



TECHNICAL REPORT ON CROFT GROUP OF HOTELS BUSINESS INTELLIGENCE (2024)

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1. INTRODUCTION

This report provides an in-depth business intelligence analysis for Croft Group of Hotels, a five-star hotel chain with three hotels across two branches: City Hotel and Resort Hotel. The primary objective of this analysis is to evaluate revenue generation strategies while ensuring high operational standards, increasing customer retention, reducing churn, and expanding the customer base.

Objectives

The main objective of this project is to extract insight that will aid revenue generation and decision-making toward a high operational standard.

Specific Objectives

The specific objective of the business intelligence report is to:

- i. Examine operations in the three hotels to identify areas for improvement.
- ii. Understand customer preferences.
- iii. Analyze booking channels to determine the most effective ones.
- iv. Recognize best customers and their purchasing behaviors.

Problem being addressed

The hospitality industry in the region is highly competitive, with several well-established hotels offering similar services. Croft Group of Hotels strives to enhance customer retention and improve service quality to attract more patrons and maintain a competitive edge. While profitability remains a primary goal, customer satisfaction and seamless service delivery have become the company's top priorities. To address these challenges, this project aims to gain insights into the operational performance of the three hotels, revenue generation, customer ratings, preferred booking and payment methods, best customers, and the most preferred room type.

Key Datasets and Methodologies

The analysis is based on hotel data, which includes customer details, payment methods and details, and services required from the hotel.

Microsoft Excel was used to analyze the data,

Pivot Tables are employed to summarize and analyze key metrics.

Pivot Charts were utilized for data visualization.

Slicers were implemented to gain deeper insights into customer preferences and operational trends.

2. STORY OF DATA

i. **Data Source:** The data was downloaded from Kaggle dataset repository, which was gotten from the company's internal database.

ii **Data Collection:** The data was sourced from internal hotel management systems, capturing real-time customer bookings, reservations, and payment details. The dataset was automatically generated based on customer interactions with the hotel's booking system, transaction records, and feedback forms.

iii. **Data Structure:**The dataset is organized in a tabular format, where:

- Each row represents an individual customer's reservation, capturing various factors influencing their booking and payment behavior.
- Each column represents a specific variable, such as hotel name, reservation details, customer demographics, payment method, and revenue metrics.

iv. **Important Features and their Significance:**

a) Hotel Name

- Identifies the specific hotel where the reservation was made.
- Assists in analyzing performance differences across various hotel locations.

b) Hotel Type

- Specifies whether the hotel is a city hotel, resort hotel, or another category.
- Useful for understanding customer preferences for different hotel types.

c) Customer Name

- Represents the individual making the reservation.
- Aids in tracking repeat customers and analyzing loyalty trends.

d) Room Type

- Describe the category of the room booked (e.g., Standard, Deluxe, Suite).
- Assists in assessing demand and revenue contribution from different room types.

e) Booking Channel

- Indicates how the reservation was made (e.g., Online, Walk-in, Travel Agency).
- Helps optimize marketing efforts by identifying the most effective channels.

f) Payment Method

- Shows the mode of payment (e.g., Credit Card, Cash, Bank Transfer).
- Aids in assessing customer payment preferences and financial transaction trends.

g) Salesperson

- Identifies the individual responsible for handling the booking.
- Useful for evaluating staff performance and commission-based incentives.

h) Membership Type

- Indicates the customer's loyalty tier (e.g., Platinum, Gold, Regular).
- Assists in assessing the impact of membership programs on repeat bookings and spending.

i) Sales

- Represents the total revenue generated from a reservation.

- A key performance indicator for financial success and revenue analysis.

j) Customer Feedback

- Qualitative responses from customers about their hotel experience.
- Aids in identifying areas for service improvement and customer satisfaction.

k) Customer Ratings

- A numerical rating (typically on a scale of 1-5) given by customers.
- Provides measurable insights into customer satisfaction and service quality.

v. Data Biases and Limitations

Customer feedback and ratings may be influenced by personal bias or recent experiences rather than an objective assessment of service quality. Guests might rate the hotel based on a single incident, either positive or negative, rather than considering their overall stay. Sales figures and payment methods rely on recorded transactions, which may not reflect refunds or adjustments. The dataset includes only completed check-outs, omitting cancellations and no-shows, potentially skewing revenue analysis. Incorporating cancellation data and tracking customer history over multiple visits can enhance the accuracy of insights.

