



# Solution SET-UP

## PMOS Solution Design: Functionality and Full Set-Ups

**Prepared by:** Dean Phạm

**Role:** Business Analyst

## System Overview

System Component	What It Does	How It Helps SME Factories
<b>HR Attendance Integration</b>	Syncs daily attendance data from biometric or HR files to PMOS.	Ensures shift accuracy, reduces idle labor time, and prevents over/understaffing.
<b>Digital Production Entry (Tablet/Mobile App)</b>	Allows operators and supervisors to record output, downtime, and defects in real time.	Replaces paper forms, saves time, and eliminates data duplication.
<b>Real-Time Dashboard (Power BI / Data Studio)</b>	Visualizes key KPIs: OEE, output per hour, defect ratio, downtime causes.	Enables data-driven decision-making and early problem detection.
<b>Automatic Alerts &amp; Notifications</b>	Sends alerts when output falls below targets or downtime exceeds thresholds.	Keeps managers and supervisors proactive in handling issues immediately.
<b>QC Digital Inspection Module</b>	Records inspection results and defect details linked to production batches.	Improves traceability and quality control consistency.
<b>Centralized Data Platform (PMOS Database)</b>	Stores synchronized data from HR, production, and QC departments.	Ensures all departments access the same real-time information.

System Component	What It Does	How It Helps SME Factories
<b>Automated Daily Reporting</b>	Generates shift-based and daily production reports automatically.	Eliminates manual report compilation delays and improves accuracy.
<b>KPI-Based Management System</b>	Calculates efficiency metrics like OEE, productivity rate, and defect ratio.	Allows management to evaluate performance continuously.

## How the PMOS Works (Step-by-Step)

### 1. Setting Up the System

- Tablets or mobile devices are deployed at production lines and QC stations.
- Each operator and supervisor receives a login linked to their HR profile.
- The PMOS is connected to HR attendance data, production data inputs, and dashboard tools (e.g., Power BI, Google Data Studio).
- System permissions are defined by role: HR, Production Supervisor, QC, or Manager.

### 2. Real-Time Data Collection

- Operators record **output, downtime, and defect counts** through the mobile/tablet interface.
- Data syncs immediately to the PMOS central database.
- Supervisors monitor progress in real time and verify shift performance.
- Managers can view the same data across departments through a live dashboard.

 *Example:*

Operator inputs "Machine 2 — 450 units produced — 20 minutes downtime (Material Delay)" → PMOS instantly updates the dashboard.

### 3. HR Attendance Integration

- HR attendance automatically syncs to PMOS every morning.
- The system cross-references attendance with assigned shifts and machine operators.
- Missing or mismatched attendance entries trigger alerts for HR review.

✓ *Benefit:* Eliminates manual attendance reconciliation between HR and Production.

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## 4. QC Digital Inspection

- QC inspectors use a tablet app to log product defects (e.g., scratches, misalignment, wrong label).
- Each defect is tied to the batch, shift, and operator for root-cause tracking.
- QC data updates the dashboard and contributes to **OEE and Defect Ratio KPIs**.

✓ *Benefit:* Ensures complete visibility from production to quality assurance.

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## 5. KPI Calculation and Dashboards

- The PMOS automatically calculates key performance indicators:
  - **OEE (Overall Equipment Effectiveness)**
  - **Productivity Rate (Output/Hour)**
  - **Defect Ratio (%)**
  - **Downtime Causes (Categorized)**
- Dashboards refresh every few minutes and can be viewed on desktop or mobile.
- Management receives instant insights on bottlenecks or underperforming lines.

✓ *Benefit:* Data transparency drives faster, more informed decision-making.

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## 6. Automated Alerts and Notifications

- The system continuously monitors live data.
- When output falls below the daily target or downtime exceeds 30 minutes, PMOS triggers alerts.
- Notifications are sent automatically via **Zalo API, Email, or App Notification** to Supervisors and Managers.

 *Example:*

"⚠ Alert: Line 3 output dropped to 70% of target. Downtime 45 mins — Reason: Machine Maintenance."

✅ *Benefit:* Enables instant corrective action and prevents major production delays.

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## 7. Automatic Report Generation

- At the end of each shift, PMOS automatically compiles:
  - Output totals
  - Downtime summaries
  - Defect and quality data
  - Attendance vs. production efficiency
- The report is generated in PDF or Excel format and sent to Management via email or dashboard link.

✅ *Benefit:* Eliminates 1–2 days of manual reporting and consolidates all data accurately.

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## 8. Unified Data Access Across Departments

- All teams — HR, Production, QC, and Management — access the same PMOS interface.
- Data is role-based:
  - HR sees attendance and manpower allocation.
  - Production sees line performance and downtime.

- QC sees defect analysis.
- Management sees consolidated KPIs.
- Every update is visible across departments in seconds.

✅ *Benefit:* Improves cross-department coordination and eliminates data conflicts.

## 9. Continuous Improvement and Scalability

- KPI trends are reviewed weekly via dashboards.
- Data insights guide process improvement (e.g., operator training, machine maintenance).
- The system can easily scale to multiple factories or production lines as needed.

✅ *Benefit:* Sustainable and cost-effective approach for SME digital transformation.

## Summary: How Everything Connects

Component	Function	Business Value
<b>PMOS Core System</b>	Captures and centralizes production, HR, and QC data.	One source of truth for all departments.
<b>HR Integration</b>	Syncs attendance and shift data.	Aligns workforce and production planning.
<b>Tablet/Mobile App</b>	Data entry for operators and QC staff.	Reduces paper-based work and delays.
<b>Dashboard (Power BI / Data Studio)</b>	Displays KPIs in real time.	Increases transparency and accountability.
<b>Automated Alerts</b>	Triggers notifications for low output or downtime.	Enables fast management response.
<b>Automated Reports</b>	Generates daily summaries automatically.	Saves time and reduces human error.
<b>KPI Logic Engine</b>	Calculates OEE, productivity, and defect ratios.	Drives continuous improvement.