

Business Analysis of Airbnb

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I. INTRODUCTION

The sharing economy has revolutionised the way we consume goods and services, with Airbnb being one of the most successful platforms in this space. Airbnb is a platform that allows property owners to rent out their properties to travellers, providing an alternative to traditional hotels and accommodations. As the sharing economy continues to grow, it is essential to analyse the business performance of platforms like Airbnb to understand their impact and potential for growth.

In this paper, we present a business analysis of Airbnb using business intelligence techniques. We connect Airbnb datasets to a Postgres database and use PowerBI to build a dashboard that visualises key metrics related to Airbnb's business performance. We also create CRM leads and customer forms to gather additional data on our customers and improve customer satisfaction.

Our analysis provides insights into various aspects of Airbnb's business, such as occupancy rates, average nightly rates, and guest ratings. We also identify patterns and trends in the data that can inform business decisions, such as which properties are most popular and which factors are associated with higher guest ratings. Additionally, our CRM leads and customer forms provide valuable information on customer preferences and behaviours, which can be used to personalise marketing efforts and improve the customer experience.

Overall, our business analysis of Airbnb demonstrates the power of business intelligence techniques for gaining insights into business performance and making data-driven decisions. By understanding the business performance of sharing economy platforms like Airbnb, we can inform business strategies and improve the success of these platforms.

II. BALANCE SCORECARD



Fig. 1.

2.1. Growth Perspective

The Growth perspective emphasizes the initial stages of gathering data and implementing it effectively in the business to achieve desired outcomes. This involves collecting relevant data and ensuring its proper utilization to drive business growth and success.

2.2. Financial Perspective

The Financial Perspective focuses on the bottom line of a business and evaluates its progress or decline through strategic, operational, and financial metrics. The key financial objectives commonly considered are profit, growth, and shareholder value. Cash flow is used to assess long-term viability, quarterly sales growth and operating income per division indicate success, while market share growth and return on equity reflect overall prosperity.

3.3. Customer perspective

The ultimate goal of any business is to provide excellent service to its customers. This section focuses on ensuring customer satisfaction. Feedback from customers is gathered to understand how the service can be enhanced and improved. This feedback is valuable for assessing metrics such as the net promoter score, market share, and brand value of the business. By actively listening to customer feedback, businesses can work towards enhancing their offerings and building stronger relationships with their customers.

3.4. Internal Process

To ensure customer satisfaction, a company must evaluate its internal operations. Great customer service is the result of effective procedures, choices, and actions. A company's success relies on meeting customer expectations through efficient internal processes. Balanced scorecards include a section that provides an inside perspective on customer satisfaction for management's evaluation and improvement.

III. METHODOLOGY

A. Process Workflow

The deployment of a Customer Relationship Management (CRM) system, along with associated Business Intelligence (BI) and analytics, is a key initiative for Airbnb. The existing local database systems will be phased out and replaced with the CRM system to enhance customer service and attract more users to the Airbnb platform. To achieve this, Airbnb will leverage various lead generation sources, including social media ads, and engage in personal conversations with potential customers. Special discounts and offers will be provided to encourage customers to opt for annual plans. Feedback forms will be utilized to gain insights into the customer perspective, and customer support will promptly address any technical issues. Additionally, the primary objectives of the business intelligence application are to provide management with summarized statistics and support.

The workflow process is structured as follows:

Data source & Mockaroo:- We collected three datasets from the Airbnb website and utilized Excel to join them together. In

