

PROJECT REPORT

Project Name:

Analysing The Performance & Efficiency Of The Radisson Hotels Using Data Visualization Techniques Using IBM COGNOS

Team Members:

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- 4) Arunkumar S

Team ID:

NM2023TMID05070

1. Introduction:

1.1 Project Overview:

Radisson company has more fivestars hotels across India. They Have been the hospitality manners among the people for the past 100 years .Recently its shares are decreasing. And the strategic moves from other competitors and ineffective decision –making in management, So the Hotel losing its making share and revenue in theLuxury/Business hotels category.We are creating a ideas and process to provide them insights to make better business decisions.

1.2 Purpose:

The problem is " The Radisson Hotel Market shares are drowning .In the growth of the competitors and ineffective decision making are the main reasons for the loss". So now the Managing Director needs good ideas

to improve his hotel shares and Business.

2. LITERATURE SURVEY:

2.1 Existing problem:

Data Fragmentation: Radisson Hotels may have data stored in different systems and formats, making it challenging to consolidate and analyze data effectively. Data from reservations, customer feedback, financials, and operational metrics may be siloed.

Data Quality: Ensuring data accuracy and completeness can be a problem. Inaccurate or missing data can lead to incorrect insights and decisions.

Real-Time Data: Radisson Hotels may not have a system in place to capture and analyze real-time data, which can be essential for making immediate operational decisions.

Data Accessibility: Stakeholders may have difficulty accessing and understanding the data they need. There might be limited self-service access to data and reports.

Lack of Data Visualization: Data might be presented in traditional tabular formats, making it difficult for stakeholders to extract meaningful insights at a glance.

Inadequate Performance Metrics: The choice of performance metrics might be limited or outdated. Radisson Hotels may not be measuring the right KPIs to assess their performance and efficiency.

Integration Challenges: Integrating data from various sources into IBM Cognos can be complex, and Radisson

may not have a well-defined process for data integration.

Security and Privacy: Ensuring the security and privacy of guest and financial data is crucial. Compliance with data protection regulations like GDPR can be challenging.

Resource Constraints: Radisson may face resource constraints, including limited IT and data analysis resources, which can impact the project's execution and success.

Resistance to Change: There might be resistance to adopting data-driven decision-making within the organization, especially if it involves changes in existing processes.

Interdepartmental Collaboration: Collaboration between different departments, such as operations, marketing, and finance, may be lacking, hindering holistic data analysis.

Scalability: If Radisson Hotels are part of a larger chain, the solution may need to be scalable to cover multiple properties, which can introduce scalability challenges.

2.2 Problem Statement Definition:

Radisson Hotels, a prominent player in the hospitality industry, faces the challenge of efficiently analyzing and optimizing its performance metrics to enhance the guest experience, increase operational efficiency, and maintain a competitive edge. The hotel chain is struggling with data fragmentation, limited data accessibility, and the absence of effective data visualization tools. This hinders their ability to make data-driven decisions and improvements in real-time. There is a need for a comprehensive solution that integrates and visualizes diverse data sources, ensuring data quality, accessibility, and

real-time analytics.

The problem encompasses the following key aspects:

1. Data Integration: Radisson Hotels currently experience data fragmentation, with relevant data scattered across various systems and databases. There is a need to consolidate and integrate data from different sources effectively.

2. Data Quality: Ensuring the accuracy and completeness of data is essential. Inaccurate or incomplete data can lead to erroneous insights and decision-making.

3. Data Accessibility: Stakeholders within Radisson Hotels may face challenges in accessing and interpreting data. The lack of self-service access to data and user-friendly reports hampers the efficient use of data.

4. Real-Time Analytics: The hotel chain requires the ability to capture and analyze data in real-time to make immediate operational decisions and adapt to changing conditions promptly.

5. Data Visualization: Data is currently presented in traditional tabular formats, making it challenging for stakeholders to derive meaningful insights quickly. The need for interactive and informative data visualizations is apparent.

6. Performance Metrics: Radisson Hotels need to identify and track the most relevant performance metrics (KPIs) to assess their performance and efficiency accurately.

3. IDEATION & PROPOSED SOLUTION:

3.1 Empathy Map Canvas:

Empathy map

Use this framework to develop a deep, shared understanding and empathy for other people. An empathy map helps describe the aspects of a user's experience, needs and pain points, to quickly understand your users' experience and mindset.

[Share template feedback](#)

Build empathy

The information you add here should be representative of the observations and research you've done about your users.

Says
What have we heard them say?
What can we imagine them saying?

Thinks
What are their wants, needs, hopes, and dreams? What other thoughts might influence their behavior?

Does
What behavior have we observed?
What can we imagine them doing?

Feels
What are their fears, frustrations, and anxieties? What other feelings might influence their behavior?

