Research of Hotel Price Competition in Java and Bali

Project Presentation

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01

Introduction

Motivation and Research Question

Motvation

- Indonesia is a country that is often visited by tourists
- Hotel is one of the important things in a tourism place
- Many factors affect hotel prices which is become the main consideration for customers in choosing a hotel
- There is also hotel price competition between nearby hotels

Therefor we want to know what factors that affect a hotel price and how is the effect, we also want to know the tendency of hotel price competition in Indonesia, especially in Java and Bali. Beside that, we want to know the effect of Covid-19 periodization to the hotel price in Java and Bali.

Research Question

1. What is the factors that affect hotel price in Java and Bali? And How is the effect to the hotel price?

2. How is the hotel price competition between nearby hotel in Java and Bali?

3. How is the effect of Covid-19 periodization to the hotel price in Java and Bali between October and November?

02

Literature Study

Literature Comparison and
Literature Gap

Literature Comparison

No	Paper Title	Authors	Year	Journal Name
1	Different from or similar to neighbors? An investigation of hotels' strategic distances	Minsun Kim, Wesley Roehl, Seul Ki Lee	2019	Tourism Management
2	Factors Influencing Hotels' Online Prices	Sérgio Moro, Paulo Rita & Cristina Oliveira	2017	Journal of Hospitality Marketing & Management
3	Impact of online reviews on hotel booking intention: The moderating role of brand image, star category, and price	Osman Ahmed El-Said	2019	Tourism Management Perspectives
4	Modeling hotel room pricing: A multi-country analysis	Manuel Sánchez-Pérez, María D. Illescas-Manzano, Sergio Martínez-Puertas	2018	International Journal of Hospitality Management
5	Quality differentiation and conditional spatial price competition among hotels	Seul Ki Lee	2014	Tourism Management

Literature Comparison

No	Riset Questions	Empirical Method	Sample Period; Data Frequency; Data Source	Dependent Variable	Independent Variable	Empirical Results
1	1. How conformity and differentiation in location, capacity, and quality impacts hotel performance and performances risk?	Instrumental variable estimation, OLS, 2SLS, GMM	Quarterly (first quarter of 2005 to second quarter of 2016); 296 hotels and 13616 observations	Performance and Performance risk	Strategic distance, Capacity distance, Quality distance, Quality segments, chain-affiliation, location characteristics	1. Conformity in location and qulaity dimensions, respectively tends to increase hotel performance but also increase its performace risk 2. mixing conformity and differentiation strategies in terms of hotels' location, capacity, and quality selections, a higher dispersion of differentiation (i.e., highly differentiated in one product dimension while conforming to others in all remaining product dimensions) is associated with higher but less stable performance, as compared with a lower dispersion of differentiation (i.e., equally differentiated in all three product dimensions)
2	1. What are the factors that influencing the hotel online price? 2. How big the factors affect the hotel online price?	Ensemble of multilayer perceptrons (neural network)	2016-2017; 3137 observations/simulations; Booking.com, Google, Tripadvisor, Facebook	Hotel price	city, stars, outdoor.pool, indoor.pool, spa, free.park, late.checkout, near.beach, near.city.center, stay. length, nr.adults, nr.children, nr.hits, nr.hits.hotel.plus.city, website.online.pay, google.ads, fb.official, fb.likes, fb.stays, fb.nr.reviews, fb.score, tripadvisor.nr.reviews, geo.type, global.brand, service.level, tripadvisor.score	1. The feature that most influencing price is TripAdvisor score, followed by number of children included, then location, then stars 2. Online payment system also affect the hotel price, as well as amenities 3. Social Media, Hotel, Reservation, Web visibility, and City accounted for 26.79%, 25.97%, 24.96%, 15.36%, 6.92% of relevance when modeling prices respectively

Literature Comparison

No	Riset Questions	Empirical Method	Sample Period; Data Frequency; Data Source	Dependent Variable	Independent Variable	Empirical Results
3	1. How is the impact of online reviews on hotel booking intention? 2. How is the direct influence of online reviews on hotel booking intention as well as to study the impact of three moderators (BI, HSC and PI) on this relationship?	Exploratory Factor Analysis (EFA), principle component analysis, Promax with Kaiser normalization, descriptive statistics, regression method, PROCESS macro for SPSS and SAS	2019; 432 customers; online and offline survey	Hotel booking intention	Price importance, Brand image, Positive review valence, Negative review valence	1. OCR (Online Customer Review) have become critical factors in the tourism and hospitality sectors, occupying a near commonplace position in the purchasing habits of consumers 2. Reviews with positive valence do not affect booking intention, while reviews with negative valence have a strong impact
4	1. Deepen the understanding of hotel pricing decisions by analyzing heterogeneous effects of hotel's characteristics, customers' experience, competition and country on fixed prices 2. How is the influence of hotel category, country of location, eWOM (reviews) received by hotel customers and hotel spatial competence?	Regression model, hypothesis testing, variance inflation factor, OLS, quantile regression model, Frisch-Newton method, bootstrap method,	2018; 3800 hotels in France, Spain, Italy, and UK (163 cities and organized in 1221 commercial zones); Veturis.com, alexa.com	The average room rate for a standard double room	Hotel category, Hotel local competition, eWOM (reviews), Country, Hotel size, Hotel type, City hotel,	1. The heterogeneity of the effects of hotel category, country location, eWOM and hotel competitive intensity across different price levels 2. Hotels concentration proves to have a generally positive effect on price, confirming positive effects of spatial concentration. 3. The significant effect of hotel country location and show the competitiveness in prices of hotels in Spain and Italy, compared to hotels located in France and the UK.

