



## The Influence of Dynamic Pricing in Enhancing Room Occupancy and Room Revenue in Bintan Island Resort

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### Abstract

**Background:** Dynamic demand-based pricing has increasingly been adopted by capacity-constrained businesses such as hotels. This strategy is deemed highly profitable for both service providers and guests. Resorts on Bintan Island have implemented dynamic pricing by analyzing specific dates and times when occupancy is expected to peak.

**Objective:** This research aims to analyze the impact of dynamic pricing on hotel reservations and revenue, focusing on its effect on increasing room occupancy and revenue.

**Method:** The study utilizes descriptive quantitative research methods, relying on primary data from the Daily on the Book (OTB) Report, Dynamic Cover Monthly Report, and Three Month Forecast Report, all sourced from the hotel Property Management System (PMS) called Opera.

**Results:** The findings indicate that dynamic pricing significantly increases hotel room occupancy and revenue.

**Conclusion:** Hotel management must choose between prioritizing occupancy or room revenue. The room nights and occupancy budget might not be reached if management prioritizes increasing room revenue and vice versa.

**Keywords:** dynamic pricing, occupancy, revenue, Average Daily Rates (ADR), reservation

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## 1. Introduction

According to (Kemenparekraf, 2023), the number of visitors coming through the three main entries in January 2023 was 330,037 people from Ngurah Rai Airport in Bali, and 115,590 people from Soekarno-Hatta Airport, and 94,247 people from Batam city. According to this data, Riau Islands competes with Bali and Jakarta for Indonesia's most terrific entry point. This data demonstrates that

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competition exists between provinces in Indonesia. Bintan Island, known as Lagoi Tourism, is one of the most visited tourist spots in the Riau Islands.

FIT (Free et al.) guests are usually given a published rate, which is usually called BAR (Best Available Rates) by the hotel. Best Available Rates (BAR) are the lowest priced packages with flexible terms offered to all customers and exclusively for leading category room types or standard type rooms for one night stay only. For example, based on personal research, the standard room rate in Banyan Tree Bintan on March 7 2024, outside the peak season, is IDR 10,454,481. In the meantime, to stay on March 29 2024, the price is increased to IDR 16,837,980 in the same hotel and room type. Another example is to stay on March 7, 2024, at Pantai Indah Lagoi resort for a standard room type; the price is IDR 3,500,000. However, to stay on March 29 2024, the price is increased to IDR 10,125,000 for the same room type. Previous data illustrates how different stay dates will result in various lodging costs. This difference in prices at certain times is called dynamic pricing. Dynamic pricing algorithms have been extensively investigated to manage hotel and platform revenue across online travel platforms (OTPs). Pricing strategy has been a key instrument in managing OTPs' overall revenue as a lever to balance supply and demand better. Pricing models are typically built by each specific scenario in the past (Xiao et al., 2024)

According to the statistics, many hotels and resorts in Bintan Island have adopted a dynamic pricing strategy to set their room rates. Research gaps were identified in previously published studies that were cited. For example, Bigne et al., 2021 solely addressed the impact of dynamic pricing on bookings; in contrast, Talón-Ballesteró et al., 2022 did not address dynamic pricing's impact on higher occupancy and room revenue. A theoretical gap was discovered in this study that has not been discovered in the theory of hotel forecasting and budget, in which forecasts, budget, and dynamic pricing strategies are tightly associated. Statistics and current issues raise three issues: whether dynamic pricing significantly affects revenue and occupancy and can spur hotel price competition.

## 2. Literature Review

### 2.1. Concept of Hotel Pricing Strategy

One of the most important considerations in consumer decision-making is price, which is also essential for successful expansion (Andrés-Martínez et al., 2014 in Ahmadi & Ghasemi, 2023). The internet has made it easier for customers to conduct cost-effective product and price comparisons by lowering search obstacles. It is conceivable that this has resulted in significant price transparency and convergence both inside and between businesses. On the other hand, the internet has cultivated information and communications technologies (ICTs) that use customization options. Businesses use algorithmic pricing, automatically determined using a computer, to increase price dispersion (Aparicio et al., 2024). Selecting a product's appropriate price presents a variety of difficulties. The first is that dynamic reward optimization techniques are challenging due to intricate structural elements. The dearth of product and market information is another issue (Gibbs et al., 2018; Tuncay et al., 2024).

