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Room Occupancy Rate of Accommodation Establishments in Davao Region, Philippines: An Empirical Analysis

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A B S T R A C T

This study was conducted to investigate what models could be developed in analyzing the Room Occupancy Rate (ROR) of accommodation establishments in the Davao Region. This investigation used a quantitative research method utilizing empirical analysis. The statistical tools used were the Bai and Perron multiple structural break test and One Least Squares (OLS) regression. Secondary data was utilized and the sources were from various government agencies and reliable websites. The key findings of this investigation include overall mean of 29.53% for the ROR of accommodation establishments in Davao Region between 2016 and 2022. Results revealed that the presence of three breakpoints happened in January 2019, January 2022 and March 2020. The OLS regression and Augmented Dickey-Fuller (ADF) test result exhibit that the sources and magnitude of the structural breaks are Public Safety with permanent effect, Regime with permanent effect, Earthquake with transitory effect and Health Crisis with permanent effect. The conclusions of this study imply that it just simplifies the actual events occurring in the Davao Region's Accommodation Industry.

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INTRODUCTION

The Room Occupancy Rate (ROR) is a reliable metric for evaluating the performance of tourism demand which also affects the accommodation establishments' performance. The substantial influx of tourists has greatly contributed to the economic and social progress of local communities, particularly when they check in to an accommodation establishment such as beach resorts (Soriano, 2022). Moreover, a study conducted by Lee (2020) highlighted the problem of a high prevalence of surplus rooms among accommodation establishments in Singapore. More often than not, the said surplus of room is said to be a result of widespread crises and catastrophic events on a global scale (Berbekova et al., 2021; Wu et al., 2010). Furthermore, the accommodation industry frequently faces challenges related to the fluctuating tourism demand (Wulandari et al., 2021) and these fluctuations are found to be associated with violent crime incidences and terrorist attacks that severely impacted the ROR of accommodation establishments (Anichiti et al., 2021; Kubickova et al., 2019; Nagaj & Žuromskaitė, 2020)

Additionally, the impact of climate-related seasonality on the decrease of tourism demand is a major concern. It is even more alarming that the ROR of accommodation establishments may reach its lowest levels during sudden climate-related occurrences such as storm surge, flooding, high heat index or waves, among others. Further, it is common that there are structural changes in the accommodation sector's tourism demand which is manifested in the room occupancy rates making it clear that the causes of these structural changes may vary depending on each specific location (Baldigara & Koic, 2015; Lei & Lam, 2015; Wu et al., 2010).

A study undertaken by Popșa (2021) in the Philippines has predicted that the hotel industry is among the most affected globally by the health crisis, COVID-19 pandemic. Specialized studies predict that the hotel business will not recover to its pre-pandemic levels until 2024. Luckily, there are handful researches that talked about specific variables to affect the occupancy rate of the accommodation establishments such as sharing economy's entry in the Philippines in 2008 (M. V. L. Tumbali, 2020)health emergencies, earthquake, among others (Rindrasih et al., 2019). However, no study has been published about the ROR of the accommodation sector in Davao Region. Consequently, the objective of this study is to address the population gap and evidence gap.

This research aims to investigate the possibility of numerous structural changes and understand the flexible characteristics of lodging businesses affected by low occupancy rates. The objective is to provide advice on enhancing efficiency in various situations, specifically addressing the current lack of empirical evidence (Miles, 2017). In particular, this study aims to examine how the room occupancy rate of accommodation establishments in Davao Region would be affected by external factors. Conducting this research study is important since no previous study has particularly attempted to empirically create an optimal framework for analyzing the ROR of accommodation establishments in the Davao Region, Philippines.

THEORETICAL REVIEW

Porter's 5 Forces Model

This research is mostly based on Michael Porter's influential work on competitive forces, generally referred to as the Porter's 5 forces model and it implies that competition is impacted by additional elements beyond only direct competitors. Porter (1980) provides a comprehensive framework that considers the economic dimensions of certain industries, the potential for new competitors to enter the market, the bargaining power of customers and suppliers, and the probability of alternative services or products emerging. Furthermore, one can employ strategic tactics to influence the equilibrium of these forces, so achieving a competitive advantage.

A noticeable transition can be observed in Porter's work, as he moved from an Industrial Organization viewpoint in 1980 to an Austrian/resource-based approach in 1990. Consequently, The assertion that Porter's Competitive Strategy is grounded on Industrial Organization theory, as evidenced by works like Bain (1968) and Scherer (1980), is not particularly contentious. Teece et al. (1992) establish a connection between Porter's work and this particular school, along with several other researchers. Porter acknowledges that he draws inspiration from Industrial Organization theory (Porter, 1981). Industrial organization theorists mostly study market structures. Typically, the findings of their research have been applied to government policy, frequently with the aim of promoting competition in order to enhance the effective distribution of resources for production. Porter has revolutionized the theories of this school and in a "Umwertung aller Werte" demonstrates how corporations might limit rivalry by utilizing certain notions derived from IO-theory (De Man, 1994).