Literature Comparison

No	Riset Questions	Empirical Method	Sample Period; Data Frequency; Data Source	Dependent Variable	Independent Variable	Empirical Results
5	1. How is the spatial price competition among hotels in Texas? 2. How is the spatial price competition among hotels conditional on their quality differences?	Regression model, OLS, the Variance Inflation Factor (VIF) and the Breusch-Pagan (BP) statistics, 2SLS, the IV estimation,	2010, Quarterly; 4257 hotels in Texas; Source Strategies, Inc	The yearly average daily rate	unity when distance between hotels <= 10 miles, unity when distance between hotels > 10 and <= 20 miles, unity same quality hotels, unity different quality hotels, degree of price competition, the total number of hotels within 20-mile radius, segment hotels, transportation hubs, exogenous demand-generating locations, the number of tourist attractions in 10 miles radius, the number of rooms, locations	1. Hotels compete with more distant neighbors of similar quality than those who are quality-differentiated 2. There is possibility of cooperation among neighboring hotels similar in quality 3. The price competition among differentiated neighbors was highly significant at the radius of 10 miles. The differentiated neighbors who were located between 10 and 20 miles did not engage in a significant price competition. The undifferentiated neighbors showed significant price competition in both the 10 and 20 miles distance radius.

Literatute Gap

Developing Country

here is still little research on hotel prices in developing countries

The number of data observations

Most research uses observational data no more than 20000

Daily Hotel Price

There is no research that studies hotel prices on a daily basis

03

Data & Method

Webscraping and Linear Regression

Data

Webscraping

The data is collected by using Selenium library in Python from Traveloka.com and export to .xlsx format

Parameters for the hotel price

- 2 adults and 0 children
- 1 night stay
- 1 room that have the lowest price in the property at the time
- Price for Day+1 and Day+7
- 7 Provinces
- Collecting almost all the available data in the website at the time

Data Collection

Make the code in Python with Selenium Library to automate the browser and collect the data of **property daily rent prices**, **stars**, **rating**, **region**, and **property's name**

→ Running the program for certain time interval

→ Make the code in Python to combine and tidy up the data

↓

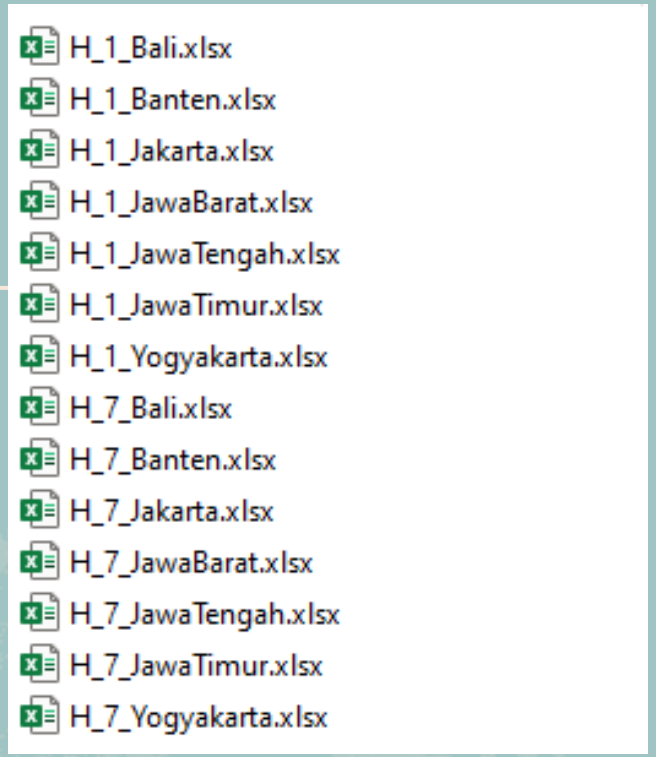
Make the code in Python with Selenium Library to automate the browser and collect the data of **facilities**, **address**, **type of property**, **type of room**, **latitude**, and **longitude**

← Running the program

← Clean the data

← Convert data to the panel format by using Python

Data



- There are 7 provinces in Indonesia which will be studied in this research
- We also consider the price for the next day and the next week for comparison

Clean Data

- Bali D+1 = 16807 observations
- Banten D+1 = 2783 observations
- Jakarta D+1 = 13030 observations
- West Java D+1 = 18676 observations
- Central Java D+1 = 11909 observations
- East Java D+1 = 16480 observations
- Yogyakarta D+1 = 8643 observations
- Bali D+7 = 17018 observations
- Banten D+7 = 2902 observations
- Jakarta D+7 = 13416 observations
- West Java D+7 = 19677 observations
- Central Java D+7 = 12510 observations
- East Java D+7 = 17090 observations
- Yogyakarta D+7 = 9408 observations

