Business Requirements Document (BRD)

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Project Title: Production Management Optimization System (PMOS) for SMEs

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Role: Business Analyst

Executive Summary

Many small and medium-sized manufacturing enterprises (SMEs) in Vietnam still rely on **manual production tracking, paper-based reporting, and separate Excel files** across HR, Production, and Quality Control (QC) departments.

These disconnected processes lead to **low visibility, duplicated effort, delayed decisions, and poor KPI measurement**.

This project proposes implementing a **Production Management Optimization System (PMOS)** — a lightweight, affordable digital platform designed to:

- Streamline production planning and scheduling
- Monitor real-time performance of machines and operators
- Integrate HR attendance data with production shifts
- Automate reporting and KPI tracking

By digitalizing production processes, SMEs can improve **efficiency, data accuracy, and collaboration** — all while staying within modest operational budgets.

Project Objectives (SMART Goals)

Criterion	Goal
Specific	Implement a digital production management system that integrates HR attendance, machine data, and daily reports within 60 days.
Measurable	Reduce manual reporting time by 70% and improve data accuracy by 25% within 3 months.
Achievable	Use cost-effective low-code tools (Odoo, Google AppSheet, Power BI) compatible with existing factory infrastructure.
Relevant	Help SMEs improve production efficiency and minimize downtime through real-time visibility.
Time-bound	Complete full rollout and staff onboarding within 8 weeks.

Project Scope

In-Scope

- Integration of HR attendance data with production scheduling
- Real-time tracking of operator and machine performance
- Mobile data entry for supervisors and QC inspectors
- Automatic daily report generation
- KPI dashboards for productivity, defect rate, and OEE
- Centralized data platform accessible by HR, Production, and QC
- Alerts for low output or extended downtime

Out-of-Scope

- Full ERP or accounting system replacement
- Predictive maintenance and AI analytics (reserved for later phase)
- Integration with external supplier or sales systems
- Physical machine hardware or PLC upgrades
- Company-wide rollout (pilot limited to selected production lines)

Functional Requirements (What the System Shall Do)

Functional Requirement	Business Need Addressed
FR-01: The system shall record real-time production data (output, downtime, defect count) from each line.	Provide live insights into performance and bottlenecks.
FR-02: The system shall integrate HR attendance data to match available operators with production shifts.	Ensure accurate workforce allocation and reduce idle time.
FR-03: The system shall generate daily and weekly reports automatically.	Reduce manual reporting and increase timeliness.
FR-04: The system shall display real-time dashboards showing productivity, OEE, and defect rates.	Enable data-driven management decisions.
FR-05: The system shall allow supervisors and QC staff to log data via tablet or mobile app.	Eliminate paper-based reporting and data loss.
FR-06: The system shall send automated alerts when daily output falls below target or downtime exceeds threshold.	Enable proactive response to production issues.
FR-07: The system shall provide a unified platform for HR, Production, and QC to access synchronized data.	Improve collaboration and data consistency.
FR-08: The system shall automatically calculate key performance indicators (OEE, Defect %, Productivity Rate).	Support continuous performance monitoring.

Non-Functional Requirements (How the System Should Behave)

Non-Functional Requirement	Business Value / Justification
NFR-01: The system shall have a simple, intuitive interface accessible on desktop and mobile.	Encourages adoption among non-technical staff.

Non-Functional Requirement	Business Value / Justification
NFR-02: The system shall include secure login with role-based access controls.	Protects sensitive production and HR data.
NFR-03: The system shall be compatible with affordable, off-the-shelf hardware.	Reduces setup cost for SMEs.
NFR-04: The system shall operate in offline mode and sync automatically when connected.	Ensures reliability in environments with unstable internet.
NFR-05: The system shall generate automated reports within 30 seconds of data input.	Supports efficient management decision-making.
NFR-06: The system shall integrate with Power BI, Google Data Studio, or Odoo dashboards.	Enables flexible, visual KPI reporting.
NFR-07: The system shall require minimal maintenance (<5% of annual operational cost).	Keeps total cost of ownership low for SMEs.

Fig 1.1 – AS-IS Process (Current Workflow)

Current State Description:

1. Production schedules are manually created in Excel.
2. Supervisors collect output and downtime data on paper.
3. HR tracks attendance separately, with no link to production.
4. QC logs defects manually in Excel.
5. Reports are delayed by 1–2 days, leading to outdated management decisions.

