OLA Data Analysis Project

Comprehensive Performance Analysis of Ride-Sharing Operations

A complete data analysis project examining Ola's ride-sharing performance in July 2024, focusing on operational efficiency, revenue optimization, and customer experience improvement.

Table of Contents

Project Overview

Purpose: To analyze Ola's ride-sharing operations and identify opportunities for performance improvement, revenue optimization, and enhanced customer satisfaction through comprehensive data analysis.

Objective:

- Evaluate booking success rates and cancellation patterns
- Analyze revenue distribution across vehicle types and payment methods
- Assess customer and driver satisfaction through rating analysis
- Identify top-performing customers and operational bottlenecks
- Provide actionable insights for business improvement

Dataset Scope: 103,024 bookings from July 1-31, 2024, spanning 7 vehicle categories with comprehensive booking, payment, and rating data.

Business Problem

Problem Statement

Ola faces a critical **28.08% cancellation rate** that significantly impacts revenue and customer satisfaction, with driver-initiated cancellations (17.89%) being the primary concern, resulting in substantial revenue losses and operational inefficiencies.

Why it Matters

- **₹16M total revenue loss** due to cancellations (₹10M from driver cancellations, ₹6M from customer cancellations)
- Customer experience degradation affecting brand loyalty
- Operational inefficiencies reducing fleet utilization
- Need for digital payment adoption to reduce operational costs
- Revenue efficiency at only 62.09% with significant improvement opportunities

Key Business Questions

1. How can we reduce the 28.08% cancellation rate to industry standard (<15%)?
2. Which vehicle types and customer segments drive the most value?
3. What payment methods should we prioritize for operational efficiency?
4. How do ratings correlate with business performance across vehicle types?
5. What are the primary reasons for incomplete rides and cancellations?

Data Source

Primary Dataset: Ola ride-sharing transaction data (103,024+ records)

- **Time Period:** July 1-31, 2024 (31 days)
- **Geographic Scope:** Bengaluru city operations
- **Data Quality:** Comprehensive booking lifecycle tracking

Key Data Points:

- Booking details (ID, status, timestamps)
- Vehicle type and location data
- Payment method and transaction values
- Customer and driver ratings (4.0+ scale)
- Cancellation reasons and incomplete ride tracking

- Revenue and distance metrics

Tools & Technologies

Database Management:

- MySQL for data storage and complex querying
- SQL views creation for efficient data retrieval

Analytics & Visualization:

- Power BI for interactive dashboard creation
- Advanced SQL for data extraction and analysis
- Statistical analysis for performance metrics

Analysis Framework:

- Google Data Analytics methodology (Ask → Prepare → Process → Analyze → Share → Act)

Methodology

1. Ask

- Defined key business questions around cancellations, revenue, and customer satisfaction
- Identified stakeholder requirements for operational improvement
- Established success metrics and KPIs

2. Prepare

- Validated data quality and completeness across 103,024 booking records
- Established data relationships between bookings, payments, and ratings
- Created comprehensive data dictionary and mapping

3. Process

- Cleaned and standardized payment method categories
- Calculated key performance metrics (success rates, cancellation rates, revenue per ride)
- Created derived fields for analysis (booking value categories, customer segmentation)
- Developed SQL views for efficient data retrieval

4. Analyze

- Performed comprehensive SQL queries to extract insights on booking patterns

- Analyzed customer behavior and driver performance across vehicle types
- Identified correlation between ratings and business performance
- Conducted revenue analysis by payment methods and vehicle types

5. Share

- Built comprehensive Power BI dashboards with drill-down capabilities
- Created executive summary with actionable recommendations
- Developed interactive visualizations for stakeholder consumption

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Key Findings

Critical Performance Issues

- **28.08% total cancellation rate** - Nearly double the industry benchmark of 15%
- **Driver cancellations dominate:** 17.89% vs 10.19% customer cancellations
- **Revenue efficiency at 62.09%** - Significant improvement opportunity
- **₹16M total loss** due to cancellations across all categories

Revenue Insights

- **₹35M monthly revenue** with ₹547 average revenue per successful ride
- **Prime Sedan leads performance:** ₹5.22M successful booking value with highest conversion
- **Cash payments dominate:** 55.7% of total revenue vs 44.3% digital payments
- **Top 5 customers contribute ₹32,612** representing 0.93% of total revenue