3. DATA SPLITTING AND PREPROCESSING

i) Data Cleaning

Before analysing the hotel data, a data quality check was performed to ensure accuracy and reliability. This involved identifying missing values, duplicate entries, and inconsistencies using Microsoft Excel's built-in functions.

a) Handling Missing Values

A prerequisite data quality check was conducted using Microsoft Excel's built-in functions to assess missing values. The check confirmed that there were no blank spaces in the dataset. This validation ensured data integrity and reliability before proceeding with the analysis.

b) Removing Duplicates

After checking for missing values, a duplicate records assessment was conducted using Microsoft Excel's built-in functions. The test confirmed that no duplicate entries existed in the dataset, indicating that data cleaning had occurred before the analysis.

ii) **Data Transformation:** To perform sales trend analysis, I transformed the dataset by aggregating the arrival dates to a monthly level. This involved grouping individual daily records into their respective months, which enabled the calculation of the total number of arrivals each month. Additionally, I calculated the total revenue generated in each month, providing a clearer view of seasonal patterns and fluctuations in revenue over time.

iii) **Data Splitting:** In this project, the variables were split in two forms: Independent and Dependent Variables

Independent Variables: The Independent Variables include

- a) Hotel Name
- b) Hotel Type
- c) Customer Name
- d) Room Type
- e) Booking Channel
- f) Payment Method
- g) Salesperson
- h) Membership Type

Dependent Variables

- a) Sales
- b) Customer Feedback
- c) Customer Ratings.

iv) **Industry Context**

The data relates to the hospitality industry, specifically focusing on hotel operations, customer experiences, and sales performance. The significance of this analysis lies in helping the hotel grasp its operations across three different states, customer preferences, and reservation patterns, while also evaluating salesperson performance. These insights are vital for enhancing service quality, optimizing pricing strategies, and excelling against competitors in the highly competitive hotel industry. By leveraging this analysis, the hotel can refine its service offerings, enhance guest experiences, and adopt data-driven strategies to boost profitability and market share.

v) **Stakeholders**

- **Board of Directors** – Responsible for strategic decision-making and fostering overall business growth.
- **Hotel Management** – Understanding revenue streams, operational performance, and customer satisfaction trends that will help implement data-driven operational improvements.

vi) **Value to the Industry**

To this industry, success is defined when there is an increase in revenue which is derived through increased retention, excellent ratings and feedback, as well as more sales from salespersons.

4 PRE-ANALYSIS

i) **Identify Key Trends**

- Top Performing Salesperson:** Certain sales representatives are anticipated to make a significant contribution to revenue generation.
- Peak Sales by Arrival Date:** Some months may exhibit higher sales, likely due to seasonal demand.
- Sales by Hotel Room Type:** Studio rooms seem to generate the highest revenue, demonstrating strong customer preference.

- d) **Performance Analysis by Hotel Type:** City hotels might generate more revenue by receiving more bookings from business travelers, whereas resort hotels are likely to attract leisure guests.
- e) **Top Performing Customer by Revenue:** A group of loyal customers may account for a considerable share of revenue.
- f) **Best Performing Hotel:** One of the three hotels might surpass the others in revenue generation based on factors like location, services, and customer preference.
- g) **Performance Analysis by Booking Channel:** Online bookings could be the most utilized method, indicating that digital engagement is crucial for future growth.
- h) **Most Used Payment Method:** Cashless payments, such as credit cards, are expected to dominate as the preferred payment mode, owing to their convenience.

ii) **Potential Correlation:**

- a) **Booking Channel vs. Revenue Generation** – Revenue is tied to booking channel, when one channel increases, more revenue is generated from that channel which would reveal the most preferred booking channel.
- b) **Room Type vs. Revenue** – To know the most preferred room type, the revenue generated from that room determines the customer preference.
- c) **Salesperson Performance vs. Customer Retention** – The more customers that visit a certain hotel, the more it reflects the salesperson's performance,
- d) **Payment Method vs. Revenue** – The payment method use reflects the revenue generated from that channel..
- e) **Arrival Date (Month) vs. Sales** – When customer books a room in some month the corresponding effect on the sales.
- f) **Hotel Type vs. Customer Preference** – City hotels may attract more corporate travelers, while resort hotels may cater to vacationers.
- g) **Hotel Name vs. Revenue** – The more some hotels entertain customers the higher revenue generated.
- h) **Customer Name vs. Revenue** – The more customers book a hotel room, the higher the revenue the company generates.\

iii) Initial Insights

Before conducting a detailed statistical analysis, a preliminary review of the dataset reveals promising insights:

- a) **Service and Operational Excellence:** Ensuring high service quality to improve customer retention.
- b) **Revenue Optimization:** Identifying the most profitable room types and implementing pricing strategies to maximize revenue.
- c) **Targeted Marketing:** Leveraging seasonal demand by launching promotions ahead of peak sales months.
- d) **Customer Base Expansion:** Implementing loyalty programs and targeted advertising to attract new customers.
- e) **Optimizing Booking Channels:** Focusing on the most effective booking platforms to streamline customer experience.
- f) **Enhancing Payment Options:** Offering multiple payment methods for greater convenience.
- g) **Sales Incentives:** Recognizing top sales performers to enhance motivation and company performance.

5. IN-ANALYSIS

Unconfirmed Insights

- a) **Salesperson Performance:** The performance gap between the top and least-performing salespersons is marginal, suggesting a relatively balanced sales team. However, targeted incentives or performance improvement programs could enhance overall sales efficiency.
- b) **Sales Trend Report:** The peak sales in July and the lowest sales in April indicate a possible seasonal trend. Marketing strategies should focus on promotional campaigns in low-sales months to balance revenue throughout the year.
- c) **Revenue by Hotel Room Type:** The dominance of studio rooms in revenue generation suggests that they are the most preferred choice among customers. Upselling strategies for other room types may help diversify revenue streams.

- d) **Performance Analysis by Hotel Type:** City Hotels significantly outperform Resort Hotels, indicating stronger demand in urban areas. Resort Hotels may require targeted marketing, promotions, or service enhancements to increase their revenue contribution.
- e) **Customer of the Year:** The presence of high-value customers like Micheal Smith suggests the potential benefits of a loyalty program that encourages repeat bookings from premium customers.
- f) **Best Performing Hotel:** Lexis Suites leads in performance but with a relatively small margin over competitors. Identifying its key strengths can help replicate its success across other hotels.
- g) **Performance Analysis by Booking Channels:** The dominance of Booking.com highlights the growing importance of online booking channels. Expanding partnerships with online travel agencies or improving direct booking incentives could further enhance revenue.
- h) **Most Preferred Payment Method:** The preference for credit card payments underscores the need for a seamless digital transaction experience. Additional payment options, such as mobile wallets, may further enhance customer convenience.

Recommendations

- a) Implement targeted marketing strategies to boost sales in low-performing months.
- b) Develop promotional offers to increase occupancy in Resort Hotels.
- c) Leverage data-driven pricing models to optimize revenue from different room types.
- d) Enhance customer loyalty programs to retain high-value customers.
- e) Improve direct booking incentives to reduce reliance on third-party platforms.

Analysis Used in Excel

- a) **Pivot Tables:** Used to summarize key hotel metrics, including revenue by hotel type, room preferences, booking channels, and payment methods. This facilitated efficient data organization and identification of trends in customer spending and sales performance.
- b) **Pivot Charts:** Created to visually represent relationships between variables, such as monthly sales trends, hotel performance comparisons, and the impact of booking channels on revenue. These visual insights helped highlight peak sales periods and customer preferences.

c) **Conditional Formatting:** Applied color scales to emphasize key patterns, such as the most profitable room types, highest revenue-generating hotels, and best-performing salespersons. This allowed for quick identification of performance variations and potential areas for improvement.

6 POST ANALYSIS & INSIGHTS

Key Findings

- a) **Top Sales Achiever:** Leo led with \$16,332,917.50, while Derek had the lowest at \$15,000,222.50. Leo had high customer ratings and worked at City Hotel, which produced the top customer of the year.
- b) **Sales Trends:** Peak sales in July (\$5,137,537.50), lowest in April (\$2,796,502.50).
- c) **Revenue by Room Type:** Studio rooms earned the highest (\$21,087,920.00), Royal Suite the lowest (\$4,010,190.00).
- d) **Hotel Performance:** City Hotels (\$31,255,450.00) outperformed Resort Hotels (\$15,523,407.50).
- e) **Top Customer:** Michael Smith led with \$64,057.50.
- f) **Best Hotel:** Lexis Suites topped at \$15,715,220.00, leading by \$174,990.
- g) **Booking Channel:** Booking.com was the most used, generating \$16,028,110.
- h) **Payment Method:** Credit cards were preferred, totaling \$16,974,980.

ii) Comparison with Initial Findings

The analysis largely supports the initial expectations, with a few nuanced differences:

a) Salesperson Performance:

The assumption that certain sales representatives significantly contribute to revenue generation is confirmed. However, the performance gap between the top and lowest-performing salespersons is marginal, indicating a balanced sales team. Targeted incentives or training programs could further enhance overall sales efficiency.

b) Peak Sales by Arrival Date:

As expected, certain months exhibit higher sales, likely due to seasonal demand. The analysis confirms that July recorded the highest sales, while April had the lowest revenue, suggesting a potential seasonal trend. Implementing promotional campaigns during low-sales months may help balance revenue throughout the year.

c) Sales by Hotel Room Type:

The initial assumption that studio rooms generate the highest revenue holds true, as they remain the most preferred choice among customers. However, revenue diversification strategies, such as upselling higher-tier rooms, could help improve overall earnings.

d) Performance Analysis by Hotel Type:

City hotels significantly outperform resort hotels in revenue generation, aligning with the expectation that business travelers drive more bookings in urban areas. Resort hotels may require targeted marketing, promotional offers, or service enhancements to boost occupancy rates.

e) Top Performing Customer by Revenue:

A group of loyal customers, including high-value guests like Michael Smith, substantially contribute to revenue. This finding supports the idea that repeat customers play a crucial role in financial success. Introducing a structured loyalty program could further encourage repeat bookings.

f) Best Performing Hotel:

Lexis Suites emerges as the leading hotel in revenue generation, although the margin over competitors is relatively small. Understanding and replicating its key success factors across other locations may help optimize performance.

g) Performance Analysis by Booking Channel:

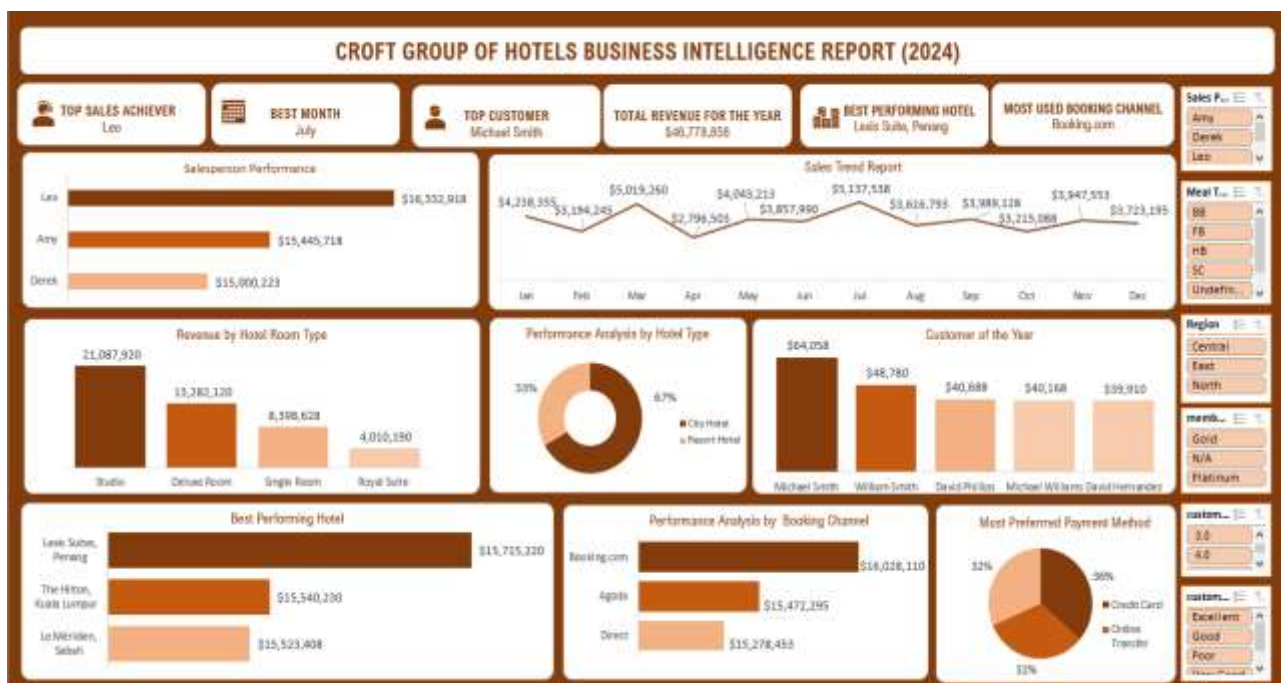
As predicted, online bookings dominate, particularly through Booking.com. This highlights the growing reliance on digital platforms for reservations. Expanding partnerships with online travel agencies or enhancing direct booking incentives could further drive revenue growth.