Porter's primary analytical framework in Competitive Strategy consists of five forces that propel industry competition (Porter, 1980). The forces that affect a company's competitive position are the risk of new competitors entering the market, the ability of buyers to negotiate favorable terms, the ability of suppliers to negotiate favorable terms, the risk of alternative products or services replacing the company's offerings, and the intensity of competition among current companies. These five forces pose a risk to the profitability of a company.

Porter's model provides a robust theoretical framework for evaluating and understanding the intricacies of competitive dynamics in many industries, including the accommodation industry. This research is based on its shown effectiveness in evaluating competitive dynamics among accommodation establishments. The considerable adaptability of this theory enables it to effectively evaluate the competitive environment and strategic positioning of enterprises. Furthermore, the researcher has chosen to incorporate considerations of structural breaks into the investigation. This technique aims to provide a comprehensive comprehension of how changes in external factors impact the competitive landscape over a period of time. As a result, it will improve the strategic assessment for companies by offering a more in-depth and timely analysis.

The following alternative hypothesis was tested at 0.05 level of significance.

Ha1: The public safety index of Davao region significantly influences the room occupancy rate of accommodation establishments in Davao region.

Ha2: The climate significantly predicts the room occupancy rate of accommodation establishments in Davao region.

Ha3: The corruption perception index significantly influences the room occupancy rate of accommodation establishments in Davao region.

Ha4: The number of AirBNB's new entrants significantly predicts room occupancy rate of accommodation establishments in Davao region.

Ha5: The regime of regional director significantly influences the room occupancy rate of accommodation establishments in Davao region.

Ha6: The presence of earthquake with magnitude 5.0 above significantly influences the room occupancy rate of accommodation establishments in Davao region.

Ha7: The presence of health crisis significantly influences the room occupancy rate of accommodation establishments in Davao region.

The researcher tested which among the independent variables significantly influences the room occupancy rate of accommodation establishments in Davao Region at 0.05 level of significance. The conceptual model is represented by the following equation:

$$ROR_{2016\text{-}2022} = \beta_0 + + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 D_5 + \beta_6 D_6 + \beta_7 D_7 + e \quad (1)$$

Where:

ROR = monthly room occupancy rate from Jan 2016-Dec 2022

X1 = Public Safety Index -Crime Rate

X2 = Climate

X3 = Corruption Perception Index

X4 = AIRBNB number of new entrants

X5 = Earthquake occurrence, magnitude 5 and above within 300km radius

D6 = 1 for appointment of new DOT XI-Regional Director, 0 otherwise

D7 = 1 for health crisis, 0 otherwise

e = error term

METHODOLOGY

Non-experimental quantitative-empirical research was utilized in this scholarly undertaking. Quantitative approaches enable the systematic gathering and analysis of numerical data, offering a formal framework to investigate correlations, patterns, and trends within the research field (Creswell & Creswell, 2018). Moreover, researchers encounter a challenge in selecting the appropriate methodology when analyzing time series data. Due to the presence of features like trend and structural break, usual methods used for analyzing other data types may not be suitable for analyzing time series data (Cró & Martins, 2017). Understanding and appropriately addressing the key properties of time series data allows for a straightforward regression analysis to reveal the

patterns of relationships among the variables of interest (Shrestha & Bhatta, 2018).

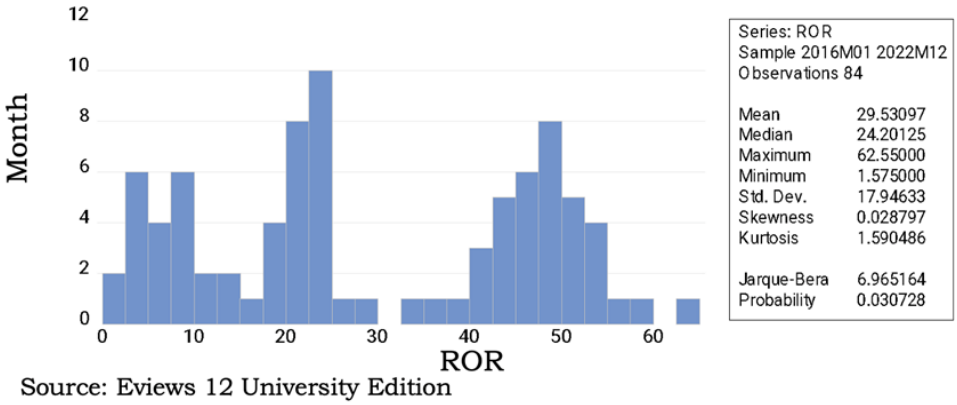
This study utilized secondary data as the source of information taken from the databank of various agencies and websites. The sources for the identified variables in this study with their corresponding indicators offer a set of time series data covering the 4 provinces of Davao region from 2016 up to 2022.

These time series data covered the 4 provinces and 2 cities of Davao Region from 2016 up to 2022. These data were sourced out directly from the provincial tourism offices, Philippine Institute of Volcanology and Seismology (PhilVolcs), Department of Tourism (DOT), Philippine National Police (PNP), Philippine Statistics Authority (PSA) and websites such as efoi.gov.ph. A set of 84 observations was constructed based on the available information and data from the identified offices and various online sources. The study's hypothesis was tested by utilizing statistical techniques OLS regression analysis. The utilization of quantitative research methodology improves the accuracy and objectivity of the study, enabling a thorough assessment of the phenomena being investigated and contributing to the development of strong and evidence-based conclusions.