Example of Final Data Presentation

1	Nama Hotel	Tanggal	Harga	Daerah	Bintang	Rating	Latitude	Longitude	Oktober	November	Weekend	AC	Restaurant	Standard I	Non-Stan	tangerang	lebak
2	OYO 90708 Kbr Hom	1024	50000	tangerang	0	0	-6.24088	106.6241064	1	0	1	1	0	1	0	1	0
3	OYO 90708 Kbr Hom	1025	50000	tangerang	0	0	-6.24088	106.6241064	1	0	0	1	0	1	0	1	0
4	OYO 90708 Kbr Hom	1026	50000	tangerang	0	0	-6.24088	106.6241064	1	0	0	1	0	1	0	1	0
5	Hotel Padma Syaria	1025	88000	tangerang	0	7.4	-6.18517	106.6102151	1	0	0	0	0	1	0	1	0
6	Hotel Padma Syaria	1027	88000	tangerang	0	7.4	-6.18517	106.6102151	1	0	0	0	0	1	0	1	0
7	Hotel Padma Syaria	1029	88000	tangerang	0	7.4	-6.18517	106.6102151	1	0	0	0	0	1	0	1	0
8	Hotel Padma Syaria	1030	88000	tangerang	0	7.4	-6.18517	106.6102151	1	0	1	0	0	1	0	1	0
9	Hotel Padma Syaria	1031	88000	tangerang	0	7.4	-6.18517	106.6102151	1	0	1	0	0	1	0	1	0
10	Hotel Padma Syaria	1101	88000	tangerang	0	7.4	-6.18517	106.6102151	1	0	0	0	0	1	0	1	0
11	Hotel Padma Syaria	1114	88000	tangerang	0	7.7	-6.18517	106.6102151	0	1	1	0	0	1	0	1	0
12	Hotel Padma Syaria	1115	88000	tangerang	0	7.7	-6.18517	106.6102151	0	1	0	0	0	1	0	1	0
13	Hotel Padma Syaria	1116	88000	tangerang	0	7.8	-6.18517	106.6102151	0	1	0	0	0	1	0	1	0
14	Hotel Padma Syaria	1117	88000	tangerang	0	7.8	-6.18517	106.6102151	0	1	0	0	0	1	0	1	0
15	Hotel Padma Syaria	1118	88000	tangerang	0	7.8	-6.18517	106.6102151	0	1	0	0	0	1	0	1	0

Data

The data that we get

- Hotel daily rent price
- Star
- Rating
- City
- Latitude and Longitude
- Facility
- Type of room
- Hotel Name
- Date of stay

Data

Dependent Variable

Daily hotel rent price

Independent Variable

- Hotel distances between nearby hotel
- Price different between nearby hotel
- Date of stay

Control Variable

- Star
- Rating
- Facility
- City
- Weekdays/Weekend
- Room type

Analysis Method

Linear Regression Analysis

- Define the econometric model based on the purpose, available data, dependent variable, independent variable, and the control variabke
- Using Ordinay Least Square for estimate the coefficient of model

Econometric Model

Location Distance

$$LD_i = \frac{1}{n}\sum_{j=1}^{n}\sqrt{\left(LA_i - LA_j\right)^2 + \left(LO_i - LO_j\right)^2}$$

Descriptions :

$LD_i = Location\ Distance\ of\ i^{th}\ hotel$

$LA_i = Latitude\ of\ i^{th}\ hotel$

$LO_i = Longitude\ of\ i^{th}\ hotel$

$LA_j = Latitude\ of\ j^{th}\ hotel$

$LO_j = Longitude\ of\ j^{th}\ hotel$

$n = number\ of\ the\ nearest\ hotel\ that\ considered$

Econometric Model

Price Different

$$PD'_i = \begin{cases} |HH_i - HH_j|, & if\ HH_i > 0\ and\ HH_j > 0 \\ 0, else \end{cases}$$

$$PD_i = \frac{1}{m} \sum_{k=1, PD'_{ik} \neq 0}^{m} PD'_{ik}$$

Descriptions :

$PD'_i = Substraction\ of\ i^{th}\ and\ j^{th}\ hotel\ that\ have\ value\ non-zero\ for\ i^{th} hotel\ iteratrion$

$PD_i = Price\ Different\ of\ i^{th}\ hotel$

$HH_i = Price\ of\ i^{th}\ hotel$

$HH_j = Price\ of\ j^{th}\ hotel$

$m = number\ of\ PD'_i\ that\ has\ value\ non-zero$

Econometric Model

Regression Model

$$HH_{ij} = \beta_0 + \beta_{LD} LD_i + \beta_{PD} PD_{ij} + \beta_M M_j + \beta_B B_i + \beta_R R_i + \beta_T T_j + \cdots$$

$$+ \sum_{k=1}^{7} \beta_{Fk} F_k + \sum_{k=1}^{d} \beta_{Dk} D_k + \beta_W W_j + \beta_K K_i + \varepsilon_i$$

Descriptions :

