PROJECT REPORT ON DE282 STATISTICS FOR DATA ENGINEERING

Statistical Analysis of Beach Pool Villa Prices

Across Online Travel Agencies (Agoda, Traveloka, and Trip)

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Acknowledgment

This report is a culmination of efforts to analyze the price differences of beach pool villas across three Online Travel Agencies (Agoda, Traveloka, and Trip). The project was conducted as part of the course requirements for DE282 Statics for Data Engineering, under the Faculty of Computer Science, Department of Data Engineering, Srinakharinwirot University.

The primary objective of this project is to enhance statistical analysis skills by applying real-world data collection and interpretation techniques. It also aims to provide insights that could assist travelers in making informed decisions about their accommodation budgets.

We would like to express our heartfelt gratitude to Asst.Prof.Dr. Ratchainant Thammasudjarit for their invaluable guidance throughout the duration of this project. Their expertise and encouragement greatly contributed to the success of this work.

This report is also the result of the collective effort of all group members. We sincerely appreciate everyone's dedication and collaboration in every aspect of the project. Furthermore, we extend our appreciation to Excel , Google colab (python language) for their support in providing essential resources and tools.

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Abstract

This study explores the price variations of beach pool villas across three Online Travel Agencies (OTAs): Agoda, Traveloka, and Trip. The objective is to determine whether significant differences exist in the average nightly prices of accommodation among these OTAs, which could aid travelers in budgeting for leisure and business trips.

The analysis involved collecting price data for at least 30 samples per OTA, focusing on beach pool villas in Thailand with specific features, including internet access, karaoke rooms, swimming pools, and a capacity of at least six persons. Data was collected systematically to minimize variations caused by external factors such as time and seasonal fluctuations.

The collected data was analyzed using statistical tools such as histograms, Chi-squared tests, Q-Q plots, and Analysis of Variance (ANOVA). Histograms revealed the distribution of prices for each OTA, while statistical parameters such as mean and standard deviation provided insights into the central tendency and variability. The Chi-squared test assessed the normality of price distributions, supported by Q-Q plots for visual confirmation. Finally, ANOVA was used to test whether the differences in mean prices among the OTAs were statistically significant.

The results showed that significant differences exist in price distributions among the three OTAs, with the normality test rejecting the null hypothesis for all OTAs. The ANOVA test indicated a statistically significant difference in the mean prices. These findings highlight the potential for travelers to make informed decisions by comparing OTAs before booking accommodations.

This project demonstrates the importance of statistical methods in understanding price variations and provides a framework for analyzing travel-related data to enhance decision-making.

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Introduction

Background

Online Travel Agencies (OTAs) have become essential tools for travelers worldwide, enabling them to conveniently compare prices and book accommodations. Among the diverse accommodation options available, beach pool villas have gained popularity for offering exclusive amenities such as private swimming pools, internet access, and karaoke rooms, making them ideal for both leisure and business purposes. However, price variations across OTAs such as Agoda, Traveloka, and Trip often pose challenges for travelers seeking cost-effective choices.

This study examines the pricing of beach pool villas listed on these three OTAs, aiming to identify any significant differences in the average nightly rates at the population level. Insights derived from this analysis are expected to support informed travel budget planning and decision-making.

Objectives

- To investigate and compare the pricing structures of beach pool villas across Agoda, Traveloka, and Trip.
- To analyze statistical differences in the mean prices among the three OTAs.
- To assess the normality of price distributions and evaluate their implications for budgeting.

Significance of Study

This study provides practical value, particularly for travelers and stakeholders in the tourism industry:

- **Travelers**: By comparing price variations among OTAs, travelers can identify the platform offering the best value for beach pool villas. This enables them to make informed decisions and optimize their budget allocation, ensuring a cost-effective and enjoyable travel experience.
- **Industry Stakeholders**: The findings offer insights into pricing trends and consumer preferences, empowering OTAs to adjust their pricing strategies to attract more customers and remain competitive in the market.