h) Most Preferred Payment Method:

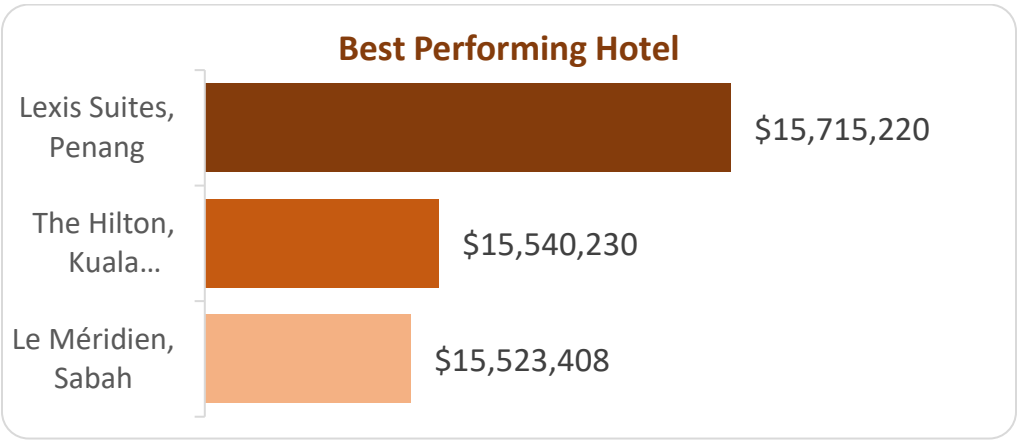
The hypothesis that cashless payments, particularly credit cards, would dominate was confirmed. Credit card payments are the most widely used method, reinforcing the importance of a seamless digital transaction experience. Offering additional payment options, such as mobile wallets, could improve convenience and accessibility.