$HH_{ij} = Price\ of\ i^{th}\ hotel\ at\ j^{th}\ observation$

$LD_i = Location\ Distance\ of\ i^{th}\ hotel$

$PD_{ij} = Price\ Different\ of\ i^{th}\ hotel\ at\ j^{th}\ obsevation$

$M_j = Dummy\ variable\ for\ month\ at\ j^{th}\ observation$

$B_i = The\ i^{th}\ hotel\ star$

$R_i = The\ i^{th}\ hotel\ rating$

$T = Date\ at\ j^{th}\ observation$

$F = Dummy\ variable\ for\ facility$

$D = Dummy\ variable\ for\ region$

$W_j = Dummy\ variable\ for\ weekend\ at\ j^{th}\ observation$

$K_i = Dummy\ variable\ for\ room\ type\ in\ i^{th}\ hotel$

04 Result & Discussion

Estimation Result and Discussion

Estimation Result

Bali

D+1

Coefficients: (1 not defined because of singularities)

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	601226.7	13494.4	44.554	< 2e-16	***
LD	-56432.9	3677.2	-15.347	< 2e-16	***
PD	841067.9	3081.6	272.932	< 2e-16	***
November	14849.4	11953.6	1.242	0.21416	
Bintang	39629.7	2076.1	19.088	< 2e-16	***
Rating	-17267.6	763.9	-22.605	< 2e-16	***
Tanggal	-14183.5	5931.8	-2.391	0.01681	*
AC	-26253.1	5249.8	-5.001	5.77e-07	***
Restaurant	87508.5	6244.9	14.013	< 2e-16	***
Swimming.Pool	9008.4	6597.8	1.365	0.17216	
WiFi	-30194.4	10452.4	-2.889	0.00387	**
Elevator	6877.3	5612.0	1.225	0.22042	
Parking	-25662.0	5859.3	-4.380	1.20e-05	***
X24.Hour.Front.Desk	26608.0	5624.7	4.731	2.26e-06	***
Weekend	-3845.7	4375.5	-0.879	0.37946	
Non.Standrad.Room	755050.2	19616.4	38.491	< 2e-16	***
karangasem	-3820.5	13760.9	-0.278	0.78130	
ogan.komering.ilir	548653.4	64355.8	8.525	< 2e-16	***
gianyar	-145760.3	10686.9	-13.639	< 2e-16	***
tabanan	133068.1	21054.9	6.320	2.68e-10	***
buleleng	16163.1	12639.5	1.279	0.20099	
badung	-139554.2	9964.0	-14.006	< 2e-16	***
denpasar	-50776.2	10680.3	-4.754	2.01e-06	***
jembrana	168609.1	27263.6	6.184	6.38e-10	***
bangli	134763.1	27592.1	4.884	1.05e-06	***
klungkung	NA	NA	NA	NA	

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

D+7

Coefficients: (1 not defined because of singularities)

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	610185.8	12474.6	48.914	< 2e-16	***
LD	-58816.6	3645.0	-16.136	< 2e-16	***
PD	849604.7	2870.6	295.968	< 2e-16	***
November	-11429.3	5487.9	-2.083	0.03730	*
Bintang	37266.7	2037.2	18.293	< 2e-16	***
Rating	-17423.2	748.5	-23.279	< 2e-16	***
Tanggal	2105.1	2721.3	0.774	0.43919	
AC	-22404.9	5164.0	-4.339	1.44e-05	***
Restaurant	95547.7	6169.1	15.488	< 2e-16	***
Swimming.Pool	13893.1	6504.3	2.136	0.03269	*
WiFi	-19439.9	10257.0	-1.895	0.05807	.
Elevator	5855.6	5539.8	1.057	0.29053	
Parking	-34056.1	5768.9	-5.903	3.63e-09	***
X24.Hour.Front.Desk	20792.0	5550.7	3.746	0.00018	***
Weekend	-6676.3	4328.4	-1.542	0.12299	
Non.Standrad.Room	624061.5	18043.8	34.586	< 2e-16	***
karangasem	13261.8	13564.0	0.978	0.32823	
ogan.komering.ilir	542358.9	63853.7	8.494	< 2e-16	***
gianyar	-135642.9	10563.1	-12.841	< 2e-16	***
tabanan	144770.2	20739.4	6.980	3.05e-12	***
buleleng	10492.5	12457.9	0.842	0.39967	
badung	-142493.1	9848.3	-14.469	< 2e-16	***
denpasar	-54879.2	10567.7	-5.193	2.09e-07	***
jembrana	174136.5	26985.3	6.453	1.13e-10	***
bangli	160429.1	27130.6	5.913	3.42e-09	***
klungkung	NA	NA	NA	NA	

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Estimation Result

Banten

D+1

Coefficients: (1 not defined because of singularities)

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	227799	24985	9.118	< 2e-16	***
LD	4399	7773	0.566	0.57145	
PD	352166	4034	87.297	< 2e-16	***
November	5122	17634	0.290	0.77151	
Bintang	72503	3324	21.809	< 2e-16	***
Rating	9273	2151	4.310	1.69e-05	***
Tanggal	-2832	8678	-0.326	0.74424	
AC	70740	8302	8.521	< 2e-16	***
Restaurant	42370	8989	4.714	2.55e-06	***
Swimming.Pool	14386	6978	2.062	0.03933	*
WiFi	45815	11955	3.832	0.00013	***
Elevator	7251	8218	0.882	0.37764	
Parking	-66142	8846	-7.477	1.02e-13	***
X24.Hour.Front.Desk	-61209	11013	-5.558	2.99e-08	***
Weekend	5449	6273	0.869	0.38512	
Non.Standrad.Room	386477	32629	11.845	< 2e-16	***
tangerang	-32055	18478	-1.735	0.08288	.
lebak	-238093	38555	-6.175	7.57e-10	***
serang	4459	17072	0.261	0.79398	
pandeglang	NA	NA	NA	NA	