RESULTS AND DISCUSSION

Descriptive Statistics

Presented in Figure 2 is the descriptive statistics with histogram and as seen in the figure, the overall average room occupancy rate from January 2016 – December 2022 is 29.53%.



Source: Eviews 12 University Edition

Figure 1. Descriptive Statistics

Moreover, to gain better understanding and appreciation about the descriptive statistics in Figure 1, Table 1 highlights the annual ROR with its corresponding highest monthly occupancy rate. The highest was in 2016 which is 51.13%, followed by the year 2018, with 47.43% ROR. Third on rank is year 2017 with 46.33%, and fourth is in the year 2022 with 24.42% ROR. Following the year 2022 is the year 2019 with 21.7% and in the year 2021, the ROR is 9.54%. Lastly, with the least percentage is the year 2021 with 9.54% ROR.

Between 2015 and 2019, worldwide hotel occupancy rates have generally fluctuated between 50% and 80% throughout all seasons, and it is the ideal

occupancy rate for any type of accommodation establishment (Easton, 2020). In addition, we can say that the ROR of accommodation establishments in Davao Region during the years 2016 to 2018 was high and in 2019 to 2022 was described as low occupancy.

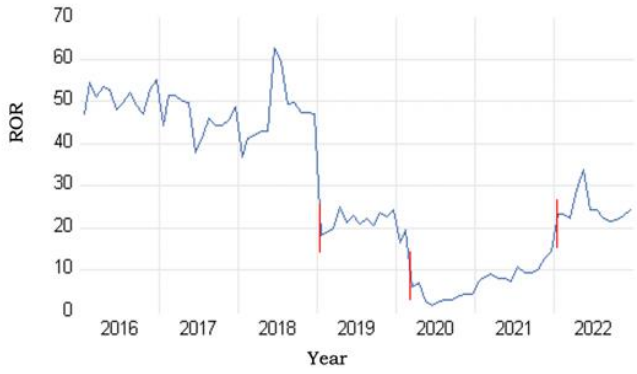
Consequently, it was affirmed by Kamińska and Mularczyk (2013) that occupancy rate of tourist accommodation varies from one place to another, and because of that they argued that to gain a high occupancy rate of rooms or beds a property should have 40 and more percent. Also, it was agreed by another study that in Croatia, the highest occupancy rate for hotels was 43% between year 2005 and August 2014 (Baldigara & Koic, 2015), and they described it as high. Hotel Imara Palembang for the period of January to July was 41%, and they describe it also as high occupancy rate (Rahmania et al., 2021).

Table 1. Room Occupancy Rate of Accommodation Establishments in Davao Region

Year	Average Room Occupancy Rate (%)	Highest Monthly Occupancy Rate (%)
2016	51.13	55.38 (December)
2017	46.33	51.61 (March)
2018	47.43	62.55 (May)
2019	21.7	24.38 (December)
2020	6.17	19.45 (February)
2021	9.54	14.57 (December)
2022	24.42	33.81 (May)
Overall Mean		29.53%

Source: Eviews 12 University Edition

Figure 3 displays a line graph that depicts the Room Occupancy Rate of accommodation establishments. Upon analyzing the graph, it is evident that there are possible abrupt changes in the pattern, suggesting that the time series may experience structural breaks. Structural breaks can indicate substantial alterations in the fundamental process of collecting data, potentially resulting from variables such as economic events, legislative changes, technical improvements, or other external influences.



Source: Eviews 12 University Edition

Figure 2. Room Occupancy Rate

Bai and Perron Test

To validate the author's suspicion about these changes and to ensure the strength of any future study or prediction, it is crucial to perform a rigorous test to detect structural breaks. The Bai and Perron Test is a very dependable and

extensively employed technique for identifying multiple structural breaks. This test enables the detection of several breakpoints in the time series data, offering a comprehensive insight into the specific locations and timings of these shifts.

Understanding and taking into consideration structural breaks is essential for precise forecasting, policy development, and strategic decision-making in the tourism sector. Performing a structural break test, such as the Bai and Perron Test, is an essential process to confirm the existence of these breaks and guarantee that the analysis accurately represents the actual characteristics of the data.

Table 1 presents the result of the Bai-Perron test. It was found out that there are three structural breaks and it happened in January 2019, January 2022 and March 2020.

