



Business Escalation Strategy Using Time Series Forecasting for Hotel X in Yogyakarta

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ABSTRACT: Yogyakarta is one of the cities attracting significant foreign and local tourist attention with its beautiful city, culture, education, and traditional cuisine which prospered the hospitality industry in the city. However, since the pandemic Covid-19 hit the global economy in 2020, Hotel X Yogyakarta was also affected. The total occupancy room per year fell ten times lower than usual during the pandemic which jeopardized the business stability. Starting from preliminary interviews and SWOT analysis, this research aims to figure out what strategy needs to be implemented in Hotel X Yogyakarta to escalate the business and stabilize the occupancy room by using a quantitative methodology from a marketing and business analytic perspective. All data provided in this research is based on the internal data and information from the hotel, systematically calculated with Time Series Forecasting Theory using ARMA and ARIMA to provide a comprehensive forecasting result for business escalation strategy that is proposed to be implemented in Hotel X Yogyakarta.

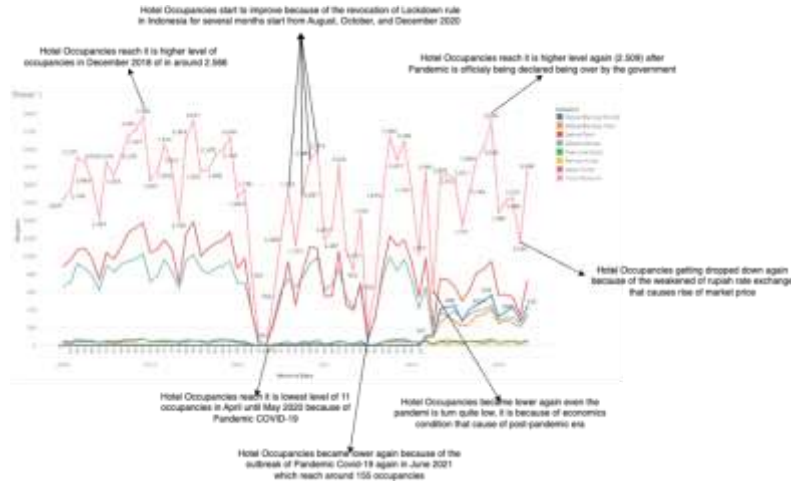
KEYWORDS: ARMA, ARIMA, SWOT, Time Series Forecasting.

INTRODUCTION

Indonesia is a major destination for international tourism as evident in the highest number of international visitors of 16.11 million in 2019. Domestic tourists will also achieve their largest number ever in 2019, totalling 722 million people. This is the same record as visitors from other countries. When it comes to boosting Indonesia's foreign exchange, the tourism industry is an important pillar of the service sector. The natural resources, artistic and cultural assets, and diversity of tourism potentials that the region possesses, along with a variety of services, have the potential to serve as the region's fundamental capital for growth and sustainable tourism development. The tourism sector is one of the industries that possesses a substantial potential for contributing significantly to the expansion of the national economy. It is projected that this sector will be able to function as the primary source of earnings in foreign currency, as well as a field that has the potential to attract further investment and generate a significant number of jobs. The government's attempts to increase the tourism industry involve developing strategies and passing a number of rules, one of which is to promote each tourist attraction that already exists as a tourist magnet. This is just one of the many regulations.

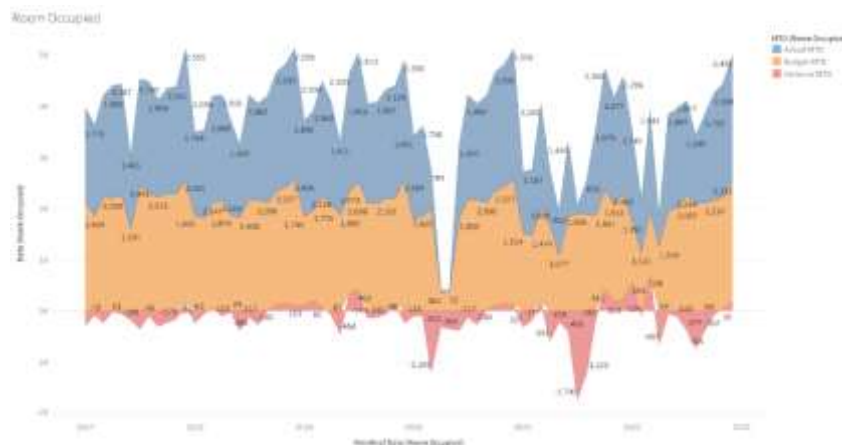
The Yogyakarta Special Region is a part of the city that contains a number of tourist attractions, some of which are natural, others are man-made, and still others are historical. In contrast to that of other regions, the magnetism in these areas is uniquely their own. As a result of an increase in the number of people going to Yogyakarta, it is predicted that the tourism industry in the Special Region of Yogyakarta would be able to give an adequate amount of revenue to the administration of the region. The variety of tourist attractions that are already in Yogyakarta, the openness of the society in Yogyakarta, and the role that the government plays in promoting the development of the tourism business in the city of Yogyakarta are all strongly tied to the growth of tourism in Yogyakarta. Activities connected to tourism receive full support from the city of Yogyakarta's infrastructure in the form of facilities for guests and other structures. Because its hotels, restaurants, public transit, and high security are all conveniently accessible to people from all over the world, Yogyakarta attracts a significant number of tourists each year (Investasi Pemerintah Kota Yogyakarta, 2012).

Prior to the epidemic caused by Covid-19, the occupancy room rate at Hotel X Yogyakarta was consistent. In December 2018, X Hotel reached its highest level of occupancy rate in around 2.566 transactions. Then in the early to middle month in 2019 the occupancy rate was still in a normal condition even though in the low season, but towards the end of the year as such from September, the occupancy rate started to decrease slowly and reached its lowest rate in around only 49 transaction in early 2020 when Covid-19 pandemic attacked and affected the hospitality and tourism world. Many hotels were forced to close due to the governance policy, terribly low income coming in, plus that the hotel did not accept the self-isolation service for Covid patients.