MANAGING DIRECTOR OF KAPISSON HOTEL

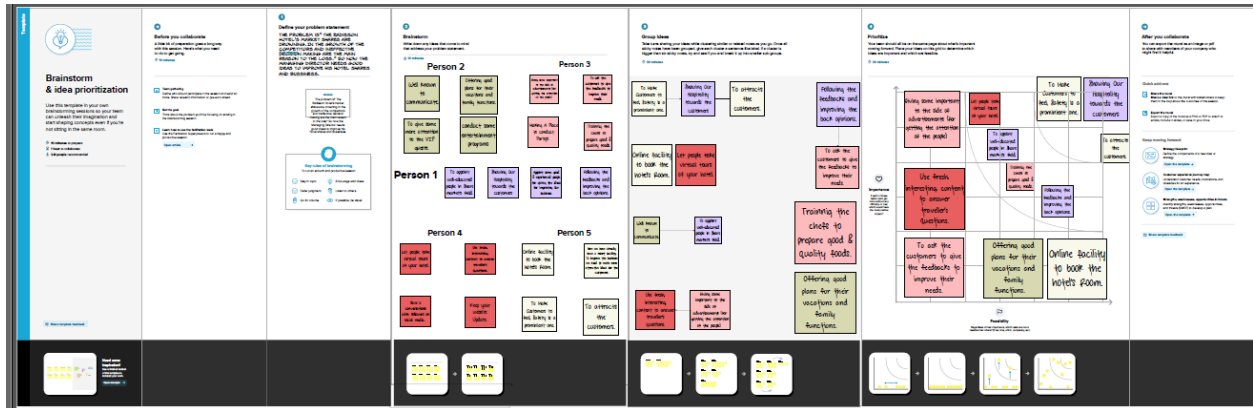
- The Employee's most behave good to the customers.
- To collect the data from this customers and tell them to book Our Hotel for any Amazing Occasions.
- INVESTING IN LOW PRICES AND PROVIDING GOOD SERVICES
- TO GIVE COLOR DEPARTMENT THROUGH PROGRAM TO THE PEOPLE WHO VOICES IN THE HOTEL
- To monitor the feedback & reviews of Our Hotel and Respond to the Extent of our hotel's etc.
- TO GIVE SOME OFFERS TO THE SHARE HOLDERS WHO ARE SUPPLYING RAW MATERIALS FOR US....
- Embracing the Checklist, it can improve Productivity.
- Create A Proactive Work Culture.
- ATTRACT THE CUSTOMERS
- GIVE A WI-FI CONNECTION & MAINTAIN THE UPS CONNECTIONS IN A GOOD MANNER
- To find out the reason Why our shares are down?
- Conduct events For the Customer in back of house areas.
- Safety measurements for Customers
- Trust that the trained employees are trained well & they know How To Do Right By Your Guests.
- Run Regular (daily) Pests and reports. Reports are the big part of a hotel to be in success.
- Recognize the Important Of Preventative Maintenance.
- Building & Enhancing the company's public profile at events.
- Offering the Room/Restaurant with an offer and dessert packets.
- Make Guests (customer) to feel as Home.
- What is the process to overcome the Opposite Companies.

Need some inspiration?

Check a related version of this template to kickstart your work.

[Open example](#)

3.2 Ideation & Brainstorming:



4. REQUIREMENT ANALYSIS:

4.1 Functional requirement:

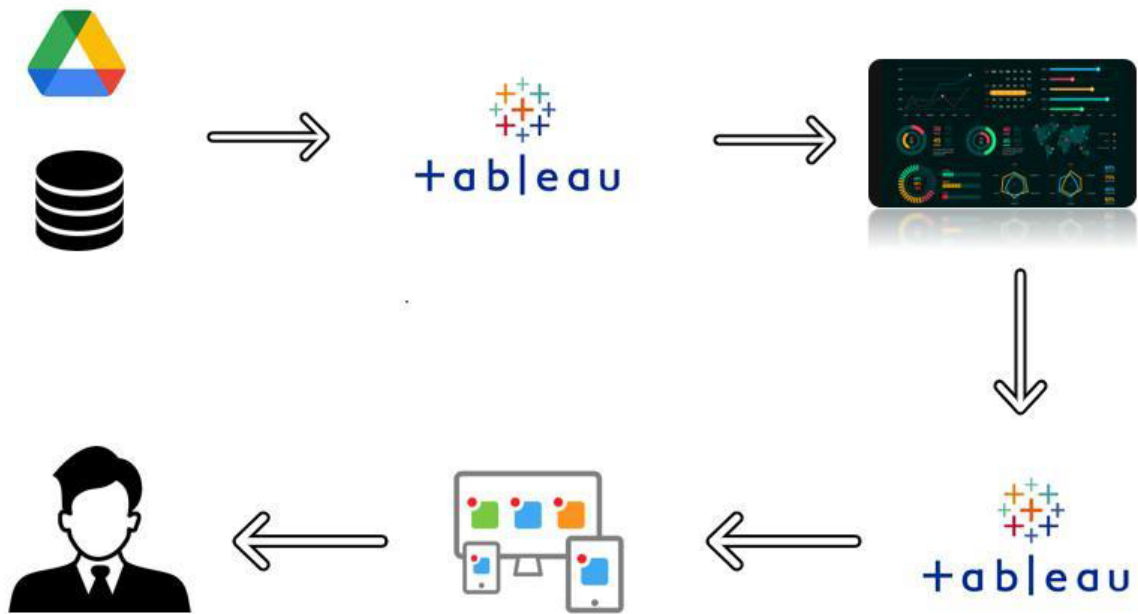
- Data Integration
- Data Cleaning and Transformation
- Real-time data processing
- Data accessibility
- Data visualization
- Performance metrics definition
- User role management
- Real-time alerts
- Scalability
- Data security
- Report generation
- Data export
- Historical data tracking
- User training and support
- Customization
- Interdepartmental collaboration