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

D+7

Coefficients: (1 not defined because of singularities)

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	287255.6	20362.1	14.107	< 2e-16	***
LD	4995.3	6422.0	0.778	0.436721	
PD	219117.8	3358.0	65.252	< 2e-16	***
November	269.2	6674.2	0.040	0.967834	
Bintang	69075.9	2769.8	24.939	< 2e-16	***
Rating	6941.0	1831.7	3.789	0.000154	***
Tanggal	-181.7	3283.0	-0.055	0.955876	
AC	74088.4	6985.7	10.606	< 2e-16	***
Restaurant	57268.1	7467.1	7.669	2.35e-14	***
Swimming.Pool	31827.6	5791.2	5.496	4.23e-08	***
WiFi	27826.0	10190.7	2.731	0.006362	**
Elevator	-1479.2	6916.3	-0.214	0.830659	
Parking	-51329.7	7369.4	-6.965	4.05e-12	***
X24.Hour.Front.Desk	-39896.7	9223.5	-4.326	1.57e-05	***
Weekend	5917.2	5239.6	1.129	0.258861	
Non.Standrad.Room	325023.9	27262.5	11.922	< 2e-16	***
tangerang	-125002.0	15700.3	-7.962	2.42e-15	***
lebak	-305590.7	32109.5	-9.517	< 2e-16	***
serang	-79259.7	14570.5	-5.440	5.78e-08	***
pandeglang	NA	NA	NA	NA	

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Estimation Result

Jakarta

D+1

```
Coefficients: (1 not defined because of singularities)
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)       330479.69   15032.26  21.985  < 2e-16 ***
LD                 -9410.56    1729.51  -5.441 5.39e-08 ***
PD                361997.03    2431.03 148.907  < 2e-16 ***
November           19789.39   10109.51   1.958  0.05031 .
Bintang            52698.97    1767.25  29.820  < 2e-16 ***
Rating             -1784.72    1298.50  -1.374  0.16933
Tanggal            -5861.17    4987.87  -1.175  0.23998
AC                -22867.38    4851.20  -4.714 2.46e-06 ***
Restaurant            -58.96    4965.59  -0.012  0.99053
Swimming.Pool      143550.79    4892.80  29.339  < 2e-16 ***
WiFi               -28180.67    9545.69  -2.952  0.00316 **
Elevator            34245.26    4580.71   7.476 8.15e-14 ***
Parking             49808.93    5160.41   9.652  < 2e-16 ***
X24.Hour.Front.Desk 26118.85    6321.93   4.131 3.63e-05 ***
Weekend              4761.28    3629.69   1.312  0.18962
Non.Standrad.Room  894550.10   14781.86  60.517  < 2e-16 ***
jakarta.barat      -51079.06    7649.33  -6.678 2.53e-11 ***
jakarta.pusat      -58696.66    7031.73  -8.347  < 2e-16 ***
jakarta.selatan    -71397.90    7133.93 -10.008  < 2e-16 ***
jakarta.timur       22526.58    9568.49   2.354  0.01858 *
jakarta.utara            NA         NA      NA       NA
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

D+7

```
Coefficients: (1 not defined because of singularities)
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)       347081      13010  26.677  < 2e-16 ***
LD                -6536        1548  -4.222 2.44e-05 ***
PD                309635       2237 138.392  < 2e-16 ***
November            8380       4123   2.032   0.0421 *
Bintang            49771       1582  31.471  < 2e-16 ***
Rating             -2759       1171  -2.356   0.0185 *
Tanggal             2934       2033   1.444   0.1489
AC                -16943       4328  -3.915 9.08e-05 ***
Restaurant          1035       4471   0.231   0.8170
Swimming.Pool     137128       4353  31.504  < 2e-16 ***
WiFi              -35765       8477  -4.219 2.47e-05 ***
Elevator           38414       4122   9.319  < 2e-16 ***
Parking            52916       4610  11.479  < 2e-16 ***
X24.Hour.Front.Desk 11799      5633   2.095   0.0362 *
Weekend             4934       3250   1.518   0.1291
Non.Standrad.Room 784652      13633  57.554  < 2e-16 ***
jakarta.barat     -60142       6858  -8.769  < 2e-16 ***
jakarta.pusat     -58094       6307  -9.212  < 2e-16 ***
jakarta.selatan   -71484       6407 -11.157  < 2e-16 ***
jakarta.timur       6732       8578   0.785   0.4326
jakarta.utara         NA         NA      NA       NA
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Estimation Result

West Java

D+1

Coefficients:

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	283665.3	10022.6	28.303	< 2e-16	***
LD	13115.8	1516.6	8.648	< 2e-16	***
PD	304987.8	1323.5	230.439	< 2e-16	***
November	-15298.7	6829.2	-2.240	0.025090	*
Bintang	35766.8	1270.0	28.162	< 2e-16	***
Rating	-273.0	742.4	-0.368	0.713034	
Tanggal	3652.1	3363.5	1.086	0.277582	
AC	-10691.1	2974.3	-3.595	0.000326	***
Restaurant	61344.6	3274.1	18.736	< 2e-16	***
Swimming.Pool	85957.2	2955.6	29.082	< 2e-16	***
WiFi	-35907.3	5387.2	-6.665	2.72e-11	***
Elevator	46961.5	3161.2	14.855	< 2e-16	***
Parking	-3521.9	3957.0	-0.890	0.373455	
X24.Hour.Front.Desk	-6730.8	3928.4	-1.713	0.086656	.
Weekend	18751.6	2544.3	7.370	1.78e-13	***
Non.Standrad.Room	154621.3	17998.0	8.591	< 2e-16	***
sukabumi	15617.3	7834.6	1.993	0.046236	*
cianjur	11659.1	8733.8	1.335	0.181914	
bekasi	29607.2	7627.8	3.881	0.000104	***
cirebon	3260.7	8078.3	0.404	0.686488	
bandung	-6655.7	6858.6	-0.970	0.331854	
bogor	-9248.9	7209.2	-1.283	0.199533	
sumedang	45731.6	11505.6	3.975	7.07e-05	***
banjar	-101165.2	35582.8	-2.843	0.004473	**
subang	59961.4	11829.3	5.069	4.04e-07	***
karawang	14551.7	7747.6	1.878	0.060368	.
tasikmalaya	53855.1	10385.3	5.186	2.17e-07	***
majalengka	150026.8	15181.4	9.882	< 2e-16	***
purwakarta	89879.1	11444.8	7.853	4.27e-15	***
garut	72489.7	10983.7	6.600	4.23e-11	***

D+7

Coefficients:

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	273551.0	7828.1	34.945	< 2e-16	***
LD	10349.7	1234.6	8.383	< 2e-16	***
PD	242740.8	1093.2	222.036	< 2e-16	***
November	-7070.3	2585.2	-2.735	0.006245	**
Bintang	34480.2	1037.5	33.234	< 2e-16	***
Rating	-1196.9	606.7	-1.973	0.048533	*
Tanggal	3863.5	1275.8	3.028	0.002462	**
AC	-4167.5	2411.2	-1.728	0.083939	.
Restaurant	55989.5	2673.4	20.943	< 2e-16	***
Swimming.Pool	82238.2	2388.9	34.425	< 2e-16	***
WiFi	-37881.2	4389.3	-8.630	< 2e-16	***
Elevator	40188.7	2564.0	15.674	< 2e-16	***
Parking	-2730.8	3195.5	-0.855	0.392795	
X24.Hour.Front.Desk	-1702.7	3206.2	-0.531	0.595368	
Weekend	8329.6	2051.6	4.060	4.92e-05	***
Non.Standrad.Room	83570.5	13876.7	6.022	1.75e-09	***
sukabumi	32394.1	6335.8	5.113	3.20e-07	***
cianjur	8514.5	7104.8	1.198	0.230770	
bekasi	25677.7	6161.2	4.168	3.09e-05	***
cirebon	12965.1	6540.0	1.982	0.047446	*
bandung	-888.9	5499.5	-0.162	0.871597	
bogor	-4725.1	5799.8	-0.815	0.415257	
sumedang	31925.1	9303.5	3.432	0.000601	***
banjar	-90877.9	31511.7	-2.884	0.003932	**
subang	70779.4	9596.8	7.375	1.71e-13	***
karawang	15371.2	6272.9	2.450	0.014278	*
tasikmalaya	45035.3	8319.8	5.413	6.27e-08	***
majalengka	150396.6	12742.2	11.803	< 2e-16	***
purwakarta	87335.2	9316.8	9.374	< 2e-16	***
garut	53629.4	8821.4	6.079	1.23e-09	***

Estimation Result

Central Java

D+1

Coefficients: (1 not defined because of singularities)

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	133940.1	17388.2	7.703	1.44e-14	***
LD	8610.7	1587.7	5.423	5.96e-08	***
PD	204885.8	1488.9	137.606	< 2e-16	***
November	-13957.3	6732.9	-2.073	0.038195	*
Bintang	30249.5	1257.6	24.054	< 2e-16	***
Rating	-4001.5	617.3	-6.482	9.43e-11	***
Tanggal	6085.8	3320.9	1.833	0.066887	.
AC	-17963.3	3253.0	-5.522	3.42e-08	***
Restaurant	60700.8	3272.8	18.547	< 2e-16	***
Swimming.Pool	93142.3	3437.5	27.096	< 2e-16	***
WiFi	-20604.0	5788.6	-3.559	0.000373	***
Elevator	7927.3	3285.6	2.413	0.015848	*
Parking	15075.2	5509.1	2.736	0.006220	**
X24.Hour.Front.Desk	20387.3	3538.5	5.762	8.54e-09	***
Weekend	11861.7	2494.5	4.755	2.01e-06	***
Non.Standrad.Room	509275.3	19521.5	26.088	< 2e-16	***
blora	133792.1	17051.6	7.846	4.65e-15	***
semarang	88997.5	16065.6	5.540	3.10e-08	***
cilacap	109302.9	17105.3	6.390	1.72e-10	***
wonogiri	84880.5	18087.6	4.693	2.73e-06	***
banyumas	119504.8	16327.5	7.319	2.65e-13	***
temanggung	34335.3	25342.8	1.355	0.175496	
tegal	145372.5	16862.7	8.621	< 2e-16	***
klaten	155053.2	17540.5	8.840	< 2e-16	***
banjarnegara	143200.4	21080.2	6.793	1.15e-11	***
pemalang	150204.5	18393.8	8.166	3.51e-16	***