Graphic 1.1 Occupancy Rate of Hotel X Yogyakarta in 2018-2023

The occupancy rate is very related to the revenue. Decreasing more than 1700 transactions, Hotel X Yogyakarta struggled to maintain its business. However, as a result of the pandemic Covid-19 that occurred at the beginning of the year 2020 and caused a crash in the economy of the entire world, including Yogyakarta province, in this situation Hotel X Yogyakarta was impacted and stumbled for two years in the unstable condition of tourism world and Indonesian governance. In the middle of 2020, hotel occupancies started to improve because of the revocation of the “Lockdown” rule in Indonesia for several months which are August, October, and December. The occupancy room during the pandemic periode in 2020 dropped up to ten times lower than the ordinary situation, from the end of 2020 to the middle of 2021, the occupancy room was still decreasing every month and almost touched the lowest point in June 2021 which reached around 155 occupancies but not as low as in 2020. Early 2022, hotel occupancies became lower again even though the pandemic Covid-19 has turned quite low, that was because of the economic condition that because of the post-pandemic era, the majority of people is still struggling over the economic stability. Near the end of 2022, the hotel occupancies succeeded to reach the higher level again in around 2.509 after the pandemic was officially being declared over by the Indonesian government. In early 2023, the hotel occupancies dropped again due to the weakening of Rupiah rate exchange that caused the rising of market price. Since the pandemic and post pandemic era, Hotel X Yogyakarta had been facing severe and difficult challenges, as well as competition among the hospitality industry in Yogyakarta city, which posed a risk to the company's capacity to survive in the long run as a corporation. The objectives of this research are to find the most suitable forecasting model for the room occupancy rate of Hotel X Yogyakarta to generate strategies that need to be implemented to escalate Hotel X Yogyakarta Hotel’ business. The scope of this research is limited to the business situation in Hotel X Yogyakarta from January 2018 to May 2023.



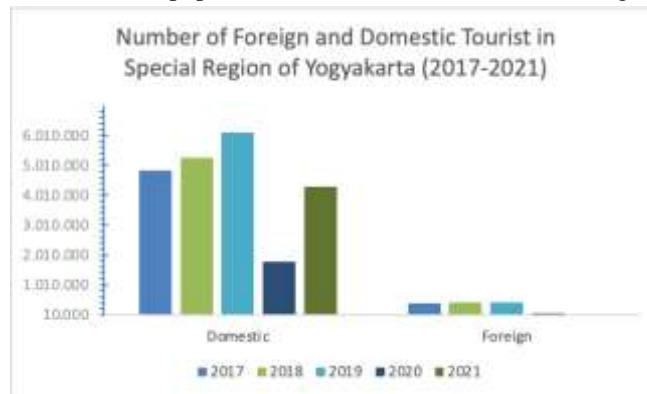
Graphic 1.2 Room Occupied of Hotel X Yogyakarta Hotel Yogyakarta in 2018-2023



YOGYAKARTA TOURISM OVERVIEW

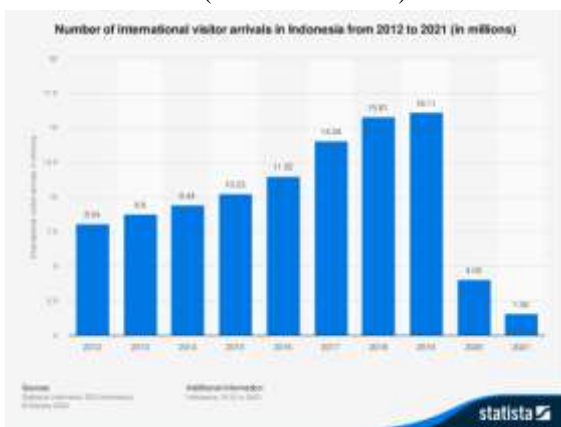
The city of Yogyakarta serves as the seat of government for the Yogyakarta Special Region, which may be found in the geographic center of the island of Java. It is one of the cities that is getting a large amount of tourist interest due to the many attractions and traditional food that it offers. Especially in the year 2020, when the globe was going through the Covid-19 pandemic age, the growth of tourism in Yogyakarta plays a vital role in the control of company operations and in the creation of conditions that are dynamic. Tourism and education were both negatively affected in Yogyakarta as a result of the pandemic, which led to massive economic losses. In spite of the fact that the epidemic is still active, it appears that Yogyakarta was visited by 1.67 million people between July and November of the year 2020, according to the data obtained from two mobile applications called Visiting Jogja and Jogja Pass that were made available by the local government. Yogyakarta's Governor, Sultan Hamengkubuwono X, was optimistic about the capabilities of the statistics to forecast a quick return for the tourism industry in the province. Hamengkubuwono remarked, during a virtual conference with the Ministry of Tourism and Creative Economy on Thursday, that Yogyakarta's tourism and education had been significantly impacted by the pandemic, resulting in considerable financial losses. (The Jakarta Post, 2020)

Yogyakarta's reputation as a tourism city, on the other hand, shows the city's potential in the domestic tourism sector. Yogyakarta is quickly becoming the second most popular tourist destination in Indonesia, right behind Bali.

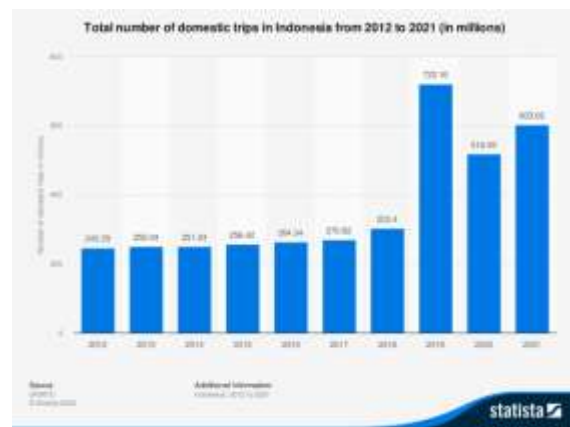


Graphic 1.3 Number of Foreign and Domestic Tourist in Special Region of Yogyakarta 2017-2021 (source: Dinas Pariwisata Daerah Istimewa Yogyakarta, 2021)

Information obtained from the Yogyakarta Department of Tourism and Culture reveals that there were 1,260,658 tourists who traveled to Yogyakarta in the year 2007. The overall number of visitors consisted of 1,159,805 domestic tourists and 100,853 tourists from other countries (or 8% of the total).



Graphic 1.4 Number of International Visitor Arrivals in Indonesia 2012 - 2021 (source: https://www.statista.com/statistics/707633/number-of-international-visitor-arrivals-in-indonesia/)



Graphic 1.5 Number of Domestic Visitor Arrivals in Indonesia 2012 - 2021 (source: https://www.statista.com/statistics/1192992/indonesia-number-of-domestic-trips/)



At the end of 2011, there were a total of 2,670,649 tourists who visited Yogyakarta. These figures have increased since then with an increase of 112% from 2007.