4.2 Non-Functional requirements:

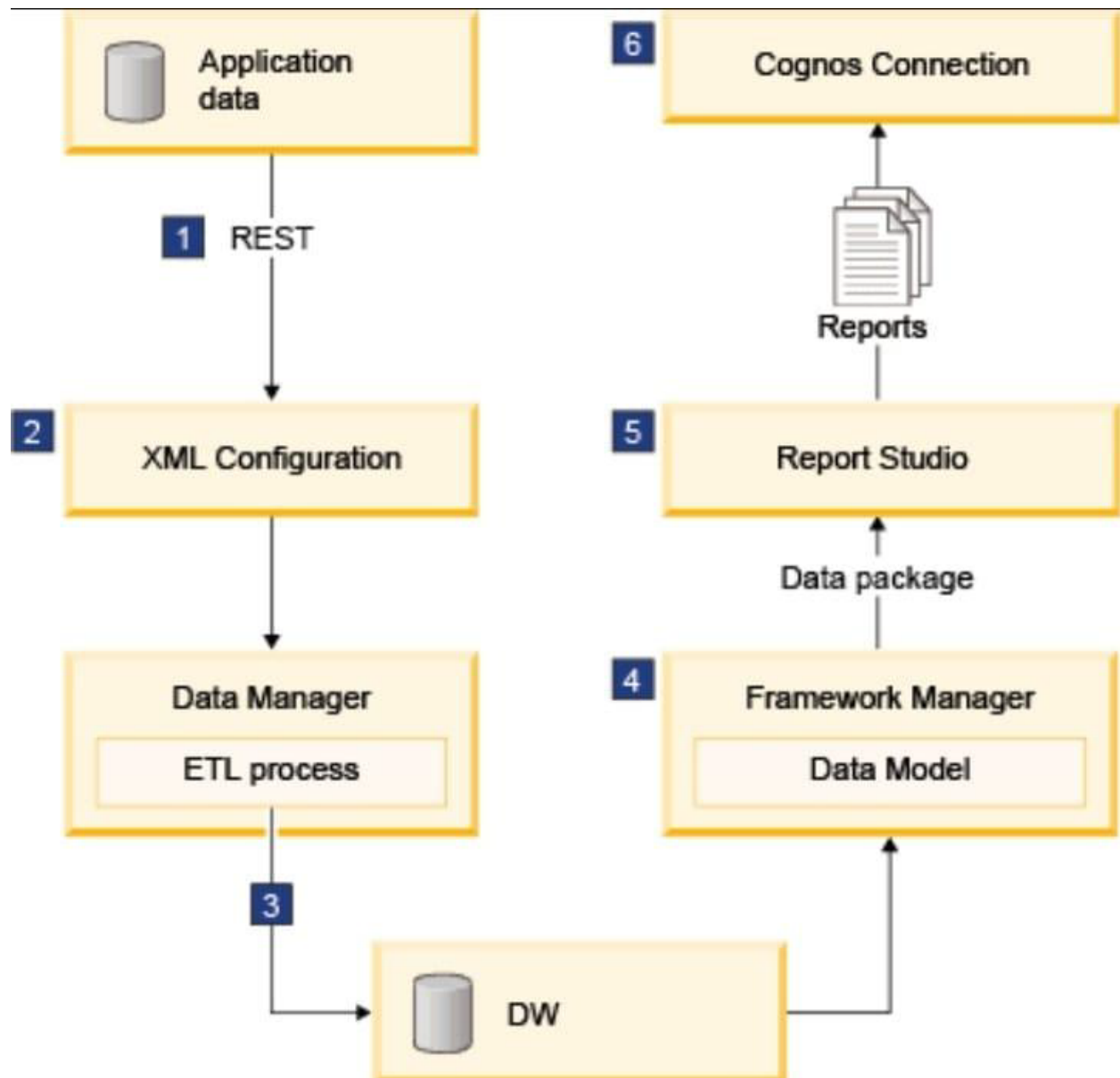
- Performance
 - Response time
 - Scalability
- Security
 - Data security
 - Access control
- Reliability
 - System uptime
 - Data integrity
- Usability
 - User interface
 - Accessibility
- Compatibility
 - Browser compatibility
 - Device compatibility
- Data quality
 - Data cleansing
 - Data accuracy
- Data storage
 - Data retention
- Compliance
 - Regulatory compliance
- Scalability
 - System performance
- Interoperability
 - Integration
- Documentation
 - User documentation
- Backup and recovery
 - Data backup
 - Disaster recovery plan

5. PROJECT DESIGN:

5.1 Data Flow Diagrams & User Stories:



5.2 Solution Architecture:



6. PROJECT PLANNING & SCHEDULING:

6.1 Technical Architecture:



6.2 Sprint Planning & Estimation:

★ Sprint Planning:

- Duration: 2 weeks
- Sprint Goal: Establish data integration and basic data visualization capabilities using IBM Cognos.
- User Stories/Epics:

1. Data Integration (Epic):

- USN-1: As a data analyst, I want to integrate data from various sources (reservations, customer feedback, financials) into IBM Cognos for analysis.