7. DATA VISUALISATION & CHARTS

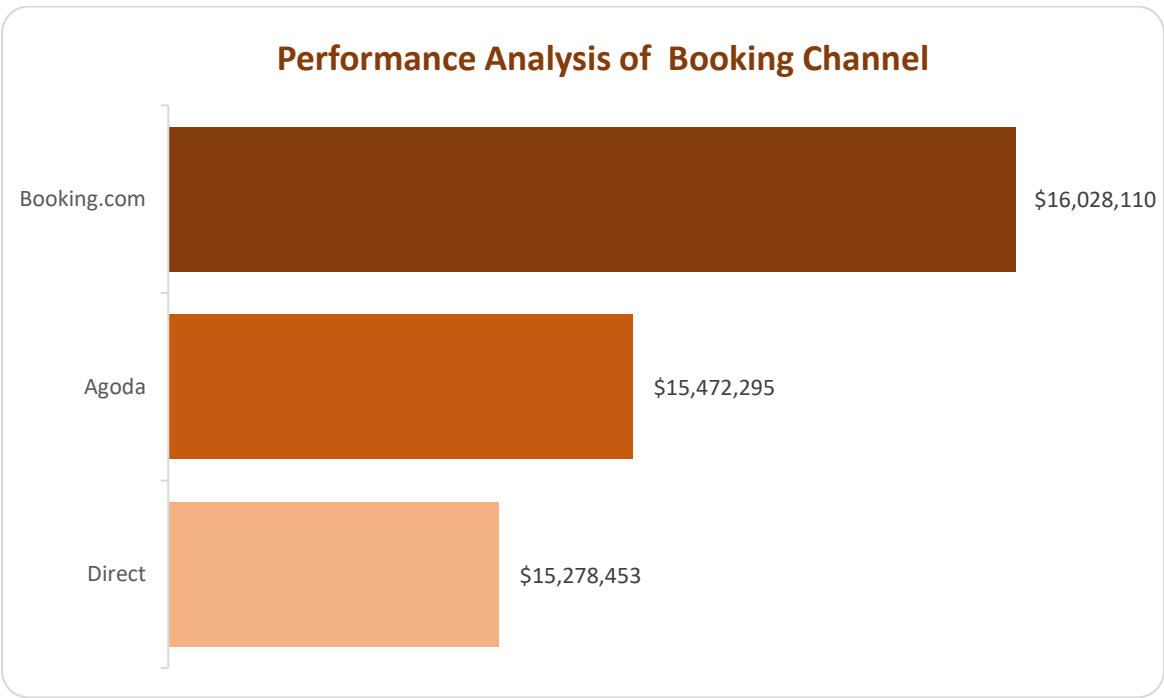
DASHBOARD



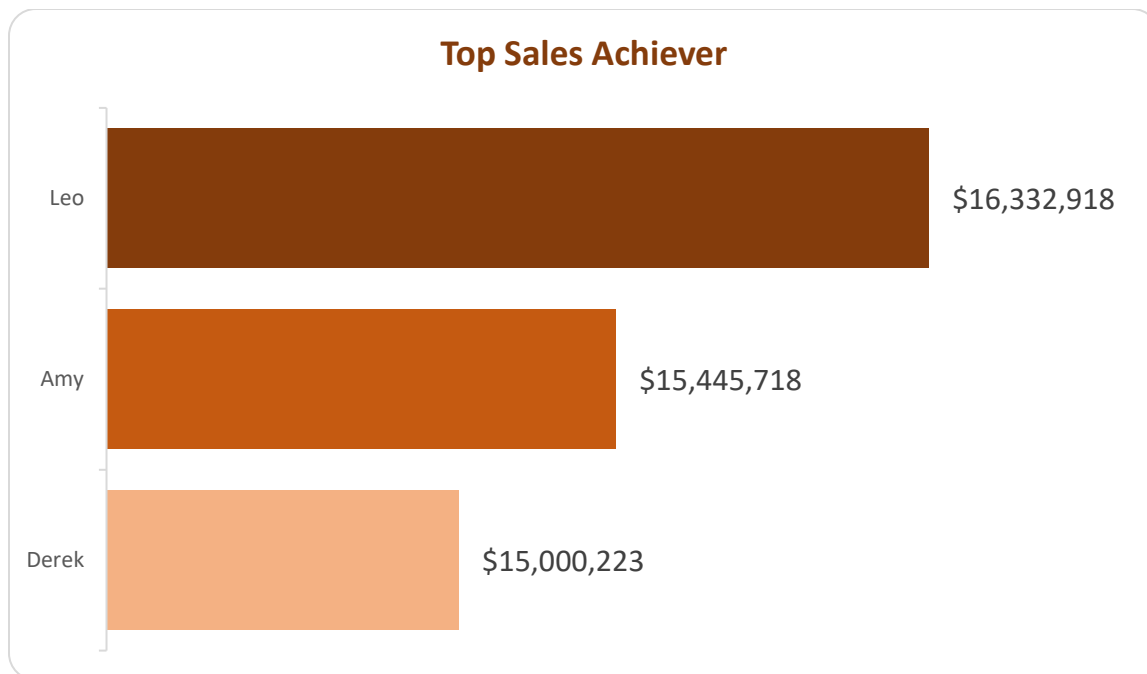
CHARTS



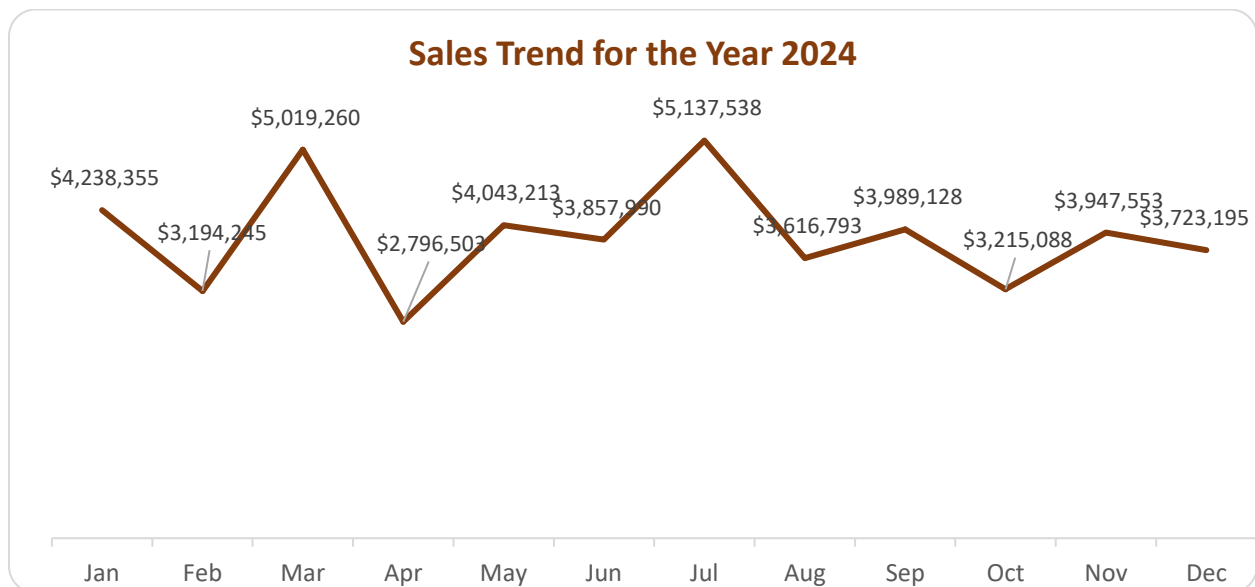
Lexis Suites Penang is the best performing hotel with a generated revenue of \$15,717,220, which is higher by some hundreds of thousands from the other two hotels.