Graphic 1.6 Number of Hotels in Special Region of Yogyakarta
(source: http://bappeda.jogjaprovo.go.id/dataku/pencarian_data/index)

Due to this, the hotel business in the city has seen significant growth. Yogyakarta, on the other hand, has not been able to keep up with the increased tourist that Indonesia continues to see. The number of visitors from other countries who come to visit the city has actually gone down, which has caused a supply-demand imbalance in the hospitality business. At the same time, the number of hotel rooms has increased, which means that there are now less people staying in those rooms.

LITERATURE STUDY

A. Business Analytics

There is no current universal definition of business analytics. The concept of business analytics has been examined from a variety of disciplinary perspectives by scholars. According to Liu et al. (2023), business analytics can be categorized into four dimensions: techniques, processes, practice, and management. From a technical standpoint, business analytics refers to the application of data analytics (Duan & Xiong, 2015) or data science (Chen et al., 2012) in business domains. It involves the utilization of statistical and quantitative tools and techniques to analyze extensive datasets and support decision-making (Delen & Zolbanin, 2018). Additionally, business analytics encompasses a wide range of applications, technologies, and methods aimed at acquiring, storing, accessing, and analyzing data to enhance decision-making capabilities for business users (Watson, 2009). As new technologies continue to emerge, business analytics can be seen as an amalgamation of operations research, artificial intelligence, and information systems (Mortenson et al., 2014).

From a procedural perspective, business analytics encompasses a collection of tools employed to convert data into actionable insights through mathematical, scientific, or intelligent processes (Delen & Ram, 2018). The Institute for Operations Research and the Management Sciences (INFORMS) defines it as a scientific approach to transforming data into insights for improved decision-making (INFORMS, 2016). From a practical viewpoint, business analytics refers to an organization's ability to gather, organize, and analyze data from diverse sources with the goal of enhancing understanding of business processes, operations, and systems (Kraus et al., 2019). It entails the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, as well as fact-based management to drive decision-making (Davenport & Harris, 2007).

Lastly, from a managerial perspective, business analytics is described as a transformative framework encompassing models, technologies, opportunities, and capabilities to scrutinize a company's data and performance, facilitating data-driven decision-making and informing future decisions and investment plans (Bayrak, 2015). Business analytics has emerged as a crucial component in the decision-making process, utilizing data to drive strategic, operational, and tactical decisions (Bayrak, 2015). It enables organizations to extract maximum value from historical data by leveraging statistical and mathematical models, along with advanced techniques like artificial intelligence algorithms. Business analytics can be categorized as descriptive analytics, diagnostic analytics, predictive analytics, and prescriptive analytics (Cote, 2021).



B. Time Series Forecasting Theory

Time series forecasting, often known as TS forecasting, has been a major research issue in both the field of computer intelligence and the field of statistical decision-making for several decades. Time series forecasting often consists of several processes, including preprocessing, sequence modeling, independent forecasting, and aggregation. As a consequence of this, a significant number of hyper parameters require tuning in order to achieve higher prediction accuracy. Grid search is utilized rather frequently for the purpose of making configuration adjustments due to its ease of usage (Du & Gao, 2022). On the other hand, conducting several searches without looking for correlations might be a very time-consuming and biased process. Due to the fact that they are interpretable, evolutionary and genetic algorithms appear as viable solutions when the task of tuning must be performed. Two different considerations serve as the impetus for the utilization of the Bayesian Optimization Algorithm (BOA) in hyper parameter adjustment. To begin, the cost of our time is something that can be controlled and adjusted to meet our specific requirements. Second, in comparison to other models that are currently in use, the equilibrium between exploitation and exploration is kept very well, which results in a more fruitful search effort.

In the moving average process, also known as the moving average model, the present value is said to be linearly reliant on the error terms that have occurred in the recent and previous periods. Again, just like with white noise, it is assumed that the error components are independent of one another and have a normal distribution (Czerwinski, 2021). The moving average method is superior to the semi-average method because it removes the effects of short-term changes. Moving averages are a type of average calculated for time series that advance through the series by eliminating the most significant things from the most recent group to be averaged and adding the most recent group to each succeeding average. Let $(t_1, y_1), (t_2, y_2), \dots, (t_n, y_n)$ denote given time series y_1, y_2, \dots, y_n are the values of the variable y ; corresponding to time periods t_1, t_2, \dots, t_n , respectively (Molugaram & Rao, 2017).

The moving averages of order m are defined as

$$\frac{y_1 + y_2 + \dots + y_m}{m}, \frac{y_2 + y_3 + \dots + y_{m+1}}{m}, \dots$$

Here $y_1 + y_2 + \dots + y_m, y_2 + y_3 + \dots + y_{m+1}, \dots$ are called moving totals of m .

When trying to estimate the trend using moving averages, we need to determine the order in which the moving averages will be used. It is recommended that the duration of the cycles in the time series should determine the order of the moving average. If the problem specifies the order in which the moving averages should be computed, then we shall use that order while calculating the moving average. It is possible to order the moving averages either unevenly or weirdly.

The moving averages of order 3 are;

$$\frac{y_1 + y_2 + y_3}{3}, \frac{y_2 + y_3 + y_4}{3}, \dots, \frac{y_{n-2} + y_{n-1} + y_n}{3}$$

The trend values are the moving averages. They are considered to correspond 2nd, 3rd, ..., $(n-1)$ th years, respectively. Using moving averages in order to calculate trend values is a bit more complex than using other types of moving averages.

- *AutoRegressive Moving Average (ARMA)*

The Autoregressive Moving Average (ARMA) model combines the Autoregressive (AR) and Moving Average (MA) models. It assumes that the current period's data is influenced by both the previous period's data and the residual values from previous periods [17]. The AR component captures the linear relationship between the current value and its lagged values, while the MA component considers the weighted average of past residuals. The ARMA model provides a comprehensive framework for analyzing time series data and is commonly denoted as $ARMA(p,q)$, where p is the order of the AR component and q is the order of the MA component.

$$Z_t = \mu + \phi_1 Z_{t-1} + \dots + \phi_p Z_{t-p} + a_t - \theta_1 a_{t-1} - \dots - \theta_q a_{t-q} \quad (3)$$

In the realm of time series analysis, the variables involved are as follows: Z_t denotes a stationary time series, μ represents a constant term, Z_{t-p} represents lagged independent variables, ϕ_p signifies the autoregressive parameter coefficient of



order p , $at-1$ signifies an additional lagged independent variable, θq indicates the moving average parameter coefficient of order q , and at represents the residuals at time t .

