Final Project: Business Analysis and Modeling for an eBike Rental Startup

Company: *Mobi-e-Rides*

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Step 1: Identifying Stakeholders

Stakeholder	Role / Interest
Customers (Tourists & Enthusiasts)	Interested in affordable, reliable, and easy-to-use eBike rentals; expect quick booking, transparent pricing, and safety.
Business Owners / Founders	Want to build a profitable, scalable, and sustainable business model with strong market presence.
Employees (Rental Agents, Maintenance Technicians)	Expect efficient systems for rental tracking, maintenance scheduling, and task management.
Local Government / City Transport Authority	Concerned about compliance with city regulations, traffic safety, and promotion of eco-friendly mobility.
Investors	Interested in growth potential, ROI, and data-driven operational transparency.

Step 2: Drafting Interview Questions

Stakeholder 1: Customers

1. What features would make your e-bike rental experience more convenient and enjoyable?
2. How would you prefer to pay for your rentals (per hour, per day, via app, etc.)?

Stakeholder 2: Business Owners

3. What are your short- and long-term goals for the Mobi-e-Rides service?

4. How will you measure success in the first year of operations?

Stakeholder 3: Employees

5. What challenges do you anticipate in managing rentals or maintaining the bikes?

6. How can technology help you perform your job more efficiently?

Step 3: Requirements Prioritization (MoSCoW)

Requirement	Priority (MoSCoW)	Justification
User-friendly booking system	**Must Have**	Core functionality for user adoption.
Mobile app for rentals	**Must Have**	Enables easy access and scalability.
Payment processing functionality	**Must Have**	Essential for operations and revenue.
Bike availability tracking	**Should Have**	Improves customer satisfaction and inventory control.
GPS tracking for individual bikes	**Should Have**	Enhances security and fleet monitoring.
Customer loyalty program	**Could Have**	Useful for retention but not essential for launch.
Integration with local tourist attractions	**Won't Have (for now)**	Can be added post-launch as a value-add feature.

Step 4: Requirements Traceability Matrix

Req. ID	Requirement Description	Stakeholder	Status	Comments
R1	User-friendly booking system	Customers	In Progress	Prototype under development
R2	Mobile app for rentals	Business Owners	Planned	Wireframes completed
R3	Payment processing functionality	Customers / Investors	Not Started	Will use third-party API
R4	Bike availability tracking	Employees	Planned	Linked with GPS data
R5	GPS tracking for bikes	Local Government / Owners	Not Started	Compliance check needed

R6	Customer loyalty program	Marketing / Owners	Deferred	For next release
R7	Integration with local attractions	Business Owners	Deferred	Post-launch feature

Step 5: Facilitating Workshop

Agenda:

1. Introduction & Objectives (10 min)
2. Review of gathered requirements (20 min)
3. Discussion of priorities (15 min)
4. Brainstorming potential risks & mitigation (15 min)
5. Next steps & action items (10 min)

Meeting Notes (Summary):

- Stakeholders agreed the **mobile app** and **booking system** are top priorities.
- **GPS tracking** required to meet insurance and safety expectations.
- **Loyalty program** postponed until stable customer base established.
- Need to explore **integration with city's bike paths data API** in the future.

Step 6: Observation Techniques

Observation Summary:

Visited two existing eBike rental providers in the city.

- Observed customers struggling with slow check-in processes and unclear pricing.
- Maintenance staff manually tracking repairs — delays in updates.
- Suggest automating check-in/out via QR codes and a digital maintenance log.

Key Insight: Automation and mobile integration will reduce waiting times and errors.

Step 7: Customer Survey

Objective: Understand potential customer expectations.

Sample Survey Questions:

1. How often do you use shared mobility services (e.g., scooters, bikes)?
    a. ☐ Daily ☐ Weekly ☐ Occasionally ☐ Never
2. What factors influence your decision to rent an eBike?
    a. ☐ Price ☐ Convenience ☐ Eco-friendliness ☐ Safety ☐ Other
3. What challenges have you faced with existing rental services? *(Open-ended)*
4. How much are you willing to pay per hour for an eBike rental?
    a. ☐ <$5 ☐ $5–$10 ☐ $10–$15 ☐ >$15
5. What features would you most like in an eBike rental app? *(Open-ended)*