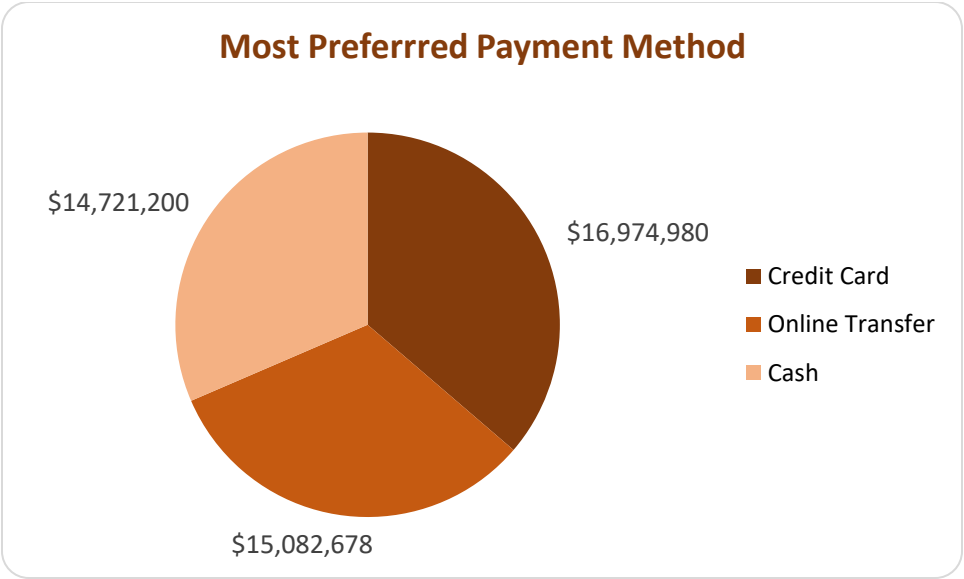
From the chart,Booking.com is the most preferred booking channel based on the revenue generated for the company, \$16,028,110 which is higher than the other methods.



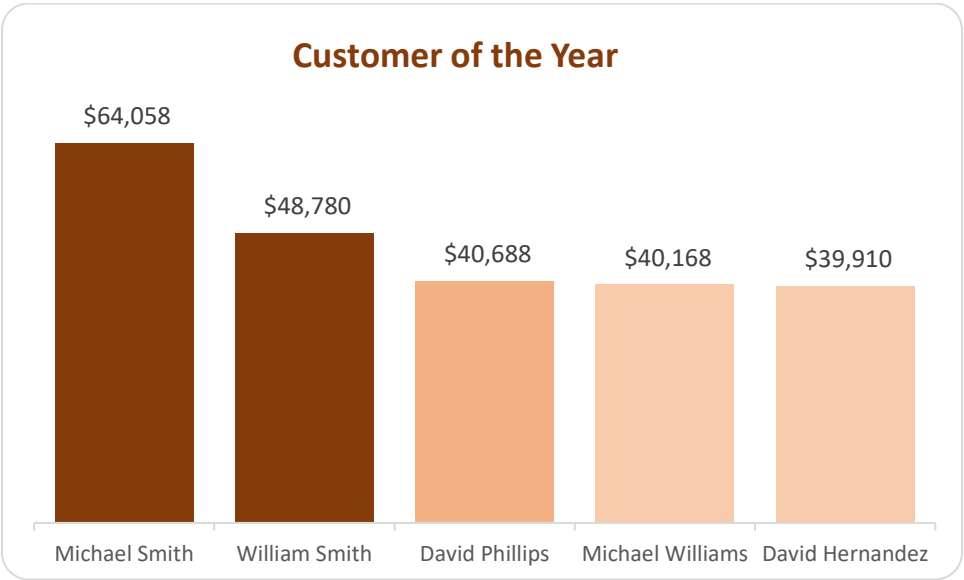
Leo was the top sales achiever with a grossing revenue of \$16,332,917.50 while Derek was the least performing salesperson with a revenue of \$15,000,222.50