Table 1. Bai-Perron test

Bai-Perron tests of L+1 vs. L sequentially determined breaks		
Sample: 2016M01 2022M12		
Included observations: 84		
Break test options: Trimming 0.15, Max breaks 5, Sig. level 0.05		
Sequential F-statistic determined breaks:	3	
Break test	F-statistic	Critical value**
0 vs. 1*	400.1498	8.58
1 vs. 2*	31.90983	10.13
2 vs. 3*	90.96455	11.14
3 vs. 4	10.38542	11.83
*Significant at the 0.05 level		
**Bai-Perron (Econometric Journal, 2003) critical values		
Break dates:	Sequential	Repartition
1	2019M01	2019M01
2	2022M01	2020M03
3	2020M03	2022M01

One Least Square (OLS) Multiple Linear Regression

Following the Bai-Perron test, the researcher conducted an OLS regression analysis using the Eviews 12 University Edition to check the sources of the break. This statistical tool was used to determine the independent variables that have a significant influence on the ROR of Accommodation Establishments in the Davao Region. Based on the results, the researcher can assert that the variables that significantly influence the breaks are also the causes of the breaks. Luckily, Perron and Yamamoto (2015) and Zarei et al. (2015) argue that after identifying structural breaks, it is possible to estimate the coefficients of the regression model independently for each period described by the breakpoints. This methodology enabled a comprehensive examination of the way in which the structural breaks within the data have changed over a period of time.

Shown in Table 2 was the result of the OLS regression. It was found out that among the seven independent variables, there were four independent variables that significantly influences the room occupancy rate of accommodation establishments in Davao Region at 0.05 level of significance, namely, Public Safety with 0.000 level of significance, Earthquake with 0.012 level of significance, Regime with 0.000 level of significance, and Health Crises

with 0.000 level of significance, which is below the 0.05 level of significance. This simply means that the sources of the break are the Public Safety, Earthquake, Regime and Health Crises.

On the other hand, the other three independent variables that have been found out to not significantly influence the ROR of accommodation establishments are: Climate with 0.3832 sig. value, Corruption Perception with 0.0523 sig. value and AirBNB with 0.6238 sig. value, which are above the 0.05 level of significance, leading to the failure of rejecting the null hypothesis.

The findings suggest that the regression equation serves as a predictive tool for estimating the ROR based on the values of the independent variables. Each coefficient (β) in the equation indicates both the strength and direction of the relationship between the corresponding independent variable and the ROR. Positive coefficients signify a positive relationship, meaning an increase in the independent variable leads to an increase in the predicted ROR, while negative coefficients indicate an inverse relationship.

Table 2. OLS Regression Analysis Result

Variables	Coefficient	T-statistic	Prob.
C	142.337	2.670416	0.0093
Public Safety	0.27451	5.527986**	0.0000
Climate	-0.005672	-0.877042^{ns}	0.3832
Corruption Perception	-2.965409	-1.971978 ^{ns}	0.0523
AIRBNB New entrants	26.27816	0.492538 ^{ns}	0.6238
Earthquake	0.602786	2.546945*	0.0129
Regime	-25.77577	-10.21412**	0.0000
Health Crisis	-13.41137	-6.897239**	0.0000
Adjusted r^2	0.919		
Prob (F-statistic)	0.000		
Akaike info criterion	6.187		
Schwarz criterion	6.418		
Hannan-Quin criterion	6.280		

Source: Eviews 12 University Edition
Legend: ns. Not Significant at 0.05 level of significance
*Significant at 0.05 level of significance
**Significant at 0.01 level of significance

Based on the result in Table 2, the estimation equation with its substituted coefficients are as follows:

Estimation Equation:

$$ROR_{m12016-m122022} = C(1) + C(2)*PublicSafety + C(3)*Climate + C(4)*CorruptionPerception + C(5)*AirBNB + C(6)*Earthquake + C(7)*D6Regime + C(8)*D7HealthCrisis \quad (2)$$

Substituted Coefficients:

$$ROR_{m12016-m122022} = 142.336954853 + 0.27451024276*PublicSafety - 0.00567208103724*Climate - 2.9654087699*CorruptionPerception + 26.2781613682*AirBNB + 0.602785837968*Earthquake - 25.7757718568*Regime - 13.4113663903*HealthCrisis \quad (3)$$

Room Occupancy Rate.

Room Occupancy Rate as the dependent variable of this study serve as the ratio of quantity of rooms available to the quantity of rooms demanded. Managers and CEOs in hotels and other accommodation establishments strive for optimum occupancy rates to maximize operational efficiency and revenue. They usually aim for 100% occupancy. However, overbooking is a problem

with this full occupancy objective. This is simply because of the fact that overbooking may be used in tourism and other industries to avoid revenue loss from customer cancellations (Mohan, 2021).

Hotel managers maximize profits by using resources efficiently. Maximum revenue per room is the only way to do this. The hotel manager only has the average daily rate. Demand usually increases revenue per room when demand is high. However, when demand is low, increasing the average daily rate would lower occupancy and income per available room. Thus, to effectively depict income per available room, the average daily rate and demand must be considered simultaneously (Chattopadhyay & Mitra, 2019)

The occupancy rate measures daily or monthly accommodation demand. The occupancy rate was evaluated using ordinary least squares to examine the variables' relationship. Many studies have evaluated occupancy rate, usually in a single urban region or nation, limiting a broader geographical analysis due to the different variables considered. The occupancy rate is moderately predictable by the developed model of Lei and Lam (2015). Monthly statistics show low occupancy and average daily rate in December. However, the last week of December is a short peak season with near-full occupancy and one of the highest daily fees. The indicator can also indicate low-demand times during a month of high activity (Mitra, 2020).

