average annual occupancy rate reached 0.67, indicating that room utilization falls within a moderate category. These findings provide insight into room capacity utilization patterns and may serve as a basis for developing capacity management strategies and revenue optimization in the future.

The calculation of workforce capacity in the previous table serves as an important basis for determining Table 2, as presented below.

Table 2. Room Attendant Workforce Requirements

No	Room Types	Amount of Rooms	Capacity RA / day	RA Required (exact)	RA Rounded
1	Deluxe Twin	44	20,70	2,13	3,00
2	Deluxe Double	32	15,52	2,06	3,00
3	Grand Deluxe Twin	24	12,42	1,93	2,00
4	Grand Deluxe Double	20	10,35	1,93	2,00
5	Junior Suite	16	9,70	1,65	2,00
6	Executive Suite	8	8,87	0,90	1,00
Total		144	77,55	10,60	13,00

As shown in Table 2, the number of Room Attendants required varies across room types according to the total number of rooms and the daily cleaning capacity per attendant. Rooms with higher quantities and shorter cleaning times, such as the Deluxe Twin and Deluxe Double, require three attendants each. In contrast, room types with lower quantities or longer cleaning times require fewer attendants, with the Executive Suite needing only one. Overall, the total requirement is 10.60 attendants, which, when rounded, results in a staffing need of 13 Room Attendants. These results provide a data-driven estimate of workforce requirements to ensure adequate operational efficiency. To gain an understanding of how effectively the Room Attendant workforce capacity is utilized and managed in operational activities, calculations of capacity utilization and work efficiency were conducted, as shown in Table 3 below.

Table 3. Capacity Utilization Rate and Work Efficiency of Room Attendant

Month	Rooms Sold	Total Monthly Capacity	α (Attendance Ratio)	Utilization (%)	Efficiency (%)	Remarks
January	1.487	14.114,69	0,763	0,105	0,138	Low/Inefficient
February	2.313	14.114,69	0,787	0,164	0,208	Low/Inefficient
March	2.314	14.114,69	0,833	0,164	0,197	Low/Inefficient
April	2.316	14.114,69	0,806	0,164	0,204	Low/Inefficient
May	3.406	14.114,69	0,843	0,241	0,286	Moderate/Less Efficient
June	3.006	14.114,69	0,819	0,213	0,260	Moderate/Less Efficient
July	3.051	14.114,69	0,829	0,216	0,261	Moderate/Less Efficient
August	2.387	14.114,69	0,834	0,169	0,203	Low/Inefficient
September	3.469	14.114,69	0,833	0,246	0,295	Moderate/Less Efficient
October	3.864	14.114,69	0,811	0,274	0,338	Moderate/Less Efficient
November	3.630	14.114,69	0,833	0,257	0,309	Moderate/Less Efficient
December	3.335	14.114,69	0,839	0,236	0,282	Moderate/Less Efficient
Average			0,819	0,204	0,248	Low/Inefficient

As shown in Table 3, both capacity utilization and work efficiency of Room Attendants vary throughout the year. The utilization rate ranges from 0.10 to 0.26, indicating relatively low use of available labor capacity during several months. Efficiency levels also fluctuate, with many months classified as "Moderate / Less Efficient," while a smaller number fall under "Low / Inefficient." On average, the annual attendance ratio is 0.819, accompanied by an average utilization rate of 0.204 and an efficiency level of 0.248. These results suggest that the workforce capacity is not yet optimized and that operational adjustments may be required to improve labor productivity and alignment between workload and staffing levels.

Workforce Schedulling

Workforce scheduling is a continuation of the capacity planning process, aimed at organizing the allocation of time and the number of workers according to daily and monthly operational requirements. In this study, scheduling is focused on aligning the number of Room Attendants with the monthly room occupancy level to achieve a balance between

labor capacity and the number of rooms that must be cleaned. The scheduling analysis in this research specifically examines Room Attendant assignments for December 2024. This month was selected based on the principle of operational representativeness, as December reflects the hotel's peak activity period (peak season), as illustrated in Figure 1 below.