New technology developments, particularly the continuous development of automated revenue management systems, continue to dominate discussions about hotel revenue management. With sophisticated algorithms, these systems may now automatically and dynamically modify room costs in response to minute variations in customer behaviour and demand patterns, sometimes resulting in temporary pricing decisions (Haynes & Egan, 2024). For an extended period, the general manager of a hotel has been deemed to possess complete overall accountability for overseeing, administering, and monitoring the provision of exceptional guest service, controlling earnings, and guaranteeing the smooth administration of the hotel (Kimes, 1989 and Jayawardena, 2000 in Haynes & Egan, 2024). According to the findings of earlier studies, general managers are also empowered to decide whether or not to continue their company's operations independently, without outside influence. However, because things happen in the marketing industry frequently, there are situations when having specialized managers in

sales, marketing, and promotion is also necessary (Riley & Jauncey, 1990 in Haynes & Egan, 2024). However, depending on the issues they are dealing with, some research suggests that general managers should rely on specialists when making choices (Donaghy & McMahon-Beattie, 1998; Haynes & Egan, 2024). Based on the research findings, hotel price decisions are not solely determined by the dynamic pricing algorithm. However, management, including the general manager, revenue manager, and reservation manager, is crucial in influencing the decisions that will be made in order to maintain business operations.

## 2.2. *Dynamic Pricing in the hotel industry*

Scholars and practitioners recognize the importance of dynamic pricing in several industries (Poláček et al., 2024). In the hotel business, it is common practice to establish pricing that fluctuates according to demand (Guizzardi et al., 2017; Bigne et al., 2021). Previous studies showed that the quality of tourist attractions and the level of service are the primary criteria affecting travellers' desire to spend money. Nevertheless, as pricing determines overall client happiness and subsequently affects hotel income, hotel rates and amenities are also important to consider (Ye et al., 2023). By utilizing dynamic pricing, potential clients can consider many price options and make an informed decision. This also gives them the chance to benefit from any available discounts. (Matsuka & Avramenko, 2023). The definitions lead to the conclusion that dynamic pricing is a pricing approach that allows for price variations on different dates by applying the room rate per night in a fluctuating or dynamic manner. In other words, dynamic pricing is a tactic whereby the industry modifies prices in response to the state of the market.

Dynamic pricing has its roots in the early days of business when traders would bargain over prices based on factors like the buyer's social position and negotiating skills, the number of items being purchased, or available inventory. With the development of technology in the modern day, the idea of dynamic pricing is becoming more prominent and complex. These days, businesses use data analysis and algorithms to tailor prices based on variables like product configurations, browsing preferences, market rivalry, location, and historical purchasing trends (Kopalle et al., 2023).

## 2.3. *Average Daily Rates (ADR)*

The average daily rate (ADR) is calculated by dividing the total number of rooms sold by the actual daily revenue. The revenue manager uses daily rates to determine the ADR. The performance of hotel financial reports is greatly influenced by the average daily rate (ADR) and how high the room occupancy is. ADR is one of the financial metrics most frequently used in the hotel industry to assess a hotel's financial performance over a given period and about other hotels in the market. Nevertheless, several extra metrics are required to get hotel financial reports, including occupancy percentage and RevPAR (Revenue Per Available Room) (Nicolau et al., 2024). The company's pricing policy will directly affect revenue (Kurniawan & Jufri, 2023). In order to benefit both the hotel and the customers, the selling price must be set precisely so operational costs will be covered, and guests will also get benefits commensurate with the costs they have incurred (Asshofi et al., 2023).

## 2.4. *Hotel Forecast*

In hotel terms, a forecast is an analysis that estimates room revenue for a given period, travel demand, and occupancy using previously obtained or historical data. Hotel forecasting has become vital to hotel revenue management (Lee, 2018; Zhang & Niu, 2024). The accuracy of hotel forecasts is critical to hotel revenue management since it is the primary factor taken into consideration by hotel management when choosing the best pricing approach to maximize hotel allocation efficiency (Dergiades et al., 2018 from Zhang & Niu, 2024).

Based on the explanation of the definition above, a hotel forecast is a set of data that includes projections of market demand, occupancy, and revenue. These estimations are then used to determine the best pricing plan for a specific time frame. Hotel forecasts consider short-term operations, such as

how many staff are needed for hotel operations, tactical pricing, and investment. In some cases, hotels may also expect additional revenue. However, the hotel forecasts usually only include room revenue. Additional income estimates may be made but are usually included in a separate appendix. In general, hotel forecasts will be updated at regular intervals, depending on the requirements of the property. These updates could be in daily, monthly, three-month, or even annual forecasts, with estimates covering the entire year.

