Project Planning & Management

Manufacturing Downtime Analysis

Team Name: InfoVerse Team **Organization:** Digital Egypt Pioneers Initiative (DEPI)

1.1 Project Proposal

Project Overview: The Manufacturing Downtime Analysis project is a Business Intelligence solution designed to analyze production line efficiency, downtime patterns, and operator performance. Utilizing Power BI, the system transforms raw manufacturing data into actionable insights to improve operational effectiveness.

Objectives:

1. **Increase Production Efficiency:** Minimize downtime and optimize batch operations (Target: 5-10% improvement).
2. **Root Cause Analysis:** Identify key factors contributing to machine failure and delays.
3. **Performance Evaluation:** Assess operator performance to guide training and resource allocation.
4. **Visualization:** Provide real-time visibility into production metrics across shifts and products.

Scope:

- **In-Scope:** Data cleaning (ETL), Data Modeling (Star Schema), DAX Calculations, and Dashboard creation for Line Productivity and Downtime.
- **Out-of-Scope:** Real-time sensor integration (IoT), hardware maintenance execution.

1.2 Team Roles & Responsibilities

Team Member	Role	Responsibilities
AlHussein AlAttar	Project Lead / documentation	Overall project management, dashboard architecture. Presentaion.
Mohammed AlMukadam	Business Analyst	DAX measure development, KPI definitions. Business Questions.
Youssef Ezzat	Data Analyst	Data cleaning, modelling.
Youssif Ali	UI/UX Designer	Dashboard wireframing (Figma), visual design, layout.
Mina Ayad	Storyteller	Data Visualization

1.3 Project Plan & Timeline

Methodology: Agile / Iterative Development

Phase	Duration	Deliverable
Milestone 1: Requirements	Week 1	Business questions definition, KPI list, Wireframes.
Milestone 2: Data Modeling	Week 2	Cleaned dataset (Power Query), Star Schema design.
Milestone 3: Implementation	Week 3	DAX measures (Efficiency, Downtime), Mockups.
Milestone 4: Visualization	Week 4	Final Interactive Dashboard, Reports, Presentation.

1.4 Risk Assessment

Risk	Probability	Impact	Mitigation Strategy
Data Quality Issues	High	Critical	Implement rigorous cleaning in Power Query (remove errors, standardize units).
Complex Logic Errors	Medium	High	Cross-validate DAX results with Excel pivot tables manually.
Scope Creep	Medium	Medium	Strictly adhere to the defined "Business Questions" list.

1.5 Key Performance Indicators (KPIs)

1. **Overall Production Efficiency:** Target > 85% (Current Baseline: 64.02%).
2. **Batch Target Adherence:** % of batches completed within target time (Current: 7.89%).
3. **Downtime Duration:** Reduction in total lost minutes (Current total: ~23 hours).
4. **Operator Error Rate:** Reduction in downtime attributed to human error (Current: 55.91%).