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=== Room Attendant Assignment Schedule for December ===
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Day	Staff Required (persons)	Total Working Day	RA1	RA2	RA3	RA4	RA5	RA6	RA7
1	6	7	1	1	1	1	1	1	1
2	6	5	1	1	1	1	0	1	0
3	6	5	0	1	0	1	1	1	1
4	6	6	1	0	1	1	1	1	1
5	6	6	1	1	1	0	1	1	1
6	6	6	1	1	1	1	1	0	1
7	6	7	1	1	1	1	1	1	1
8	6	5	1	1	1	1	0	1	0
9	6	5	0	1	0	1	1	1	1
10	6	6	1	0	1	1	1	1	1
11	6	6	1	1	1	0	1	1	1
12	6	6	1	1	1	1	1	0	1
13	6	7	1	1	1	1	1	1	1
14	6	5	1	1	1	1	0	1	0
15	6	5	0	1	0	1	1	1	1
16	6	6	1	0	1	1	1	1	1
17	6	6	1	1	1	0	1	1	1
18	6	7	1	1	1	1	1	1	1
19	6	7	1	1	1	1	1	1	1
20	6	5	1	1	1	1	0	1	0
21	6	4	0	1	0	1	1	0	1
22	6	6	1	0	1	1	1	1	1
23	6	5	1	1	1	1	0	0	1
24	6	7	1	1	1	1	1	1	1
25	6	7	1	1	1	1	1	1	1
26	6	5	1	1	1	1	0	1	0
27	6	5	0	1	0	1	1	1	1
28	6	6	1	0	1	1	1	1	1
29	6	6	1	1	1	0	1	1	1
30	6	6	1	1	1	1	1	0	1
31	6	7	1	1	1	1	1	1	1

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=== Recapitulation of the Number of Employee Working Days===
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Employee Name	Total Working Day
RA1	26
RA2	26
RA3	26
RA4	27
RA5	25
RA6	26
RA7	26

MaxDays: 27 | MinDays: 25 | Difference: 2

Figure 1. Existing Room Attendant Schedule for December 2024 in Binary Format

As shown in Figure 1, the existing Room Attendant schedule for December demonstrates an uneven distribution of working days among employees. While the required number of staff per day is consistently six, the total number of working days assigned to each Room Attendant ranges from 25 to 27 days. This two-day difference indicates an imbalance in workload allocation, suggesting that the current scheduling approach does not fully optimize fairness or equal distribution of work. Such disparities may affect employee fatigue, operational consistency, and overall workforce efficiency, highlighting the need for improved scheduling methods to achieve a more balanced and effective labour structure. The distribution of Room Attendants' working days for December 2024 is presented in Figure 2 below.

