BUSINESS NEEDS & OBJECTIVES

Project Title: Production Management Optimization for SMEs

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Business Context

Small and Medium-sized manufacturing enterprises (SMEs) often rely on manual systems such as Excel sheets and paper records to manage production schedules, inventory, and performance reports.

This results in **inefficiencies, data inaccuracy, and lack of visibility** across departments (Production, HR, and Quality Control).

To remain competitive and scalable, these SMEs must **optimize their production management process** through digital transformation — even with limited budgets and resources.

Business Needs Overview

Business Need	Why It's Important	Direction / Tool to Help
Centralize Production Information	Data is scattered across multiple spreadsheets; teams can't access updates consistently.	Deploy a lightweight PMS (Production Management System) like Odoo or ERPNext for unified tracking.
Improve Production Planning Accuracy	Manual planning causes scheduling conflicts and resource underutilization.	Implement automated planning with machine & operator capacity logic.
Monitor Machine & Operator	Managers lack insight into efficiency, downtime, and	Use simple dashboards that visualize performance metrics

Business Need	Why It’s Important	Direction / Tool to Help
Performance	bottlenecks.	(Power BI, Google Data Studio).
Integrate HR Attendance with Shift Planning	HR data is not connected to production shifts, causing delays and payroll mismatches.	Connect HR attendance via shared database or API into PMS.
Reduce Manual Reporting & Paperwork	Manual reports are time-consuming and prone to error.	Automate daily reports and digital forms (e.g., Google Sheet APIs, Airtable, or PMS export).
Enable Real-time Data Visibility	Without live updates, managers make decisions on outdated information.	Enable live dashboards or status boards accessible to all departments.
Support Decision-Making with Performance KPIs	No defined metrics for tracking productivity or quality performance.	Define KPIs such as OEE, rejection rate, and production lead time to measure improvement.

1. Centralize Production Information

Why It’s Important:

- Each team (Planning, Warehouse, Production, QC) uses its own file.
- Information gaps cause delays and version conflicts.

What Needs to Happen:

- Implement a **centralized PMS** where all updates (inventory, production, QC) are entered once and shared across departments.
- Configure user permissions to ensure data security while improving accessibility.

2. Improve Production Planning Accuracy

Why It’s Important:

- Production delays and idle time occur because schedules don’t account for machine maintenance or workforce availability.

- SMEs often overcommit production without clear resource visibility.

What Needs to Happen:

- Automate the planning process using PMS rules:
  - Machine capacity (hours/day)
  - Operator skills and shift availability
- Generate a **daily/weekly plan** that automatically recalculates when resources change.

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3. Monitor Machine & Operator Performance

Why It's Important:

- Managers don't know which machines or operators perform efficiently.
- Without performance metrics, optimization decisions are subjective.

What Needs to Happen:

- Install machine sensors or use manual digital logs (via tablets or PMS forms).
- Calculate **OEE (Overall Equipment Effectiveness)** for each line:

  `OEE = Availability × Performance × Quality`.
- Visualize performance trends in dashboards.

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4. Integrate HR Attendance with Shift Planning

Why It's Important:

- Production plans often mismatch with actual attendance → delayed start time, uneven workload.
- Payroll data must align with attendance and output records.

What Needs to Happen:

- Build a simple data link between **HR attendance system and PMS** (e.g., shared Google Sheet or API).
- Auto-assign shifts based on who checked in.

- HR and Production share one view of operator availability.

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5. Reduce Manual Reporting & Paperwork

Why It's Important:

- Supervisors spend hours compiling Excel reports, reducing time for actual supervision.
- Data transcription errors accumulate, causing inaccurate reports.

What Needs to Happen:

- Automate daily production reports in PMS.
- Reports update automatically based on entered data (e.g., Power Automate, Google AppScript, or built-in PMS report).
- Output summary: output per machine, downtime, rejection rate, and efficiency.

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6. Enable Real-time Data Visibility

Why It's Important:

- Management decisions are made on yesterday's data.
- Lack of transparency slows down response to production issues.

What Needs to Happen:

- Real-time dashboard with line status (Running / Idle / Maintenance).
- Integrate simple alert system: downtime >30 mins → SMS/Email notification.
- Managers can view performance from any device.

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7. Support Decision-Making with Performance KPIs

Why It's Important:

- Without measurable KPIs, improvement is subjective and inconsistent.
- SMEs need simple, visual metrics to monitor progress.

What Needs to Happen:

- Define KPIs that are relevant to SME operations:
  - Production output per shift
  - Machine downtime rate
  - Defect ratio (%)
  - On-time delivery rate
- Automate KPI calculation in PMS dashboards.

✅ Business Objectives Summary

Objective	Expected Outcome	Business Value
Centralize production operations	Single source of truth across teams	↑ Collaboration & data accuracy
Automate scheduling & shift planning	Less manual work, faster production start	↓ Delay & idle time
Measure machine & operator efficiency	Identify and improve low-performing areas	↑ Productivity
Link HR and Production data	Accurate payroll & workload tracking	↑ Transparency
Automate reporting	Save 2+ hours per day for supervisors	↑ Speed, ↓ Error
Introduce KPI dashboards	Data-driven management culture	↑ Accountability

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