D+7

Coefficients: (1 not defined because of singularities)

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	103608.0	14005.8	7.398	1.48e-13	***
LD	6447.3	1287.1	5.009	5.54e-07	***
PD	172136.2	1160.6	148.311	< 2e-16	***
November	-898.9	2533.9	-0.355	0.72279	
Bintang	28585.0	1011.7	28.253	< 2e-16	***
Rating	-4235.1	502.1	-8.435	< 2e-16	***
Tanggal	298.9	1251.9	0.239	0.81132	
AC	-14785.7	2628.0	-5.626	1.88e-08	***
Restaurant	69926.6	2662.3	26.266	< 2e-16	***
Swimming.Pool	78352.9	2762.6	28.362	< 2e-16	***
WiFi	-20273.9	4689.8	-4.323	1.55e-05	***
Elevator	7947.1	2678.1	2.967	0.00301	**
Parking	5549.0	4348.3	1.276	0.20193	
X24.Hour.Front.Desk	12891.1	2885.2	4.468	7.97e-06	***
Weekend	3339.1	2013.8	1.658	0.09733	.
Non.Standrad.Room	225291.9	13880.6	16.231	< 2e-16	***
blora	167187.0	13943.2	11.991	< 2e-16	***
semarang	134049.5	13121.2	10.216	< 2e-16	***
cilacap	138623.5	13963.0	9.928	< 2e-16	***
wonogiri	125093.9	14776.2	8.466	< 2e-16	***
banyumas	152800.4	13355.2	11.441	< 2e-16	***
temanggung	66424.8	21635.1	3.070	0.00214	**
tegal	169523.9	13759.4	12.321	< 2e-16	***
klaten	190657.5	14341.7	13.294	< 2e-16	***
banjarnegara	177692.2	17255.6	10.298	< 2e-16	***
pemalang	188796.6	15126.6	12.481	< 2e-16	***

Estimation Result

East Java

D+1

Coefficients: (1 not defined because of singularities)

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	-125058.4	27213.2	-4.596	4.35e-06	***
LD	12014.5	1119.1	10.736	< 2e-16	***
PD	287024.6	1130.9	253.807	< 2e-16	***
November	-12545.8	5418.5	-2.315	0.02060	*
Bintang	30795.8	982.7	31.339	< 2e-16	***
Rating	487.6	531.9	0.917	0.35929	
Tanggal	641.9	2669.2	0.240	0.80996	
AC	2686.3	2530.8	1.061	0.28852	
Restaurant	48549.2	2628.0	18.474	< 2e-16	***
Swimming.Pool	65371.2	2610.9	25.038	< 2e-16	***
WiFi	-53110.8	5400.3	-9.835	< 2e-16	***
Elevator	29681.7	2637.3	11.255	< 2e-16	***
Parking	5441.3	3700.7	1.470	0.14149	
X24.Hour.Front.Desk	8973.2	3014.8	2.976	0.00292	**
Weekend	8705.0	1997.5	4.358	1.32e-05	***
Non.Standrad.Room	265601.1	15009.3	17.696	< 2e-16	***
sidoarjo	377740.1	26846.9	14.070	< 2e-16	***
jember	373256.8	26912.4	13.869	< 2e-16	***
bayuwangi	300081.8	26588.0	11.286	< 2e-16	***
batu	386813.7	26697.7	14.489	< 2e-16	***
kediri	403135.3	27163.8	14.841	< 2e-16	***
surabaya	360427.8	26611.5	13.544	< 2e-16	***
malang	372677.1	26576.8	14.023	< 2e-16	***
pacitan	446283.3	27463.3	16.250	< 2e-16	***
tuban	379064.2	27395.5	13.837	< 2e-16	***
jombang	433109.6	27994.2	15.471	< 2e-16	***

D+7

Coefficients: (1 not defined because of singularities)