Chattopadhyay and Mitra (2019) also showed that a hotel with 500 rooms and a 70% occupancy rate will lose $127,750 in revenue if its average daily room cost drops by $1. A record of 54% occupancy rate was recorded in Portugal (Moro & Rita, 2019). However, the occupancy rate of a property is affected by the availability and demand of accommodations in the hotel sector's geographic area. A study found that hotel occupancy rates effect prices and despite an increase in business travelers, a fall in the average duration of stay lowers hotel occupancy rates in prominent tourist areas (Yang & Li, 2020).

Public Safety

The first variable public safety was found to significantly influence the ROR of accommodation establishments in Davao Region which is similar to the study of Alleyne and Boxill (2003) Their study mentioned that that the higher rate of unlawful activity in Jamaica, coupled with the prevailing sense of feeling unsafe, could potentially have a detrimental effect on the number of visitors to the country.

Moreover, the study of Bassil et al. (2014) also corroborated with the result of this study, they argued that that safety is indeed a source of structural breaks in the accommodation industry where they also highlighted that the events that concerns the safety and security of Lebanon were associated with series of bombings and assassinations. Also, it was mentioned in their study that the bombings and assassinations were negative shocks and it can definitely cause cancellations of flight leading to poor occupancy rate in the accommodation sector.

In addition, Chan and Lam (2013) added that since the 9/11 attacks, hotels have become a target for terrorist assaults. The result of this study was also

affirmed by the study of Rindrasih et al. (2019) where they found out that terrorism and transportation accidents significantly affect the tourism industry which directly affects the ROR of accommodation establishments.

A coefficient of 0.27 in the Ordinary Least Squares (OLS) regression results for the independent variable, public safety, indicates a substantial impact on the ROR of accommodation establishments in the Davao Region. This finding aligns with other studies, such as the study conducted by Alleyne and Boxill (2003), which emphasized the adverse effect of increased rates of illegal behavior on the volume of tourists visiting a certain location.

Similarly, the research conducted by Bassil et al. (2014) supported these findings, highlighting safety concerns as a cause of significant disruptions in the hotel business. Specifically, they pointed out incidents like bombings and assassinations in Lebanon, which resulted in low occupancy rates and the cancellation of flights. Additionally, Chan and Lam (2013) highlighted that hotels have grown vulnerable to terrorist attacks following the events of 9/11, thus emphasizing the importance of public safety considerations for lodging establishments.

In addition, Rindrasih et al. (2019) discovered that terrorism and transportation accidents have a substantial impact on the tourism business, directly influencing the ROR of accommodation establishments. Hence, the coefficient of 0.30 emphasizes the significance of tackling public safety concerns in order to guarantee the long-term profitability and sustainability of accommodation enterprises in the Davao Region.

Climate

The second independent variable is climate. It was found out that it does not significantly influences the ROR of accommodation establishments. A notable research discovery from this study is the limited impact of climate on the ROR of the accommodation sector in the Davao Region. This finding indicates that although there is extensive literature on climate in other research topics, particularly regarding its effects on different economic and environmental factors, there is an apparent dearth of literature discussing climate as a cause of structural changes or as a significant variable specifically within the accommodation industry in the Davao Region.

Climate was included in this study because the related literature and studies claim that climate significantly influences the ROR of the accommodation establishments. In a similar manner, Nik Mat et al. (2019) argued that climate has caused the shift of demand in the accommodation industry. Further, it was mentioned that tourist demand was higher in countries with temperate climates (Poprawe, 2015) which implies the higher occupancy rate of accommodation establishments.

In a study conducted by Ihsan and Alshibani (2018), they found that climate affects luxury hotel operating and maintenance costs (He et al., 2019). Climate affects an accommodation establishment's occupancy rate because water consumption is highly related to the number of people using an area and, in certain hotels, precipitation (Pinto et al., 2015)

Climate impact on tourism is only vaguely understood. Little is known about how climate affects tourism's economic potential. Climate-related elements that people evaluate when choosing tourism and recreation options are understudied, yet they are important for practical reasons. Climate-tourism links are generally inferred rather than observed and rarely tested. Finally, moderate climates attract more tourists at the same time, increases GDP per capita (Poprawe, 2015)

However, this discovery is not that consistent with prior studies that have investigated the influence of climate on the tourism and hospitality sectors. Climate can have a substantial impact on tourism demand and visitor experiences in specific locations (Gössling & Lund-Durlacher, 2021). However, the extent of its influence can differ based on factors like destination features, seasonal patterns, and traveler preferences (Elsayed, 2023).

A coefficient of -0.005 for the Climate variable in the Ordinary Least Squares (OLS) regression suggests a minimal negative impact on the ROR of accommodation establishments. However, the significance value being above the 0.05 level indicates that this coefficient is not statistically significant. In practical terms, this means that any observed relationship between climate and ROR may be due to random chance rather than a meaningful and consistent pattern.

The implication of a non-significant coefficient is that changes in climate conditions, such as temperature, precipitation, or seasonal variations, do not have a significant and reliable effect on the financial performance of accommodation establishments in the Davao Region. While climate may still play a role in influencing tourism patterns and traveler preferences, the statistical analysis suggests that its impact on ROR is not strong enough to be considered meaningful when compared to other factors included in the regression model.

