Numbers

NUMBERS

Numbers is a data analytics company specializing in interactive dashboards. We aim to turn complex data into actionable insights that support smart decision-making. In this report, we present a comprehensive analysis of manufacturing downtime through a fully interactive dashboard.

Our Team

- Beshara Fakhry
- Mohamed AbdelMaged Elbana
- Yasmin Elshenawy
- Dina Fouad Esmaiel
- Menna Sweilam

Agenda

1. Project Overview & Timeline
2. Responsibilities & Risk Mitigation
3. Project problem & Objectives
4. Project Questions
5. Structured approach
6. Recommendations & Expected Benefits

Project Overview & Timeline

Manufacturing Downtime Dashboard

Team: 5 Power BI Engineers

Duration: 15 Mar – 15 Apr 2025

Key Phases & Deadlines

1 Data Prep (15 -20 Mar)

Source identification

Data cleaning

2 Data Modeling (21-30 Mar)

Star schema design

DAX measure

3 Visualization (1 -7 Apr)

6 pages: Overview, Production Analysis, Downtime Analysis,Operator Performance,Time Analysis, OutCome

4 Finalization (8-13Apr)

Branding, testing, coach review

5 Deployment (14-15 Apr)

Publish to Power BI Service

Responsibilities & Risk Mitigation

Team Roles & Risk Plan

Team Roles Weekly Rotating Lead to coordinate updates Engineer Assignments:- Eng: mohamed : DAX + Downtime...

Team Roles & Risk Plan

Team Roles

1. Weekly Rotating Lead to coordinate updates
2. Engineer Assignments:
3. - Eng: mohamed ： DAX + Downtime Analysis+presentation
4. - Eng: Beshara ：Data cleaning + DAX + Outcomes page
5. - Eng: Dina ：Dax +Overview page + Product analysis +presentation
6. - Eng: Menna : Operator Performance +Dax
7. - Eng: Yasmin : Time Analysis +Dax

Risk Plan

1:Backup Support: Providing backup support to handle any potential disruptions in operations"

2:Weekly Syncs: Friday meetings with coach to address blockers

3:Tools: Teams/Zoom

Project problem & Objectives

Main Problem of the Factory

Unexplained increase in downtime during the manufacturing process, leading to:

1:A 26% decrease in productivity (current efficiency is only 74%)

2:Increased operational costs due to production line disruptions

3:Inability to meet rising demand during peak periods

4:Wastage of human resources and equipment during idle periods

Impact

1:Loss of approximately 23 downtime hours out of 64 working hours (35.9% of production time wasted)

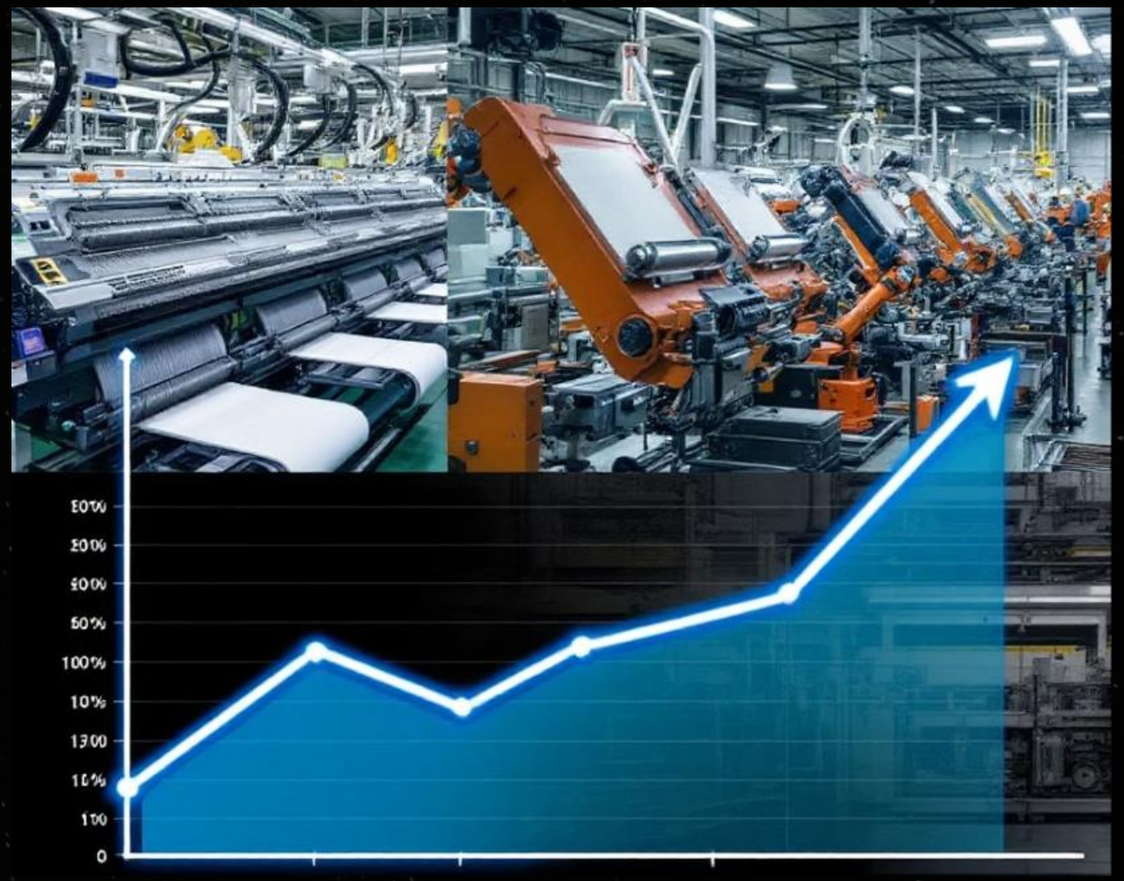
2:Decrease in the number of batches produced daily

