📑 Business Requirement Document (BRD)

Project Title:

Hospital Emergency and Operations Management Dashboard

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1. Business Objective

To develop a unified Power BI dashboard solution that provides comprehensive, real-time insights into both **emergency room performance** and **overall hospital operations**. The goal is to support hospital management in improving patient care, resource utilization, department performance, and financial efficiency through data-driven decision-making.

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2. Stakeholders

Role	Responsibility
Hospital Administrator	Strategic decision-making
ER Head/Doctors	Operational monitoring and analysis
Department Heads	Resource and referral management
Data Analysts	Data modeling, dashboard maintenance
IT Support	Data integration and platform support

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3. Scope of Work

- Design and deployment of **five integrated dashboards**:
    1. **Monthly View Dashboard**
    2. **Consolidated View Dashboard**
    3. **Patient Details Dashboard**
    4. **Key Takeaways Dashboard**
    5. **Hospital Operation Management Dashboard**
- Data will be sourced from:
    - Hospital ER_Data.csv

    - Healthcare-Dataset.xlsx
- Dashboards to be built using **Power BI**, with data cleaning and transformation handled in **DAX**.

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4. Business Requirements by Dashboard

📊 Dashboard 1: Monthly View

Objective:
Monitor emergency department performance metrics and trends on a monthly basis.

Components:

- Patient Admission Status (Admitted vs Not Admitted)
- Age Distribution (in 10-year brackets)
- Department Referrals
- % of Patients Seen Within 30 Minutes
- Gender and Race Distribution
- Time-based Analysis (volume by hour/day)

📊 Dashboard 2: Consolidated View

Objective:
Provide a holistic view of ER performance over a custom date range.

Components:

- Aggregated versions of Monthly View metrics
- KPI Cards for Total Patients, Average Wait Time, Referrals, etc.
- Date range slicer for trend analysis

📊 Dashboard 3: Patient Details

Objective:
Deliver granular-level insights for patient-level analysis.

Components:

- Tabular Grid with:
    - Patient ID
    - Full Name

- Gender
- Age
- Race
- Admission Date
- Wait Time
- Referral Department
- Admission Status

📊 Dashboard 4: Key Takeaways / Summary

Objective:
Summarize insights from all dashboards with actionable recommendations.

Components:

- High-level summary of each metric
- Visuals of key patterns, peaks, or drops
- Operational recommendations (e.g., staffing, scheduling, resource allocation)

📊 Dashboard 5: Hospital Operation Management

Objective:
Provide detailed operational insights across the hospital for improved planning, billing, and care delivery.

Components:

- Admit Date and Release Date Tracking
- Bed Type Usage (Private vs General)
- Bill Amount Analysis
- Payment Type Analysis (Self-paid vs Insurance)
- Patient Feedback Volume per Doctor
- Diagnosis-wise Patient Count
- Tests Conducted (Type and Volume)
- Department Workload Analysis
- Doctor Utilization and Patient Load

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5. KPI Summary

KPI	Purpose
Total Number of Patients	Daily and monthly patient volume
Average Wait Time	Operational efficiency
% Patients Seen in 30 mins	ER responsiveness
Patient Satisfaction Score	Quality of care
Referred Patients	Department load
Bed Occupancy Type	Resource allocation
Bill Amount	Financial monitoring
Diagnosis/Test Volume	Treatment insights
Insurance vs Self Payment	Revenue model tracking
Feedback per Doctor	Service quality by provider

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6. Data Sources

File Name	Content Description
Hospital ER_Data.csv	Emergency room data
Healthcare-Dataset.xlsx	Operational and financial data

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7. Data Preparation Tasks

- Data Cleansing: Remove duplicates, fix missing values
- Date Conversion: Admission/release dates, time formatting
- Grouping: Age ranges, time slots, diagnosis categories
- Calculated Columns: Wait time, bed type %, bill categories
- DAX Measures: Aggregations, KPIs, filters

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8. Tools & Technologies

- **Power BI** – Dashboard creation and visualizations
- **DAX** – KPIs, calculated fields

- **Power Query** – Data transformation pipelines

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9. Risks & Mitigation

Risk	Mitigation
Incomplete data	Validation rules & fallback logic
Dashboard performance	Use aggregations, limit visuals per page
Data refresh failures	Schedule checks, log refresh errors
Misunderstood metrics	Add definitions, tooltips, and legends

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10. Timeline

Phase	Duration
Requirement Gathering	2 Days
Data Cleaning & Prep	2 Days
Dashboard Design & Build	3 Days
Review and QA	2 Days
Final Delivery & Handover	1 Day

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11. Success Criteria

- Dashboards update correctly with fresh data
- Visuals are interactive and user-friendly
- KPIs reflect real-time and historical trends accurately
- Stakeholders are able to make decisions more effectively

✅ **Deliverables**

- 5 interactive Power BI dashboards
- Source-cleaned data files
- BRD and project documentation
- Stakeholder training/demo (if applicable)