- *AutoRegressive Integrated Moving Average (ARIMA)*

The ARIMA method is employed based on the assumption that the time series data used should be stationary, meaning that the mean and variance of the data remain constant. However, there are cases where the data is non-stationary. To address non-stationarity, a differencing process is applied to transform the data into a stationary form [17].

$$\Phi(B)D^dZ_t = \mu + \theta_q(B)a_t \tag{4}$$

where:

- $(1 - B)^d$ = differencing
- $\phi(B) = (1 - \phi_1B - \dots - \phi_pB^p)$ = the parameters of AR
- $\theta(B) = (1 - \theta_1B - \dots - \theta_qB^q)$ = the parameters of MA
- a_t = residual at time- t

In the context of time series analysis, several variables play a key role. These include ΦP , representing the autoregressive parameter coefficient of order p , θq , indicating the autoregressive parameter coefficient of order q , B as the backshift operator, D representing the differencing process, μ as the constant term, at denoting the residuals at time t , and p , d , and q representing the degrees of autoregressive, differencing, and moving average processes, respectively.

- *AutoCorrelation Function (ACF)*

In time series analysis, the Autocorrelation Function (ACF) is a fundamental tool that measures the correlation coefficient between a data point and its lagged values. The lag represents the number of time periods or units after which the first value in the time series is observed. The correlation coefficient in the ACF can range from -1 to +1, where -1 indicates a perfect negative relationship, +1 represents a perfect positive relationship, and 0 implies no relationship between the variables. The ACF can be calculated using either Pearson's correlation coefficient or Spearman's rank correlation coefficient, depending on the specific requirements of the analysis.

- *Partial Autocorrelation Function (PACF)*

Partial Autocorrelation Function (PACF) is a vital statistical measure used to assess the correlation between two variables while accounting for the influence of other variables. In the context of time series analysis, PACF quantifies the unique correlation between a signal S at lag t ($S_{\{t\}}$) and the same signal at a lag of $t-3$ ($S_{\{t-3\}}$), after removing the shared correlation with intermediate lags, namely $S_{\{t-1\}}$ and $S_{\{t-2\}}$. To calculate the PACF between $S_{\{t\}}$ and $S_{\{t-3\}}$, a regression model is employed to isolate the correlation exclusively attributed to the specified lags. By considering the relationship between these specific time points, the PACF allows for a more precise understanding of the direct association between the variables of interest, ultimately enhancing the analysis of time series data.

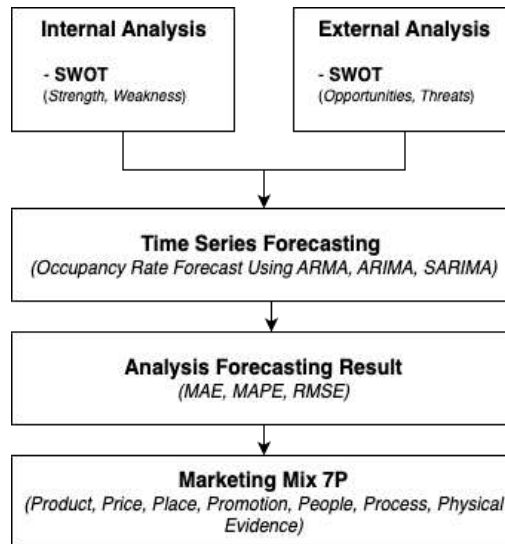
$$S_t = \phi_1 S_{t-1} + \phi_2 S_{t-2} + \phi_3 S_{t-3} + \epsilon$$

In the regression model provided above, the coefficients ϕ_1 , ϕ_2 , and ϕ_3 along with the error term ϵ are used to represent the relationship between the time-series $S_{\{t\}}$ and its lagged values, specifically $S_{\{t-3\}}$. The partial autocorrelation function (PACF) value between $S_{\{t\}}$ and $S_{\{t-3\}}$ is denoted by the coefficient ϕ_3 . This coefficient represents the direct effect of the time-series $S_{\{t-3\}}$ on the time-series $S_{\{t\}}$, while the influences of $S_{\{t-2\}}$ and $S_{\{t-1\}}$ are already accounted for by the coefficients ϕ_1 and ϕ_2 , respectively.



FRAMEWORK, METHODOLOGY, AND DATA COLLECTION

A. Conceptual Framework



Graphic 2.1 Conceptual Framework

B. Methodology

- Preliminary Interview

To have a deep exploration about the business issue, the author conducted preliminary research by having several times one on one interviews with one of the responsible persons in Hotel X Yogyakarta, The Chief Accountant of Hotel X Yogyakarta already works in the hotel since the hotel was built in 2013. The interview explored about how Hotel X Yogyakarta Hotel Yogyakarta run the business and find the issues that happen in the daily business, especially when Hotel X Yogyakarta faced the pandemic Covid-19 in early 2020 until 2022 and what is the hotel’s strategy to keep sustain and survive during the pandemic. After the interview, known that there are a lot of adjustments applied in their normal system to survive the business. He said that the most impacted part of the hotel system is the financial sector. Due to the pandemic Covid-19, many government rules that limitate people with the travel prohibition, then Hotel X Yogyakarta experienced a non-flowing income because no one stayed at the hotel for months. Other than that, the hotel expenses became heavier because of the expanding area continuity that runs in line with the running of hotel operations like salaries, taxes, supplies, and operational costs.

