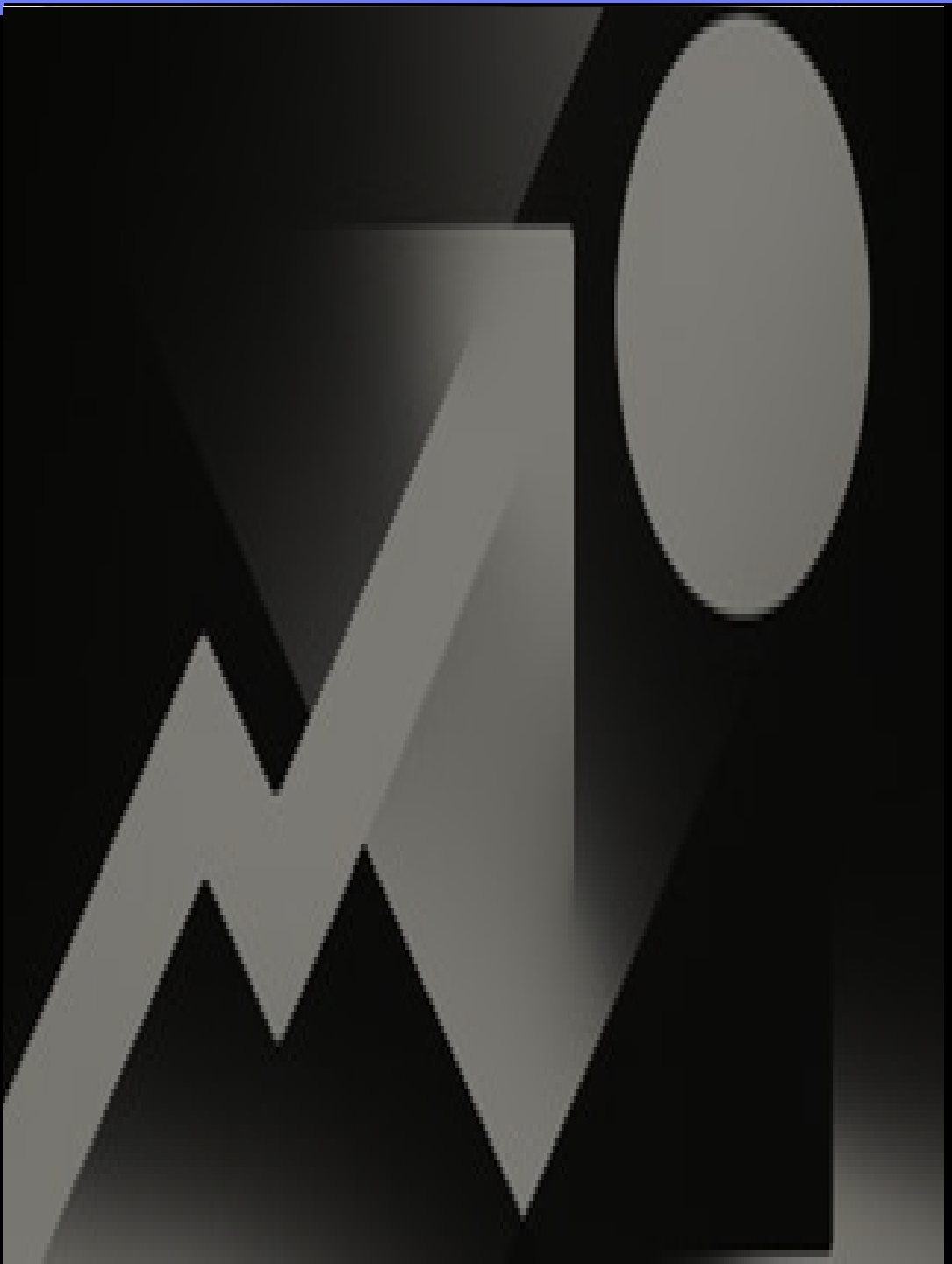
AI IN MANUFACTURING

Illustrative Case Study

AI Enabled Business Transformation Case study - Manufacturing



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CLIENT BACKGROUND AND CHALLENGES

Overview of the Mid-Sized Manufacturing Client:

Operational Complexity Across Multiple Plants and Products

Key Business Challenges

Inconsistent Performance

Rising Costs

Downtime and Reactive Decisions

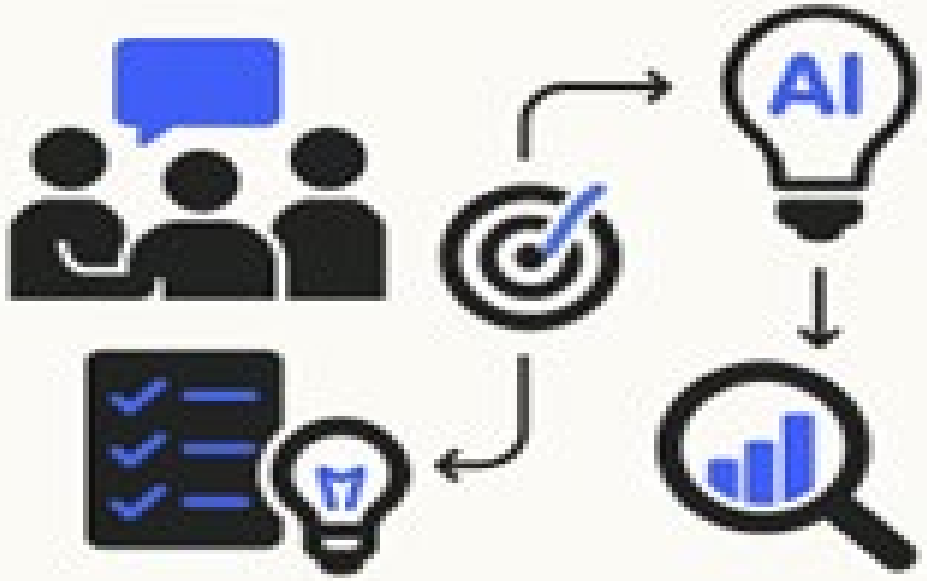
AI-ENABLED BUSINESS TRANSFORMATION: FOUR-PHASE METHOD

Phase 1: Discovery and Scoping—Identifying Business Priorities and AI Opportunities,

Phase 2: Business Diagnosis—Data-Driven Root Cause Analysis and Opportunity Prioritization,

Phase 3: Solution Design and Roadmap—AI-Powered Initiatives, KPIs, and Sequencing,

Phase 4: Execution Tracking and Dashboards—Real-Time Monitoring and Leadership Enablement



PHASE 1:

DISCOVERY & SCOPING

Key Deliverables:

- Clarified core business problems
- Defined scope and success criteria
- Identified AI opportunity areas

Executive Summary

1. Business Context

The client is a mid-sized manufacturing organization with multi-plant operations and a diversified product portfolio. Historical data (2024–2025) across sales, production, quality, cost, and workforce functions has been shared to initiate a structured diagnostic and transformation engagement.

