**Multi-Service Business Booking Analysis**

**1. Project Overview**

**Objective:** The objective of this project was to analyze booking data for a multi-service business offering classes, rentals, and birthday party reservations. The analysis involved data cleaning, visualization, and identifying insights to help the business make informed decisions.

**Tools Used:**

* Python (for data cleaning and preprocessing)
* Power BI (for visualization and dashboard creation)

**Key Deliverables:**

* An interactive Power BI dashboard
* A detailed report highlighting data cleaning steps, insights, and patterns

**2. Data Cleaning & Preprocessing**

**Initial Data Exploration:**

* The raw dataset was loaded using Python's pandas library.
* The initial inspection revealed missing values, inconsistent date formats, and an empty Subscription column.

**Data Cleaning Steps:**

**Handling Missing Values:**

* + The Subscription column was removed since it contained only null values.
  + Columns with null values were replaced with “Unknown” for better understanding.
  + Final dataset saved in a csv file.

**Datatype Corrections:**

* Date columns were converted to the proper datetime format for accurate time-based analysis in Power BI
* Unknown values replaced with values of appropriate format (Example 00:00 in Time Slot ).
* Month Column created with DAX.

**3. Power BI Dashboard Insights**

**Key Metrics:**

* **Total Revenue:** $139,000
* **Total Bookings:** 1,000
* **Top Performing Facility:** The Party Room generated **53.4%** of the total revenue.
* **Peak Booking Hour:** 2:00 PM had the highest revenue and bookings.

**Visualizations & Insights:**

1. **Revenue vs. Bookings (Combo Chart)**
   * The highest revenue and booking count occurred at **2:00 PM**.
   * The trend shows that high booking hours correspond with high revenue, suggesting consistent pricing.
2. **Monthly Distribution of Bookings (Line Chart)**
   * Bookings gradually decreased from **April** to **March**, indicating possible **seasonal patterns** or reduced customer demand.
3. **Revenue Distribution by Facility (Pie Chart)**
   * The **Party Room** generated the highest revenue share (**53.4%**).
   * The **Play Area** followed with **46.6%**.
4. **Revenue Distribution by Instructor (Donut Chart)**
   * **Amanda Davis** contributed the highest revenue share (**36.29%**).
   * **James Howard** and **Lisa Hensley** followed with **31.35%** and **32.36%** respectively.
5. **Revenue Distribution by Service Name (Bar Chart)**
   * The **Play Area** led with **$50K** in revenue, followed by the **Party Room** with **$44K**.
   * **Gymnastics**, **Dance**, and **Art** services generated lower revenue (**$15K** each).

**4. Key Takeaways & Recommendations**

✅ **1. Peak Booking Hours:**

* The busiest hour is **2:00 PM** with the highest revenue and bookings.
* **Recommendation:**
  + Implement **premium pricing** or special offers during peak hours.
  + Upsell services or add-ons to maximize revenue.

✅ **2. Facility Performance:**

* The **Party Room** generates the most revenue.
* **Recommendation:**
  + Promote **special packages** for the Party Room.
  + Consider **expanding capacity** or offering VIP experiences to boost revenue.

✅ **3. Instructor Revenue Contribution:**

* **Amanda Davis** leads in revenue generation.
* **Recommendation:**
  + Offer **exclusive workshops** or promotions with top-performing instructors.

**5. Challenges & Data Discrepancies**

* **Missing Subscription Data:**
  + The Subscription column was entirely empty and removed.
* **Inconsistent Date Formatting:**
  + Resolved by converting date columns to the proper datetime format.
* **Null Values Replacement:**
  + Replaced by appropriate column specific values that do not affect results.

**6. Conclusion**

The analysis revealed valuable insights into booking patterns, revenue distribution, and customer behavior. The Power BI dashboard provides an interactive view of the data, allowing for dynamic exploration and better decision-making.

**Next Steps:**

* **Presentation Video:** Record a Loom walkthrough of the Power BI dashboard.

✅ This report summarizes the entire analysis process, providing key insights and actionable recommendations.