### 2.5. Hotel Revenue Management

In order to assist hotel management in maximizing income, hotel revenue management is a technique for identifying, predicting, and tracking current market demand. It typically comprises all data of available inventory, room types, and guest stay patterns, both past and future. Dynamic pricing strategy aims to enable hotels to provide the right products at the right price and time through the right distribution channels. Over the past two to thirty years, the hotel sector has adopted many revenue management practices in its operational activities. The room prices vary or are dynamic depending on demand and availability (Brborović, 2023). Optimizing revenue for the hotel is the goal of revenue management (RM) (Cross, 199 in Brborović, 2023). The basic concept of revenue management is to maximize the potential of accommodation and several interactive methods to increase prices when demand in the market is expected to reach its peak and drop prices when demand in the market reaches the target expected by hotel management (Hayes & Miller, 2011 in Brborović, 2023). An increasing number of criteria seem to be considered when setting hotel prices via automated revenue management and dynamic pricing systems, which do not require human interaction. (Haynes & Egan, 2024). With a complicated algorithm, this system may modify changing room rates in response to shifts in customer behaviour and market demand patterns. The temporary publish rate can be ascertained by the resulting algorithm independent of the hotel management's choice (Alrawadieh et al., 2021).

## 3. Method

The research method used in this research is the descriptive quantitative method. The quantitative descriptive method is a research method that aims to explain current phenomena by using numbers to describe the characteristics of the elements being studied (Sari & Sutabri, 2023). The research results are presented and connected to existing theories (Sandora & Prayitno, 2023). The primary data used in this research is hotel revenue management reports. The secondary data used in this research comes from journals and previous research related to research problems.

### 3.1. Sample

A sample is a subset of the population with comparable features (Tulwaidah et al., 2023). The sample used must represent the population studied. Sampling is used to precisely represent the population in order to provide answers to the research question (Asrulla et al., 2023). The sampling method in this research is purposive, in which the sample is determined based on the researcher's considerations (Amin et al., 2023). Non-probability sampling is the deliberate selection of items or participants for the sample based on the researcher's goals or areas of competence. Non-probability sampling selects the sample based on personal judgment instead of random selection. Under this methodology, only some population members will be able to participate in the research (Adeoye, 2023). Purposive sampling aims to help the researcher answer the research questions by concentrating on specific aspects of a population of interest. For instance, units are chosen for homogenous sampling based on shared qualities because the researcher is particularly interested in these attributes (Rai & Thapa, 2019). The sample was determined using the total sampling method, which means the entire population was used as a sample (Halawa et al., 2023).

The sample in this research is data drawn for seven months from August 2023 to February 2024, totalling 875 data. The data components used include the value of room nights (RN), Average Daily Rate (ADR), percentage of room occupancy forecast, and room sold. The data is obtained from the Daily

On the Book (OTB) Report, Dynamic Revenue Management Report, and Three Months Forecast Report. The following is the data calculation formula :

$$\begin{aligned}
 &= (\text{number of days each month in the OTB report} \times \\
 &4 [\text{daily pickup, ADR, REV, and \%Occ}]) + (4 [\text{Forecast RN and ADR} + \\
 &\text{Budget RN and ADR}] \times 6 \text{ months OTB} ) + \\
 &(2 [\text{Dynamic cover monthly Room Rev \&Room sold}] \times 6 \text{ months dynamic report}) + \\
 &(3 \text{ months} \times [5 (\text{Three mths forecasts 2023 Actual RN, REV, ADR, Total Room REV, Occ})]) \\
 &= ([31 \times 4] + [30 \times 4] + [31 \times 4] + [30 \times 4] + [31 \times 4] + [31 \times 4] + [22 \times 4]) + (4 \times 6) + \\
 &(2 \times 6) + [(2 \times 6) + (3 \times 5)] \\
 &= (124 + 120 + 124 + 120 + 124 + 124 + 88) + 24 + 12 + 15 \\
 &= 824 + 24 + 12 + 15 \\
 &= 875
 \end{aligned}$$

### 3.2. Data collection and analysis

Data analysis aims to present and explain the research results. The collected data is analyzed and presented in tabular form to highlight its significance and answer research questions. The study's dependent variables are revenue and occupancy, whereas dynamic pricing is the independent variable. In this instance, the number of hotel nights and the occupancy percentage describe occupancy. In this instance, revenue is expressed in terms of ADR and revenue. The primary data used in this research is data from the Daily Report, Dynamic Cover Monthly Report, and Three Month Forecast Report. This data was retrieved, processed, and updated daily to be examined and considered for hotel management during the author's internship at Bintan Island. Secondary data is taken from earlier research publications to support findings and claims.