Therefore, while the coefficient of -0.005 suggests a slight negative association between climate and ROR, the lack of statistical significance indicates that this relationship should be interpreted with caution and may not have practical implications for decision-making or strategy development.

This research emphasizes the significance of considering the impact of climate within particular industries and geographic areas. Although climate can significantly influence tourism demand in certain locations, its effect on the accommodation industry in the Davao Region seems to be minimal. This emphasizes the necessity for additional research to investigate the intricate relationship between climate, tourism, and accommodation dynamics in this particular context.

Corruption Perception

The corruption perception as the third variable with p-value of 0.0532 was also detected to significantly influence the ROR of accommodation establishments but at 0.10 level of significance. The Ordinary Least Squares (OLS) regression analysis of Corruption Perception reveals that the coefficient of -2.966 has a negative impact on the ROR of accommodation establishments.

Nevertheless, the absence of statistical significance suggests that this link should be approached with care and may not have practical implications for decision-making or strategy creation in the accommodation industry in the Davao Region.

Mushtaq et al. (2021) confirms the result of this investigation that government effectiveness has a negative influence on the tourism demand. Also, the study of Mignonac and Lind (2012) mentioned that a country has a big problem if the officials are not truthful or corrupt. But during events like Rio Olympics in Brazil and the World cup, it increased the global exposure and resulted to higher tourism demand. However, the study of Yap and Saha (2013) has a different claim that corruption perception would not have a negative effect in the tourist demand.

This discovery is consistent with the results of a study conducted by Mushtaq et al. (2021), which validated the adverse influence of government efficacy on the demand for tourism. Furthermore, Mignonac and Lind (2012) underscored the adverse consequences of corruption on the reputation and trustworthiness of a nation, placing particular emphasis on the criticality of governance that is both truthful and transparent. Exceptions were noted, including major international events such as the World Cup and the Olympics in Rio de Janeiro, which increased global exposure and led to a surge in tourism demand despite the presence of corruption issues.

Moreover, Yap and Saha (2013) affirmed the viewpoint by proposing that the perception of corruption might not invariably exert an adverse impact on the demand for tourism. The unsubstantial influence of corruption perception on the appeal and competitiveness of a tourist destination, and consequently on the financial performance of lodging establishments in the Davao Region was still highlighted by the -4.11 coefficient. This means that

Air BNB New Entrants.

The fourth variable listed below was the AirBNB's new entrants where it was found out that it has no significant effect on the ROR of accommodation establishments in Davao Region. However, from the literature they argued that the presence of substitution threats and/or new entrants holds a major implication in the direct financial consequences of AirBNB's increased room availability on important performance indicators such as occupancy rates (OCC), average daily rate (ADR) and revenue per available room (RevPAR) (Dogru et al., 2019, 2020, 2023).

Another study that partly confirm this was the study of Tumbali (2020), that the presence of AirBNB does not significantly influence all types of accommodation establishments. AirBNB's new entrants only impacted the mabuhay accommodation establishments. But, a study by Srovnalikova et al. (2020) also found out that there is a significant link between AirBNB occupancy rate and the accommodation establishments' occupancy rate.

In the Ordinary Least Squares (OLS) regression model, the coefficient of 26.28 for the variable representing Airbnb new entrants indicates a positive influence to the Room Occupancy Rate (ROR) of lodging establishments. This suggests that, on average, a modest decline in the occupancy rate of

conventional lodging establishments in the Davao Region could be associated with an augmentation in the quantity of new AirBNB entrants. Nevertheless, it is critical to acknowledge that the coefficient in question possesses a significance value exceeding the 0.05 threshold, which deems it devoid of statistical significance.

A coefficient that is considered statistically insignificant suggests that the observed association between the dependent variable (ROR) and the independent variable (AirBNB new entrants) is more likely to be attributed to random variation than to a consistent and meaningful pattern. Put simply, the coefficient of 26.28 might not provide an accurate representation of the actual influence that new entrants to Airbnb have on the occupancy rate of conventional lodging establishments.

Hence, although the coefficient implies a negative correlation between new entrants to Airbnb and ROR, the absence of statistical significance renders the association insufficiently robust to warrant substantial conclusions. Further investigation or an expanded dataset might be required to ascertain whether the entry of new Airbnb hosts into the Davao Region has, in fact, a substantial effect on the occupancy rates of lodging establishments.

Earthquake

The fifth variable to test if it significantly influences the ROR in the accommodation establishments was the presence of earthquake. Many studies have argued that disasters such as earthquake are found to be directly affecting the ROR of accommodation establishments in Jakarta, Indonesia (Rindrasih et al., 2019), Taiwan (Wang, 2009), Japan (Badri & Kazemi, 2021), Thailand (Tang et al., 2019), Nepal (Tuladhar, 2016).

Indeed, the result of this study confirms the previous studies in different parts of the world. By looking at the coefficient of 0.603, it is important to note that there is a lower number of increase in the ROR of accommodation establishments in the Davao Region. This implies that even if there are earthquakes, there is no huge decrease in the ROR of accommodation establishments.