2. Core Business Problems

Based on an initial review of the client's historical data, the following core issues are evident:

- Operational performance is inconsistent across plants and products, leading to inefficiencies and variability in outcomes.
- Cost increases are not matched by productivity or margin improvement, indicating margin leakage.
- Quality defects and equipment downtime are recurring and systemic, rather than isolated incidents.
- Decision-making is largely reactive, driven by lagging indicators and siloed reporting.
- Limited forward-looking insights restrict management's ability to proactively manage risk and performance.

Problem Statement:

The organization lacks an integrated, data-driven operating and performance management model, resulting in reactive decision-making, operational inefficiencies, and unrealized opportunities to improve margins.

3. Objectives

Stated Objectives

- Improve operational efficiency and reliability
- Enhance visibility into manufacturing and cost performance
- Reduce defects, downtime, and unplanned costs
- Establish consistent performance tracking across plants

Unstated (Strategic) Objectives

- Improve EBITDA margins without significant capital expenditure
- Shift from intuition-led to insight-led decision-making
- Enable proactive, predictive management using AI-driven insights
- Build a scalable foundation for digital and AI transformation

4. Scope Definition

In Scope

- Sales, demand, and revenue performance analysis
- Manufacturing efficiency, downtime, and throughput analysis
- Quality performance and cost of poor quality assessment
- Cost structure and margin leakage diagnosis
- Workforce productivity indicators
- Identification and prioritization of AI use cases
- Definition of enterprise and plant-level KPIs

Out of Scope

- ERP replacement or core IT system implementation
- Capital-intensive automation or robotics decisions
- Vendor selection or contract negotiations
- Detailed HR policy redesign or compliance audits

5. Key Assumptions & Constraints

Assumptions

- Historical data is accurate and representative of current operations
- Business processes remained broadly stable during the analysis period
- Management support is available for data-driven transformation

Constraints

- Monthly data granularity (limited real-time or machine-level data)
- Limited visibility into customer-level profitability
- Change adoption capability may vary across plants

6. Risks & Dependencies

Key Risks

- Data quality and trust challenges
- Resistance to change at operational levels
- Insights not translating into actionable decisions

Critical Dependencies

- Active sponsorship from senior leadership
- Availability of functional SMEs
- Cross-functional alignment (Operations, Finance, HR)
- Adoption of analytics and dashboarding tools

7. Key Clarifying Questions (Executive Level)

1. What are the top three strategic priorities for leadership—growth, margin, or cash flow?
2. Which plants or products are considered strategically critical?
3. Where does management perceive the highest value leakage today?
4. How are operational improvement initiatives currently prioritized and governed?
5. What decisions are delayed due to a lack of timely insights?
6. How frequently does leadership review performance metrics?
7. What level of AI-driven automation and decision support is acceptable initially?
8. How will the success of this engagement be measured?

8. Recommended Consulting Approach

8.1 Approach Overview

A structured **AI-Enabled Business Transformation** approach progressing from insight to execution:

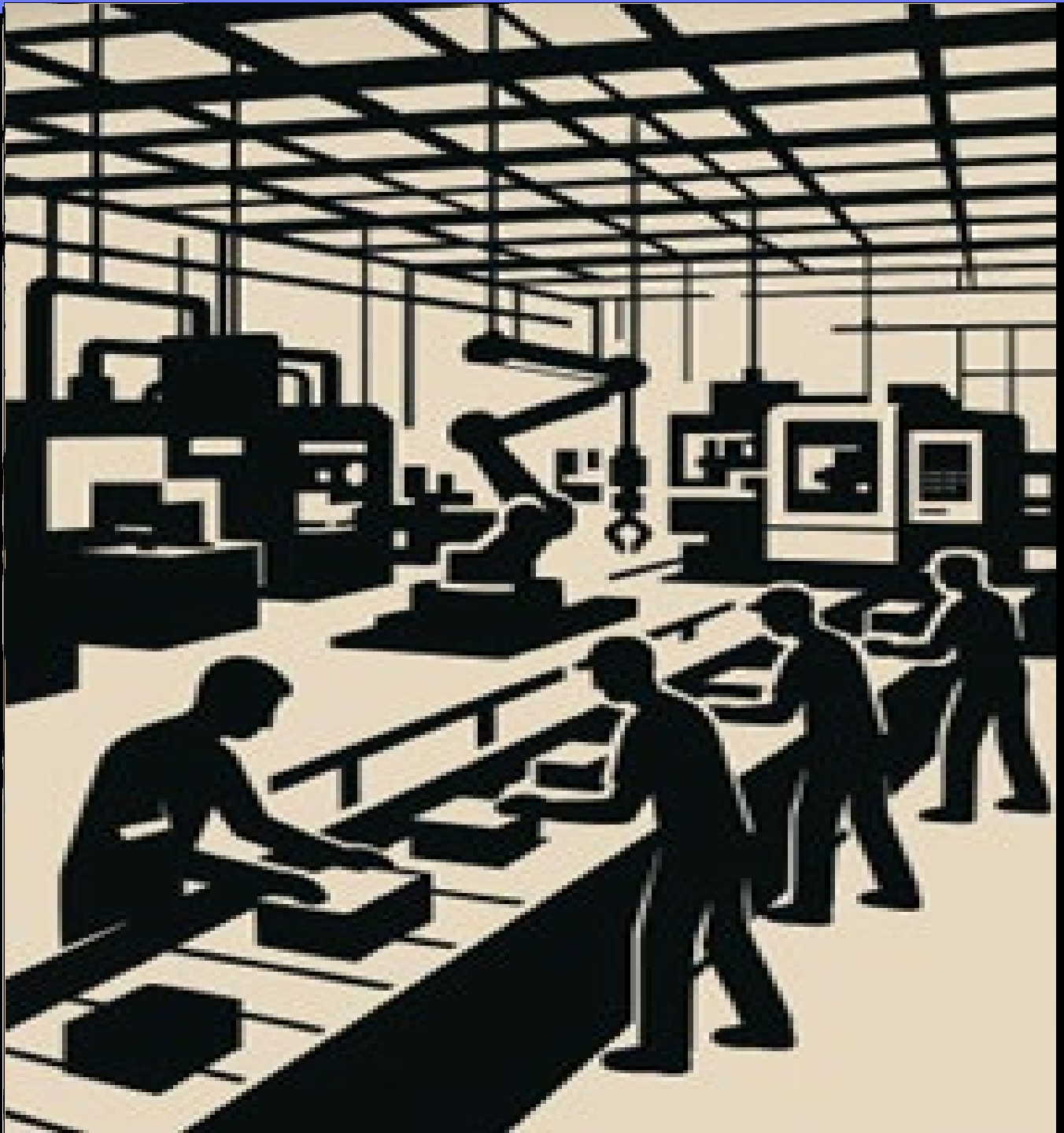
1. **Discovery & Scoping** – Establish baseline, priorities, and value pools
2. **Business Diagnosis** – Identify root causes and quantify impact
3. **Solution Design & Roadmap** – Define AI use cases with ROI linkage
4. **Execution Tracking** – Monitor performance and benefits realization