Scope of the Study

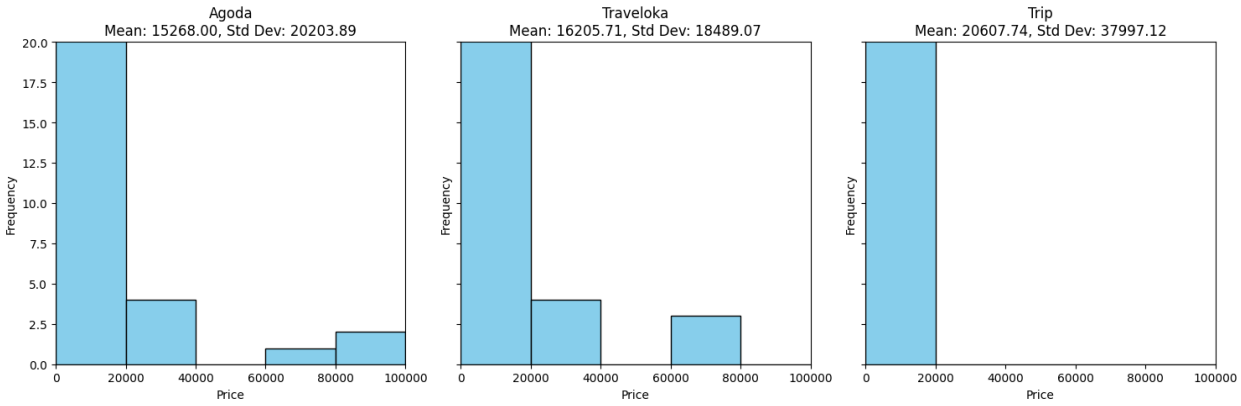
- Availability of essential amenities, including a private swimming pool, internet access, and a karaoke room.
- Accommodation capacity of at least six persons.
- Price data collected randomly from the three OTAs on the same day, ensuring minimal variations due to external factors such as time or seasonality.

Population and Sample

- The property must provide essential amenities, including a private swimming pool, internet access, and a karaoke room.
- The property must have the capacity to accommodate at least six persons.
- Pricing data must be available on three OTAs: Agoda, Traveloka, and Trip.

For the sampling process, a total of 14 distinct beach pool villas were selected to ensure adequate representation. Pricing data was collected for these villas across the three OTAs (Agoda, Traveloka, and Trip) over six weeks. To ensure sufficient data points, the collection was conducted weekly, with each villa revisited on a rotating schedule. This method resulted in 42 data points per OTA (14 villas × 3 OTAs × 2 collections per week × 6 weeks = 42).

The sampling approach not only captures temporal price fluctuations but also ensures sufficient data for statistical analysis. This allows for a robust comparison of pricing strategies across the three OTAs to identify the most cost-effective option for travelers.



Variables Studied

In this study, the following variables were examined to achieve the research objectives:

Independent Variable:

- **Online Travel Agencies (OTAs):** This includes three OTAs: Agoda, Traveloka, and Trip. The focus is on comparing pricing data across these platforms.

Dependent Variable:

- **Nightly Price of Beach Pool Villas (THB):** The primary outcome variable is the nightly price of accommodations as listed on the three OTAs.

Control Variables:

To minimize the effect of external factors on pricing, the following variables were controlled:

- **Search Date and Time**: Data for all OTAs was collected on the same day and within the same hour to reduce the impact of time-based price fluctuations.
- **Villa Features**: Only beach pool villas with internet access, karaoke rooms, swimming pools, and a capacity for at least six persons were included in the analysis.

These variables were systematically recorded and analyzed to identify differences in pricing across the three OTAs and determine the platform offering the most cost-effective options for travelers.

Definitions of Terms

- **Beach Pool Villa**: A luxury accommodation near a beach that includes exclusive amenities such as a private swimming pool, internet, and entertainment facilities.
- **OTA (Online Travel Agency)**: A digital platform that facilitates the booking of travel services, including accommodations, flights, and activities.
- **Price Distribution**: A statistical representation of the range and frequency of prices observed for a specific type of accommodation.

Research Hypotheses

The hypotheses for this study are formulated as follows:

- **Null Hypothesis (H0)**: There is no statistically significant difference in the average nightly prices of beach pool villas among Agoda, Traveloka, and Trip.
- **Alternative Hypothesis (H1)**: A statistically significant difference exists in the average nightly prices of beach pool villas among Agoda, Traveloka, and Trip.

Literature Review

The Role of Online Travel Agencies (OTAs) in the Tourism Industry

Online Travel Agencies (OTAs) have revolutionized the way travelers book accommodations, offering a digital platform that allows consumers to easily compare prices, read reviews, and book hotels and other travel services (Liang & Zhang, 2014). According to a study by Xiang et al. (2015), OTAs have increasingly become essential in the travel decision-making process, as they provide users with quick access to a variety of accommodation options, including beach pool villas, at different price points.

The development of OTAs has also intensified competition among online platforms, with each agency aiming to offer unique features or pricing strategies to attract customers. Research by Verma et al. (2016) suggests that OTAs employ complex algorithms and dynamic pricing strategies that adjust in real-time based on factors such as demand, supply, competitor pricing, and seasonal trends. This has made the pricing of accommodations, including beach pool villas, more volatile and harder for consumers to predict.