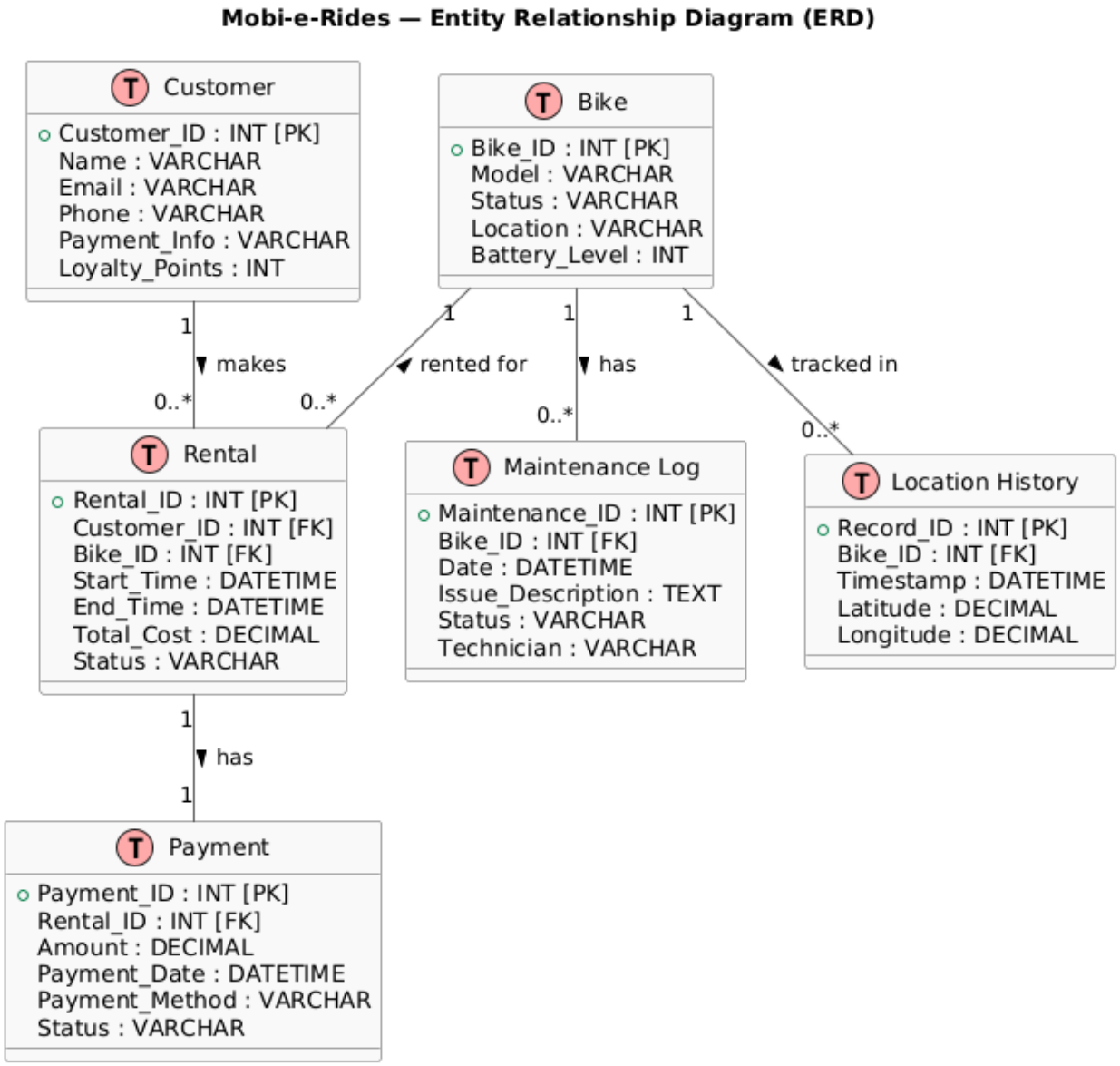
Step 8: Prototyping (Optional)

Low-fidelity wireframes (suggested tools: *Figma / Lucidchart*)

Key Screens:

1. Home screen with available bikes map
2. Booking screen
3. Payment confirmation screen
4. Ride tracking interface
5. Account / Loyalty dashboard

Step 9: Entity Relationship Diagram (ERD)