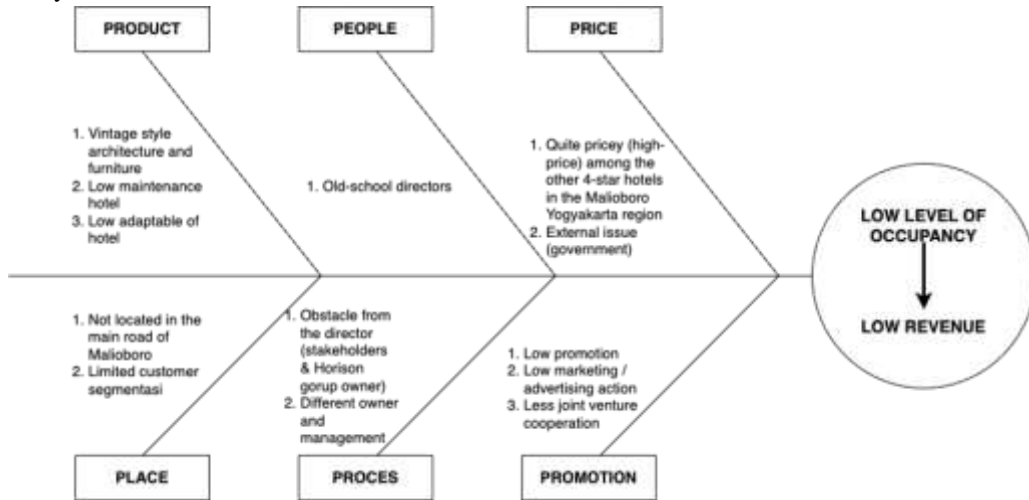
- Quantitative Research

Quantitative data was collected from the internal sources of Hotel X Yogyakarta which are room occupation monthly and annual reports from 2018 until 2023. Tableau was used to visualize the before and after data which can display graphs and fluctuance lines in the room occupancy of the hotel to give the big picture of the room available, room occupied, total food and beverage revenue, total other revenue, and total net revenue. When processing the data, all of the data was calculated using Time Series Forecasting Theory in the R Studio application, after that the data was also visualized in R Studio.



C. Data Analysis Method

- Root Cause Analysis



Graphic 2.2 Fishbone Analysis

1. Product

It enables firms to be prepared to change and operate utilizing the most relevant technology by providing information about technological advancements. Depending on technical progress, the identification of new technologies would increase productivity and likely decrease production costs. However, the detected changes in the technical environment may present the business with either possibilities or risks. For example, the cost of obtaining new technologies may dramatically increase the organization's costs, which in turn may impact the production cost of the company. Numerous firms employ internet and telecommunication technologies to increase their efficiency and effectiveness since they can readily communicate with their clients and suppliers (Buye, 2021). Technological analysis enables Hotel X to update its own technology in the event that it becomes obsolete. In the Services industry, there is no strong culture of technology transfer, and corporations are frequently hesitant to transfer or license technologies for fear of turning collaborators into competitors. Most competitors in the Hotels & Motels industry are fighting for new developments that will allow them to capture a larger market share in Indonesia. The most recent technological advancements done by Hotel X competitors which can provide valuable insight into what competitors are thinking and the future of the hotels' business model.

2. Place

Hotel X is not located in the main street of Malioboro, this causes lack of knowledge for tourists who look for a hotel in the Malioboro region if they do not explore the area. Also, Hotel X already have their own market segmentation which limits their range of customers.

3. People

The people's influence plays an important role in the existence of the Hotel X business and policy. When it comes to making a decision, it will take a long time to decide what decision will be made for Hotel X due to many stakeholders and Hotel X group owners stating a different perception.

4. Process

There are obstacles from the stakeholders and the Hotel X group owner about the decision making and business process held in Hotel X.

5. Price

The price rate for the Hotel X's room is quite high among the other 4-stars hotels in the Malioboro region and in Yogyakarta because there is a hard situation among the stakeholders and Hotel X Group owners. Other than that,



economic factors generate information regarding the economic situation in terms of taxes, tariffs, interest rates, economic growth, recession, inflation rate, exchange rate, minimum wage, wage rates, unemployment, cost of living, working hours, credit availability, financing availability, and economic growth level. The organization is better able to respond correctly if it is informed of the economic situation and its potential effects. Recession, for instance, can have a negative impact on the performance and continuous existence of businesses (Buye, 2021). In addition, interest rates influence a company's cost of capital and, thus, its capacity for growth and expansion.

- A. **Inflation and Recession**— After the devastating recession of 2018, the market's easy liquidity will lead to a rise in inflation in Indonesia. If inflation occurs, people typically choose not to take a vacation or to stay at a less expensive hotel. Then, if a recession occurs, people have less money in their pockets and minimize their trip expenses.
- B. **Increasing Salary Standard** — In the services industry, the skill level of human resources in Indonesia is moderate to high. Hotel X can use it to not only improve services in Indonesia, but also to develop worldwide prospects by using the trained workforce. If the salary standard in each region of Indonesia rises, then people will spend considerably more money.
- C. **Economic Cycle** — Hotel X's performance is highly associated with the economic performance of Indonesia. Increased globalization and the use of local resources to serve global markets have contributed to the expansion of the previous two decades. Increasing liberalization of Indonesia's trade policies may enable Hotel X to invest further in locations previously off-limits to the company.
- D. **Foreign Currency** — If the foreign currency is stable, the economy also stable or even rises enough.
- E. **Tax Policy** — The increasing or decreasing of tax obviously will affect the price and consumer will to stay in the hotel.

6. *Promotion*

Digital marketing is an advertising and content distribution via a variety of digital channels. Digital marketing includes online channels such as search engines, social media, email, applications, hotel websites, and any new digital channels that might arise with the possibility of advertisement. Increasing online advertising will find better competition, improved best practices, and increased engagement through digital marketing of Hotel X. A social media influencer very helpful to the rising trend of social media, Hotel X should adapt with the new trend of marketing and business strategy using social media influences and the use of influencer service to boost the Hotel X brand and awareness.

- **SWOT Analysis**

The S.W.O.T. (Strengths, Weaknesses, Opportunities, and Threats) analysis is a tool that is used in businesses for It is possible to make efficient use of it to establish organizational strategies as well as competitive tactics. As a strategic planning framework, the SWOT analysis can be used to evaluate an organization, a plan, a project, or a business activity. Because of this, the SWOT analysis is an important tool for situation analysis, as it assists in detecting organizational and environmental aspects. It is essential to do an environment analysis in order to develop strategic management techniques. The examination of an organization as well as the context in which it operates is referred to as a SWOT Analysis. Internal and exterior analysis are the two components that make up a SWOT analysis. Variables that are internal to the organization include both its strengths and shortcomings, while factors that are external to the organization include environmental factors along with opportunities and dangers (GÜREL, 2017). An organization's resource capabilities and gaps, market possibilities, and external risks to its future can all be evaluated using this clear and straightforward but powerful tool (THOMPSON et al., 2007).

Based on the SWOT theory, the following strengths and weaknesses analysis is developed using the results from environmental scanning, primary and secondary data, and the existing business model:



Table 2.1 SWOT Table for Strength and Weakness

<i>Strength</i>		<i>Weakness</i>	
1	Strategic Location	1	Hard Accessibility
2	Wide Parking Area	2	Lots of Unused Space
3	Full and Equipped Facilities	3	Low Capacity
4	Extra Entertainment	4	High Price
5	Tasteful Traditional and Local Cuisine	5	Main Crowd Area

Strength 1: Strategic location.