Vehicle Type Performance Analysis

Vehicle Type	Total Booking Value	Success Booking Value	Avg Distance	Total Distance
Prime Sedan	₹8.30M	₹5.22M	25.01 km	234.54K km
E-Bike	₹8.18M	₹5.05M	25.15 km	230.84K km
Auto	₹8.09M	₹5.05M	10.04 km	92.04K km
Prime Plus	₹8.05M	₹5.02M	25.03 km	227.19K km
Mini	₹7.99M	₹4.89M	24.98 km	225.70K km
Bike	₹7.99M	₹4.97M	24.93 km	227.75K km
Prime SUV	₹7.93M	₹4.88M	24.88 km	223.85K km

Service Quality Analysis

- **Consistent 4.0+ ratings** across all vehicle types demonstrate service quality

- **Driver ratings range:** 3.98-4.01 across all categories
- **Customer ratings range:** 3.99-4.01 showing high satisfaction
- **Auto rickshaws excel in urban mobility:** 10.04km average distance vs 25km+ for other categories

Cancellation Analysis

Driver Cancellation Reasons:

- Personal & Car related issues: 35.49% of driver cancellations
- Customer related issues: 29.36%
- Customer coughing/sneezing: 19.82%
- More than permitted people: 15.32%

Customer Cancellation Reasons:

- Driver not moving towards pickup: 30.24% of customer cancellations
- Driver asked to cancel: 25.43%
- Change of plans: 19.82%
- AC not working: 14.93%
- Wrong address: 9.57%

Incomplete Rides Analysis

Based on the incomplete rides data, the primary reasons include:

- **Customer Demand:** Most frequent cause of incomplete rides
- **Vehicle Breakdown:** Second most common issue affecting service delivery
- **Other Issues:** Various operational challenges

Visualizations & Dashboard Analysis

Overall Performance Dashboard

- **103,024 total bookings** with ₹35M revenue generation
- **63,967 successful bookings** (62.09% success rate)
- **28,933 cancelled bookings** (28.08% cancellation rate)
- **Consistent daily performance** averaging 3,320 bookings per day

Vehicle Type Performance

- **Prime Sedan leads** in both total booking value (₹8.30M) and successful conversions (₹5.22M)
- **Auto rickshaws** show unique urban mobility pattern with shorter average distances (10.04km)

- **Consistent performance** across premium vehicle categories (Prime Sedan, SUV, Plus)

Revenue Analysis

- **Payment method distribution:** Cash dominates with ₹19.5M+ revenue
- **Top customer concentration:** Limited with highest customer contributing ₹8,025
- **Daily consistency:** Stable ride volume throughout July 2024

Cancellation Deep Dive

- **Driver cancellations:** 17.89% of all bookings (₹10M revenue loss)
- **Customer cancellations:** 10.19% of all bookings (₹6M revenue loss)
- **Root cause identification** enables targeted operational improvements

Rating Analysis

- **Service quality consistency** across all vehicle types
- **High satisfaction scores** indicating strong service delivery
- **Minimal variation** in ratings suggesting standardized service quality

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SQL Analysis Results

Key SQL Queries and Insights

1. Successful Bookings Analysis:

```sql
-- 63,967 successful bookings identified
SELECT * FROM successful_booking;
```

2. Vehicle Type Performance:

```sql
-- Average ride distances calculated for each vehicle type
SELECT * FROM avg_ride_distance_for_each_vehichle;
```

3. Cancellation Analysis:

```sql
```

```sql
-- Customer cancellations: 10,491 rides
-- Driver cancellations due to personal issues: Significant portion identified
SELECT * FROM Canceled_rides_by_customer;
SELECT * FROM Rides_canceled_by_Driver_issues;
```

4. Top Customer Identification:

```sql
-- Top 5 customers by ride frequency identified
SELECT * FROM Highest_Rides;
```

5. Payment Method Analysis:

```sql
-- UPI payment rides analyzed for digital adoption insights
SELECT * FROM Payment_via_Upi;
```

6. Rating Analysis:

```sql
-- Prime Sedan ratings: Max and Min driver ratings calculated
-- Average customer ratings per vehicle type analyzed
SELECT * FROM Max_Min_Driver_rating_for_Prime_Sedan;
SELECT * FROM average_customer_Rating_per_vehicle_type;
```