This research was generally carried out in two stages: data collection and processing. Withdrawing reports is carried out by retrieving data from the Property Management System (PMS) called Opera. Monthly, three-month, and yearly forecasts are processed into Daily On the Book (OTB) and dynamic revenue management reports. After data collection is carried out, the next step is data processing. The data is processed using Microsoft Excel to make it easier to understand by describing it in tables. The existing data is then analyzed in order to obtain answers to answer research problems.

## 4. Results

### 4.1. ADR, revenue and occupancy fluctuations based on daily OTB reports

**Table 1** OTB (On the Book) Report Table Average of ADR, Revenue, and Occupancy Percentage  
Source: Daily on the Book Report

OTB (On the Book) Report Table Average of ADR, Revenue, and Occupancy Percentage (Estimated in Rupiah)			
Months	ADR	Rev	%Occ
August 2023	IDR 5,918,741	IDR 5,581,488,073	43.65%
September 2023	IDR 5,312,716	IDR 5,792,804,632	52.01%
October 2023	IDR 5,131,991	IDR 5,124,137,345	45.97%
November 2023	IDR 5,493,165	IDR 4,650,759,823	40.36%
December 2023	IDR 6,460,618	IDR 7,960,530,939	56.86%
January 2024	IDR 5,459,875	IDR 5,543,528,337	46.77%
February 2024	IDR 5,704,061	IDR 6,949,759,825	60.09%

Table 1 shows the average Average Daily Rates (ADR), room revenue, and room occupancy percentage over seven months from August 2023 to February 2024. The following data are the results from all data divided by the number of days in one month. In August 2023, the room revenue was IDR 5,581,488,073, occupancy was 43.65%, and the ADR was IDR 5,918,741. In September 2023, room revenue increased to IDR 5,792,804,632, as did the occupancy percentage, which reached 52.01%. However, ADR decreased to IDR 5,312,716. October 2023 saw a decline in room revenue to IDR 5,124,137,345 and occupancy and ADR to IDR 5,131,991 and 45.97%, respectively. In November 2023, the room revenue and occupancy decreased to IDR 4,650,759,823 and 40.36%. However, the ADR side increased to IDR 5,493,165. In December 2023, the three sides experienced an increase. Room revenue rose to IDR 7,960,530,939, occupancy rose to 56.86%, and ADR rose to IDR 6,460,618. However, in January 2024, all three sides experienced quite a drastic decline. Room revenue fell to IDR 5,459,875, occupancy fell to 46.77%, and ADR to IDR 5,459,875. In February 2024, all three sides showed quite a significant increase: room revenue increased to IDR 6,949,759,825, occupancy increased to 60.09%, and ADR increased to IDR 5,704,061.

#### 4.2. Comparison of RNs and ADR to forecast and budget

**Table 2** Room Nights and ADR Forecast against budget per month  
Source : Daily on the Book Report

Months	Room Nights (RNs)		Average Daily Rates (ADR) (Estimated in IDR)	
	Forecast	Budget	Forecast	Budget
August 2023	980	1345	IDR 6,408,626	IDR 6,080,819
September 2023	1060	1218	IDR 5,967,057	IDR 5,508,052
October 2023	1164	1194	IDR 5,081,979	IDR 5,918,046
November 2023	1154	966	IDR 5,081,350	IDR 5,323,839
December 2023	1256	1302	IDR 6,781,752	IDR 6,765,371
January 2024	1061	1042	IDR 5,372,982	IDR 6,849,309
February 2024	1347	1056	IDR 5,537,639	IDR 6,963,007