Regime

The sixth variable was regime and found to be a source of structural change and significantly influence the ROR of accommodation establishments in Davao Region. In the same manner, this finding also confirms the study of Valadkhani and O'Mahony (2018) that the performance of accommodation establishments was triggered by a change in leadership styles, corporate cultures or governing principles, which are believed to be components of a regime and the sudden changes might stem from strategy realignments, priorities, changes in decision-making or cultural shifts. Some researchers have agreed to the result of this investigation that the tourism industry was greatly influenced by changes in leadership and social movements (Andini & Koesrindartoto, 2020; Denton & Sandstrom, 2021).

The implication of discovering that regime serves as a source of structural change and significantly influences the ROR of accommodation establishments in the Davao Region carries notable implications for the Regional director's regime. Firstly, it underscores the important role of any Regional director in shaping the economic landscape and performance of the tourism sector within the Davao Region. As the leader overseeing the tourism policies and initiatives, the Regional director's leadership style, priorities, and decision-making processes can profoundly impact the success and profitability of accommodation establishments. Therefore, the findings highlight the importance of the Regional director's strategic vision and ability to foster an environment conducive to sustainable growth and development within the tourism industry.

Furthermore, the implication suggests that any regime may need to adapt and evolve in response to changing socio-political dynamics, economic conditions, and market trends. This adaptation may involve revisiting and realigning existing policies, introducing new initiatives, or continually fostering collaborations with stakeholders to address emerging challenges and capitalize on opportunities. Additionally, it emphasizes the need for the leadership to cultivate strong relationships with accommodation establishments, industry stakeholders, and local communities to foster a supportive and collaborative ecosystem conducive to the sector's growth and resilience.

The coefficient of -25.77 for the regime variable indicates a substantial influence on the ROR of accommodation establishments in the Davao Region. It indicates a significant influence, emphasizing the significance of regime-related elements in influencing the financial performance of accommodation establishments in the Region. The negative coefficient highlights the need of taking into account regime-related dynamics and their impact on the financial outcomes of the accommodation industry. It indicates that a stable and consistent regime may promote greater RORs, but periods of regime change or uncertainty could potentially result in reduced profitability for accommodation facilities in the Davao Region.

It was also observed that while there is a limitation on the number of published studies about regime shifts as a source of breaks in occupancy rate, there is a rich literature and studies about regime shifts as a source of break for economic growth (Harvie & Pahlavani, 2006; Hegerty, 2022) and also found out to be the source of break in the series of other variables such as Carbon emissions (Adedoyin et al., 2020)

Health Crisis

The seventh variable that was considered was the health crisis, which has a significant impact on the ROR of accommodation establishments in the Region. Many authors have argued that public health emergencies have the ability to significantly impact the occupancy rate of accommodation establishments. This finding aligns with the current situation (Davahli et al., 2020; Rindrasih et al., 2019; Sami, 2021; Sönmez et al., 1999).

Amidst the COVID-19 pandemic, the implementation of lockdowns and quarantines resulted in a substantial reduction in the ROR of accommodation establishments. On the contrary, Taiwan experienced a health crisis known as Severe Acute Respiratory Syndrome (SARS), which resulted in 664 cases and 73 deaths over a period of approximately four months. When the government discourages travel to Taiwan during the outbreak, there is a substantial decrease in the number of tourists visiting Taiwan (Lin & Chen, 2022), leading to a decline in the occupancy rate of the accommodation sector.

The coefficient of -13.411 for the presence of health crisis variable in the regression model suggests a substantial negative association with the Room Occupancy Rate of accommodation establishments. This indicates that the occurrence of health crises, such as pandemics or disease outbreaks, has a significant adverse impact on the occupancy rate of accommodation establishments in the Davao Region.

A negative coefficient suggests that during health crisis, there is a considerable decrease in the occupancy rate of accommodation establishments. This can be attributed to various factors such as travel restrictions, fear of contagion, cancellation of events or bookings, and overall reduced demand for travel and tourism services during times of health emergencies.

Furthermore, the significance of the coefficient implies that this negative impact is not likely due to random chance but is indeed a meaningful and consistent pattern observed in the data. Thus, the presence of health crises is a significant determinant of the room occupancy rate, highlighting the vulnerability of the tourism industry to public health emergencies and the importance of preparedness and mitigation strategies to minimize the adverse effects on accommodation establishments.

The adjusted r^2 is a statistical measure used in regression analysis to assess how well the independent variables explain the variability of the dependent variable. An adjusted r^2 of 0.919 indicates that approximately 91.9% of the variability in the dependent variable is explained by the independent variables in the model. In simpler terms, it suggests that the model is able to account for a large portion of the variation in the dependent variable. This high value indicates a strong relationship between the independent and dependent variables in the regression model.

However, it's important to interpret the adjusted r^2 in the context of the specific data and research question. While a high adjusted r^2 value is generally desirable, it's imperative to consider other factors such as the model's assumptions, the significance of individual coefficients, and potential limitations of model. The specific sources of the structural breaks in January 2019 and March 2020 could not be precisely identified due to the near singular matrix error encountered in Eviews 12 University Edition. This issue arose from several contributing factors, primarily the limited number of observations available for each structural break segment and the presence of multicollinearity among the predictors. The small sample size for these periods made it challenging to accurately estimate the model parameters, leading to instability and singularity problems in the matrix computations.