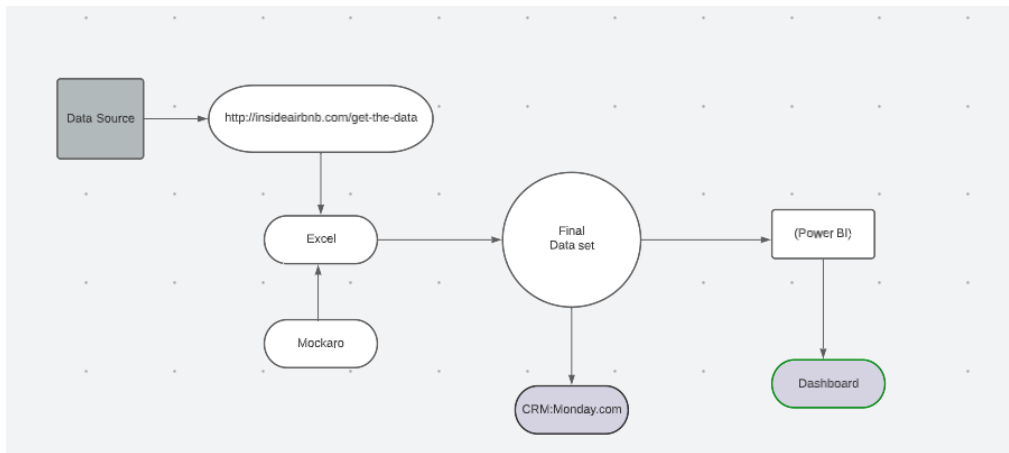


Fig. 2.

addition, we made modifications to certain references and incorporated new records using Mockaroo.

PowerBi: we have directly fetch our final data set on power bi and crated dashboard

CRM:Monday.com is used as our customer relationship management tool with this we create the leads , contacts and customer support pipeline to solve the marketing, sales, and customer issues.

B. Design Tool Used

1) PostgreSQL

An open-source relational database management system (RDBMS) called PostgreSQL is well-known for its scalability, extensibility, and robustness. It offers cutting-edge tools for managing, retrieving, and storing data. The database used in your project to store and manage the datasets from Airbnb is PostgreSQL. It allows for smooth connection with other tools and applications and provides a dependable and effective solution for handling enormous volumes of data.

2) Power BI

The business intelligence programme known as Power BI was created by Microsoft. Users can connect to different data sources, build engaging visualisations, and produce perceptive reports and dashboards. Your project uses Power BI to create a dashboard that visualises important metrics taken from the Airbnb datasets kept in PostgreSQL. By presenting data in an aesthetically pleasing and engaging way, it facilitates data exploration, trend analysis, and data-driven decision-making.

3) Monday CRM

Monday is a platform for team collaboration and project management in the cloud that provides several tools and functionalities to manage processes, tasks, and projects. Monday can be adapted and used as a customer relationship management (CRM) tool, despite the fact that it is originally intended for project management. Monday serves as a CRM tool in your project to manage leads and customer forms. To increase business efficiency and boost customer satisfaction, it helps centralise customer information, monitor interactions, and streamline customer-related activities.

4) Gmail Integration

Gmail is a well-known email service provided by Google. Email attachments and other files can be sent and received by users. Gmail was utilised in your project as a tool for lead management and customer service, enabling effective and efficient contact with clients and potential leads.

C. Database Design

1) Entity-relationship diagram and data dictionary

We gathered three datasets, "listing," "reviews," and "neighbourhoods.csv," as per our client's specifications from DataSet Link. To enhance the datasets, we utilized Excel for data modifications, followed by concatenation using Python. The final dataset was saved in CSV format. In Excel, we performed tasks like data cleaning, filtering, and transformations, while also adding new fields. Python's pandas library helped combine the modified datasets, ensuring data quality and consistency. We leveraged macros in Excel for additional field creation.

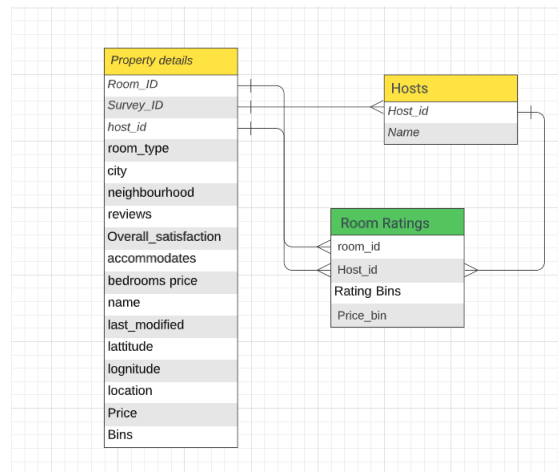


Fig. 3.