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	-208622.3	23620.7	-8.832	< 2e-16	***
LD	10044.3	997.2	10.072	< 2e-16	***
PD	242654.5	1032.9	234.919	< 2e-16	***
November	-6443.1	2241.2	-2.875	0.004048	**
Bintang	30562.0	876.2	34.878	< 2e-16	***
Rating	-322.4	466.2	-0.692	0.489239	
Tanggal	1254.9	1105.4	1.135	0.256273	
AC	5990.9	2253.2	2.659	0.007847	**
Restaurant	52630.8	2350.8	22.388	< 2e-16	***
Swimming.Pool	52335.8	2331.1	22.451	< 2e-16	***
WiFi	-40538.5	4764.4	-8.509	< 2e-16	***
Elevator	28509.5	2348.3	12.141	< 2e-16	***
Parking	2269.6	3302.9	0.687	0.491995	
X24.Hour.Front.Desk	10474.4	2708.8	3.867	0.000111	***
Weekend	-1339.2	1778.0	-0.753	0.451314	
Non.Standrad.Room	222598.7	13426.6	16.579	< 2e-16	***
sidoarjo	449618.1	23375.1	19.235	< 2e-16	***
jember	442726.8	23438.5	18.889	< 2e-16	***
bayuwangi	381267.9	23134.3	16.481	< 2e-16	***
batu	456063.2	23230.0	19.633	< 2e-16	***
kediri	470909.4	23639.1	19.921	< 2e-16	***
surabaya	433451.0	23159.0	18.716	< 2e-16	***
malang	447543.6	23124.4	19.354	< 2e-16	***
pacitan	512413.8	23891.9	21.447	< 2e-16	***
tuban	455960.6	23893.4	19.083	< 2e-16	***
jombang	518764.9	24462.9	21.206	< 2e-16	***

Estimation Result

Yogyakarta

D+1

```
Coefficients: (1 not defined because of singularities)
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)         346525.2    20534.5  16.875  < 2e-16 ***
LD                    5877.4     4065.7   1.446  0.14832
PD                  262470.6     1638.7 160.171  < 2e-16 ***
November            -18679.5     8185.8  -2.282  0.02252 *
Bintang              32379.0     1520.2  21.299  < 2e-16 ***
Rating                -323.5      745.3  -0.434  0.66429
Tanggal               4980.1     4009.5   1.242  0.21424
AC                  -10883.7     5329.8  -2.042  0.04118 *
Restaurant           24923.2     3946.6   6.315 2.83e-10 ***
Swimming.Pool        84494.1     3934.9  21.473  < 2e-16 ***
WiFi                 18283.4     7404.3   2.469  0.01356 *
Elevator             67946.0     4527.4  15.008  < 2e-16 ***
Parking               3126.5     5099.0   0.613  0.53980
X24.Hour.Front.Desk   3013.6     4154.6   0.725  0.46825
Weekend              12488.8     3158.9   3.954 7.76e-05 ***
Non.Standrad.Room   154207.1    20477.6   7.531 5.56e-14 ***
sleman             -157526.9    18131.1  -8.688  < 2e-16 ***
yogyakarta         -109376.0    18834.2  -5.807 6.57e-09 ***
bantul              -97679.5    16959.0  -5.760 8.71e-09 ***
kulon.progo         -56180.0    17978.5  -3.125  0.00178 **
gunungkidul               NA         NA      NA       NA
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

D+7

```
Coefficients: (1 not defined because of singularities)
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)         331682.3    16427.3  20.191  < 2e-16 ***
LD                    1860.2     3217.2   0.578  0.56315
PD                  232686.9     1286.4 180.877  < 2e-16 ***
November            -18079.9     3123.6  -5.788 7.34e-09 ***
Bintang              27900.3     1203.3  23.187  < 2e-16 ***
Rating                -261.7      615.8  -0.425  0.67084
Tanggal               4731.9     1530.2   3.092  0.00199 **
AC                   -2578.6     4246.6  -0.607  0.54372
Restaurant           31017.1     3151.3   9.843  < 2e-16 ***
Swimming.Pool        72531.3     3104.9  23.360  < 2e-16 ***
WiFi                 24246.0     6086.5   3.984 6.84e-05 ***
Elevator             53954.7     3569.2  15.117  < 2e-16 ***
Parking              10015.8     4064.2   2.464  0.01374 *
X24.Hour.Front.Desk    -76.7     3329.9  -0.023  0.98162
Weekend               4866.1     2485.2   1.958  0.05025 .
Non.Standrad.Room    79046.3    15583.6   5.072 4.00e-07 ***
sleman             -164223.2    14693.2 -11.177  < 2e-16 ***
yogyakarta         -116646.2    15225.2  -7.661 2.02e-14 ***
bantul             -111521.6    13702.4  -8.139 4.50e-16 ***
kulon.progo         -29895.5    14723.3  -2.030  0.04233 *
gunungkidul               NA         NA      NA       NA
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Conclusions

- Hotel star always have positive effect to the hotel price, it’s like it should be
- Hotel rating have various effect to the hotel price, but mostly negative, this is indicates that the customer more like cheap hotels and don't really care about the facilities offered
- Hotel facility have various effect to the hotel price, but mostly positive

Conclusions

- Price different always have positive effect to the hotel price, whereas location distance have various effect to the hotel price, but mostly positive, except in Jakarta and Bali, this is indicates that the hotel in Banten, West Java, Central Java, East Java, and Yogyakarta have strong competition between nearby hotels, whereas the competition in Jakarta and Bali is not that strong anymore, even there could be cooperation between nearby hotels
- The Covid-19 periodization between October and November has various effect, but mostly negative, this is indicates that the hotel price in November is cheaper than October, there is a possibility that due to the decline in the number of covid-19, hotels are competing to provide lodging promos

Thanks

Riswansyah Imawan