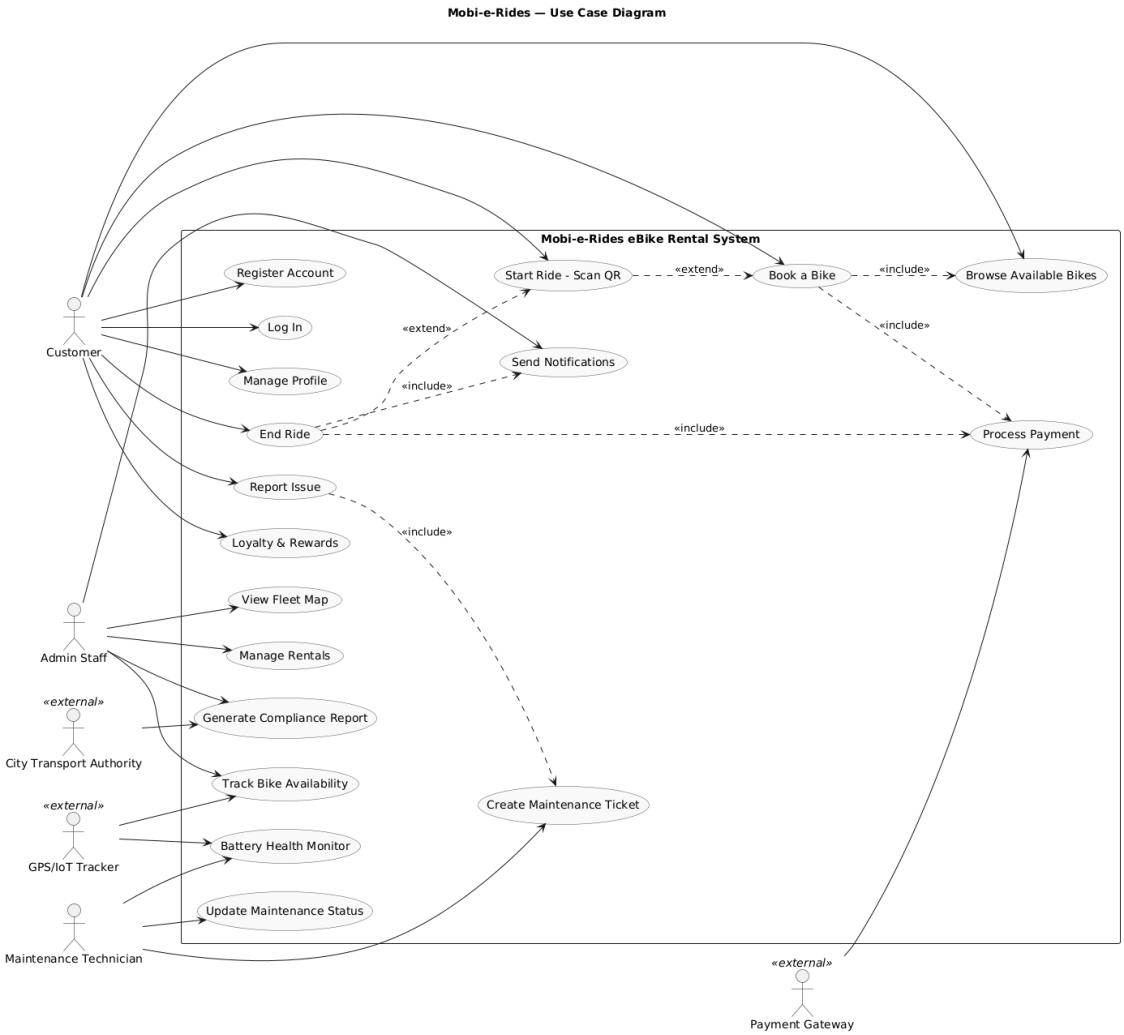
Entities:

- **Customer** (Customer_ID, Name, Email, Phone, Payment_Info)
- **Bike** (Bike_ID, Model, Status, Location)
- **Rental** (Rental_ID, Customer_ID, Bike_ID, Start_Time, End_Time, Total_Cost)
- **Payment** (Payment_ID, Rental_ID, Amount, Date, Method)
- **Maintenance_Log** (Maintenance_ID, Bike_ID, Date, Issue_Description, Status)