Table 2 compares the RN and ADR forecast to the RN and ADR budget from August 2023 to February 2024. In August, the RN budget was 1,345 RNs, while the RN forecast only reached 980 RNs. The ADR budget in August 2023 was IDR 6,080,819, while the ADR forecast was IDR 6,408,626. Data shows that the ADR forecast in August 2023 has achieved the budget, but the RN side still needs to achieve the budget. In September, the RN budget was 1,218 RNs, while the RN forecast only reached 1,060 RNs. The ADR budget in September 2023 was IDR 5,508,052, while the ADR forecast reached IDR 5,967,057. According to these statistics, the September RN and ADR failed to achieve the budget. In October 2023, the RN budget was 1,194 RNs, while the RN forecast only reached 1,164 RNs. The ADR budget was IDR 5,918,046, while the ADR forecast is only IDR 5,081,979. Data shows that the RN and ADR forecast in October 2023 did not achieve the budget. In November 2023, the RN budget was 966 RN, while the RN forecast reached 1,154 RN. The ADR budget was IDR 5,323,839, while the ADR forecast only reached IDR 5,081,350. Data shows that in November 2023, the RN achieved the budget, but the ADR still needs to achieve the budget. In December 2023, the RN budget was 1,302 RNs, while the RN forecast only reached 1,256 RNs. The ADR budget was IDR 6,765,371, while the ADR forecast was IDR 6,781,752. Data shows that the ADR forecast in December 2023 has succeeded in achieving the budget, but on the RN side, it has yet to achieve the budget. In January 2024, the RN budget was 1,042 RNs, while the RN forecast reached 1,061 RNs. The ADR budget was IDR 6,849,309, while the ADR forecast only reached IDR 5,372,982. Data shows that the ADR forecast in January 2024 did not achieve the budget but managed to achieve it on the RN side. In February 2024, the RN budget was 1,056 RNs, while the RN forecast was 1,347 RNs. The ADR budget was IDR 6,963,007, while the ADR forecast only reached IDR 5,537,639. Data shows that the ADR forecast in February 2024 did not achieve the budget, but the RN side achieved the budget.

4.3. *Dynamic Cover Monthly Report Analysis Results on Room Revenue***Table 3** Dynamic Cover Monthly Report Analysis Results on Room Revenue

Source: Dynamic Revenue Management Report

'000	Room Revenue								
Month	Act/OTB (IDR)	STLY (IDR)	Act/OTB vs. STLY IDR	%	Bgt (IDR)	Act/OTB vs. Bgt IDR	%	Fcst (IDR)	Fcst vs. Bgt
Aug	5,965,952	5,457,703	508,074	9%	8,194,749	2,229,367	27%	6,277,089	-23%
Sep	6,031,250	4,359,537	1,671,702	38%	6,703,199	-671,958	10%	6,327,826	-6%
Oct	5,459,273	4,918,264	524,614	11%	7,064,713	-1,606,183	23%	5,916,656	-16%
Nov	4,867,720	4,212,134	655,572	15%	5,146,242	-278,618	-5%	5,867,371	14%
Dec	8,163,562	7,655,389	508,173	7%	8,820,251	-639,386	-7%	7,361,139	-17%
Jan '24	5,836,448	5,902,171	-81,974	-1%	7,131,790	-1,311,593	18%	5,705,526	-20%
Feb '24	7,279,465	4,213,564	3,065,921	73%	7,361,491	-65,581	-1%	7,459,863	1%