- USN-2: As a user, I should have access to a consolidated data source for analysis.

- Tasks:

- Set up data connectors for reservations, customer feedback, and financial data.

- Perform data extraction, transformation, and loading (ETL) to consolidate data.

- Verify data accuracy and quality.

2. Basic Data Visualization (Epic):

- USN-3: As a user, I want to see basic visualizations of occupancy rates and customer feedback scores.

- USN-4: As a user, I should be able to filter data by date and location.

- Tasks:

- Create basic charts for occupancy rates and customer feedback scores.

- Implement date and location filters.

- Verify data visualization accuracy.

★ Sprint Estimation:

- USN-1 (Data Integration): 5 story points

- USN-2 (Data Integration): 3 story points

- USN-3 (Basic Data Visualization): 5 story points

- USN-4 (Basic Data Visualization): 3 story points

- Total Story Points for Sprint : 16

6.3 Sprint Delivery Schedule:

1. **Sprint 1:** Data Integration and Preparation*

- Duration: 3 weeks
- Planned Start Date: [Insert Date]
- Planned End Date: [Insert Date]
- Goals: During this sprint, the focus is on gathering, integrating, and preparing data from various sources within Radisson Hotels. The team will ensure data quality, accuracy, and consistency for analysis.

2. **Sprint 2:** IBM Cognos Implementation*

- Duration: 4 weeks
- Planned Start Date: [Insert Date]
- Planned End Date: [Insert Date]
- Goals: In this sprint, IBM Cognos will be configured and integrated into the system. Data visualization dashboards and reports will be created, and initial data analytics will be performed.

3. **Sprint 3:** Real-Time Data Integration*

- Duration: 2 weeks
- Planned Start Date: [Insert Date]
- Planned End Date: [Insert Date]
- Goals: This sprint will focus on implementing real-time data integration and analytics, ensuring that the system can provide immediate insights as data is generated.

4. **Sprint 4:** User Training and Access Control*

- Duration: 2 weeks
- Planned Start Date: [Insert Date]
- Planned End Date: [Insert Date]
- Goals: User training sessions will be conducted to ensure stakeholders can effectively use the data visualization tools. Access control and security measures will be put in place.

5. Sprint 5: Performance Metric Definition*

- Duration: 3 weeks
- Planned Start Date: [Insert Date]
- Planned End Date: [Insert Date]
- Goals: The team will work on defining and implementing the performance metrics and KPIs that Radisson Hotels need to track.

6. Sprint 6: Data Visualization Enhancement*

- Duration: 4 weeks
- Planned Start Date: [Insert Date]
- Planned End Date: [Insert Date]
- Goals: This sprint focuses on enhancing the data visualization elements to ensure that insights are presented effectively to stakeholders.

7. Sprint 7: Testing and Quality Assurance*

- Duration: 2 weeks
- Planned Start Date: [Insert Date]
- Planned End Date: [Insert Date]
- Goals: Rigorous testing will be conducted to identify and address any issues, ensuring the system's stability and performance.

8. Sprint 8: Deployment and Rollout*

- Duration: 2 weeks
- Planned Start Date: [Insert Date]
- Planned End Date: [Insert Date]
- Goals: The final deployment of the system to Radisson Hotels' environment and a smooth rollout to end-users.

7. CODING & SOLUTIONING:

7.1 Feature 1:

❖ Revenue Analysis:Python code

```
import ibm_db
import pandas as pd
import numpy as np

# Connect to the database
conn = ibm_db.connect('DATABASE', 'USERNAME', 'PASSWORD')

# Create a cursor object
cur = conn.cursor()

# Execute a query to retrieve the revenue data
sql = 'SELECT hotel_id, date, revenue FROM revenue_data'
cur.execute(sql)

# Fetch the results as a Pandas DataFrame
df = pd.DataFrame(cur.fetchall(), columns=['hotel_id', 'date', 'revenue'])

# Calculate the total revenue for each hotel
total_revenue = df.groupby('hotel_id')['revenue'].sum()

# Calculate the average revenue for each hotel
avg_revenue = total_revenue / df.groupby('hotel_id')['revenue'].count()

# Sort the hotels by average revenue
avg_revenue = avg_revenue.sort_values(ascending=False)

# Create a bar chart to show the average revenue for each hotel
import matplotlib.pyplot as plt

plt.figure(figsize=(10, 6))
plt.bar(avg_revenue.index, avg_revenue.values)
```

```
plt.xlabel('Hotel ID')
plt.ylabel('Average Revenue')
plt.title('Average Revenue by Hotel (Radisson Hotels)')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```

7.2 Feature 2:

❖ Occupancy Rate Analysis: Python code