8.2 Core Frameworks

- Value Tree & KPI Cascade (Revenue → Cost → Margin → Cash)
- AS-IS vs TO-BE Operating Model
- Issue Tree / Root Cause Analysis
- AI Use-Case Maturity Funnel (Descriptive → Predictive → Prescriptive)
- Impact vs Feasibility Prioritization Matrix

9. Phase-1 Deliverables

- Executive discovery summary
- KPI baseline and performance snapshot
- AI opportunity heatmap
- Defined scope and success criteria for Phase-2 diagnosis



PHASE 2:

BUSINESS DIAGNOSIS

Key Deliverables:

- Diagnosed margin leakage, downtime, and quality losses
- Identified root causes using data-led analysis
- Prioritized opportunities by impact and controllability

DATA READINESS AND GAP ASSESSMENT

Base Data:
Client-provided historical datasets (2024–2025):

Data Readiness & Gap Assessment

Input Reviewed:
Client-provided historical datasets (2024–2025):
Sales, Production, Quality, Costs, Workforce, Product Master

1. Data Gaps & Inconsistencies Identified

1.1 Cross-Dataset Integration Gaps

- **No direct linkage between sales and production fulfilment**
  - Sales data shows demand (Units Sold) but does not confirm:
    - On-time delivery
    - Backorders
    - Lost sales due to capacity constraints
- **Costs are not product- or SKU-attributed**
  - Cost data is aggregated at plant + cost-type level
  - Prevents precise product-level margin diagnosis

1.2 Granularity Limitations

- **Monthly-level data only**
  - Masks intra-month volatility (e.g., breakdowns, labor shortages)
  - Limits root-cause precision for downtime and defect spikes
- **No shift-level or machine-level visibility**
  - Downtime and productivity are averaged, not diagnostic

1.3 Inconsistencies & Data Quality Risks

- **Units Produced ≠ Units Inspected**
  - No reconciliation logic (scrap, rework, WIP losses not visible)
- **Revenue appears list-price driven**
  - No discounting, rebates, or pricing variance captured
- **Defect Units not linked to financial impact**
  - Cost of poor quality (COPQ) cannot be quantified directly.

2. Missing or Unreliable Metrics

2.1 Commercial & Revenue Metrics (Missing)

- Net selling price (after discounts)
- Customer-level profitability
- Order fulfilment rate / OTIF
- Forecast vs actual demand accuracy

2.2 Manufacturing & Asset Metrics (Missing)

- Overall Equipment Effectiveness (OEE)
- Breakdown vs planned maintenance split
- Mean Time Between Failures (MTBF)
- Mean Time to Repair (MTTR)
- Capacity utilization %

2.3 Quality Metrics (Partially Missing)

- Scrap vs rework classification
- First-pass yield (FPY)
- Defect severity/criticality
- Quality cost attribution (scrap cost, warranty, returns)

2.4 Cost & Margin Metrics (Missing)

- Product-wise gross margin
- Conversion cost per unit
- Fixed vs variable cost split
- Energy cost per unit
- Logistics cost per unit / per region

2.5 Workforce & Productivity Metrics (Missing)

- Output per worker / per shift
- Skill mix and experience levels
- Attrition rate
- Training hours
- Overtime cost (₹), not just hours

3. Recommended Additional Data for Robust Diagnosis

3.1 "Must-Have" Data (Critical for Phase 2)

Area	Additional Data Required	Why It Matters
Sales	Order backlog, OTIF, price discounts	Revenue leakage & service diagnosis
Operations	OEE, breakdown logs, maintenance type	Root-cause of downtime
Quality	Scrap vs rework, COPQ	Financial impact of defects
Costs	Product-level cost allocation	True margin analysis
Workforce	Output per worker, overtime cost	Productivity diagnosis

3.2 "Good-to-Have" Data (Enhances AI Value)

Area	Data	Use Case
Operations	Machine sensor / IoT data	Predictive maintenance
Sales	Customer churn, repeat orders	Demand stability modelling
Supply Chain	Supplier delays, material yield	Constraint diagnosis
Finance	Cash cycle, inventory aging	Working capital optimization

4. Data Reliability Assessment (High-Level)

Dataset	Reliability	Commentary
Product Master	High	Stable, reference data
Sales	Medium	Lacks pricing realism & fulfillment linkage
Production	Medium	Aggregated, no machine view
Quality	Medium	Volume-based, not cost-based
Costs	Medium-Low	Not SKU-attributed
Workforce	Medium	Hours captured, productivity missing

5. Implications for Diagnosis

- Current data is sufficient for directional insights, trend analysis, and hypothesis generation.
- Root-cause diagnosis and financial quantification are constrained by a lack of:
  - Product-level cost attribution
  - Asset-level performance data
  - Customer profitability visibility
- AI models can begin at descriptive and diagnostic levels, but predictive and prescriptive accuracy will require data enrichment.