3:Increased pressure on operators to compensate for lost time

Project Objectives

Data Analysis Objectives:

- Identify root causes of increased downtime
- Improve production line efficiency by reducing idle periods
- Optimize allocation of human resources and equipment
- Increase productivity by 15-20% within 3 months
- Enhance product quality by reducing human errors



Project...

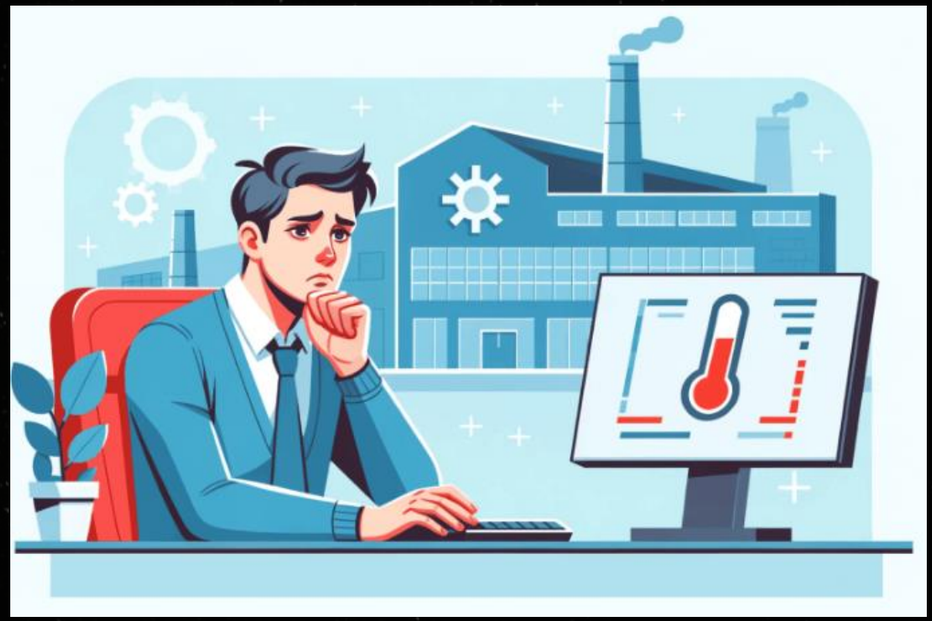
Key questions What is the production line’s overall efficiency, and how much downtime is impacting output? Which products have th...

Project Questions

Key questions

- What is the production line’s overall efficiency, and how much downtime is impacting output?
- Which products have the highest downtime, and why?
- What are the top 3 causes of downtime?
- Which operators contribute most to downtime, and is it linked to errors or external factors?
- Does downtime vary significantly between day and night shifts?
- Which specific batches had the longest downtime, and what went wrong?

- Are there days with abnormally high downtime?
- What percentage of downtime is preventable through operator training?
- Do certain products take longer to produce, leading to higher downtime risk?
- Based on the data, what are the top 3 actions to reduce downtime



Structured...

Data Preparation & Cleaning Objective: Ensure data accuracy and consistency for reliable analysis: 1: Data Cleaning2:Data Validation...

Structured approach

1 Data Preparation & Cleaning

Objective: Ensure data accuracy and consistency for reliable analysis:

1: Data Cleaning

2:Data Validation

2 Data Modeling in Power BI

Objective: Structure data for efficient analysis and visualization:

Star Schema Design

DAX Measures

3 Dashboard Design & Visualization

Objective: Present insights intuitively to answer stakeholder questions.

Steps:

1:Overview page

2:Production Analysis

3:Downtime Analysis

4:Operator Performance

5:Time Analysis

6:OutCome

Project

4 Validation & Testing

Objective: Ensure reliability before presentation

Steps:

Cross-Check Metrics

User Testing

Sensitivity Analysis

Recommendations & Expected Benefits:

1:Recommendations

- Focus improvement efforts on days with the highest downtime rates
- Study the factors affecting days with low efficiency
- Retrain operators on CO-600 and RB-600 products
- Improve operating procedures for high-downtime products
- Address "batch change" and "belt blockage" issues as a priority
- Transfer knowledge from skilled operators to others
- Adjust maintenance schedules based on downtime patterns

2:Expected Benefits

- Increased Productivity: 15-20% improvement within 3 months
- Cost Reduction: 30% savings in downtime costs
- Quality Improvement: 25% reduction in errors
- Enhanced Flexibility: Better responsiveness to demand fluctuations
- Improved Work Environment: Reduced pressure on operators

Project GitHub Link

MohamedElbanna171/
Graduation-Project-DEPI

1 Contributor 0 Issues 0 Stars 0 Forks

GitHub

GitHub - MohamedElbanna171/Graduation-Project-DEPI

Contribute to MohamedElbanna171/Graduation-Project-DEPI development by creating an account on GitHub.

THANKS