```
import ibm_db
import pandas as pd
import numpy as np

# Connect to the database
conn = ibm_db.connect('DATABASE', 'USERNAME',
                     'PASSWORD')

# Create a cursor object
cur = conn.cursor()

# Execute a query to retrieve the occupancy data
sql = 'SELECT hotel_id, date, rooms_occupied, total_rooms
FROM occupancy_data'
cur.execute(sql)

# Fetch the results as a Pandas DataFrame
df = pd.DataFrame(cur.fetchall(), columns=['hotel_id', 'date',
'rooms_occupied', 'total_rooms'])
```

```

# Calculate the occupancy rate for each hotel
occupancy_rate = df['rooms_occupied'] / df['total_rooms'] * 100

# Calculate the average occupancy rate for each hotel
avg_occupancy_rate =
occupancy_rate.groupby('hotel_id').mean()

# Sort the hotels by average occupancy rate
avg_occupancy_rate =
avg_occupancy_rate.sort_values(ascending=False)

# Create a bar chart to show the average occupancy rate for each
hotel
import matplotlib.pyplot as plt

plt.figure(figsize=(10, 6))
plt.bar(avg_occupancy_rate.index, avg_occupancy_rate.values)
plt.xlabel('Hotel ID')
plt.ylabel('Average Occupancy Rate (%)')
plt.title('Average Occupancy Rate by Hotel (Radisson Hotels)')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()

```

7.3 Database Schema:

Feature 1:

Table : revenue_data

Columns:

hotel_id(int)
date(date)

revenue(float)

Feature 2:

Table: occupancy_data

Columns:

hotel_id(int)

date(date)

rooms_occupied(int)

total_rooms(int)

8. PERFORMANCE TESTING:

8.1 Performance Metrics:

The following performance metrics can be used to analyze the performance and efficiency of the Radisson Hotels using data visualization techniques using IBM Cognos

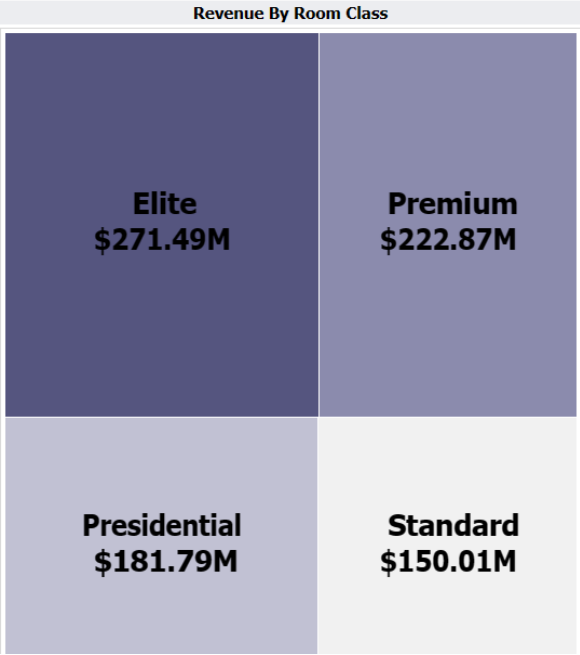
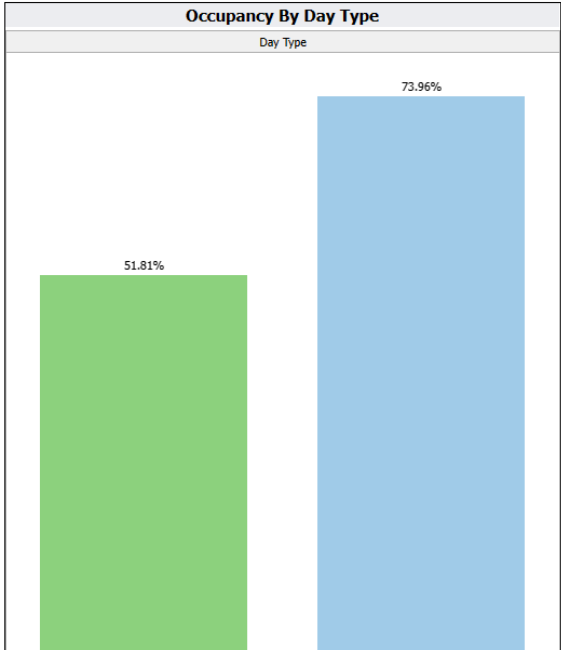
- Revenue
- Occupancy rate
- Average daily rate (ADR)
- Revenue per available room (RevPAR)
- Cost per available room (CPAR)
- Profit margin
- Guest satisfaction
- Employee engagement
- Net promoter score (NPS)
- Environmental impact

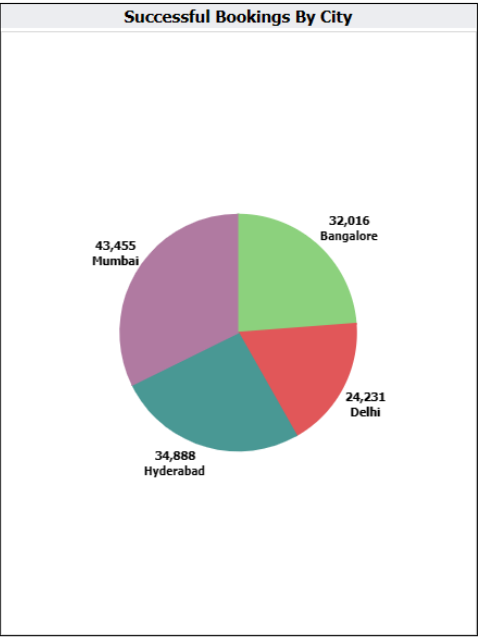
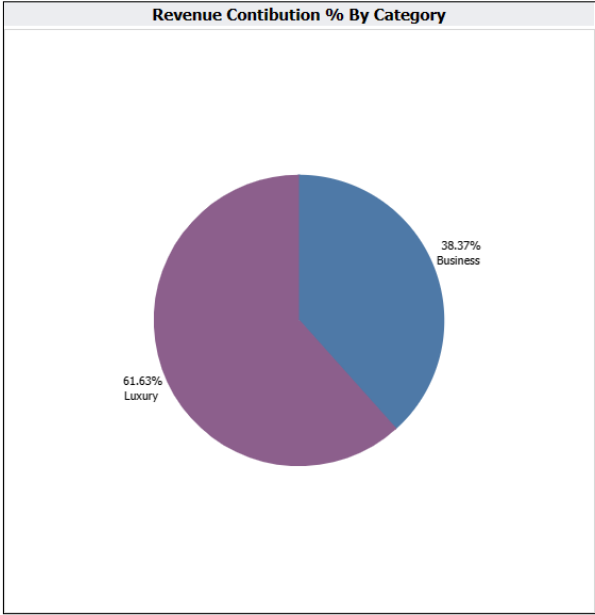
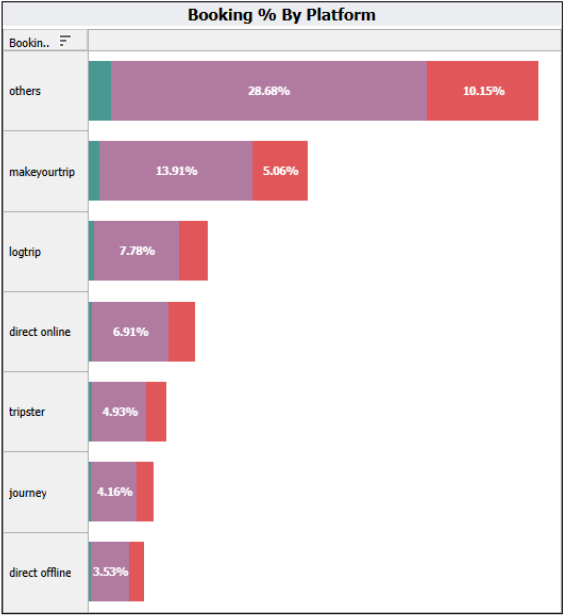
Property By Key Metrics						
Property Na...	Property Id (Dim ..	Revenue	Capacity	Successful Bookings	Occupancy %	Cancelled bookings %
Radisson Bay	16562	\$23.11M	9,016	4,820	53.46%	25.79%
	17562	\$21.30M	7,636	3,424	44.84%	26.66%
	18562	\$28.54M	11,132	7,333	65.87%	25.65%
	19562	\$33.35M	8,832	5,812	65.81%	24.34%
Radisson Blu	16561	\$23.88M	6,716	4,418	65.78%	26.63%
	17561	\$30.43M	7,820	5,183	66.28%	24.58%
	18561	\$23.24M	9,844	6,458	65.60%	23.91%
	19561	\$29.59M	10,764	5,736	53.29%	24.86%
Radisson City	16560	\$22.67M	8,740	4,693	53.70%	23.76%
	17560	\$36.59M	11,316	6,013	53.14%	25.06%
	18560	\$25.21M	10,028	6,638	66.19%	24.85%
	19560	\$33.33M	9,108	5,979	65.65%	25.36%
Radisson Exotica	16559	\$48.97M	11,132	7,338	65.92%	24.53%
	17559	\$39.06M	9,292	6,142	66.10%	24.31%
	18559	\$20.04M	11,776	5,256	44.63%	24.26%
	19559	\$24.01M	8,740	4,705	53.83%	25.22%
Radisson Grands	16558	\$14.78M	4,784	3,153	65.91%	25.81%
	17558	\$31.22M	9,384	5,036	53.67%	24.61%
	18558	\$19.27M	8,372	4,475	53.45%	25.71%