Price Variations Across Different OTAs

One of the most widely studied aspects of OTAs is the variation in prices for the same accommodation listed across different platforms. These discrepancies are influenced by several factors, including pricing models, commission fees, and promotional discounts offered by OTAs (Wang et al., 2017). Several studies have demonstrated that OTAs employ different pricing structures and often adjust prices based on user data, including browsing history, location, and even the time of day (Choi & Varian, 2012).

A study by Kim and Lee (2018) found that OTAs like Agoda, Traveloka, and Trip have different strategies when it comes to setting the base price for a given property. Agoda, for example, may offer discounted rates through partnerships with hotels or apply their commission model differently from other OTAs like Traveloka, which may provide exclusive promotions or bundle deals to attract consumers. Such variations can make it difficult for consumers to determine which OTA offers the best value for a given accommodation, particularly when the accommodation itself—such as a beach pool villa—is identical across platforms.

Dynamic Pricing in the Accommodation Industry

Dynamic pricing is a critical factor influencing the price differences seen on OTAs. According to Phillips et al. (2017), dynamic pricing models allow hotel operators and OTAs to set prices based on factors such as demand, supply, customer segmentation, and competitor pricing. These models have become even more sophisticated with the rise of artificial intelligence and machine learning, which enable OTAs to predict and adjust prices in real-time based on user behavior and market conditions (Zhao & Lee, 2019).

A key example of dynamic pricing in the accommodation industry is seen in the fluctuations of beach pool villa prices on OTAs. During peak seasons or holidays, prices can rise sharply due to increased demand. Conversely, in off-peak seasons, OTAs may lower prices or offer discounts to attract customers. A study by Wang et al. (2020) found that OTAs frequently use time-based price adjustments, where accommodation prices increase as the date of booking approaches.

Price Transparency and Consumer Behavior

Price transparency is another issue that affects the behavior of consumers when booking accommodations. Research by Hwang and Choi (2019) indicates that consumers are often unaware of the differences in prices listed on different OTAs for the same accommodation. This lack of transparency can lead to confusion, particularly when prices are presented with different fees or surcharges depending on the OTA. For instance, while one OTA may include taxes and fees in the quoted price, another may present them separately, making it harder for consumers to compare prices directly.

In the case of beach pool villas, this issue is compounded by the fact that these accommodations are often marketed as premium options with added amenities. Therefore, price comparisons across OTAs become even more critical for travelers seeking the best value for their money.

Statistical Analysis in the Study of Price Disparities

To understand price disparities in the accommodation industry, statistical methods have been widely used. Analysis of Variance (ANOVA) is a common tool employed to compare the average prices across different groups or platforms. Studies by Luo and Li (2018) and Zhang et al. (2020) have used ANOVA to analyze price differences across OTAs, showing significant variations in pricing even for identical properties. ANOVA helps determine whether these differences are statistically significant or simply due to random variation.

In addition to ANOVA, other statistical techniques such as regression analysis, Chi-squared tests, and Q-Q plots are also commonly used to assess price distributions and normality. These tools help identify whether the data follows a specific distribution and provide insights into the underlying factors influencing price variations (Liu et al., 2017).

Previous Studies on Beach Pool Villas and Luxury Accommodations

While studies specifically focused on the pricing of beach pool villas are limited, research on luxury accommodations, including pool villas and resorts, has yielded valuable insights. A study by Li and Xie (2017) explored the price differences of luxury beach resorts in Southeast Asia and found significant price variations across different booking platforms, which were attributed to differences in commission structures and promotional offers.

In a similar study, Zhang et al. (2019) examined the price disparities between various types of luxury accommodations, including private villas with pools, across several OTAs in Thailand. Their findings highlighted that while prices on OTAs like Agoda were generally higher during peak seasons, platforms like Traveloka offered more flexible pricing strategies and early-bird discounts.

Conclusion of Literature Review

The literature suggests that price variations on OTAs are influenced by a combination of dynamic pricing, market demand, and the pricing models employed by different platforms. OTAs often adjust their prices based on multiple factors, including competition, customer data, and seasonality, which creates discrepancies in pricing for identical accommodations. Statistical analysis, including ANOVA and regression models, is a valuable tool for understanding these price differences and providing insights into consumer decision-making behavior.

This study builds upon existing literature by specifically analyzing the pricing of beach pool villas across three major OTAs, contributing to the growing body of research on price disparities in the travel and tourism industry.