6. Recommended Way Forward (Phase 2 Readiness)

Short-Term (This Engagement)

- Derive proxy metrics (e.g., estimated margins, implied COPQ)
- Focus diagnosis on patterns, correlations, and structural issues
- Clearly state assumptions in all outputs

Medium-Term (AI Enablement)

- Introduce standardized data capture for:
  - OEE
  - Quality costs
  - Product-wise margins
- Establish a single performance data model across functions

STRUCTURED BUSINESS DIAGNOSTIC

Objective:
Identify performance gaps, root causes, and value leakage using a fact-based lens

Structured Business Diagnostic

SWOT Analysis (Data-Backed)

Strengths

- **Revenue scale and demand diversity across regions and products provide resilience.**
- **Established manufacturing footprint with multi-plant capacity.**
- **Consistent workforce availability (stable headcount over 24 months).**
- **Sufficient historical data to establish baselines and trends.**

Weaknesses

- Operational variability across plants and products (uneven output, downtime, defects).
- Cost structure opacity—costs not attributable to product/SKU level.
- Quality losses not monetized, limiting management attention to impact.
- Reactive performance management due to lagging, siloed metrics.

Opportunities

- Margin uplift without capex through downtime, defect, and cost leakage reduction.
- AI-enabled forecasting and predictive maintenance using existing trends.
- Standardized KPI governance to reduce variability.
- Workforce productivity optimization (overtime and absenteeism patterns).

Threats

- Sustained cost inflation eroding margins if productivity does not improve.
- Operational fatigue risk from rising overtime and absenteeism.
- Competitive disadvantage from slower, reactive decision-making.
- Execution risk if insights are not translated into ownership-driven actions.

Process Bottleneck Analysis (End-to-End)

Demand → Production Mismatch

- Sales volumes fluctuate by region and product, but **production planning appears capacity-led rather than demand-led**.
- No evidence of **forecast accuracy tracking**, increasing firefighting.

Impact: Inventory imbalance, missed revenue, inefficient capacity utilization.

Production & Asset Utilization

- **Recurring downtime across plants** with no differentiation between planned and unplanned.
- Machine hours increase without proportional output gains in some periods.

Bottleneck: Maintenance strategy and asset reliability
Impact: Lost capacity, higher conversion costs.

Quality Control

- **Defect volumes persist month-over-month**, indicating structural issues.
- No linkage between defect types and corrective actions.

Bottleneck: Root-cause closure loop
Impact: Rework, scrap, delayed shipments, hidden cost leakage.

Cost Management

- Costs are **aggregated at plant level**, masking product-level profitability.
- Rising power, maintenance, and logistics costs lack efficiency benchmarks.

Bottleneck: Cost transparency and ownership
Impact: Margin erosion without clear levers.

Workforce Productivity

- **Overtime and absenteeism trends signal workload imbalance.**
- Productivity is measured in hours, not output per worker.

Bottleneck: Workforce planning and skill deployment
Impact: Fatigue, quality risk, higher labor cost per unit.

KPI Performance Gap Analysis

KPI Area	Observed Gap	Management Implication
Revenue	Volume-driven growth, not margin-led	Growth does not translate to profit
Gross Margin	Not directly measurable by product	Margin leakage invisible
Downtime	Persistently high, non-segmented	No predictive control
Quality	Defects tracked, cost not tracked	Low urgency to fix
Costs	Rising without productivity offset	Structural inefficiency
Workforce	High overtime, rising absenteeism	Sustainability risk

Key Insights (Executive Summary)

1. **Performance variability—not scale—is the core issue.**
   The business has sufficient demand and capacity, but outcomes vary significantly across plants and products.
2. **Margin leakage is structural and largely invisible.**
   Costs, downtime, and defects are not translated into financial impact, weakening accountability.
3. **Operations are managed reactively.**
   Monthly, lagging metrics prevent early intervention and proactive decision-making.
4. **Quality and downtime are symptoms of deeper process gaps.**
   Lack of root-cause closure and predictive signals keeps issues recurring.
5. **Workforce stress is a leading indicator of future risk.**
   Overtime and absenteeism trends point to sustainability and quality risks ahead.

Diagnostic Conclusion

The organization's primary challenge is not a lack of data but a lack of integration, prioritization, and predictive insight.
Significant value can be unlocked by shifting from descriptive reporting to AI-enabled, insight-driven performance management, without major capital investment.

Root Cause Identification & Prioritization

Core Problem Statement (from Phase 2):
Persistent margin leakage driven by recurring downtime, quality defects, cost escalation, and workforce strain—despite stable demand and capacity.

Fishbone (Cause–Effect) Analysis

(Grouped by classic Ishikawa dimensions)

🎯 Effect

- Margin erosion
- Operational variability
- Reactive decision-making

🧩 People

- High overtime indicates poor workforce planning
- Absenteeism impacting shift stability
- Limited analytical capability at the plant level
- KPI ownership unclear

🧩 Process

- Reactive maintenance approach
- No closed-loop root cause resolution for defects
- Production planning not demand-aligned
- Cost reviews done in aggregate, not at SKU/process level

🧩 Machines / Assets

- Recurring unplanned downtime
- No predictive maintenance indicators
- Machine performance averaged, not segmented
- Aging assets treated uniformly

🧩 Materials

- Defects not traced to material batches or suppliers
- No yield loss visibility
- Rework vs scrap not differentiated

🧩 Measurement (Data & KPIs)

- Monthly, lagging metrics only
- No OEE, MTBF, MTTR
- No product-wise margin visibility
- Quality tracked in units, not ₹ impact

🧩 Management / Governance

- Decisions based on symptoms, not root causes
- No prioritization of improvement initiatives by ROI
- Limited cross-functional integration (Ops–Finance–HR)

5-Why Analysis (Key Problem Chains)

A. Why is downtime persistently high?

1. Why? → Equipment failures recur
2. Why? → Maintenance is largely reactive
3. Why? → No early-warning indicators or predictive signals
4. Why? → Machine-level performance data not tracked
5. Why? → No structured asset performance framework

Root Cause:

Absence of predictive maintenance and asset performance governance.

B. Why do quality defects continue month after month?

1. Why? → Same defect types reappear
2. Why? → Corrective actions are not sustained
3. Why? → No root-cause closure tracking
4. Why? → Defects not monetized or prioritized
5. Why? → Quality treated as operational issue, not financial lever

Root Cause:

Lack of cost-of-poor-quality visibility and accountability.

C. Why are costs rising without margin improvement?

1. Why? → Conversion and overhead costs increase
2. Why? → Productivity gains not tracked
3. Why? → Costs aggregated at the plant level
4. Why? → No product/process-level cost attribution
5. Why? → Margin not used as a primary decision metric

Root Cause:

Inadequate cost transparency at the decision-making level.