The hotel is in the middle of Yogyakarta City, especially in Malioboro Area which means it belongs to Ring 1 area hotel.

Strength 2: Wide parking area.

Parking areas are the widest among competitors in the Ring 1 area.

Strength 3: Full facilities.

Facilities are more complete than competitors like swimming pool, laundry, fitness center, kid center, and mini zoo.

Strength 4: Extra entertainment.

Hotel X Yogyakarta also has several entertainment venues like Spa, Coffee Shop, Live music, and Bar.

Strength 5: Tasteful Traditional and Local Cuisine

Hotel X Yogyakarta have a highly certified chef and serve a very appetizing cuisine, the specialties include traditional Yogyakarta cuisine and local Indonesian cuisine which are attractive value for foreign and domestic guests.

Weakness 1: Indirect accessibility.

Hotel location is not in the main street, not the same as the competitors in the same Ring 1 Area, most of them are located in main street.

Weakness 2: Lots of unused space.

Because of the wideness of the overall area, there is a lot of unused space that is unused.

Weakness 3: Low capacity.

The number of rooms is fewer than competitors.

Weakness 4: High price.

For the hotel in the Ring 1 area, the price is quite high among competitors.

Weakness 5: Main crowd area.

Located in the middle of Yogyakarta, there are a lot of crowds and traffic around Hotel X Yogyakarta.

Table 2.2 SWOT Table for Opportunity and Threats

<i>Opportunity</i>		<i>Threats</i>	
1	Modern Ethnic Concept	1	Price Competition in Ring 1 Area
2	Social Media and Website Engagement	2	Lot of Competitor for 4 star Hotel in Yogyakarta
3	Social Event Readiness	3	Better Hotel Management
4	Wide Land Area	4	Lazy Customer Review

Opportunity 1: Strategic location.

The hotel's concept incorporated Yogyakarta culture and it has become a great point among competitors that mostly use modern concepts.

Opportunity 2: Social media and website engagement.

Hotel X Yogyakarta got double awards from Agoda and TripAdvisor's travelers choice.



Opportunity 3: Social event readiness.

Hotel X Yogyakarta has 11 meeting rooms that can provide a lot of events like meetings, gatherings, and weddings.

Opportunity 4: Wide land area.

Because of the wideness of the land, there is a lot of free space to be used for other facilities or even to add some towers to add extra rooms.

Threats 1: Price Competition in Ring 1 Area.

There are a lot of competitors in the Ring 1 Area which increase price competition.

Threats 2: Many Competitors for a 4-star Hotel in Yogyakarta.

There are a lot of competitors with the same 4-star grade that are better than Hotel X Yogyakarta.

Threats 3: Advanced Hotel Management.

X Group Hotel Management is not as good as other management hotel groups in the Management system.

Threats 4: Lazy Customer Review.

Most of the customers did not put their review to Google as one of main references that might be harmful for X Hotel to get trusted from prospective customers.

BUSINESS SOLUTION

Using the information provided, the author attempted to explain a solution that would improve the strategic business of Hotel X by utilizing the Marketing Mix 7Ps. The term "marketing mix" refers to the collection of methods used by a company to achieve its goals via the strategic promotion of its goods or services to a specific sector of the general public (Cengiz & Yayla, 2007). The marketing mix 7Ps strategies improve both the patient's entire experience and degree of satisfaction. The framework is comprised of the goods, the pricing, the location, the advertising, the people, the procedure, and the physical proof. The 7Ps of the marketing mix are explained in strategic and corporate terms below:

1. Product

For the purpose of product improvement, Hotel X should modernize the appearance of the rooms and furnishings by giving them a sleek and sophisticated makeover. Alternatively, they might improve the product by enhancing the existing amenities in the rooms. This method is a new breakthrough from Hotel X to escalate the commercial games. It involves either supplying or putting aside some space in order to provide an apartment studio, or even adding more space. Additionally, Hotel X ought to lease out part of their available meeting space or make some of their space available for use as a co-working office.

2. Price

It would be beneficial for the prices of Hotel X to have more variety in terms of the different deals available. Place the basic room at the same price as the cheapest room available on the market within the same four-star hotel, or simply place it at the same price as the basic rooms offered by the nearest competitors; however, this offer is very limited and will only be honored if customers order it at least one day in advance in order to attract customers. Because of this, Hotel X will be able to communicate with a greater number of travelers. Also, lowering the costs can effectively attract more eyes on the Hotel X property in order to get rapid traction; however, due to the impact on the bottom line, lowering the rates as part of an ongoing agreement is not a sustainable approach.

3. Place

In order to improve the quality of the location, Hotel X should emphasize both their onsite and online presence. People should be made aware of Hotel X's location by hanging a large banner on the main street in Malioboro, and the establishment should also advertise on social media.

4. Promotion

Hotel X should organize flash sales, which is a promotion on website offering for discounted membership, an online campaign on internet publication offers or packages, an offline campaign such as print and share publication offers and packages, give promotion for special event such as packages and offers for special event such as concerts, festivals, or holidays, and also have some opaque pricing, which is a hidden hotel discount program for a particular hotel. Additionally, establish cooperative



relationships with businesses to create customer loyalty programs. In order to make the content that Hotel X posts on social media more interesting to people, the hotel should encourage its staff members to be more inventive and creative.

5. *People*

People are talking about the staff at the hotel. Hotel X should encourage staff engagement for the purpose of people enhancement by ensuring their continued psychosocial and physical well-being. This will allow the company to cultivate a working environment that is both wholesome and pleasurable. This could be accomplished through increasing trust, teamwork, and the overall quality of work through the use of incentives like prizes, flexible paid leave, clear and effective communication between supervisors and subordinates, and routine corporate gatherings and webinars. In addition, Hotel X should work to advance its hospitality technology because doing so is essential to boosting the efficiency of its workforce. Cloud-based distribution systems, such as a channel manager, are advantageous not only because they extend the hospitality industry's reach but also because they improve operational efficiency. This frees up the hotel staff and management to concentrate on enhancing the quality of the experience that they provide for their customers.