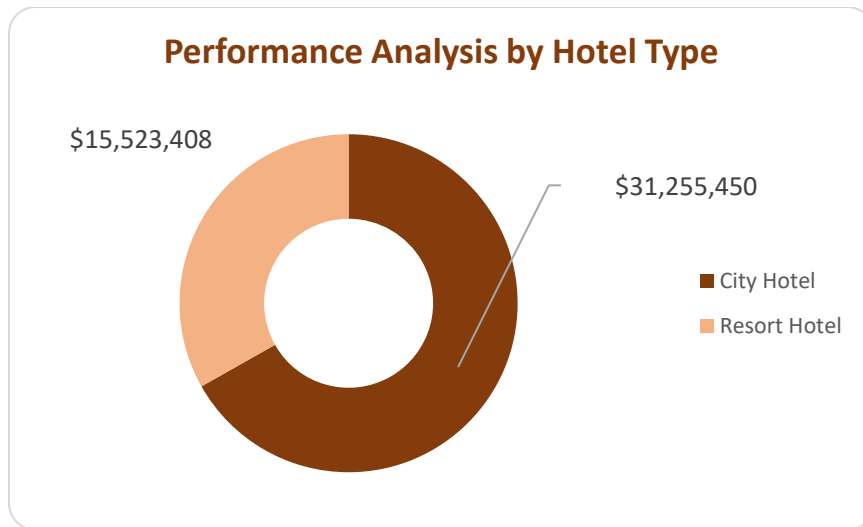
The firm exhibited a fluctuating trend with its peak sales recorded in July(\$5,137,537.50) and their lowest sales was recorded in April (\$2,796,502.50)



Credit Card was the most preferred payment based on the revenue generated (\$16,974,980) which is higher than other payment methods.



Micheal Smith topped the bar (\$64,057.50) as the best customer of the year among more than a thousands customers.



City Hotels (\$31,255,450) outperformed Resort Hotels (\$15,523,407.5) by generating more than half of the group revenue.

8. RECOMMENDATIONS AND OBSERVATIONS

Salesperson Performance

Regular training sessions should be held where top performers like Leo share their strategies with other colleagues. Bonus needs to be introduced based on performance to motivate sales staff.

Sales Trend Report

Special promotions or discounts needs to be introduced during April to attract more bookings. For July,I recommend that there is a need to identify what drove high sales in July(eg, Holiday, events) and create similar campaign for other months.

Revenue by Hotel Room Type

Offer luxury package deals (e.g., complimentary spa services, airport transfers) to make Royal Suites more attractive. Conduct a customer feedback survey to understand why guests prefer Studio Rooms over Royal Suites

Performance Analysis by Hotel Type

Offer luxury package deals (e.g., complimentary spa services, airport transfers) to make Royal Suites more attractive. Conduct a customer feedback survey to understand why guests prefer Studio Rooms over Royal Suites

Customer of the Year

Micheal Smith being the top customer should be given a special customer agent who will handle his reservations, send him monthly greetings to make him feel special and also earn his trust to get referrals from him. Also he needs to be given discount on his next patronage.

Best Performing Hotel

Lexis Suites needs to be studied to know the reason for their high sales. Also there need to improve on the services to get more customers and revenue in the coming year.

Performance Analysis by Booking Channels

Booking.com services should always be available and the network be smooth. There is need for the software engineers to maintain and monitor the services from the site and ensure it is smooth without hitches.

Most Preferred Payment Method

Since Credit Card is the most used payment, it should be available at all branches of the hotel and the services must be smooth and fast to avoid loss of customers.

CONCLUSION

The analysis of hotel sales and performance revealed key trends in revenue generation, customer preferences, and sales dynamics. Leo emerged as the top salesperson, with high customer ratings and strong sales performance at City Hotel, while Booking.com was the most utilized reservation channel. Sales trends fluctuated, peaking in July and hitting their lowest in April, highlighting seasonal variations. Studio rooms generated the highest revenue, while Royal Suites had the least, indicating differences in customer demand across room types. City Hotels significantly outperformed Resort Hotels, contributing more than half of the total revenue. Overall, credit cards were the most preferred payment method, reinforcing their dominance in hotel transactions.

REFERENCE

The dataset was downloaded from [Kaggle.com](https://www.kaggle.com)