Room Attendant Working Day Distribution for December

(Bar chart: RA1 = 26, RA2 = 27, RA3 = 26, RA4 = 27, RA5 = 25, RA6 = 27, RA7 = 27; Ideal average (26.4 day); Y-axis: Number of Working Days (Days); X-axis: Room Attendant Name (RA))
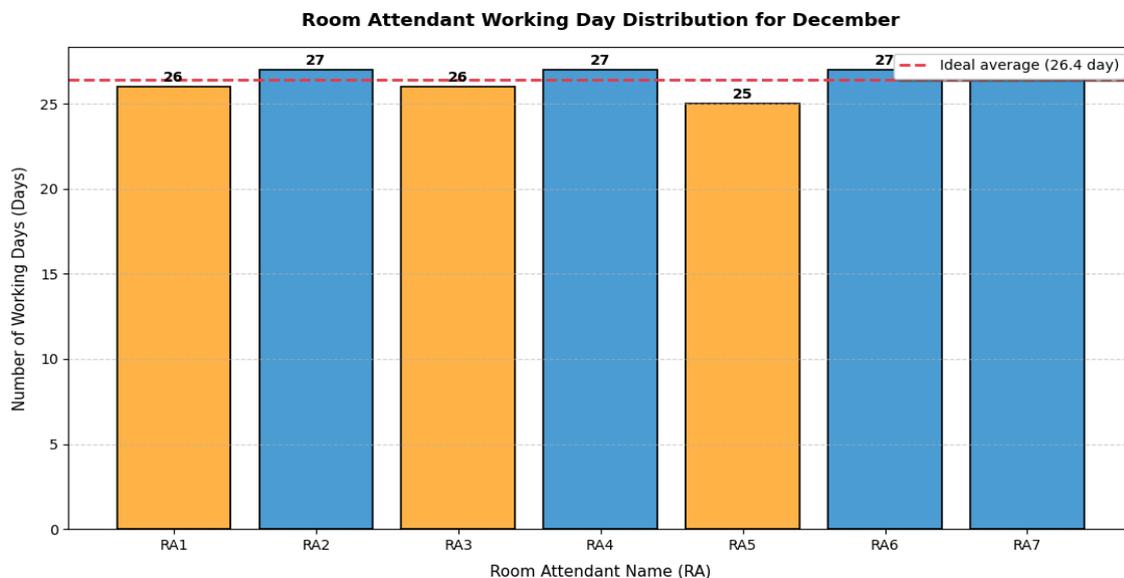
Figure 2. Distribution of Room Attendant Working Days in December 2024

As shown in Figure 2, the distribution of working days among Room Attendants in December 2024 is not fully balanced. While the ideal average is approximately 26.4 working days per attendant, actual assignments range between 25 and 27 days. RA5 records the lowest number of working days (25), whereas RA2, RA4, and RA6 reach the highest level (27). This variation indicates that the existing scheduling system does not achieve an equitable allocation of work across employees. Although the difference is relatively small, such imbalance may contribute to unequal workload distribution and can influence staff performance and well-being. These findings highlight the need for a more optimized scheduling approach to ensure fairness and operational efficiency. The optimized Room Attendant assignment schedule generated using Integer Linear Programming (ILP) is presented in Table 4 below.

Table 4. ILP-Optimized Room Attendant Assignment Schedule

Day	Staff Required (Person)	RA1	RA2	RA3	RA4	RA5	RA6	RA7	Total Workdays (ILP)
1	6	1	1	1	1	1	0	1	6
2	6	0	1	1	1	1	1	1	6
3	6	1	0	1	1	1	1	1	6
4	6	1	1	1	1	0	1	1	6
5	6	1	1	1	1	1	0	1	6
6	6	1	1	1	1	1	1	0	6
7	6	1	1	1	1	1	1	0	6
8	6	1	1	1	1	1	1	0	6
9	6	1	1	1	1	1	1	0	6
10	6	1	1	1	1	0	1	1	6
11	6	1	1	1	1	1	0	1	6
12	6	1	1	1	0	1	1	1	6
13	6	1	1	1	0	1	1	1	6
14	6	1	1	1	1	0	1	1	6
15	6	1	1	1	0	1	1	1	6
16	6	1	1	1	1	0	1	1	6
17	6	1	1	0	1	1	1	1	6
18	6	0	1	1	1	1	1	1	6
19	6	1	1	1	1	1	1	1	7
20	6	1	1	1	1	1	1	1	7
21	6	1	0	1	1	1	1	1	6
22	6	0	1	1	1	1	1	1	6
23	6	1	0	1	1	1	1	1	6
24	6	1	1	1	1	1	1	1	7
25	6	1	1	0	1	1	1	1	6
26	6	1	1	0	1	1	1	1	6
27	6	1	1	0	1	1	1	1	6
28	6	0	1	1	1	1	1	1	6
29	6	1	0	1	1	1	1	1	6
30	6	1	1	1	0	1	1	1	6
31	6	1	1	1	1	1	0	1	6