D. Why is the workforce under strain?

1. Why? → High overtime and absenteeism
2. Why? → Capacity gaps during demand peaks
3. Why? → Demand volatility not forecasted accurately
4. Why? → Planning not demand-driven
5. Why? → Limited use of analytics in planning

Root Cause:

Weak demand forecasting and workforce planning integration.

E. Why is decision-making reactive?

1. Why? → Issues identified after impact occurs
2. Why? → Metrics are lagging
3. Why? → No predictive or leading indicators
4. Why? → Data is siloed and descriptive
5. Why? → Analytics maturity is low

Root Cause:

Performance management limited to descriptive reporting.

Consolidated Root Causes (Shortlist)

#	Root Cause	Description
RC1	Reactive maintenance model	No predictive asset insights
RC2	No monetization of quality losses	Defects not linked to ₹ impact
RC3	Lack of product-level cost transparency	Margin leakage invisible
RC4	Demand–capacity misalignment	Planning not forecast-driven
RC5	Lagging KPI framework	No early-warning signals
RC6	Weak governance & ownership	Actions not sustained

Executive Insight:

80% of value leakage is driven by controllable, non-CapEx issues—primarily lack of cost transparency, reactive maintenance, and absence of monetized quality accountability.
These root causes are **ideal candidates for AI-enabled interventions** with fast ROI.

Prioritization by Impact & Controllability

Root Cause	Impact on Business	Controllability	Priority
RC3 – Cost transparency gap	Very High	High	P1
RC1 – Reactive maintenance	High	Medium-High	P1
RC2 – Quality not monetized	High	High	P1
RC4 – Demand misalignment	Medium-High	Medium	P2
RC5 – Lagging KPIs	Medium	High	P2
RC6 – Governance gaps	Medium	Medium	P3

Implication for Phase 3 (Solution Design)

This root cause analysis directly translates into:

- **Predictive maintenance use case**
- **AI-driven cost & margin analytics**
- **Quality cost intelligence dashboards**
- **Demand forecasting & workforce planning**
- **Leading-indicator KPI framework**

Phase 2 – Improvement Opportunities & Prioritization

Basis:

- Observed 2024–2025 data patterns (sales, production, quality, cost, workforce)
- Explicitly identified root causes (RC1–RC6)
- Impact judged by **potential value unlocked**
- Effort judged by **organizational + data + change complexity**

Improvement Opportunity Identification

#	Improvement Opportunity	Linked Root Cause(s)
O1	Product-level margin transparency	RC3
O2	Downtime reduction through predictive insights	RC1
O3	Monetization of quality losses (COPQ)	RC2
O4	Demand–capacity alignment	RC4
O5	KPI standardization with leading indicators	RC5
O6	Workforce productivity optimization	RC4, RC6
O7	Cost governance & efficiency tracking	RC3, RC6
O8	Performance management & ownership model	RC6

Impact vs Effort Assessment

Legend

- **Impact** = EBITDA / productivity/risk reduction potential
- **Effort** = data readiness + process change + adoption

Opportunity	Impact	Effort	Rationale (Data-Anchored)
O1 – Margin transparency	High	Medium	Costs exist but not SKU-mapped
O2 – Downtime reduction	High	Medium–High	Persistent downtime, no prediction
O3 – COPQ visibility	High	Low–Medium	Defect volumes already captured
O4 – Demand-capacity alignment	Medium–High	Medium	Sales & production data available
O5 – Leading KPIs	Medium	Low	Primarily governance & analytics
O6 – Workforce productivity	Medium	Medium	Overtime & absenteeism visible
O7 – Cost efficiency tracking	Medium	Medium	Cost data exists, needs structure
O8 – Performance ownership model	Medium	Low–Medium	Org/process driven

Opportunity Classification

Quick Wins (0–3 months)

Low to moderate effort, visible business impact

Opportunity	Why It Qualifies
O3 - Cost of Poor Quality (COPQ)	Defects already tracked; monetization adds urgency
O5 - KPI standardization	Uses existing data; improves decisions immediately
O8 - Performance ownership model	Governance-driven, minimal tech dependency

Expected Outcome:

- Better focus
- Faster decisions
- Improved accountability

Medium-Term Improvements (3–9 months)

Requires structured analytics and cross-functional alignment

Opportunity	Why It Qualifies
O1 - Product-level margin transparency	Needs cost allocation logic
O4 - Demand-capacity alignment	Requires forecasting & planning discipline
O6 - Workforce productivity optimization	Needs productivity metrics & planning

Expected Outcome:

- Margin uplift
- Reduced firefighting
- Better capacity utilization

Strategic Initiatives (9–18 months)

Foundational, transformational, AI-enabled

Opportunity	Why It Qualifies
O2 - Predictive maintenance	Data enrichment + behavioral change
O7 - Enterprise cost governance	Cultural & systemic shift

Expected Outcome:

- Structural efficiency
- Risk reduction
- Sustainable EBITDA improvement

Impact–Effort Portfolio (Executive View)

High Impact / Low–Medium Effort (Priority Focus):

- COPQ monetization
- Margin transparency
- Leading KPI framework

High Impact / Higher Effort (Strategic Bets):