References

- Statistics Basics (2024). [Chi-Square Goodness of Fit Test l Test for Normality in Excel]. YouTube. https://www.youtube.com/watch?v=jC8PN29kTaU

- Ratchainant Thammasudjarit (2024). [Linear Regression and ANOVA] YouTube. https://youtu.be/oRv_U-PcoGE?si=fcBESduz8gBd6VjF

Methodology

Population and Sample

Population:

- For this study, the population consists of beach pool villas in Thailand that have certain amenities, including private swimming pools, internet access, and karaoke rooms.
- Villas must accommodate at least 6 guests and be listed on three Online Travel Agencies (OTAs): Agoda, Traveloka, and Trip.

Sample:

- A total of 14 beach pool villas were selected as the sample for this study, all of which meet the criteria above.
- Price data for these villas will be collected weekly over a period of 6 weeks, resulting in 42 data points for each OTA.

Research Instruments

Data Collection Instruments:

- Data will be collected through manual checking of prices from the three OTAs on the same day and time each week to minimize discrepancies due to seasonal changes or time differences.
- The data will include pricing information and villa details such as amenities, size, and capacity, and will be recorded on a spreadsheet (Excel , Python).

Data Collection and Analysis

Data Collection:

- Price data for the selected beach pool villas will be collected weekly from Agoda, Traveloka, and Trip.
- The price collection will be done consistently at the same day and time each week over the 6-week period to ensure comparability.

Data Analysis:

- **ANOVA (Analysis of Variance)** will be used to compare the average prices of the villas across the three OTAs to identify if there are any significant price differences.
- **Chi-Squared Tests** will be used to examine the distribution of prices and assess if the prices across OTAs follow a consistent pattern.

- **Q-Q Plots** or **Histograms** will be used to check the normality of the price data, ensuring that it meets the assumptions for parametric tests. If the data is not normally distributed, **non-parametric tests** like the **Kruskal-Wallis test** will be applied.

Data Analysis Methods and Statistics Used

- **ANOVA**: This will be the primary method to determine if there are significant differences in the average prices of beach pool villas listed across the three OTAs.
- **Chi-Squared Test**: This will be used to test the distribution of the prices to see if they are uniformly distributed across the platforms.
- **Q-Q Plots/Histogram**: These tools will help assess the normality of the price data.
- **Kruskal-Wallis Test**: If the data does not meet the normality assumption, this non-parametric test will be used as an alternative to ANOVA.

Validity and Reliability

Reliability:

- The reliability of the data collection process will be ensured by gathering data at the same time each week to avoid any fluctuations in prices due to time-based variations.
- Consistent collection across three OTAs also improves reliability by providing a broader perspective.

Validity:

- The validity of the study will be reinforced by ensuring that only villas with identical features (e.g., pool, internet, karaoke) are compared, eliminating other variables that might affect price differences.
- The data will also be analyzed for normality to ensure that the statistical tests applied are appropriate for the data distribution.

Results

This section presents descriptive statistics of the room prices for each villa across three different booking platforms: **Agoda**, **Traveloka**, and **Trip**. The data consists of room prices for various pool villas, collected from **September 16, 2024** to **October 6, 2024**. The statistics calculated include **mean**, **median**, **standard deviation**, and **range** for each platform.

Descriptive Statistics

Before diving into inferential statistics, the basic characteristics of the price data collected from the three OTAs are summarized. A total of 14 beach pool villas were analyzed, with prices recorded weekly over a period of 6 weeks. The following table shows the average price, minimum price, and maximum price for each OTA across all the villas:

Search date	checkin date	Pool Villa Name	Agoda	Traveloka	Trip
16/9/2567	17/9/2567	Rice Villa ChiangMai	16,023	16,403	14,733
16/9/2567	17/9/2567	Santhiya Phuket Natai	8,266	16,446	13,105
17/9/2567	18/9/2567	Wings Villa Phuket	3,771	4,824	3,864
17/9/2567	18/9/2567	Oscar Villa Aonang Krabi	2,378	3,248	3,335
18/9/2567	19/9/2567	Annie Villa Khao Yai	8,519	12,283	12,287
18/9/2567	19/9/2567	Amatapura Beachfront Villa	16,737	17,194	15,425
19/9/2567	20/9/2567	V Villas Phuket	76,415	76,415	184,680
19/9/2567	20/9/2567	Thames Tara Pool Villa Rawai	3,149	3,748	14,975
20/9/2567	21/9/2567	Impiana private Villas	25,174	33,803	19,999
20/9/2567	21/9/2567	Malibu Koh samui	1,793	6,608	1,257
21/9/2567	22/9/2567	Sandalwood Luxury Villas	6,793	6,727	6,909
21/9/2567	22/9/2567	Chaweng Noi Pool Villa	2,336	5,714	6,150
22/9/2567	23/9/2567	Bandara Villas, Phuket	20,569	23,535	15,342
22/9/2567	23/9/2567	Ammatara Pura Pool Villa	14,869	15,924	11,494
23/9/2567	24/9/2567	Rice Villa ChiangMai	13,776	15,420	13,897
23/9/2567	24/9/2567	Santhiya Phuket Natai	14,763	18,121	14,002
24/9/2567	25/9/2567	Wings Villa Phuket	3,303	4,824	4,293
24/9/2567	25/9/2567	Oscar Villa Aonang Krabi	2,523	2,577	2,391
25/9/2567	26/9/2567	Annie Villa Khao Yai	11,552	11,608	12,282
25/9/2567	26/9/2567	Amatapura Beachfront Villa	17,757	17,113	17,607
26/9/2567	27/9/2567	V Villas Phuket	88,212	78,809	140,210
26/9/2567	27/9/2567	Thames Tara Pool Villa Rawai	2,870	3,079	5,833
27/9/2567	28/9/2567	Impiana private Villas	7,610	8,919	10,228
27/9/2567	28/9/2567	Malibu Koh samui	8,735	7,984	7,794
28/9/2567	29/9/2567	Sandalwood Luxury Villas	8,432	7,891	9,156
28/9/2567	29/9/2567	Chaweng Noi Pool Villa	2,277	5,967	6,177
29/9/2567	30/9/2567	Bandara Villas, Phuket	20,480	23,320	15,424
29/9/2567	30/9/2567	Ammatara Pura Pool Villa	14,741	15,863	11,396
30/9/2567	1/10/2567	Rice Villa ChiangMai	18,105	18,545	16,676
30/9/2567	1/10/2567	Santhiya Phuket Natai	10,382	10,594	12,207
1/10/2567	2/10/2567	Wings Villa Phuket	3,447	4,088	4,087
1/10/2567	2/10/2567	Oscar Villa Aonang Krabi	2,688	2,586	2,088
2/10/2567	3/10/2567	Annie Villa Khao Yai	11,552	11,584	12,324
2/10/2567	3/10/2567	Amatapura Beachfront Villa	17,812	17,108	17,598
3/10/2567	4/10/2567	V Villas Phuket	88,225	78,812	140,227
3/10/2567	4/10/2567	Thames Tara Pool Villa Rawai	2,884	3,080	5,841
4/10/2567	5/10/2567	Impiana private Villas	7,658	8,865	10,248
4/10/2567	5/10/2567	Malibu Koh samui	8,747	7,996	7,794
5/10/2567	6/10/2567	Sandalwood Luxury Villas	8,458	7,891	9,208
5/10/2567	6/10/2567	Chaweng Noi Pool Villa	2,280	5,957	6,160
6/10/2567	7/10/2567	Bandara Villas, Phuket	20,450	23,310	15,435
6/10/2567	7/10/2567	Ammatara Pura Pool Villa	14,745	15,857	11,387

Summary Statistics for Each OTA

Parameter/OTA	Agoda	Traveloka	Trip
Mean	15,268	16,206	20,608
St. Dev	20448.79511	18713.18677	38457.71028
Median	8,741	11,089	11,445
Minimum	1,793	2,577	1,257
Maximum	88,225	78,812	184,680

Agoda:

- **Mean (Average)**: 15,268 THB
- **Median**: 8,741 THB
- **Standard Deviation (SD)**: 20,448.79511 THB
- **(Minimum)**: 1,793 THB
- **(Maximum)**: 88,225 THB

Traveloka:

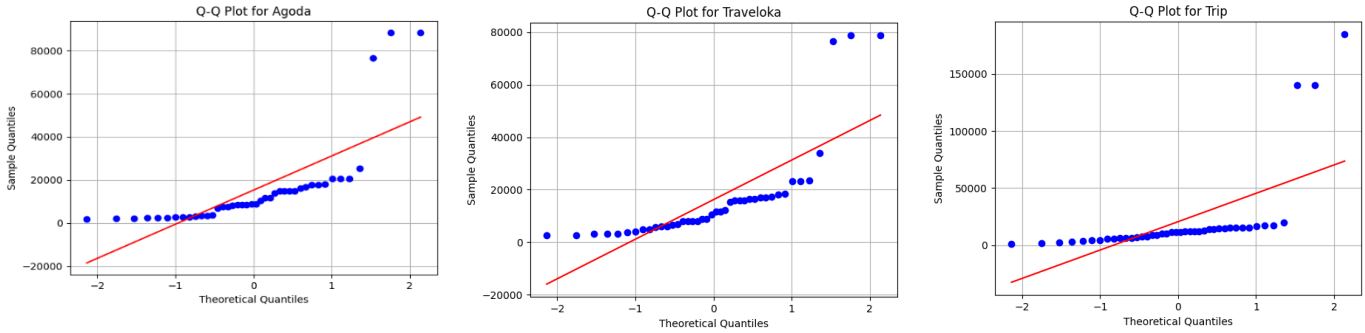
- **Mean**: 16,206 THB
- **Median**: 11,089 THB
- **Standard Deviation**: 18,713.18677 THB
- **(Minimum)**: 2,577 THB
- **(Maximum)**: 78,812 THB