IV. IMPLEMENTATION PLAN

A. Dashboards

A. Revenue Analysis of cities Dashboard

To investigate the trends seen in Amsterdam's visualisations from 2008 to the present year 2022, the Revenue Analysis Dashboard was created. Below images, provides us with the following insights into visualisations:

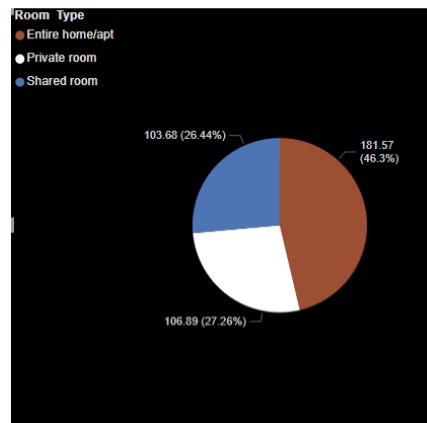


Fig. 4. average of price

- By city, revenue, and average room price To illustrate the money earned across the cities and the related average room price of the listings, a line and clustered chart is used.

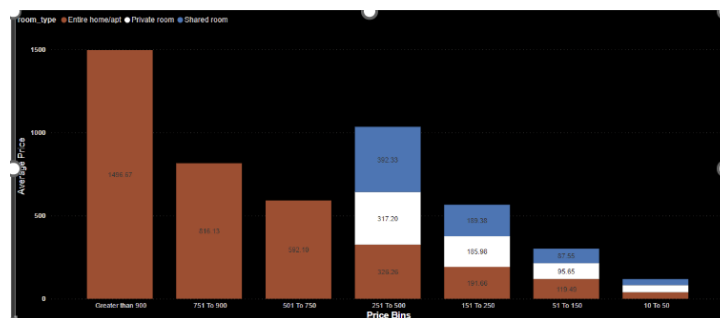


Fig. 5. average of price

- Revenue by City Tile: To compare capital cities to non-capital cities and to show the percentage-wise distribution of the revenue in the Amsterdam cities, a bar chart has been utilised.

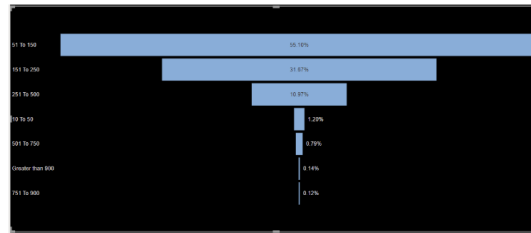


Fig. 6. average of price

- Annual Income in Cities Tile: The revenue of each city from 2008 to the present (2022) is analysed using this line graph. The graph above demonstrates how AirBnB's popularity increased from 2013 to 2015. Paris led the board in 2014, and Amsterdam took the top spot in 2015. AirBnB had a decline in their client base in 2015 as a result of increased competition in the travel business, as shown in the chart by the steady decline trend for several cities. Due to the pandemic crisis in 2020, AirBnB experienced a severe income loss.
- Number of listings by city and year Tile: The AirBnB supply chain model depends on the rooms being available on their website or mobile application. This animation shows how, across these 8 cities, the number of listings has grown since AirBnB launched. In most cities, it has been found that there is a positive association between the quantity of listings and the amount of money made annually. There was not much of an increase in the quantity of listings across different cities after the COVID-19 epidemic in 2020.

B. Performance Analysis of Hosts Dashboard

gives an overview of all the host and listing visualizations completed; the specifics are given below.