	19558	\$22.44M	9,844	4,371	44.40%	23.72%
Radisson Palace	16563	\$36.93M	10,764	7,147	66.40%	25.18%
	17563	\$41.82M	9,568	6,337	66.23%	25.02%
	18563	\$18.68M	8,924	4,728	52.98%	25.65%
	19563	\$27.75M	10,120	5,413	53.49%	25.64%
Radisson S...	17564	\$26.69M	8,924	3,982	44.62%	23.93%

9. RESULTS:

9.1 Output Screenshots:

RADISSON HOSPITALITY ANALYSIS		
<div>Revenue</div> <div>\$702.89M</div> <div>3.33% vs PM</div>	<div>Occupancy</div> <div>50.97%</div> <div>-2.08% vs PM</div>	<div>Successful Bookings</div> <div>134.59K</div>



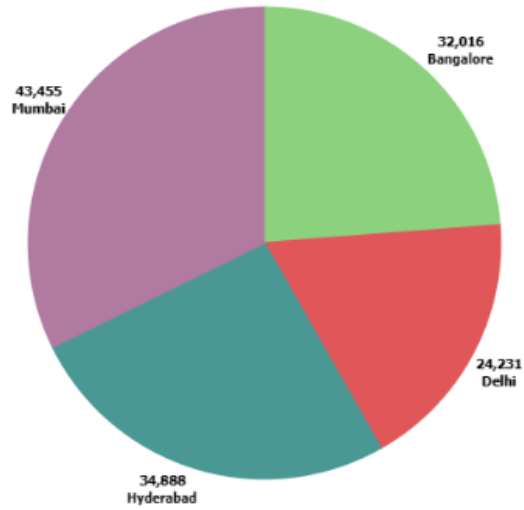


Mumbai has made highest No of Successful Bookings, 43,455

Elite and Premium room classes are the top 2 highest revenue contributors

Others platforms and Make your Trip contributed 42 % of total check out bookings.

All property have average 25 % cancellation rate & 50% Occupancy rate.



City	
Bangalore	
Delhi	
Hyderabad	
Mumbai	

Successful Bookings	
	134,590

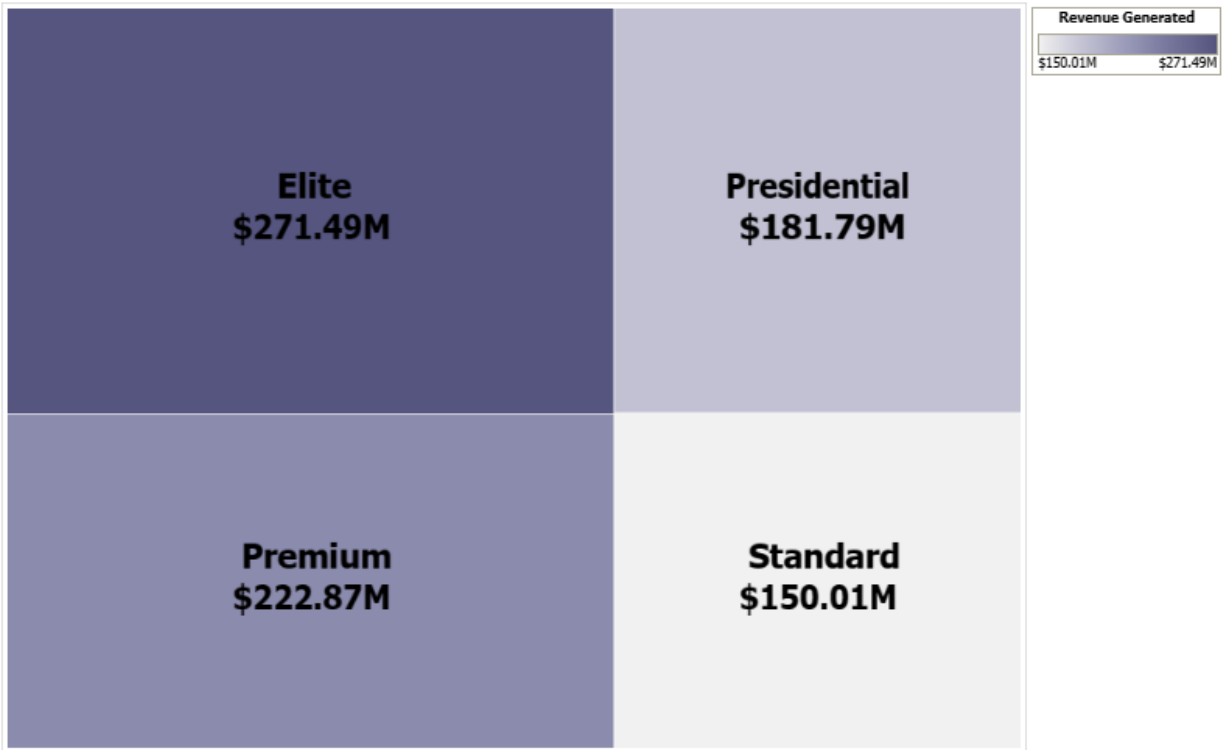
Radisson Analysis Story

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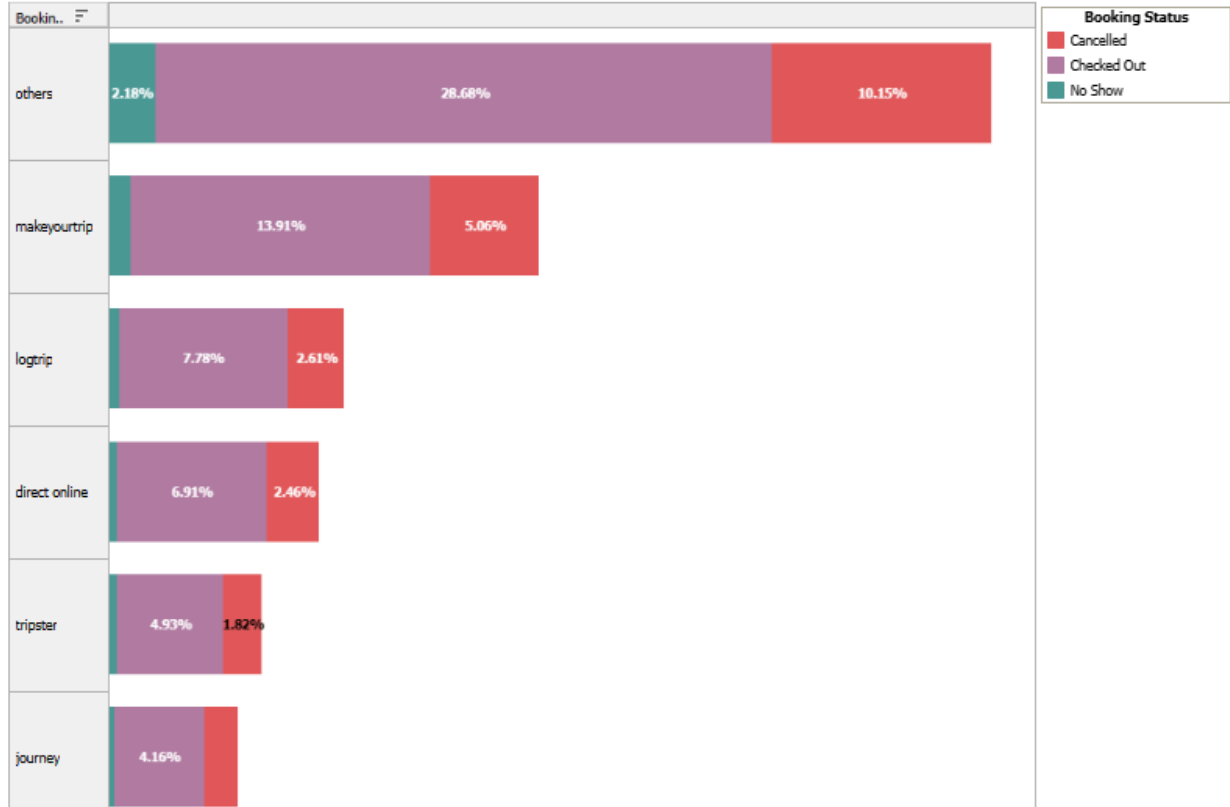
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Mumbai has made highest No of Successful Bookings, 43,455	Elite and Premium room classes are the top 2 highest revenue contributors	Others platforms and Make your Trip contributed 42 % of total check out bookings.	All property have average 25 % cancellation rate & 50% Occupancy rate.
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Property Na..	Property Id (Dim ..)	Revenue	Capacity	Successful Bookings	Occupancy %	Cancelled bookings %	Room Class