- Predictive maintenance
- Integrated cost governance

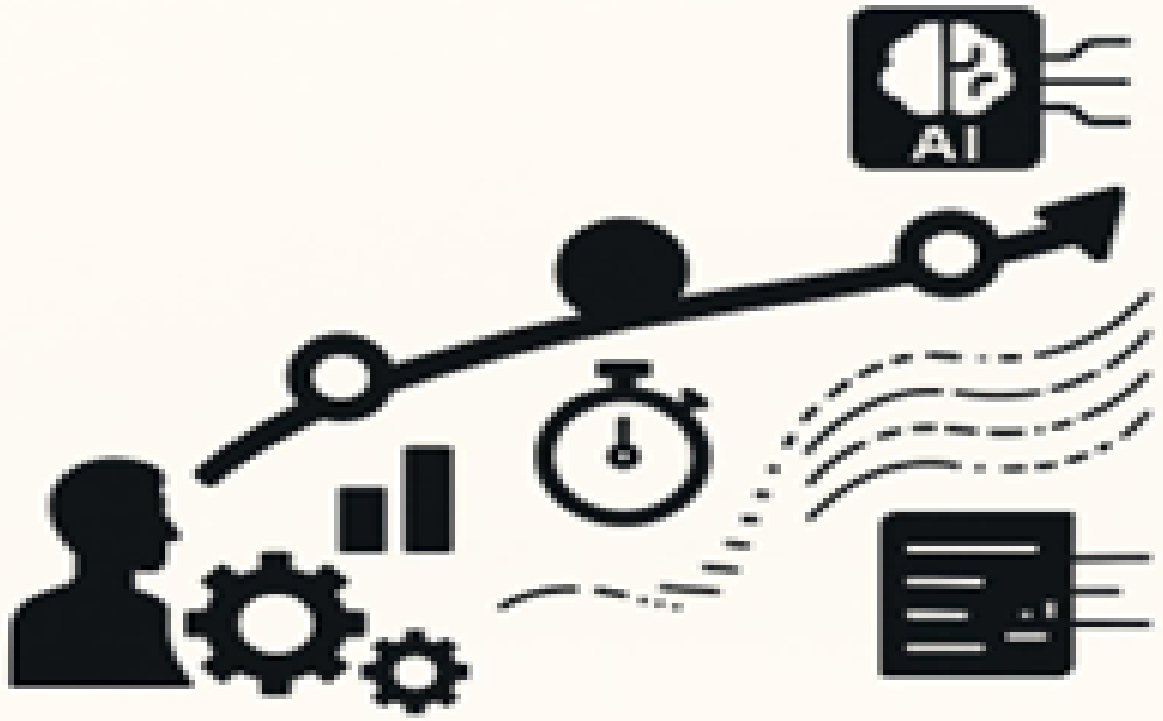
Executive Summary:

The diagnostic reveals **multiple controllable improvement opportunities** that do not require heavy capital investment.
Approximately **60–70% of value potential lies in Quick Wins and Medium-Term initiatives**, while **Strategic initiatives create sustainable, AI-enabled advantage**.

PHASE 3: SOLUTION DESIGN AND ROADMAP

Key Deliverables:

- Designed business-first AI solutions
- Defined initiatives, KPIs, owners, and governance
- Sequenced roadmap over 18 months



SOLUTION THEMES

(Business-First, Practical, Implementable)

Guiding Design Principles (Explicit)

- **Business problem first, AI second**
- **Leverage existing data before adding new systems**
- **Start with decision support, not automation**
- **Clear ownership and measurable outcomes**
- **Incremental adoption with visible wins**

Solution Theme 1: Margin & Cost Transparency

Root Causes Addressed

- RC3: Lack of product-level cost transparency
- RC5: Lagging KPI framework

Business Problem

Management cannot identify where margin is earned or lost at the product and process levels.

Proposed Solution

Establish a **product- and process-level margin intelligence layer** that allocates costs using practical drivers (volume, machine hours, labor hours).

What This Enables

- Visibility into **true product profitability**
- Identification of **margin leakage drivers**
- Data-backed pricing and product mix decisions

AI Enablement (Supporting, Not Leading)

- Pattern detection to highlight abnormal cost behavior
- Scenario simulation for “what-if” margin outcomes

Practicality Check

✓ Uses existing cost, production, and sales data
✓ No ERP replacement required
✓ Can start with rule-based logic, evolve to AI

Solution Theme 2: Predictive Operations & Asset Reliability

Root Causes Addressed

- RC1: Reactive maintenance model
- RC5: Lagging indicators

Business Problem

Recurring downtime reduces effective capacity and increases conversion costs.

Proposed Solution

Implement **predictive operations intelligence** to anticipate downtime risk and prioritize maintenance actions.

What This Enables

- Early identification of **high-risk periods**
- Shift from firefighting to **planned intervention**
- Improved equipment availability and throughput

AI Enablement

- Trend-based risk scoring using historical downtime
- Predictive alerts (initially probabilistic, not deterministic)

Practicality Check

✓ Works with historical downtime & machine-hour data
✓ Does not require immediate IoT investment
✓ Scales later to sensor-based models

Solution Theme 3: Quality Loss Monetization & Root-Cause Closure

Root Causes Addressed

- RC2: Quality not monetized
- RC6: Weak corrective action governance

Business Problem

Defects are tracked operationally but lack financial urgency and closure discipline.

Proposed Solution

Create a **Quality Intelligence & COPQ framework** linking defects to financial impact and corrective actions.

What This Enables

- Clear visibility into the **cost of poor quality**
- Prioritization of defects by business impact
- Sustained root-cause closure tracking

AI Enablement

- Defect pattern clustering
- Predictive identification of defect-prone products or periods

Practicality Check

✓ Defect data already exists
✓ Financial linkage uses standard cost assumptions
✓ Strong early ROI with minimal change effort

Solution Theme 4: Demand-Driven Planning & Workforce Alignment

Root Causes Addressed

- RC4: Demand–capacity misalignment
- RC6: Workforce strain

Business Problem

Production and workforce planning are not sufficiently aligned with demand volatility.

Proposed Solution

Introduce **demand-driven planning intelligence** that aligns production and workforce capacity with forecasted demand.

What This Enables

- Reduced overtime and absenteeism pressure
- Improved service levels and delivery reliability
- Better utilization of existing capacity

AI Enablement

- Demand forecasting using historical sales patterns
- Workforce load forecasting linked to demand scenarios

Practicality Check

✓ Sales and workforce data already available
✓ Forecasting can start simple and mature over time
✓ Immediate operational relevance

Solution Theme 5: Leading-Indicator KPI & Performance Governance

Root Causes Addressed

- RC5: Lagging KPIs
- RC6: Governance gaps

Business Problem

Management reacts after issues arise from lagging metrics and unclear ownership.

Proposed Solution

Establish a **leading-indicator KPI framework** with clear accountability and review cadence.

What This Enables

- Early warnings before financial impact
- Faster corrective action
- Stronger cross-functional alignment

AI Enablement

- Anomaly detection
- KPI threshold learning over time

Practicality Check

✓ Primarily governance and analytics
✓ Minimal technology dependency
✓ Foundational for all other themes

Solution Theme Summary (Executive View)

Solution Theme	Root Causes Addressed	Business Value
Margin & Cost Transparency	RC3, RC5	Margin uplift
Predictive Operations	RC1, RC5	Capacity & reliability
Quality Intelligence	RC2, RC6	Cost reduction
Demand-Driven Planning	RC4, RC6	Productivity & service
KPI & Governance Framework	RC5, RC6	Proactive management

Key Differentiator of This Roadmap

This roadmap **does not start with tools or platforms**.
It starts with **decisions that leaders struggle to make today** and introduces AI only where it materially improves those decisions.