Consequently, multicollinearity happens when predictors are highly correlated with each other and may exacerbate the estimation issues by inflating the variance of the coefficient estimates, thereby further complicating the identification of distinct structural breaks. Therefore, the researcher of this dissertation chose to solely conduct the ordinary least squares (OLS) regression in determining the source of the breaks (Gujarati & Porter, 2009)

CONCLUSIONS AND RECOMMENDATIONS

The findings of this study underscore the significant influence of Public Safety on the ROR of accommodation establishments in the Davao Region. The acceptance of the alternative hypothesis highlights that enhancing public safety measures can positively impact accommodation demand.

Contrary to initial expectations, Climate was found to be an insignificant predictor of ROR in the Davao Region, leading to the rejection of the second alternative hypothesis. This indicates that factors other than climate play a more important role in influencing accommodation demand in Davao Region.

Similarly, the Corruption Perception does not significantly influence the ROR of accommodation establishments in the Davao Region, resulting in the rejection of another alternative hypothesis. This finding suggests that tourists' decisions to stay in the region's accommodations are not heavily swayed by their perceptions of corruption. It highlights the need for further studies to identify the more pressing concerns of tourists that impact their lodging choices.

The hypothesis that the number of new AirBNB entrants significantly predicts ROR was also rejected. This result indicates that the presence of Airbnb does not detract significantly from the occupancy rates of traditional accommodation establishments. This could suggest a market segmentation where Airbnb and traditional accommodations cater to different types of travelers or a possible saturation point where additional Airbnb listings no longer impact traditional accommodations.

Conversely, the monthly number of earthquake occurrences with a magnitude of 5.0 or above was found to significantly influence the ROR, affirming that natural disasters have a substantial impact on accommodation demand. This highlights the need for robust disaster preparedness and response strategies to mitigate the adverse effects of such events on the hospitality sector.

Additionally, the study confirmed that regime changes and health crises significantly impact the ROR in the Davao Region. These findings underline the importance of political stability and health security in the sustainability of the accommodation sector. The analysis also revealed that earthquakes have a transitory effect, whereas public safety, regime changes, and health crises exert a more permanent impact on ROR.

To the Department of Tourism Region XI, they may utilized the results of this study as a starting point in crafting their strategies on how to increase the room occupancy rate of accommodation establishments in the Region.

Therefore, governments not just in the municipal/city, provincial, Regional levels, but also on the national level must not only support the hotel industry in terms of training (e.g. revenue management, data gathering techniques) and/or legislation, but also intensify the provision of adequate marketing campaigns to

minimize the impact of crisis/disasters on the industry. Also, tourism policies may be enhanced in making sure that whoever is the leader, the tourism data policies are in place, this is to make sure the continuity of data availability.

As a significant stakeholder in providing tour packages and destination packages, the Philippine Tour Operators Association (PhilTOA) may also help in promoting the accommodation establishments in the Region, including the mabuhay accommodation.

The Association of Tourism Officers in the Philippines (ATOP) may help in promoting and gathering more granular data that will be submitted to the provincial tourism offices and at the same time to the Regional office.

The Council of Hotel and Restaurant Educators in the Philippines Region XI, Inc. (COHREP-XI) and Union of Filipino Tourism Educators (UFTE) may utilize this study as a learning material for students (both undergraduate and graduate students) to make them realize how important is the room occupancy rate of accommodation establishment.

Local Tourism Associations may help in promoting and disseminating information about the importance of data in analyzing and basis for informed decision making in making strategies to increase the room occupancy rate in the Region, as a whole. Also, City/ Municipal Tourism Officers may join the Disaster Risk Reduction Committee in the LGU level. This will enhance the Risk Management programs of the government in times of natural disasters such as earthquake, and health crisis. Moreover, the said government offices may also create a safety and security committee together with the Philippine National Police to create a more safe and secure tourism destination. Also, natural disasters like earthquakes, health crises, public safety concerns, and regime or leadership changes greatly impact supplier and customer bargaining power, substitute threat, and competitive rivalry.

The Accommodation Establishment Owners may be communicated through the local tourism offices that the quality and realness of the data that will be coming from them are very important in tourism policy and development of the Region. The researcher also suggests that accommodation establishment owners should adopt and assess the Customer Relation Management (CRM) System's forecasting technique to improve their projections and strategies. Therefore, accommodation providers and government agencies must work hand and hand in proactively handling these external elements to maintain a competitive advantage and optimize room occupancy rate.

FURTHER STUDY

The following limitations of the study may be addressed through a further study:

1. Other variables such as foreign exchange rate, average length of stay (ALOS), different type of hotel classification, foreign tourist arrivals might be other variables that are important in predicting Room Occupancy Rate.
2. Other methodology may be explored such as Qualitative or Mixed-method study. This is to confirm the result of the quantitative results.
3. This study may be explored in a national level.

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