As shown in Table 4, the optimized schedule generated using Integer Linear Programming (ILP) achieves a more balanced allocation of working days among Room Attendants. The model consistently fulfills the daily staffing requirement of six attendants while distributing assignments in a way that minimizes disparities in workload. Unlike the existing schedule, the ILP-generated plan reduces variation in the total number of working days per employee, resulting in a more equitable and efficient staffing pattern. This indicates that ILP can serve as an effective tool for improving workforce scheduling by

aligning operational needs with fair labour distribution. Next, a comparison between the total existing working days and the ILP-optimized working days is presented in Table 5 below.

Table 5. Comparison of Total Working Days (Existing vs. ILP)

No	Room Attendant	Total Working Days (Existing)	Total Working Days (ILP)	Difference (ILP – Existing)	Remarks
1	RA1	26	27	1	Increase
2	RA2	26	27	1	Increase
3	RA3	26	27	1	Increase
4	RA4	27	27	0	Unchanged
5	RA5	25	27	2	Increase
6	RA6	26	27	1	Increase
7	RA7	26	27	1	Increase
Average		26,00	27,00	1,00	Increase
Range (Max–Min)		2	0		
Standar Deviation (σ)		0,53	0,00		

As shown in Table 5, the ILP-generated schedule results in a more uniform distribution of working days across all Room Attendants. Under the existing schedule, total working days range from 25 to 27, with a standard deviation of 0.53, indicating noticeable variation. In contrast, the ILP schedule assigns 27 working days to nearly all attendants, reducing the range to zero and eliminating variation, as reflected by a standard deviation of 0.00. This improvement demonstrates that ILP effectively enhances workload equity by minimizing differences in individual working days. Overall, the optimized schedule promotes a fairer and more balanced labor distribution compared to the existing arrangement

Discussion

Capacity Planning in the Hotel Housekeeping Department

The results of the study show that the average room occupancy rate at Hotel Bumi Senyiur Samarinda in 2024 reached 66.68%, with significant monthly variation. This indicates that approximately two-thirds of the total available rooms were occupied each month. Such fluctuations directly affect the housekeeping workload, as higher occupancy levels increase the number of rooms that must be cleaned daily. The standard cleaning time, calculated based on the housekeeping Standard Operating Procedure (SOP) and adjusted with appropriate allowances, shows that a single housekeeping staff member can clean a specific number of rooms depending on room type within an effective working period of 7.2 hours per day.

Based on the capacity calculation, the available workforce is generally adequate under average occupancy conditions. However, during high-occupancy periods (≥80%), a shortage of staff occurs, increasing individual workload and potentially reducing room cleanliness quality. These findings align with Heizer, Render, and Munson (2020), who state that capacity planning is the process of determining the optimal output level that enables an organization to meet demand without resource waste. In the hotel context, labor capacity must be adjusted according to fluctuations in room demand to balance efficiency and service quality.

Workforce Scheduling in the Hotel Housekeeping Department

The findings indicate that the existing housekeeping schedule distributes working days across Room Attendants relatively evenly, ranging from 26 to 27 days per month. However, 10 understaffed days were identified, with a cumulative shortage of 10 personnel during the observation period. This means that on several days, the number of available staff did not meet the minimum operational requirement of six attendants per day. Such imbalance

may lead to delayed room cleaning, higher individual workload, and reduced cleanliness standards, particularly during high-occupancy periods.

After applying Integer Linear Programming (ILP), the results show substantial improvement: all working days are fully covered (100% fulfilment), and the distribution of working days becomes perfectly even (range = 0, standard deviation = 0.00). These outcomes indicate that ILP effectively optimizes daily assignment distribution without increasing staff numbers, instead restructuring the rotation pattern mathematically. ILP minimizes deviation between actual and target working days while ensuring that daily staffing requirements are always met. Thus, the model addresses the inefficiency gap between workforce availability and operational needs using a systematic and objective approach. The ILP-based schedule also avoids clustering of off-days or excessive workloads for specific employees, reducing the risk of work fatigue while maintaining service continuity.