INITIATIVE –LEVEL DEFINITION

Objective:

Establish visibility into true product-level profitability to identify margin leakage.

Solution Theme 1: Margin & Cost Transparency

Initiative 1.1: Product-Level Cost & Margin Model

Expected Outcome

- Clear product-wise gross margin view
- Identification of loss-making products/processes

Key Stakeholders

- CFO (Sponsor)
- Finance Controller
- Operations Head

Success Metrics (KPIs)

- % of products with calculated gross margin
- Margin variance by product
- Cost allocation accuracy

Initiative 1.2: Margin Performance Review Cadence

Objective

Embed margin accountability into monthly business reviews.

Expected Outcome

- Faster corrective actions
- Data-backed pricing and mix decisions

Key Stakeholders

- CFO
- Sales Head
- Plant Heads

Success Metrics (KPIs)

- Monthly margin review completion rate
- Number of margin improvement actions initiated
- Margin improvement (%)

Solution Theme 2: Predictive Operations & Asset Reliability

Initiative 2.1: Downtime Pattern Analysis & Risk Scoring

Objective

Identify equipment and periods with an elevated risk of downtime.

Expected Outcome

- Reduced unplanned downtime
- Improved asset availability

Key Stakeholders

- COO (Sponsor)
- Maintenance Head
- Plant Managers

Success Metrics (KPIs)

- Unplanned downtime hours
- Asset availability (%)
- Downtime incidents per month

Initiative 2.2: Maintenance Planning Optimization

Objective

Shift from reactive to condition-informed maintenance planning.

Expected Outcome

- Better maintenance scheduling
- Lower emergency repairs

Key Stakeholders

- Maintenance Head
- Operations Planning Team

Success Metrics (KPIs)

- Planned vs unplanned maintenance ratio
- Maintenance cost per unit
- MTBF (Mean Time Between Failures)

Solution Theme 3: Quality Loss Monetization & Closure

Initiative 3.1: Cost of Poor Quality (COPQ) Model

Objective

Translate quality defects into financial impact to drive prioritization.

Expected Outcome

- Visibility of quality losses in ₹ terms
- Focus on high-impact defect types

Key Stakeholders

- Quality Head (Sponsor)
- Finance Team
- Plant Quality Managers

Success Metrics (KPIs)

- COPQ as % of revenue
- Defect cost by category
- Reduction in high-impact defects

Initiative 3.2: Root-Cause Closure Tracking

Objective

Ensure sustained closure of recurring defect causes.

Expected Outcome

- Reduction in repeat defects
- Improved first-pass yield

Key Stakeholders

- Quality Head
- Operations Managers

Success Metrics (KPIs)

- Repeat defect rate
- Corrective action closure rate
- First-pass yield (%)

Solution Theme 4: Demand-Driven Planning & Workforce Alignment

Initiative 4.1: Demand Forecasting & Scenario Planning

Objective

Improve demand predictability to reduce firefighting.

Expected Outcome

- Better production planning
- Reduced overtime pressure

Key Stakeholders

- Sales Head (Sponsor)
- Supply Chain Head
- Operations Planning

Success Metrics (KPIs)

- Forecast accuracy (%)
- Production plan adherence
- Overtime hours

Initiative 4.2: Workforce Load & Capacity Planning

Objective

Align workforce deployment with forecasted demand.

Expected Outcome

- Balanced workloads
- Lower absenteeism

Key Stakeholders

- HR Head
- Plant Managers

Success Metrics (KPIs)

- Output per worker
- Absenteeism rate
- Overtime cost per unit

Solution Theme 5: Leading-Indicator KPI & Governance Framework

Initiative 5.1: Leading KPI Definition & Ownership Model

Objective

Move from lagging to proactive performance management.

Expected Outcome

- Early-warning signals
- Clear KPI accountability

Key Stakeholders

- CEO (Sponsor)
- CXO Team
- Functional Heads

Success Metrics (KPIs)

- % KPIs with defined owners
- Number of leading indicators implemented
- Time-to-detect performance deviations

Initiative 5.2: Executive Performance Dashboard

Objective

Provide a single source of truth for leadership decisions.

Expected Outcome

- Faster, aligned decision-making
- Reduced manual reporting

Key Stakeholders

- CEO
- CFO
- COO

Success Metrics (KPIs)

- Dashboard adoption rate
- Decision cycle time
- Manual reporting hours eliminated

Executive Summary Table:

Theme	Initiative	Objective	Primary KPI
Margin Transparency	Product margin model	Identify leakage	Product GM%
Predictive Ops	Downtime risk scoring	Reduce downtime	Unplanned downtime
Quality Intelligence	COPQ model	Monetize defects	COPQ %
Demand Planning	Forecasting	Reduce volatility	Forecast accuracy
Governance	Leading KPIs	Proactive mgmt	KPI adherence

Readiness for Execution (Phase 4)

Each initiative has:

✓ Clear owner
✓ Measurable outcomes
✓ Practical data dependency
✓ Direct linkage to root causes

ROADMAP DESIGN LOGIC (EXPLICIT)

The roadmap follows four governing principles:

1. **Value first** – deliver visible business impact early
2. **Change readiness aware** – avoid overwhelming the organization
3. **Foundation before sophistication** – governance & data before advanced AI
4. **Scalable by design** – solutions mature over time without rework

Short Term: 0–90 Days (Stabilize & Create Momentum)

Primary Objective:
Create visibility, ownership, and early wins using existing data and minimal process disruption.

Key Initiatives

1. **Leading KPI Framework & Ownership**
   - Define enterprise and plant-level KPIs
   - Assign clear owners and review cadence
2. **Cost of Poor Quality (COPQ) Model**
   - Monetize defects using standard cost assumptions
   - Prioritize top defect drivers
3. **Executive Performance Dashboard (v1)**
   - Single source of truth for leadership
   - Descriptive + early diagnostic views
4. **Downtime & Defect Pattern Analysis**
   - Identify recurring risk periods and assets
   - Establish baseline metrics

Impact | Effort | Readiness

- **Impact:** Medium–High
- **Effort:** Low–Medium
- **Change Readiness:** High (limited behavioral change)

Dependencies

- Leadership sponsorship
- Data validation and alignment
- Agreement on KPI definitions

Outcomes by Day 90

- Clear visibility into margin, quality, and downtime issues
- Organization aligned on “what matters”
- Credibility built through early wins

Medium Term: 3–9 Months (Optimize & Embed)

Primary Objective:
Translate insights into operational improvements and embed analytics into planning and reviews.