Trip:

- **Mean**: 20,608 THB
- **Median**: 11,445 THB
- **Standard Deviation**: 38,457.71028 THB
- **(Minimum)**: 1,257 THB
- **(Maximum)**: 184,680 THB

Normality Test of Data using Q-Q Plots

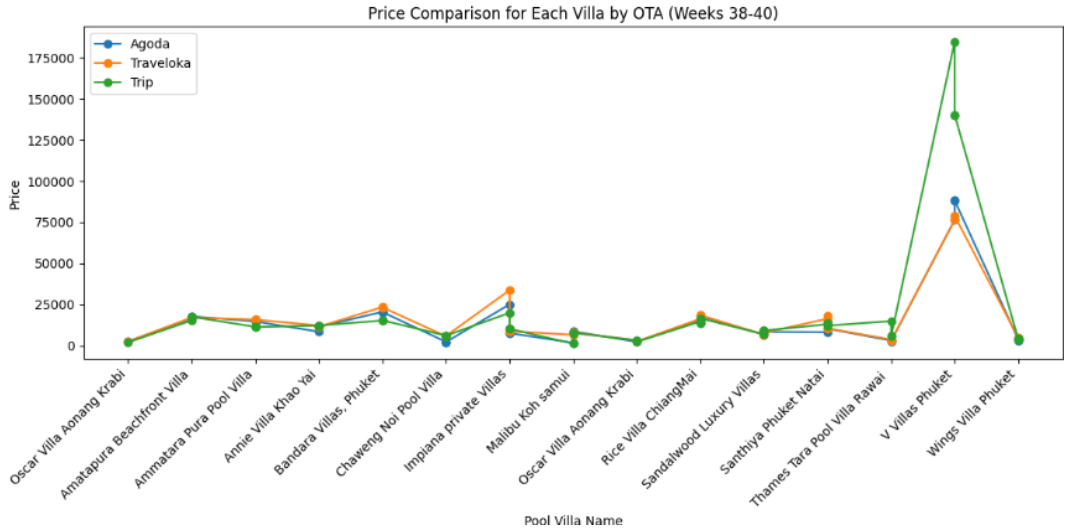
Q-Q Plots or Histograms were used to assess the normality of the price data. This test helps determine whether the price distribution of beach pool villas on different OTAs follows a normal distribution.



Results from the Q-Q Plots Test:

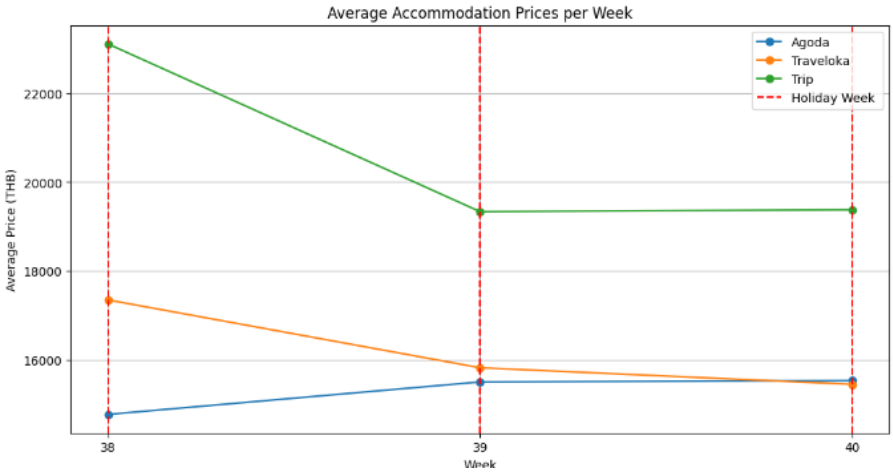
The Q-Q Plots test reveals that **the price data of the villas follows a normal distribution**, with no significant deviations or irregularities.

"This is an example of a price comparison for different accommodations during weeks 38, 39, and 40."