Effectiveness of Capacity Planning and Scheduling on Operational Efficiency and Room Readiness

Effectiveness was assessed using several key performance indicators (KPIs): fulfilment rate, number of understaffing days, cumulative staffing shortage, workload distribution (range and standard deviation), and average daily workforce realization. Empirically, the combination of capacity planning as the baseline and ILP as the allocation mechanism resulted in significant performance improvements. The fulfilment rate increased from 70.97% (existing) to 100% (ILP); understaffing days reduced from 10 to 0; total personnel shortages decreased from 10 to 0; and both the range and standard deviation dropped to 0, indicating perfect workload distribution. The average number of active staff per day closely aligned with the ideal requirement of six attendants, contributing to consistent room-turnaround time and sustained room cleanliness quality.

From an efficiency perspective, the elimination of understaffing reduces rework and waiting time caused by workload imbalances, while avoiding overstaffing minimizes unproductive labor hours. These outcomes support more efficient and targeted labor utilization. In terms of room readiness, meeting the minimum daily staffing requirement ensures adequate resources to handle check-ins, especially during peak seasons. At the organizational level, equitable workload distribution enhances internal satisfaction and supports long-term performance sustainability.

CONCLUTIONS

Capacity planning for housekeeping staff indicates that employees' ability to meet room-cleaning service requirements is strongly influenced by occupancy rates, standard time, and effective working hours. With an average occupancy rate of 66.68% in 2024, workload fluctuations occur throughout the year. The analysis shows that staffing capacity is adequate under normal occupancy conditions; however, during high-occupancy periods (≥80%), staff shortages emerge. These findings highlight the importance of adaptive capacity planning based on actual occupancy data to prevent mismatches between available capacity and daily operational needs.

Workforce scheduling for room attendants using the Integer Linear Programming (ILP) method produces a more optimal schedule compared to the existing system. The ILP model successfully eliminates understaffing, ensuring that all staffing requirements are fully met (100%), while achieving a balanced distribution of workdays among room attendants. This demonstrates that optimization-based scheduling enhances alignment between labor availability and operational demand without increasing the number of staff. Proportional and equitable scheduling also helps reduce fatigue risk, improve productivity, and maintain consistent quality in room-cleaning services.

The integration of capacity planning and workforce scheduling has a positive impact on operational efficiency and room readiness. Implementing capacity planning based on standard time and occupancy levels, combined with mathematically optimized scheduling, improves human resource utilization, reduces overtime requirements, and ensures a

balanced workload across employees. Overall, the findings confirm that adopting an ILP-based planning and scheduling system can enhance working-time efficiency, staff productivity, and the overall quality of housekeeping services.

Limitations

This study utilized housekeeping operational data from the year 2024, which means the results are highly dependent on the occupancy patterns and operational conditions during that specific period. Consequently, the calculated capacity and workforce scheduling outcomes may not fully represent conditions in other hotels with different occupancy characteristics, room capacities, or operational systems.

The optimization model employed (Integer Linear Programming) focused primarily on equal distribution of workdays and fulfillment of minimum daily staffing requirements. The model does not incorporate qualitative factors such as employee experience levels, individual competencies, or personal scheduling preferences. As a result, although the generated schedule is mathematically optimal, practical implementation may still require managerial adjustments to balance efficiency with staff well-being.

This study is a single-case analysis focusing on one department within one organization, making its scope relatively limited. While the findings provide in-depth insight into capacity planning and workforce scheduling practices, they cannot be broadly generalized to the wider hospitality industry without comparative studies involving hotels with different operational types and scales.

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