Key Issues:

- Manual data entry and duplication
- No real-time visibility
- Frequent reporting delays
- No KPI tracking system

- Disconnected HR–Production–QC data

🧩 *(Fig 1.1 — AS-IS Process Diagram for visual representation)*

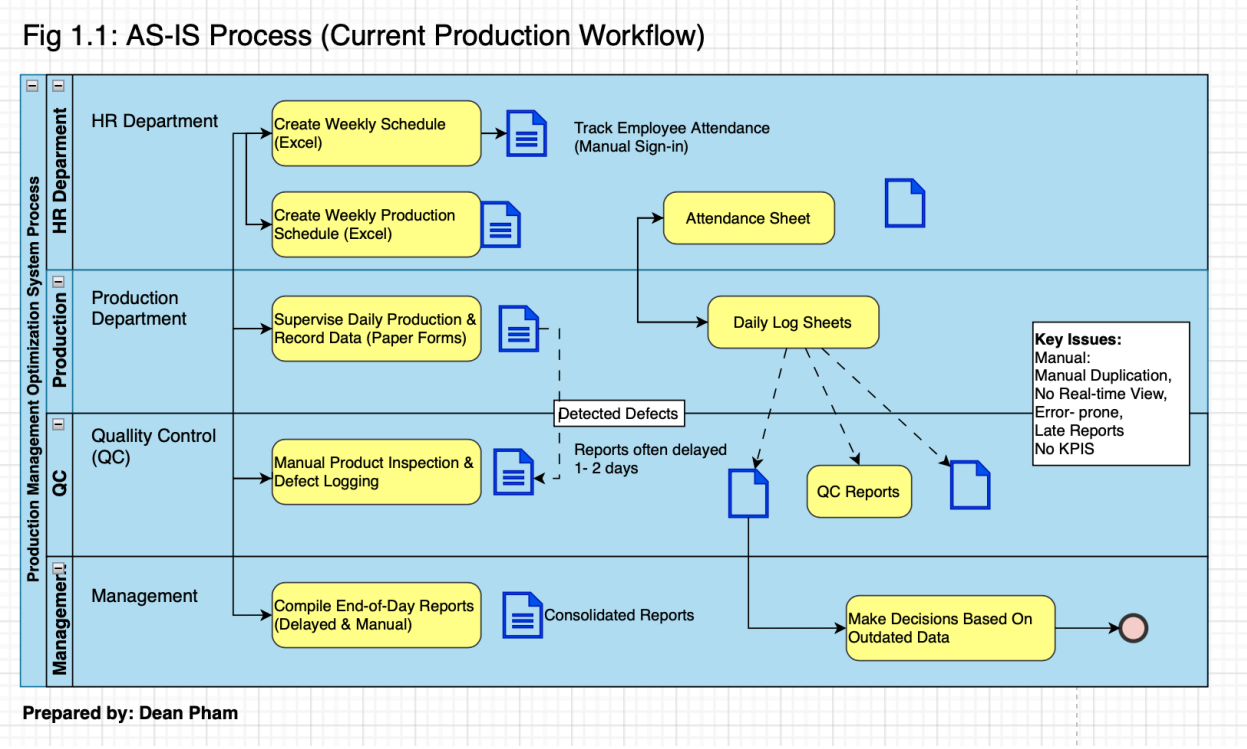


Fig 1.2 – TO-BE Process (Proposed Solution)

Optimized Workflow Description:

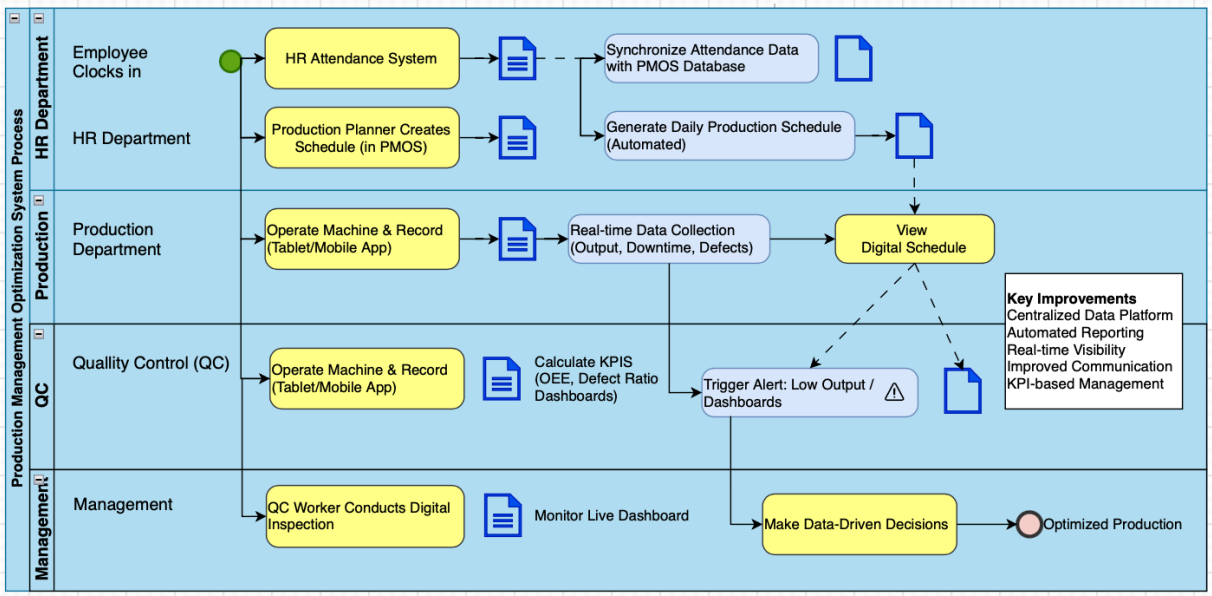
1. HR attendance system automatically syncs with PMOS.
2. System generates daily production schedule based on available operators.
3. Operators log output and downtime digitally.
4. QC conducts digital inspections and defect entries via mobile app.
5. PMOS aggregates data in real time and updates KPI dashboards.
6. Alerts trigger automatically when targets are not met.
7. Management monitors live dashboards to make data-driven decisions.

Key Improvements:

- Centralized data platform
- Automated reporting and alerts
- Real-time visibility and KPI tracking
- Improved inter-department collaboration

🧩 *(Fig 1.2 — TO-BE Process Diagram for visual representation)*

Fig 1.2: TO-BE Process (Proposed Solution)



Use Case: How the PMOS Will Work (Step-by-Step)

1. System Setup

- Tablets or mobile devices deployed at production lines and QC areas.
- HR attendance and production databases connected to PMOS.
- Dashboard tools (Power BI, Google Data Studio) integrated for KPI visualization.

2. Real-Time Production Tracking

- Operators record output and downtime using mobile/tablet forms.

- PMOS updates records instantly for all departments.

3. Automated Alerts

- PMOS monitors live data.
- If downtime >30 minutes or output <80% target, system triggers alerts to supervisors/managers via Zalo or email.

4. KPI Dashboard

- Dashboards visualize key metrics (OEE, Defect Ratio, Productivity Rate).
- Management uses dashboards to assess performance trends and take corrective actions.

5. Unified Access

- HR, Production, and QC share one synchronized data platform.
- Reports and dashboards are updated in real time, reducing miscommunication.

System Components Summary

Component	Function
Mobile App / Tablet Interface	Data entry for production and QC teams.
PMOS Database	Centralized data storage for HR, Production, and QC.
Dashboard (Power BI / Data Studio)	Displays real-time KPIs for management.
Alert System (Zalo / Email API)	Sends notifications for downtime and low productivity.
HR Integration Module	Imports and syncs attendance and shift data.

Expected Outcomes

Metric	Before (AS-IS)	After (TO-BE)	Improvement
Planning Time	3–4 hours/day	<1 hour/day	⏱️ 70% faster
Data Accuracy	60%	95%	📊 +35% improvement

Metric	Before (AS-IS)	After (TO-BE)	Improvement
Report Delay	1–2 days	Real-time	⚡ 100% faster
KPI Visibility	None	Live dashboards	📈 Continuous tracking
HR–Production Sync	Manual	Automated	🔗 Full integration

💡 Conclusion

The **PMOS** provides a practical, scalable, and cost-effective solution to SME production challenges.

By transitioning from manual to digital systems, SMEs gain **real-time visibility, faster reporting, and actionable insights** — all achieved with low-cost, locally available technologies.

This project will enable Vietnamese factories to **bridge the gap between manual processes and Industry 4.0 digital standards**, without heavy ERP investment.