Table 3 displays the changes in revenue from August 2023 to February 2024 due to the dynamic pricing strategy's deployment and a comparison with the budget, all estimated in Indonesian Rupiahs (IDR). Table 3 compares actual, budget, and forecast in terms of room revenue and compares it with the previous year. Actual room revenue in August 2023 is expected to be IDR 5,965,952, budget room revenue is expected to be IDR 8,194,749, and forecast room revenue is expected to be IDR 6,277,089. The comparison of forecast room revenue to budget room revenue decreased by -0.23%, and actual room revenue decreased by IDR 311,377. Data shows that actual room revenue in August 2023 did not achieve the room revenue forecast or room revenue budget, but at least it increased from the previous year (2022), which only touched IDR 5,457,703, an increase of IDR 508,074 or as much as 9%. In September 2023, actual room revenue will be IDR 6,031,250, budget room revenue will be IDR 6,703,199, and forecast room revenue will be IDR 6,327,826. The comparison of forecast room revenue with budget room revenue is -0.06%, and with actual room revenue, there is a difference of IDR 294,988. Data shows that the actual room revenue in September 2023 did not achieve the room revenue forecast or room revenue budget. However, it managed to increase from the previous year to only IDR 4,359,537, an increase of IDR 1,671,702 or as much as 38%. Actual room revenue in October 2023 is expected to be IDR 5,459,273, budget room revenue is expected to be IDR 7,064,713, and forecast room revenue is expected to be IDR 5,916,656. A comparison of forecast room revenue with budget room revenue shows a difference of -0.16%, and against actual room revenue, there is a difference of IDR 458,871. Data shows that actual room revenue in October 2023 did not achieve the room revenue forecast or room revenue budget. However, it managed to increase from the previous year to only IDR 4,918,264, an increase of IDR 524,614 or worth 11%. Actual room revenue in November 2023 is expected to be IDR 4,867,720, budget room revenue is expected to be IDR 5,146,242, and forecast room revenue is expected to be IDR 5,867,371. When comparing the revenue to the budget room, there is a 14% (positive) difference, and the actual revenue differs by IDR 999,712. Data shows that the actual room revenue in November 2023 did not achieve the room revenue forecast, but the room revenue forecast managed to achieve the room revenue budget. Apart from that, actual room revenue in November 2023 increased by IDR 655,572, or 15%, over the same month the year before. Actual room revenue in December 2023 is expected to be IDR 8,163,562, budget room revenue is expected to be IDR 8,820,251, and forecast room revenue is expected to be IDR 7,361,139. Comparison of forecast room revenue with budget room revenue has a difference of -0.17%, and to actual room revenue, there is a difference of IDR -803,047. Data shows that actual room revenue in December 2023 achieved the room revenue forecast but did not achieve the room revenue budget, an increase from the previous year, which only reached IDR 7,655,389, an increase of IDR 508,173 or the equivalent of 7%. Actual room revenue in January 2024 is expected to be IDR 5,836,448, budget room revenue is expected to be IDR 7,131,790, and forecast room revenue is expected to be IDR 5,705,526. Comparison of forecast room revenue with budget room revenue has a difference of -0.20%, and to actual room revenue, there is a difference of IDR -131,109. Data shows that actual room revenue in January 2024 achieved the room revenue forecast but still needs to achieve the room revenue budget. Apart from that, a comparison with actual room revenue in the previous year also appears to have decreased by IDR -81,974 or -0.01%. Actual room revenue in February 2024 is expected to be IDR 7,279,465, budget room revenue is expected to be IDR 7,361,491,

and forecast room revenue is expected to be IDR 7,459,863. There is a 1% (positive) discrepancy between the forecast and budget room revenue and an IDR 180,276 difference between the actual and forecast room revenue. Data shows that actual room revenue in February 2024 did not achieve the room revenue forecast, but the room revenue forecast achieved the room revenue budget. An increase was also visible compared to last year, which only touched IDR 4,213,564, an increase of IDR 3,065,921 or 73%.

#### 4.4. Dynamic Cover Monthly Report Analysis Results on Room Sold

**Table 4** Dynamic Cover Monthly Report Analysis Results on Room Sold  
Source: Dynamic Revenue Management Report

Month	Act/OTB (RNs)	STLY (RNs)	Room Sold						Fcst (RNs)	Fcst vs. Bgt
			Act/OTB vs. STLY		Bgt (RNs)	Act/OTB vs. Bgt				
			RNs	%		RNs	%			
Aug	1047	1271	-224	-18%	1345	-298	-22%	980	-27%	
Sep	1150	1246	-96	-8%	1218	-68	-6%	1060	-13%	
Oct	1035	1295	-260	-20%	1194	-159	-13%	1164	-2%	
Nov	891	815	76	9%	966	-75	-8%	1154	19%	
Dec	1257	1199	58	5%	1302	-45	-3%	1256	-4%	
Jan '24	1068	879	189	22%	1042	26	3%	1061	2%	
Feb '24	1260	650	610	94%	1056	204	19%	1347	28%	

Table 4 displays the changes in occupancy due to the dynamic pricing strategy's deployment and compares it to the budget for August 2023 to February 2024. Table 4 compares the budget and forecast for the room sold with the previous year. The actual room sold in August 2023 is expected to be 1,047 RNs, the budget room sold is expected to be 1,345 RNs, and the forecast room sold is expected to be 980 RNs. In comparison of forecast rooms sold to budget rooms sold, there is a difference of -0.27%, and to actual rooms sold, there is a difference of -67 room nights. Data shows that actual room sales in August 2023 achieved the room sales forecast but still need to achieve the room sales budget. Actual rooms sold in August 2023 have declined from 1,271 room nights in the prior year, a fall of 224 room nights or 0.18%. In September 2023, the actual rooms sold will be at 1,150 room nights, the budget rooms sold will be at 1,218 rooms sold, and the forecast rooms sold will be at 1,060 room nights.