room_type	host_id	Count of room_id	Rating Bins
Entire home/apt	48703385	54	Less Than 2
Entire home/apt	1464510	51	4 To 5
Entire home/apt	113977564	46	Less Than 2
Entire home/apt	107745142	44	Less Than 2
Entire home/apt	65859990	38	4 To 5
Entire home/apt	113977564	37	4 To 5
Entire home/apt	48703385	33	4 To 5
Entire home/apt	84453740	31	Less Than 2
Entire home/apt	669178	30	4 To 5
Entire home/apt	87871054	30	4 To 5
Entire home/apt	517215	28	Less Than 2
Entire home/apt	84453740	28	4 To 5
Entire home/apt	4979621	24	4 To 5
Entire home/apt	46691672	24	4 To 5
Entire home/apt	7594884	23	4 To 5
Entire home/apt	9302267	21	Less Than 2
Entire home/apt	8558897	20	4 To 5
Entire home/apt	46691672	18	Less Than 2
Entire home/apt	107745142	18	4 To 5
Entire home/apt	7002898	17	4 To 5
Entire home/apt	1464510	16	Less Than 2
Entire home/apt	65859990	16	Less Than 2
Entire home/apt	84449589	16	Less Than 2
Entire home/apt	517215	15	4 To 5
Total		18665	

Fig. 7. Hosts

- **Ratings Performance Metrics: Tile** This table evaluates and categorizes the performance of the listings in terms of average price, review, score, accuracy, cleanliness, and communication.

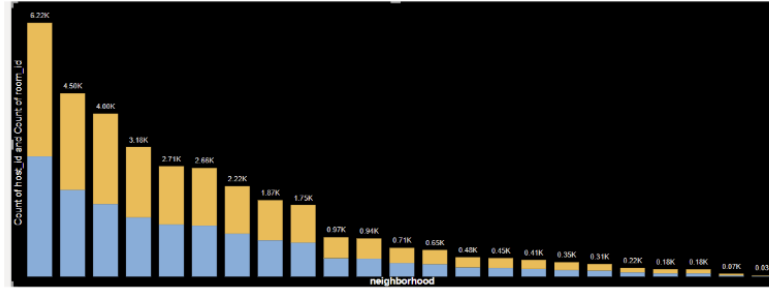


Fig. 8. Hosts

- **Count of Top Performing Hosts by Response Time Tile:** This tile illustrates how quickly hosts respond to consumers' requests for listings.
- **Count of Listings by Performance Tile:** This tile shows the percentage-wise distributions of the performances of the room listings.
- **Count of Performance by Super-Host status Tile:** Using a clustered column chart, this tile shows the performance of listings according to the kind of host: host or super-host.

C. Listing Price Analysis Dashboard

The main goal of this dashboard was to identify the key elements that contribute to the high financial worth of the AirBnB listings, which are collectively represented in the supplied figure.

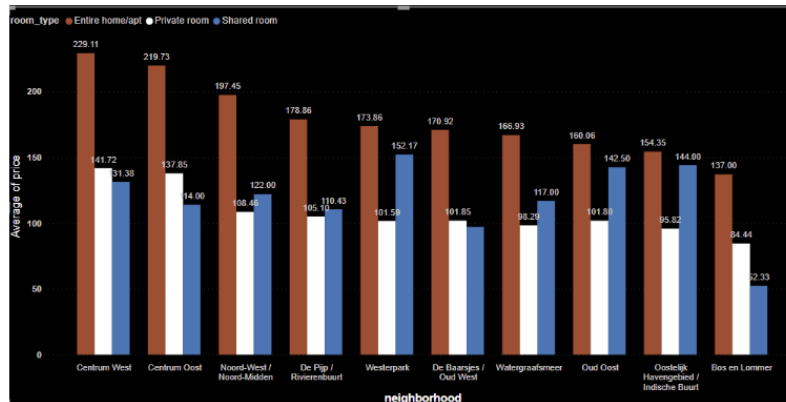


Fig. 9. Average of price

From graph of price, neighbourhood and room type, we can clearly see that average price for shared room apartment remains the highest for all the neighbourhood, whereas in areas Noord-west, De Pijp, Westerpark, Watergraafmeester, Oud Oost, Indische Buurt the price of shared room is more than private room.

- **Average price by neighborhood tile:** The average price of every neighborhood across several cities is listed in this table. The list of neighborhoods is organized from most expensive to least expensive in ascending order.