7. Revenue Analysis:

```sql
-- Total successful ride value: ₹35M calculated
SELECT * FROM Total_booking_value_of_successfull_rides;
```

8. Incomplete Rides:

```sql
-- 200+ incomplete rides with reasons identified
SELECT * FROM Incomplete_Ride;
```

Recommendations

Immediate Actions (0-30 days)

1. **Implement Progressive Driver Penalty System**
   - Address 17.89% driver cancellation rate through structured penalties
   - Focus on personal & car-related issues (35.49% of driver cancellations)
2. **Launch Emergency Driver Training Program**
   - Target customer service and communication skills
   - Address "driver not moving" complaints (30.24% of customer cancellations)
3. **Deploy Real-time Driver Monitoring**
   - Automated customer notifications for driver location
   - Proactive communication to reduce cancellations

Short-term Initiatives (1-3 months)

1. **Digital Payment Incentive Program**
   - Target 70% digital adoption (currently 44.3%)
   - Reduce operational costs through cashless transactions
2. **AI-powered Matching Algorithm**
   - Improve driver-customer pairing efficiency
   - Reduce cancellations through better matching
3. **Vehicle Quality Assurance Program**
   - Mandatory AC checks and maintenance tracking
   - Address 14.93% of customer cancellations due to AC issues

Long-term Strategy (3-12 months)

1. **Comprehensive Cancellation Reduction**
   - Target <15% cancellation rate through systematic improvements
   - Implement predictive analytics for cancellation prevention
2. **Revenue Optimization**
   - Target ₹45M+ monthly revenue via improved conversion rates
   - Focus on high-performing vehicle types and customer segments
3. **Customer Loyalty Program**
   - Retention strategy for high-value customers
   - Personalized incentives and service improvements

Expected Impact

Financial Impact

- **₹8.5M monthly revenue recovery** through cancellation rate reduction (from 28.08% to 15%)
- **₹2M operational cost savings** through 70% digital payment adoption
- **₹10M+ additional revenue** from improved operational efficiency

Operational Impact

- **20% improvement in customer retention** via service quality enhancements
- **30% reduction in driver-related cancellations** through training and monitoring
- **Enhanced fleet utilization** through better demand-supply matching

Customer Experience Impact

- **Reduced wait times** through improved driver response
- **Higher service reliability** with proactive issue management
- **Improved satisfaction scores** through targeted service improvements

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Future Work

Advanced Analytics Implementation

1. **Predictive Modeling**
   - Demand forecasting and dynamic pricing algorithms
   - Customer lifetime value analysis for retention strategies
   - Cancellation prediction models
2. **Real-time Operational Dashboards**
   - Proactive issue management and alerts
   - Live performance monitoring and optimization
   - Dynamic resource allocation

Technology Integration

1. **Machine Learning Algorithms**
   - Optimal driver-customer matching systems
   - Route optimization and traffic-aware assignments
   - Personalized pricing strategies
2. **IoT Integration**

- Real-time vehicle condition monitoring
- Preventive maintenance scheduling
- Enhanced safety and reliability tracking

3. **Mobile App Enhancements**
   - Improved user experience and interface
   - Real-time communication features
   - Advanced booking and payment options

Market Expansion Strategy

1. **Performance-Based Expansion**
   - Analysis of expansion opportunities based on current patterns
   - Scalable operational models for new city launches
   - Competitive analysis framework for market positioning
2. **Service Diversification**
   - Analysis of additional service categories
   - Integration with public transportation systems
   - Corporate partnership opportunities

Conclusion

The comprehensive analysis of Ola's July 2024 operations reveals significant opportunities for improvement, particularly in cancellation management and revenue optimization. With a current cancellation rate of 28.08% and ₹16M in monthly losses, immediate action is required to address operational inefficiencies.

The data-driven recommendations provide a clear roadmap for achieving industry-standard performance levels, with potential revenue recovery of ₹8.5M monthly through systematic improvements in driver management, customer experience, and operational processes.

Success metrics should be monitored continuously, with monthly performance assessments to track progress toward the target <15% cancellation rate and improved customer satisfaction scores.

Project Status: Complete
Analysis Period: July 2024
Next Review: Monthly performance assessment
Contact: Data Analytics Team