In comparison of forecast rooms sold and budget rooms sold, there is a difference of 0.13%, and to actual rooms sold, there is a difference of -90 room nights. Data shows that actual room sales in September 2023 achieved the room sales forecast but still need to achieve the room sales budget. Apart from that, there was a drop of 96 room nights, or -0.08%, compared to the prior year, which had 1,246 room nights. Actual room sold in October 2023 is expected to be 1,035 RNs, the budget room sold is expected to be 1,194 RNs, and the forecast room sold is expected to be 1,164 RNs. In comparison of forecast rooms sold to budget rooms sold, there is a difference of -0.02%, and to actual rooms sold, there is a difference of 129 room nights. Data shows that actual room sales in October 2023 did not achieve the room sales forecast or the room sales budget. In October 2022, the actual rooms sold reached 1,295 room nights, which means there was a decrease of 260 room nights or 0.20%. Actual room sold in November 2023 is expected to be 891 RNs, the budget room sold is expected to be 966 RNs, and the forecast room sold is expected to be 1,154 RNs. In comparison of forecast rooms sold to budget rooms sold, there is a difference of 19% (positive), and to actual rooms sold, there is a difference of 263 room nights. Data shows that actual room sales in November 2023 did not achieve the room sales forecast, but the room sales achieved the budget room sales. There was an increase compared to the previous year, which only touched 815 room nights, an increase of 76 room nights or 9%. Actual rooms sold in December 2023 are expected to be 1,257 RNs, the budget rooms sold are expected to be 1,302 RNs, and the forecast rooms sold are expected to be 1,256 RNs. In a comparison of the forecast room sold to a budget room sold, there is a difference of -0.04%, and to the actual room sold, there is a difference of -1 room nights. Data shows that the actual room nights in December 2023 achieved the rooms sold forecast but still need to achieve the rooms sold budget. There was an increase compared to the previous

year, with only 1,199 room nights, an increase of 58 room nights or 5%. The actual rooms sold in January 2024 are expected to be 1,068 RNs, the budget rooms sold are expected to be 1,042 RNs, and the forecast rooms sold are expected to be 1,061 RNs.

In comparison of forecast rooms sold to budget rooms sold, there is a difference of 2% (positive), and to actual rooms sold, there is a difference of -7 room nights. Data shows that actual room sales in January 2024 achieved the room sales forecast and the room sales budget. An increase was also visible compared to the previous year, which only touched 879 room nights, 189 room nights or a 22% increase. The actual rooms sold in February 2024 are expected to be 1,260 RNs, the budget rooms sold are expected to be 1,056 RNs, and the forecast rooms sold are expected to be 1,347 RNs. In comparison of forecast rooms sold to budget rooms sold, there is a difference of 28% (positive), and to actual rooms sold, there is a difference of 87 room nights. Data shows that until February 22, 2024, actual room sales did not achieve the room sales forecast, but the room sales forecast achieved the room sales budget. An increase was also visible compared to the previous year, with only 650 room nights, an increase of 610 room nights or 94%.

#### 4.5 Three-Month Forecast Analysis Results for November 2022 - January 2024

**Table 5.** Three-Month Forecast Analysis Results for November 2022 - January 2024  
Source: Dynamic Revenue Management Report

	Three-month forecast (fit)		
	November (2023)	December (2023)	January (2024)
RN	584	879	593
REV (IDR)	3,552,443,358	6,131,194,842	3,518,047,356
ADR (IDR)	6,082,951	6,975,193	5,392,626
Total Room Rev. (IDR)	4,706,403,120	7,088,992,234	4,546,202,129
Average Rate (IDR)	5,033,586	6,079,753	5,006,831
Occupancy %	44,52	53,73	41,84

Table 5 generally shows the rise and fall of occupancy and revenue over three months, specifically from November 2023 – January 2024. Table 5 shows the significant ups and downs due to the implementation of dynamic pricing in terms of room nights, revenue, ADR, total room revenue, average rate, and occupancy percentage over three months, from November 2023 to January 2024. In November 2023, the room nights were 584 room nights. There was an increase in December 2023 to 879 room nights due to the momentum of Christmas and New Year 2024, then a decrease in January 2024 to 593 room nights. In November 2023, the revenue side showed IDR 3,552,443,358. There was an increase in December 2023 to IDR 6,131,194,842 and a decrease in January 2024 to IDR 3,518,047,356. In November 2023, the ADR side showed IDR 6,082,951—an increase in December 2023 to IDR 6,975,193 and a decrease in January 2024 to IDR 5,392,626. In November 2023, total room revenue was IDR 4,706,403,120, an increase in December 2023 to IDR 7,088,992,234, decreased to IDR 4,546,202,129. In November 2023, the average rate showed IDR 5,033,586. There is an increase in December 2023 to IDR 6,079,753 and a decrease in January 2024 to IDR 5,006,831. In November 2023, the occupancy percentage showed 44.52%, an increase in December 2023 to 53.73% and a decrease in January 2024 to 41.84%. So, it can be concluded that based on Table 5, it is enough to show that implementing a dynamic pricing strategy can provide significant positive changes in revenue and occupancy.