6. *Process*

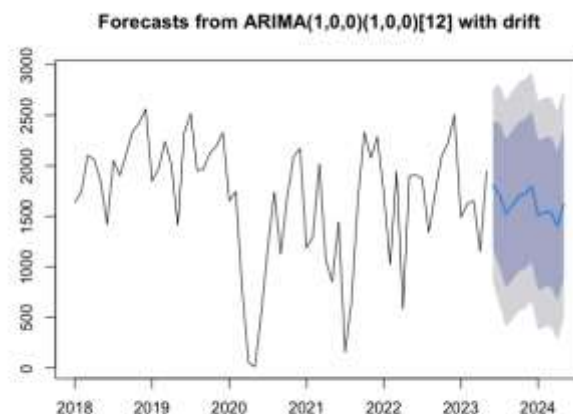
The process is focused on the satisfaction of the guests. Then, in order to improve the process, Hotel X should modernize and redesign their website to have easy navigation and booking procedures, offer a variety of payment choices, and provide customer care that is available 24 hours a day for online bookings. After that, conduct an analytical survey to determine which platform is the most effective and widely used platform for booking in order to gain a better understanding of the online buying cycle. Subsequently, make a cooperation with the identified platform in order to apply discounts only when booking from the identified platform. In addition, the Hotel X should implement an easy and speedy check-in procedure for the booking confirmation, such as online check-in, and reduce the number of input data processes in order to make the procedure quicker and more efficient. This will ensure that guests do not have to wait for an extended period of time to enter their rooms.

7. *Physical Evidence*

For the purpose of bolstering the reliability of the physical evidence, Hotel X should improve the quality of their customer service by emphasizing factors such as the cleanliness of their establishment, the strength of their brand, and their digital positioning on their website and social media posts. The staff at the hotel ought to be more aware of the media and social trend, and they ought to get on board with the trend by advertising the hotel on a variety of online platforms in order to attract clients of varying ages and regions.

BUSINESS SOLUTION FORECASTING RESULT

Forecasting Result



Graphic 4.1 Comparison Graph Between Occupancy Room vs The Forecasting Result

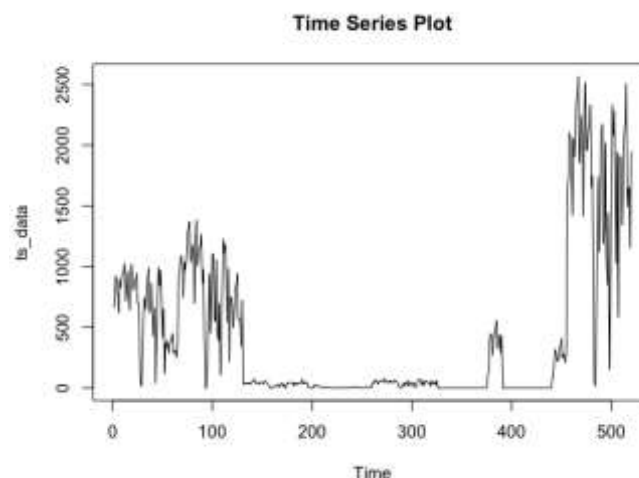


Table 4.1 Comparison Graph Between Occupancy Room vs The Forecasting Result

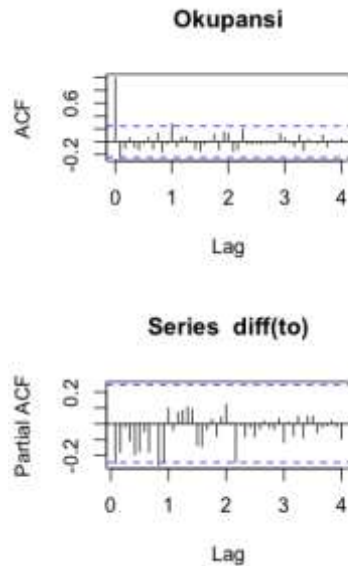
June-23	1.805,82
July-23	1.716,17
August-23	1.526,43
September-23	1.608,33
October-23	1.696,78
November-23	1.723,98
December-23	1.796,00
January-24	1.508,60
February-24	1.541,85
March-24	1.546,69
April-24	1.404,12
May-24	1.621,17

The graphical representation in the study exhibits four distinct lines depicting real occupation data and the corresponding forecasts generated by ARMA, ARIMA, and SARIMA methods. The comparison between the actual occupancy values and the forecasts derived from ARMA and ARIMA demonstrates a remarkably high degree of accuracy. These forecasting techniques exhibit promising potential for utilization within the context of this study. Despite the statistically significant nature of the forecasts, it is noteworthy that the actual occupancy values consistently outperform the forecasted values. However, it is important to acknowledge that the forecasts generally align closely with the actual values, thereby showcasing a noteworthy level of accuracy. The results indicate that while the forecasted values are slightly less precise compared to the actual observations, they still possess substantial predictive capability. Further investigation and analysis are warranted to delve into the factors contributing to the observed discrepancies and to assess the overall applicability and robustness of the forecasting methods in this specific context.

Time Series Analysis



Graphic 4.2 Time Series Plot Graph



Graphic 4.3 ACF & PACF

The time series analysis of the occupancy level data at Hotel X Yogyakarta provides valuable insights into the underlying patterns and characteristics of the data. The plotted time series graph illustrates the distribution pattern, which exhibits a discernible trend. This trend pattern suggests that the occupancy data is influenced by external factors and is subject to systematic changes over time. In analyzing the stationarity of the data, it is observed that the data does not meet the criteria for stationarity in both mean and variance.

BUSINESS SOLUTION MARKETING RESULT

Marketing Mix 7Ps

Using the information provided, the author made an attempt to provide an explanation for a solution that would improve the strategic business of Hotel X Yogyakarta using Marketing Mix 7Ps. The phrase "marketing mix" refers to the assortment of strategies that are utilized by a business in order to accomplish its objectives through the strategic promotion of its goods or services to a defined segment of the general population. (Cengiz & Yayla, 2007). The patient's overall experience and level of satisfaction are both enhanced by the marketing mix 7Ps methods. The product, the price, the place, the promotion, the people, the process, and the physical proof make up the framework. The following is a strategic and corporate explanation of the 7Ps of the marketing mix:

1. Product

For the purpose of product improvement, Hotel X Yogyakarta should modernize the appearance of the rooms and furnishings by giving them a sleek and sophisticated makeover. Alternatively, they might improve the product by enhancing the existing amenities in the rooms. This method is a new breakthrough from Hotel X Yogyakarta to escalate the commercial games. It involves either supplying or putting aside some space in order to provide an apartment studio, or even adding more space. Additionally, Hotel X Yogyakarta ought to lease out part of their available meeting space or make some of their space available for use as a co-working office.