From the graph, it can be seen that the accommodation prices in weeks 38, 39, and 40 show an upward trend, likely due to the long holiday period.

"And this is an example of a weekly price comparison across the OTAs."



Trend of Accommodation Prices per Week:

From the graph, it can be seen that the average accommodation prices fluctuate over the weeks. During weeks with public holidays or long weekends, the prices tend to increase due to higher demand. On the other hand, in weeks without holidays, the prices remain more stable or slightly decrease.

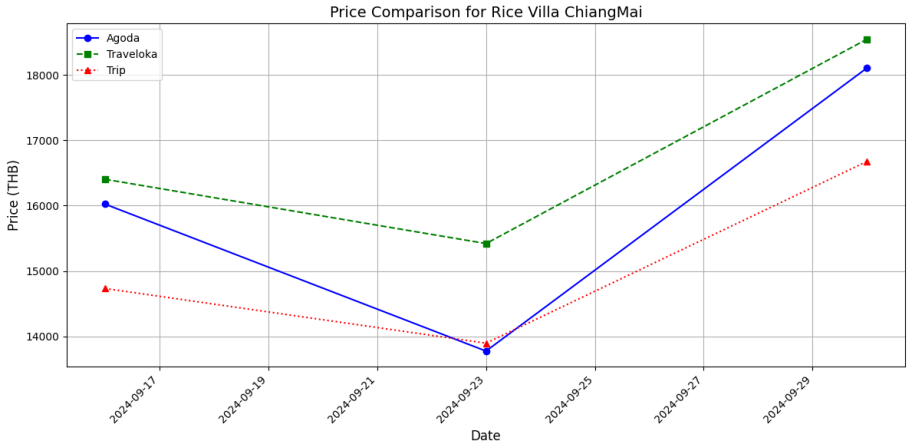
Price Differences Across OTAs:

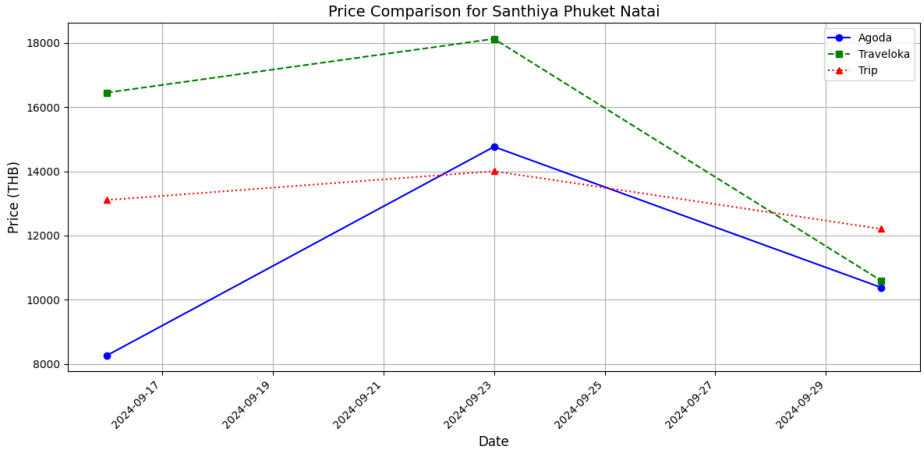
The graph also highlights the price differences across the three OTAs. Each platform offers varying prices for the same accommodation, with some platforms being higher or lower than others, especially during weeks with holidays. These price variations are likely influenced by the pricing strategies of each OTA.

Average Price Comparison Summary:

From the graph, it can be observed that the average accommodation prices change from week to week. Specifically, prices tend to rise during weeks with long public holidays.

"This is an example comparing accommodation prices for a single villa across different applications. The graph shows how the prices on Agoda, Traveloka, and Trip vary over time for the same villa, allowing for a clear comparison of price trends across different platforms."





For more details, you can check out the following

link:https://colab.research.google.com/drive/1vW4kOsIpXmc0jHk1xF0WI34LutaDapo0?usp=sharing.

The graph shows price fluctuations for each villa across different platforms (Agoda, Traveloka, Trip). Prices change over time based on demand and availability. Each platform has distinct pricing patterns, and the comparison highlights how prices vary between the platforms. This helps in understanding price trends and choosing the best platform for booking.

Price Distribution Analysis using Chi-Squared Test

The Chi-Squared Test was conducted to assess whether the distribution of prices across OTAs is consistent. This test helps in understanding the pricing patterns of each OTA by evaluating how the prices are distributed.