Contacts are people or organisations with whom our business has already developed a connection or relationship. Leads, on the other hand, are potential consumers or people or businesses who have expressed interest in your goods, services, or

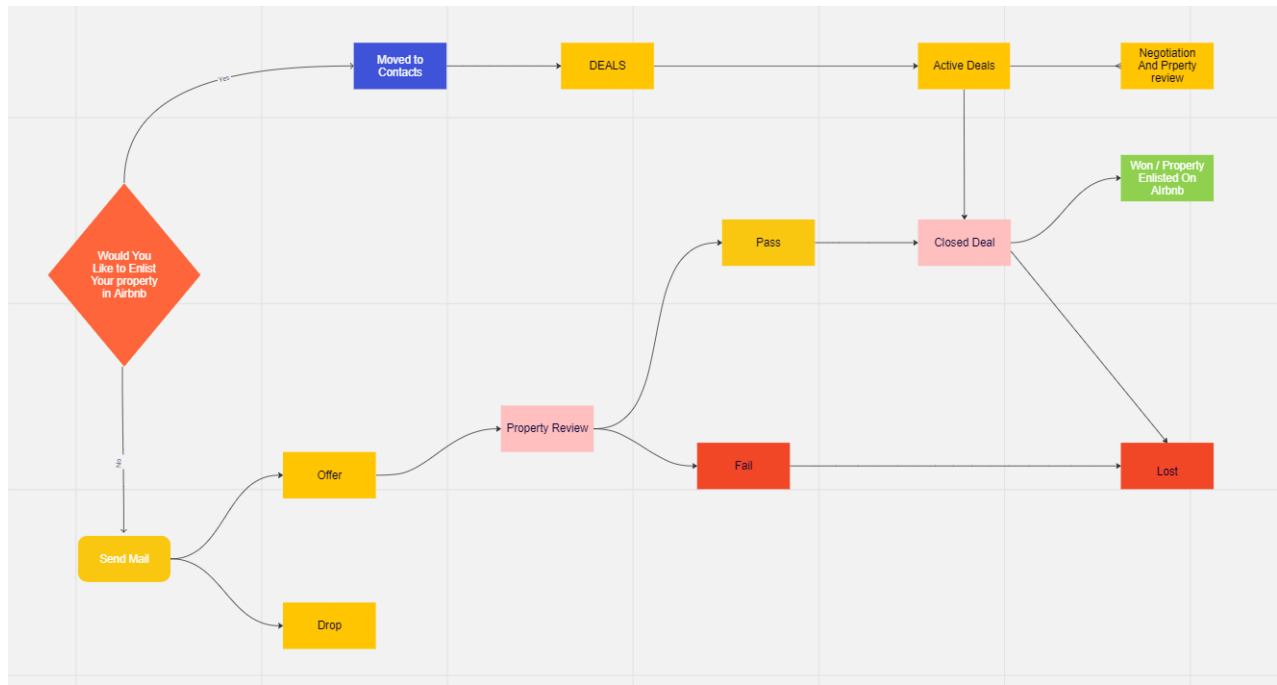


Fig. 11.

brand but have not yet converted to loyal clients. Various methods, including marketing campaigns, website queries, forms as shown in Fig.12, referrals, or other lead generating techniques, are frequently used to gather leads. Leads Forms Link. We have gathered the leads for AirBnB through the forms and are tracking them with resolution in Leads Fig13. We send an automated mail Fig.14 with the response, and then our representative will contact them and give them an offer based on their needs and convert them into deals in Fig.15

b) Step 2: Cases and Solutions

Our CRM system's integration of cases and solutions made it possible to provide effective customer assistance and problem solving by ensuring that client enquiries are accurately logged, prioritised, allocated, and addressed utilising a knowledge base of solutions that agents may access.

c) Step 3: Opportunity

An opportunity is a qualified lead with a high chance of becoming a customer or a possible sales opportunity. Opportunities represent an opportunity for our company to make money by attracting customers as per their needs by providing offers or referrals. enhances the sales process to boost conversion rates and spur company expansion.