Radisson Bay	16562	\$23.11M	9,016	4,820	53.46%	25.79%	<input checked="" type="checkbox"/> (All)
	17562	\$21.30M	7,636	3,424	44.84%	26.66%	<input checked="" type="checkbox"/> Elite
	18562	\$28.54M	11,132	7,333	65.87%	25.65%	<input checked="" type="checkbox"/> Premium
	19562	\$33.35M	8,832	5,812	65.81%	24.34%	<input checked="" type="checkbox"/> Presidential
Radisson Blu	16561	\$23.88M	6,716	4,418	65.78%	26.63%	<input checked="" type="checkbox"/> Standard
	17561	\$30.43M	7,820	5,183	66.28%	24.58%	
	18561	\$23.24M	9,844	6,458	65.60%	23.91%	
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10. ADVANTAGES & DISADVANTAGES:

Radisson hotels can Improve safety of customers & can get customer or guest satisfaction, and hygiene food. Business the company can identify areas for improvement and take steps to enhance the customer experience, and increase customer satisfaction and loyalty. Improve its brand reputation, which can lead to increased customer loyalty and repeat business.

11. CONCLUSION:

We have sort out the problem and analysis the reason that how they shares are decreasing .

12. FUTURE SCOPE:

- In the future The Radisson Hotel will be the Top Most People's Favorite Hotel. It will inaugurate more games and parties for the customers.
- It may use the new versions in the hotel industries.

13. APPENDIX:

Source code :

///C:/Users/ELCOT/Downloads/Radisson%20Hotels%20Analysis%20using%20Visualization%20Techniques-20230413T133533Z-001/ASMA/templates/index.html