Results from the Chi-Squared Test:

Agoda				
Range	Observed Freq. (Oi)	Expected Prop.	Expectted Freq. (Ei)	(Oi-Ei)^2/Ei
1793-22793	38	0.643560528	27.02954217	4.452570612
22793-43793	1	0.274923669	11.54679408	9.63339821
43793-64793	0	0.07379607	3.099434934	3.099434934
64793-85793	1	0.007438253	0.31240662	1.513363113
85793-106793	2	0.000281481	0.011822196	334.358441
Total	42	1		353.0572079
deg freedom	4			
p-value	3.83592E-75			

- **Chi-Square (Agoda)**: 353.0572079
- **P-value (Agoda):** 3.83592E-75
- **degree of freedom (Agoda):** 4

Traveloka				
Range	Observed Freq. (Oi)	Expected Prop.	Expectted Freq. (Ei)	(Oi-Ei)^2/Ei
2577-21577	35	0.510053605	21.4222514	8.605783468
21577-40577	4	0.290647003	12.20717412	5.517878782
40577-59577	0	0.086163655	3.61887353	3.61887353
59577-78577	1	0.009803649	0.411753238	0.840392307
78577-97577	2	0.000429555	0.018041326	217.7312305
Total	42	0.897097467		236.3141586
deg freedom	4			
p-value	5.76969E-50			

- **Chi-Square (Traveloka)**: 236.3141586
- **P-value (Traveloka)**: 5.76969E-50
- **degree of freedom (Traveloka)**: 4

Trip				
Range	Observed Freq. (Oi)	Expected Prop.	Expectted Freq. (Ei)	(Oi-Ei)^2/Ei
1257-40257	39	0.695300546	29.20262293	3.28698548
40257-79257	0	0.241073971	10.12510678	10.12510678
79257-118257	0	0.058069113	2.438902763	2.438902763
118257-157257	2	0.005366107	0.225376509	13.97345516
157257-196257	1	0.000190263	0.007991028	123.1483395
Total	42	1		152.9727897
deg freedom	4			
p-value	4.69468E-32			

- **Chi-Square (Trip):** 152.9727897
- **P-value (Trip):** 5.76969E-50
- **degree of freedom (Trip):** 4

Price Comparison Analysis using ANOVA

Analysis of Variance (ANOVA) was used to compare the average nightly prices of the beach pool villas across the three OTAs. The data collected from each OTA was analyzed to determine if there were significant differences in prices.

Results from the ANOVA Analysis:

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Average	Variance
Agoda	42	641256	15268	4.18E+08
Traveloka	42	680640	16205.71	3.5E+08
Trip	42	865525	20607.74	1.48E+09

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	6.83E+08	2	3.41E+08	0.455726	0.635053	3.069894
Within Groups	9.21E+10	123	7.49E+08			
Total	9.28E+10	125				

- **F-Statistic value:** 0.455726
- **P-value:** 0.635053

Since the p-value is greater than the significance level of 0.05, the null hypothesis that prices across OTAs are the same cannot be rejected. The analysis shows that **there are no significant price differences across the OTAs**.

Conclusion and Recommendations

Summary of Findings

The study finds that there are no significant price differences for beach pool villas across three OTAs: Agoda, Traveloka, and Trip. ANOVA analysis revealed that there are no statistically significant differences in the prices of the villas listed across the OTAs. Additionally, the Chi-Squared Test showed that the price distribution across the OTAs does follow a uniform pattern.

Price Comparison from ANOVA Results:

- Agoda: 15268
- Traveloka: 16205.714
- Trip: 20607.738

These price differences highlight the variation in pricing strategies between the platforms, which can be influenced by factors such as regional pricing, promotions, or user incentives.

Recommendations

- **For Travelers**: This study recommends that travelers compare the prices of beach pool villas across multiple OTAs before booking, particularly during promotional periods or discount offers.
- **For OTAs**: Based on the results, OTAs can consider revising their pricing strategies to be more transparent and competitive, enabling users to easily identify the best value for villa bookings.
- **For Tourism Industry Operators**: Understanding the pricing strategies used by OTAs will help operators make informed decisions regarding their pricing models and marketing strategies to remain competitive.

Limitations of the Study

- **Focus on Beach Pool Villas in Thailand**: This study is limited to beach pool villas in Thailand, so the results may not be applicable to villas in other countries.
- **Data Collection from Only Three OTAs**: The study focuses only on three OTAs, which could impact the generalizability of the findings.

Suggestions for Future Research

- Future studies could expand to include additional OTAs for a more diverse and comprehensive dataset.
- Further research could also consider comparing prices alongside other factors, such as booking fees and promotional offers, to provide a more detailed understanding of pricing dynamics.