2) Customer Service Request

Businesses may streamline their support procedures, increase response times, boost customer happiness, and guarantee a consistent and effective customer service experience by using CRM to manage customer service requests. Customer Request Forms Link Fig.18

a) Step 1: New Case

When new cases with low ratings and concerns occur, we then generate an automated reply, give them higher priority, and track that request. Fig.16

b) Step 2: Working on the Case

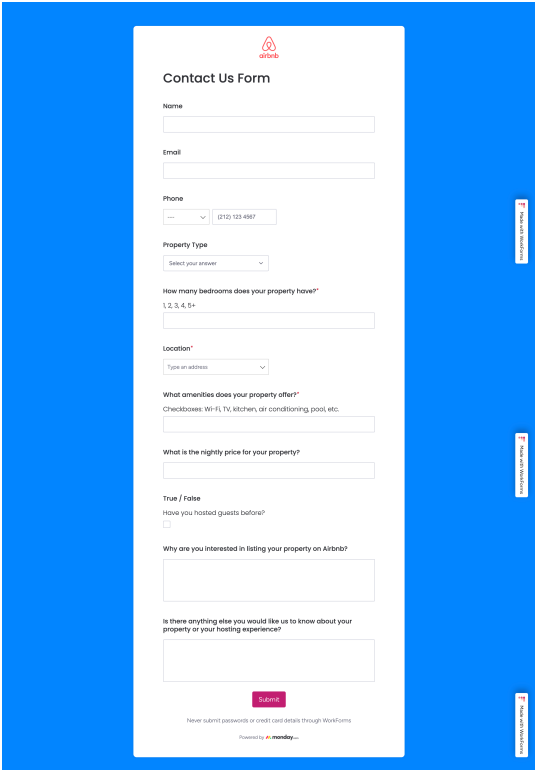
As a person is assigned and moved to a working state, we reach out to the customer, resolve the issue, and provide some discounts so that they can be our regular customer. Fig.17

c) Step 3: Resolving and Closing the Case

After the first two steps and resolving the issue, the request is closed.

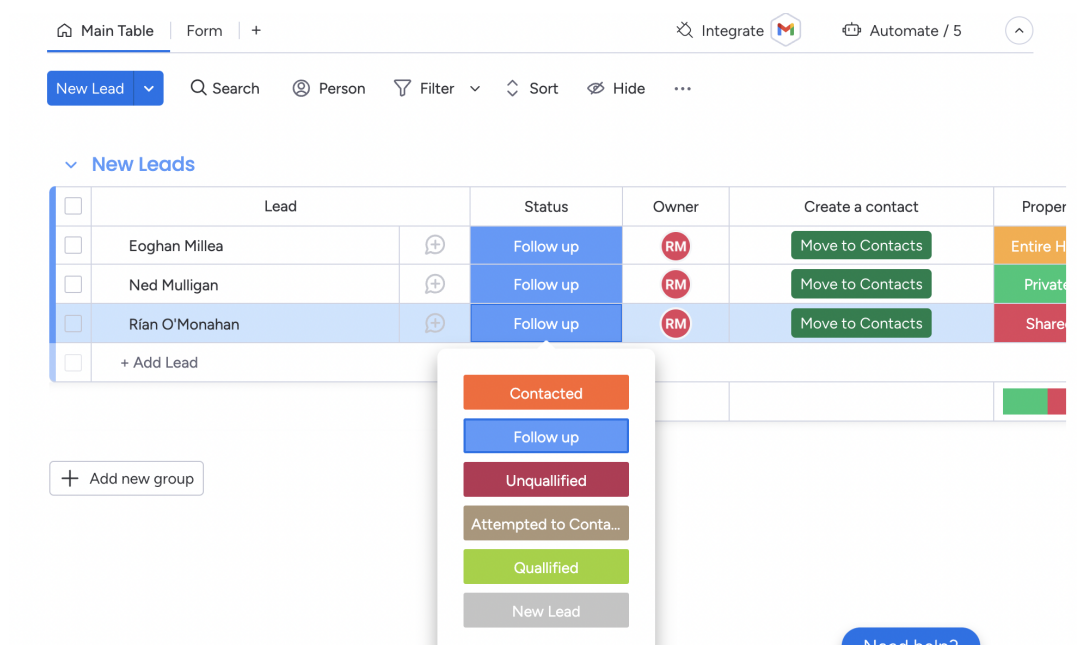
V. REFLECTION AND LESSONS LEARNED

The project has benefited greatly from the project's installation of Airbnb's data management and reporting solution. Upon reflection, the following significant points come to light:



The image shows a 'Contact Us Form' for Airbnb, set against a blue background. The form is white and contains the following fields: Name, Email, Phone (with a dropdown for country and a text input for the number), Property Type (a dropdown menu), 'How many bedrooms does your property have?' (a dropdown menu with options 1, 2, 3, 4, 5+), Location* (a dropdown menu with 'Type an address'), 'What amenities does your property offer?' (a text input with a note 'Checkboxes: Wi-Fi, TV, kitchen, air conditioning, pool, etc.'), 'What is the nightly price for your property?' (a text input), 'True / False' (a checkbox for 'Have you hosted guests before?'), 'Why are you interested in listing your property on Airbnb?' (a text input), and 'Is there anything else you would like us to know about your property or your hosting experience?' (a text input). A red 'Submit' button is at the bottom. A small footer note says 'Never submit passwords or credit card details through WebForms' and 'Powered by A. monday...'. On the right side of the form, there are three vertical labels: 'Name', 'Email', and 'Phone'.

Fig. 12. Leads Form



The image shows a 'Leads Board' interface. At the top, there's a navigation bar with 'Main Table', 'Form', and a '+' icon. To the right are 'Integrate' and 'Automate / 5' buttons. Below the navigation bar is a toolbar with 'New Lead' (dropdown), 'Search', 'Person', 'Filter', 'Sort', 'Hide', and a menu icon. The main area is titled 'New Leads' and contains a table with columns: Lead, Status, Owner, Create a contact, and Proper. The table has four rows: Eoghan Millea, Ned Mulligan, Rian O'Monahan, and '+ Add Lead'. Each row has a checkbox, a status dropdown (all set to 'Follow up'), an owner dropdown (all set to 'RM'), a 'Move to Contacts' button, and a 'Proper' dropdown (all set to 'Entire H'). A modal is open over the table, showing a list of status options: 'Contacted', 'Follow up', 'Unqualified', 'Attempted to Conta...', 'Qualified', and 'New Lead'. At the bottom left, there's a '+ Add new group' button.

Lead	Status	Owner	Create a contact	Proper
Eoghan Millea	Follow up	RM	Move to Contacts	Entire H
Ned Mulligan	Follow up	RM	Move to Contacts	Private
Rian O'Monahan	Follow up	RM	Move to Contacts	Share
+ Add Lead				

Fig. 13. Leads Board

A. Seamless Integration and Data Consistency:

PostgreSQL was integrated as the database backend, and it turned out to be a reliable option for storing and maintaining Airbnb datasets. However, careful attention to data mapping and synchronisation was necessary to ensure data consistency across diverse data sources and systems. The significance of establishing defined data governance practises and preserving data integrity throughout the integration process is highlighted by this experience.

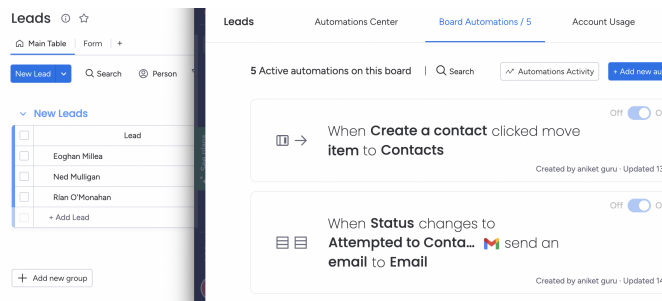


Fig. 14. Leads Automation

Section	Deals	Stage	Deal Value
Active Deals	2 Deals	[Bar Chart]	\$78,000
Closed Won	2 Deals	[Bar Chart]	\$89,000

Fig. 15. Deals

Item	Email	Host Behaviour	Overall Experience	Did You Face any...	Status	Priority
Shalil	shahil.ca@gmail.c...	★★★★★	★★★★★	Yes	Not yet Started	High
James	james@gmail.com	★★★★★	★★★★★	Yes	Not yet Started	High
Linda	Minda@gmail.com	★★★★★	★★★★★	No		Low