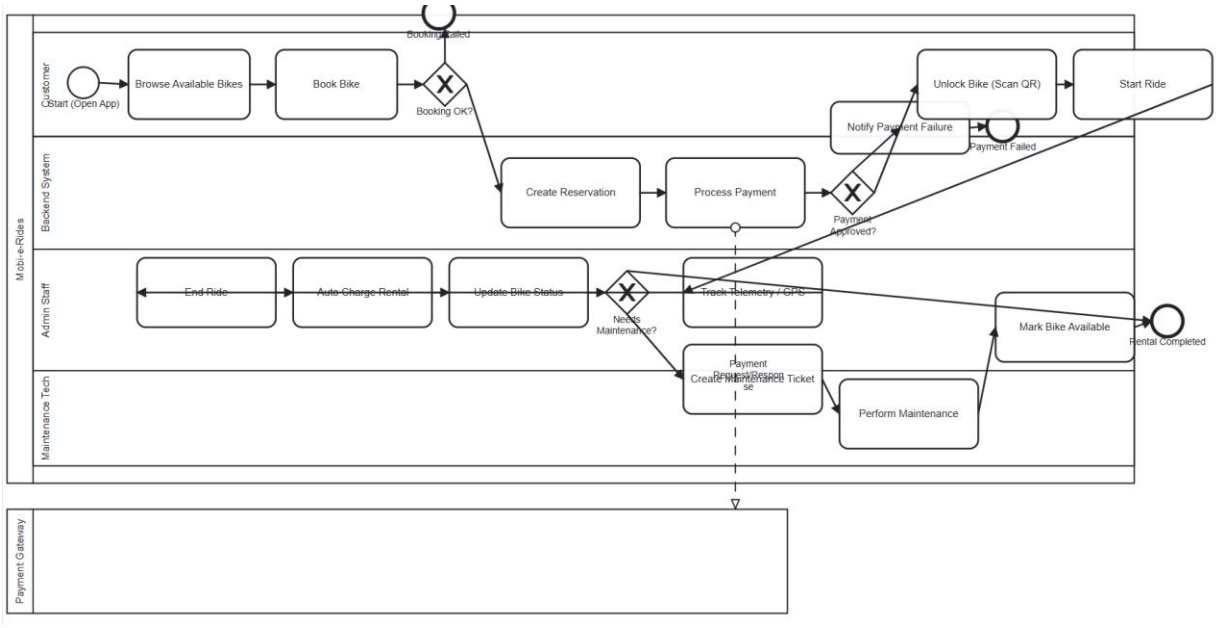
Relationships:

- One *Customer* can have many *Rentals*
- Each *Rental* is linked to one *Bike* and one *Payment*
- Each *Bike* can have multiple *Maintenance_Logs*

Step 10: Use Case Diagram



Step 11: Business Process Mapping (BPMN)



Process: eBike Rental Flow

Flow Summary:

1. Customer opens app → views available bikes.
2. Selects bike → confirms booking → system reserves bike.
3. Customer arrives → scans QR → starts ride.
4. Upon return → customer ends trip → payment processed automatically.
5. System updates bike status → available or needs maintenance.

Possible Bottlenecks:

- App downtime → delays bookings.
- Manual maintenance reporting → delays availability updates.

Improvement:

- Real-time sync with GPS and automated alerts for low battery or malfunctions.

Step 12: Systems Analysis

Technical Requirements:

- Cloud-based infrastructure (AWS / Azure)
- Secure payment gateway (Stripe, PayPal)
- Real-time GPS tracking integration (IoT API)
- Scalable backend (Node.js + PostgreSQL)
- Mobile app (iOS / Android)

Constraints:

- Budget limitations in MVP phase
- Compliance with data privacy and city regulations

Potential Challenges:

- GPS accuracy in dense urban areas
- High demand spikes on weekends
- Data security for user payments

Proposed Solutions:

- Implement load balancing for scalability
- Encrypt all personal data (AES-256)
- Utilize cloud monitoring and alerts

Step 13: Reflection and Validation

Through this project, I learned how **business analysis connects strategic goals with functional outcomes**.

I practiced identifying stakeholders, eliciting requirements, prioritizing features, and modeling both data and processes.

Creating ERD and BPMN diagrams helped me visualize how technical systems support business objectives.

In a real-world scenario, I would apply these skills by:

- Conducting structured stakeholder interviews.
- Using Agile backlog refinement for evolving requirements.
- Applying modeling tools to ensure cross-team understanding.