## 5. Discussion

### 5.1. The Influence of Dynamic Pricing against occupancy and revenue based on OTB Report

Although the ADR was observed to surpass the budget in 2023 nearly, more is needed to achieve the budget for room nights and occupancy. The value of room nights and occupancy always surpasses the

budget in 2024. However, the ADR side never achieved the budget. So, the finding in this case is that hotel management only has two choices: increasing ADR or increasing occupancy. In 2023, hotel management seemed to prioritize increasing ADR rather than occupancy. Therefore, the value of room nights and occupancy will not achieve the budget. Meanwhile, in 2024, hotel management prioritizes increasing the occupancy. Therefore, the value of room nights and occupancy consistently achieved the budget, but not on the ADR side. Thus, if hotel management prioritizes increasing the ADR value, the figures for room nights and occupancy will not achieve the budget, and vice versa. If hotel management prioritizes increasing the number of room nights and occupancy, then the ADR value cannot achieve the budget. In November 2023, the ADR did not achieve the budget; based on specific considerations, the hotel management decided to remove the peak period surcharge during the high season period of 11 to November 13 2023, to coincide with the momentum of Deepavali (a Hindu holiday in India). However, hotel management prefers to self-prioritize room night side will achieve the budget.

## 5.2. *The Influence of Dynamic Pricing against occupancy and revenue based on Three-Month Forecast Report*

Based on the tables that have been depicted, the revenue and occupancy graphs likely follow each other. Based on the discussion, revenue should also increase if occupancy increases. The explanation is also in line with the statement of Mrs S, the Executive Reservation Sales Officer of the resort in Bintan Island, who stated that the price fluctuations at this resort depend on hotel occupancy. If occupancy is high, then prices will follow, and vice versa. Table 5 demonstrates that from November to December 2023, the dynamic pricing strategy will majorly impact every aspect. The increase occurred because, in November – December 2023, hotel management seemed to prioritize increasing revenue. Then, a decline was seen in December 2023 – January 2024 because, in January 2024, hotel management prioritized increasing occupancy rather than increasing revenue. The implementation of the dynamic pricing strategy succeeded in increasing revenue and occupancy from the previous year. The proof can be seen in the monthly room sales and revenue reports.

## 6. **Conclusions**

Based on the data explanation and discussion, hotel management only has two choices: to prioritize increasing occupancy or revenue. Prioritizing increasing occupancy is recommended so that rooms stay fresh. The results of this research should be taken into consideration because if the rooms are occupied, the incoming revenue will not only increase on the room revenue side but guests are also expected to spend more money on other hotel facilities, such as restaurants, spas, etc. Hotel staff can also carry out sales techniques such as upselling to guests. The higher the occupancy, the more service charges will also increase. It is recommended that prices not be set too high, especially during the high season period, because, based on existing data, prices that are too high cause many guests to cancel the reservation and choose competing hotels based on price considerations, resulting in occupancy, revenue, and ADR has decreased. Also, setting reasonable prices will make reservations always come in and cause daily pick-up (the number of reservations coming in in one day) to increase, which also causes an increase in occupancy and revenue. Then, considering to not removing peak period surcharges during peak seasons or peak periods is recommended because removing period surcharges caused a very significant decline in revenue, as happened during the high season of Deepavali (a religious celebration for Hindus) in November 2023, considering that one of Bintan resort most significant market segments is Indian guests.

The problem and research objectives are thought to be addressed by the data explanations and tables presented above, wherein the dynamic pricing strategy resulted in a notable rise in room revenue and occupancy. The study's findings also present new opportunities for future research into fixed pricing and other pricing strategies and the creation of hotel revenue management plans. Additionally, this research brings up a new topic about what would happen if this dynamic pricing approach were used to set prices for other hotel amenities like banquets, dining areas, and meeting packages.

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