Fig. 16. Open Request

Section	Items	Host Behaviour	Overall Experience	Did You Face any...	Status	Priority
Open Requests	3 Items	3 / 5	3 / 5	[Bar Chart]	[Bar Chart]	[Bar Chart]
Working on it	1 Item	1 / 5	1 / 5	[Bar Chart]	[Bar Chart]	[Bar Chart]
Done	1 Item	1 / 5	1 / 5	[Bar Chart]	[Bar Chart]	[Bar Chart]


Fig. 17. Customer Request Board

B. Visualization for Actionable Insights:

Raw data was transformed into insightful reports and visualisations with the help of Power BI. Stakeholders were able to receive immediate insights into crucial business data thanks to the interactive dashboards. However, we learned how crucial it is to strike a balance between data richness and visualisation simplicity. Decision-making might be hampered by dashboards that contain an overwhelming amount of data. In order to promote speedy and well-informed decision-making, we learned to concentrate on important performance metrics and offer clear, succinct visual representations.

C. CRM Integration and Lead Management:

Utilising Monday.com as a CRM platform simplified the tracking of leads and management of customer interactions. However, it was difficult for us to gather and analyse the data on leads from diverse sources. We discovered the value of regular data entry and the establishment of precise lead qualification standards. Additionally, automating lead collecting from programmes like Gmail sped up the procedure and made sure that follow-ups were made on schedule.


Customer Requests

Name

Email

Overall Experience
☆☆☆☆☆

Host Behaviour
☆☆☆☆☆

Did You Face any issues?
Select your answer ▼

Any Suggestion how can we improve ?

Created at
dd/mm/yyyy

Submit


Never submit passwords or credit card details through WorkForms
Powered by  monday.com

Fig. 18. Customer Request Form

D. Collaborative Teamwork:

The solution was successfully implemented thanks to effective teamwork and collaboration. Deep understanding of requirements was promoted and effective problem-solving was made possible through regular communication and cooperation between the technical and business teams. We understood how important it was to keep the lines of communication open, set clear expectations, and actively include stakeholders in the decision-making process.

E. Continuous Improvement and Future Recommendations:

It was found that continuous evaluation and feedback loops were crucial for pinpointing areas that needed improvement. Establishing a feedback channel with end users is essential moving forward in order to take into account their opinions and gather information for ongoing improvements. Additionally, investigating sophisticated analytics methods like machine learning and predictive modelling might open up new possibilities for enhancing corporate analysis and decision-making procedures.

VI. CONCLUSION

This implementation report has demonstrated Airbnb's successful implementation and use of a complete data management and reporting solution. Utilising business intelligence approaches, such as data analysis, reporting, and CRM integration, we were able to successfully solve important company needs and boost performance as a whole.

We have created and executed a solid architecture that satisfies Airbnb's various data needs throughout the development process. The user experience has been improved by the addition of objects, custom fields, relationships, layouts, validation rules, record types, lookups, filters, and triggers. Access controls are put in place to guarantee data security while allowing authorised users access.

Management now has significant insights into crucial business metrics and performance indicators thanks to the reporting and dashboard tools. Real-time monitoring of sales, customer support, and marketing operations is made possible by the reports and dashboards that have been developed, enabling data-driven decision-making and strategic planning.

Additionally, the integration of CRM functions has made it possible to gather and analyse consumer data, promoting individualised marketing campaigns and raising customer satisfaction.

Our team showed strong cooperation and communication throughout the implementation process, which led to the accomplishment of project objectives within the specified timetable and budget.

By improving data accuracy, reducing business procedures, and promoting informed decision-making, its implementation has greatly contributed to Airbnb's success. The installed solution gives the business a strong platform for data management and exploitation, enhancing its position in the competitive sharing economy market.

Future-proofing the effectiveness and scalability of the implemented solution will require ongoing monitoring, upkeep, and future improvements. Further optimisations and modifications will be guided by regular evaluation and input from users and stakeholders to satisfy changing business needs and developing market trends.

Video Presentation Link