2. Price

It would be beneficial for the prices of Hotel X Yogyakarta to have more variety in terms of the different deals available. Place the basic room at the same price as the cheapest room available on the market within the same four-star hotel, or simply place it at the same price as the basic rooms offered by the nearest competitors; however, this offer is very limited and will only be honored if customers order it at least one day in advance in order to attract customers. Because of this, Hotel X Yogyakarta will be able to communicate with a greater number of travelers. Also, lowering the costs can effectively attract



more eyes on the Hotel X Yogyakarta property in order to get rapid traction; however, due to the impact on the bottom line, lowering the rates as part of an ongoing agreement is not a sustainable approach.

3. *Place*

In order to improve the quality of the location, Hotel X Yogyakarta should emphasize both their onsite and online presence. People should be made aware of Hotel X Yogyakarta's location by hanging a large banner on the main street in Malioboro, and the establishment should also advertise on social media.

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Hotel X Yogyakarta should organize flash sales, which is a promotion on website offering for discounted membership, an online campaign on internet publication offers or packages, an offline campaign such as print and share publication offers and packages, give promotion for special event such as packages and offers for special event such as concerts, festivals, or holidays, and also have some opaque pricing, which is a hidden hotel discount program for a particular hotel. Additionally, establish cooperative relationships with businesses to create customer loyalty programs. In order to make the content that Hotel X Yogyakarta posts on social media more interesting to people, the hotel should encourage its staff members to be more inventive and creative.

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People are talking about the staff at the hotel. Hotel X Yogyakarta should encourage staff engagement for the purpose of people enhancement by ensuring their continued psychosocial and physical well-being. This will allow the company to cultivate a working environment that is both wholesome and pleasurable. This could be accomplished through increasing trust, teamwork, and the overall quality of work through the use of incentives like prizes, flexible paid leave, clear and effective communication between supervisors and subordinates, and routine corporate gatherings and webinars. In addition, Hotel X Yogyakarta should work to advance its hospitality technology because doing so is essential to boosting the efficiency of its workforce. Cloud-based distribution systems, such as a channel manager, are advantageous not only because they extend the hospitality industry's reach but also because they improve operational efficiency. This frees up the hotel staff and management to concentrate on enhancing the quality of the experience that they provide for their customers.

6. *Process*

The process is focused on the satisfaction of the guests. Then, in order to improve the process, Hotel X Yogyakarta should modernize and redesign their website to have easy navigation and booking procedures, offer a variety of payment choices, and provide customer care that is available 24 hours a day for online bookings. After that, conduct an analytical survey to determine which platform is the most effective and widely used platform for booking in order to gain a better understanding of the online buying cycle. Subsequently, make a cooperation with the identified platform in order to apply discounts only when booking from the identified platform. In addition, the Hotel X Yogyakarta should implement an easy and speedy check-in procedure for the booking confirmation, such as online check-in, and reduce the number of input data processes in order to make the procedure quicker and more efficient. This will ensure that guests do not have to wait for an extended period of time to enter their rooms.

7. *Physical Evidence*

For the purpose of bolstering the reliability of the physical evidence, Hotel X Yogyakarta should improve the quality of their customer service by emphasizing factors such as the cleanliness of their establishment, the strength of their brand, and their digital positioning on their website and social media posts. The staff at the hotel ought to be more aware of the media and social trend, and they ought to get on board with the trend by advertising the hotel on a variety of online platforms in order to attract clients of varying ages and regions.

CONCLUSION

Based on the obtained results, it can be observed that the ARIMA method has lower MAE and RMSE values compared to the ARMA method.

- ARMA :
 - MAE : 130,527
 - RMSE : 241,429



- ARIMA
 - MAE : 119,484
 - RMASE : 239,250

This indicates that ARIMA tends to provide more accurate predictions than ARMA. In general, if the main objective is to achieve the most accurate predictions, methods with lower MAE and RMSE values are recommended. However, the final recommendation depends on the specific context and needs of the problem at hand. In this case, since ARIMA has lower MAE and RMSE values than ARMA, the ARIMA method would be more recommended if achieving high prediction accuracy is a primary priority. However, it is also important to consider other factors such as the suitability of the method with the data characteristics and the complexity of its implementation before making a final decision.

In order to enhance the strategic business of Hotel X Yogyakarta, this chapter will explain what strategies should be implemented in the hotel from the internal business strategies until the marketing hotel development. If the Hotel X Yogyakarta Hotel is successful in putting into action all of the strategies, which include the marketing mix 7Ps strategies and developing the business strategies from the forecasting result, then the hotel will see a rise in income in 2023. The hotel's income will continue to rise steadily in 2023 thanks to time series forecasting based on the Simple Moving Average for the year after that.

In the beginning, the hotel mechanism was only recognized as a place to stay for customers who were traveling for business or leisure and did not have an affiliation anywhere at their destination, so they required a place to stay overnight. These customers needed a hotel because they did not have a place to stay overnight. The range of services provided by the hotel broadened throughout time. Hotels are used rather regularly in today's society for a wide variety of events, including weddings, business meetings, and the introduction of new products by businesses. On occasion, hotels are even booked as weekend getaways for people from upper middle class families. Today's consumers are notoriously picky and circumspect about the ways in which they part with their cash. When deciding on a product or service, including hospitality services, they take a number of different aspects into consideration. As a result, it is essential for hotels to provide convenience to stay supported by services and entertainment options in order to survive in the changing circumstances, particularly the pandemic Covid-19 that has been going on, which has affected the financial stability in countries all over the world, including Hotel X Yogyakarta. Consequently, it is essential for hotels to provide convenience to stay supported by services and entertainment options.

Therefore, the purpose of this study is to come up with a plan for Hotel X Yogyakarta to use in order to increase their business. This plan will take the shape of the marketing mix 7Ps, and these will be the areas in which the hotel will need to make improvements. By analyzing the current and future state of the hotel market with The Ansoff Matrix, the matrix would help in spotting the opportunity and encourage further inquiry of the matter. There is also the opportunity to sell the new product and service to an existing market, which is another possibility. The author conducted an internal study using SWOT tools in order to have a better understanding of the hotel's advantages and disadvantages. After that, the author used SWOT tools and Porter Five Forces for the external analysis in order to determine what possibilities and challenges X Hotel faces in terms of expanding the business.

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