Key Initiatives

1. **Product-Level Cost & Margin Transparency**
    - Allocate costs using practical drivers
    - Embed margin review into management cadence
2. **Demand Forecasting & Scenario Planning**
    - Improve forecast accuracy
    - Align production planning with demand signals
3. **Workforce Capacity & Productivity Planning**
    - Balance workload across plants
    - Reduce overtime and absenteeism risk
4. **Predictive Downtime Risk Scoring (v1)**
    - Introduce early-warning indicators
    - Shift maintenance planning from reactive to informed

Impact | Effort | Readiness

- **Impact:** High
- **Effort:** Medium
- **Change Readiness:** Medium (cross-functional adoption required)

Dependencies

- Stable KPI governance from the short term
- Cross-functional collaboration (Ops, Finance, HR)
- Management discipline in using insights

Outcomes by Month 9

- Measurable margin improvement
- Reduced firefighting and operational variability
- Analytics embedded into monthly reviews

Long Term: 9–18 Months (Transform & Sustain)

Primary Objective:
Institutionalize AI-enabled decision-making and create sustainable competitive advantage.

Key Initiatives

1. **Predictive Maintenance & Asset Reliability (Advanced)**
   - Refine models using enriched data
   - Extend to condition-based maintenance where feasible
2. **Enterprise Cost Governance Model**
   - Continuous monitoring of cost drivers
   - Early-warning signals for margin erosion
3. **Prescriptive Decision Support**
   - “What-if” simulations for pricing, capacity, and workforce
   - Management decision scenarios powered by AI
4. **Performance Management Maturity**
   - KPI thresholds self-adjust over time
   - Reduced manual intervention

Impact | Effort | Readiness

- **Impact:** Very High
- **Effort:** Medium–High
- **Change Readiness:** Medium–Low (requires cultural shift)

Dependencies

- Data maturity and trust
- Proven success of earlier phases
- Leadership commitment to AI-led decisions

Outcomes by Month 18

- Proactive, predictive operating model
- Sustainable EBITDA uplift
- AI embedded into “how the business runs”

Executive Roadmap Summary

Horizon	Focus	Business Outcome
0–90 Days	Visibility & governance	Quick wins, alignment
3–9 Months	Optimization & embedding	Margin & productivity gains
9–18 Months	Transformation & scale	Sustainable advantage

EXECUTION READINESS ASSESSMENT

Objective:

Evaluate the organization’s ability to successfully execute the AI-enabled roadmap and define mitigation actions to reduce delivery risk.

Key Execution Risks & Constraints

A. Data & Insight Risks

Risk

- Data is largely **aggregated, monthly, and siloed**, limiting precision.
- Some critical metrics (product-level costs, COPQ, OEE) are missing or inferred.

Constraint

- Limits speed and accuracy of advanced analytics in early stages.

Risk Level: Medium

B. Change Adoption & Behavioral Risks

Risk

- Shift from reactive to insight-led decision-making requires behavior change.
- Middle management may continue to rely on intuition and firefighting.

Constraint

- Benefits realization depends on consistent usage of insights.

Risk Level: High

C. Capability & Capacity Risks

Risk

- Limited in-house analytical and AI capability at plant and function levels.
- Key stakeholders may be time-constrained.

Constraint

- Over-reliance on external support in early phases.

Risk Level: Medium–High

D. Governance & Ownership Risks

Risk

- KPIs and initiatives may lack clear owners and escalation paths.
- Cross-functional issues (Ops–Finance–HR) may stall decisions.

Constraint

- Slows execution and weakens accountability.

Risk Level: Medium

E. Scope & Expectation Risks

Risk

- Expectation of immediate AI-driven automation or “silver bullet” outcomes.
- Risk of scope creep beyond agreed roadmap.

Constraint

- Distracts focus from value-led execution.

Risk Level: Medium

Capability Gap Assessment

A. Data & Analytics Capability

Current State

- Strong descriptive reporting
- Limited diagnostic and predictive capability

Gap

- Ability to translate data into **actionable insights and forecasts**

B. Operational Decision Capability

Current State

- Decisions taken after performance impact is visible

Gap

- Leading indicators and scenario-based planning

C. Financial Insight Capability

Current State

- Cost tracking at the aggregate level

Gap

- Product/process-level margin and COPQ intelligence

D. Change & Performance Management

Current State

- KPIs tracked, but ownership and follow-through inconsistent

Gap

- Governance discipline and outcome-based reviews

E. AI Readiness

Current State

- Limited familiarity with AI-supported decision-making

Gap

- Comfort using AI outputs as decision inputs

Recommended Mitigation Actions

A. Data & Insight Mitigations

- Start with **proxy metrics and conservative assumptions**
- Clearly tag insights as *observed* vs *inferred*
- Improve granularity incrementally (no “big data” push upfront)

B. Change & Adoption Mitigations

- Anchor initiatives to **business KPIs**, not AI concepts
- Introduce insights in **existing review forums**
- Celebrate early wins (0–90 day outcomes)

C. Capability Mitigations

- Upskill select “analytics champions” in each function
- Provide simple interpretation guides for dashboards
- Limit initial AI complexity to explainable models

D. Governance Mitigations

- Assign **single-point accountability** for each initiative
- Establish a lightweight steering cadence (monthly)
- Use RACI for cross-functional initiatives

E. Scope & Expectation Mitigations

- Set explicit phase-wise outcomes and success criteria
- Reinforce “decision support first, automation later.”
- Lock roadmap scope at each phase gate

Execution Readiness Summary (Executive View)

Dimension	Readiness	Commentary
Leadership Sponsorship	High	Critical success enabler
Data Availability	Medium	Sufficient for phased rollout
Analytical Capability	Medium–Low	Needs targeted uplift
Change Adoption	Medium	Requires active management
Governance	Medium	Must be strengthened early

Consultant's Overall Assessment

The organization is **ready to execute the roadmap in a phased manner**, provided early focus is placed on **governance, capability uplift, and change adoption**. Attempting a technology-heavy or accelerated rollout would materially increase risk.

Clear Recommendation

✓ Proceed with the roadmap **as sequenced**
✓ Invest early in **governance and capability**, not tools
✓ Use **Phase 1–2 wins to build momentum and trust**

LIGHT WEIGHT GOVERNANCE MODEL

Purpose:

Enable fast, disciplined decisions; ensure ownership; track value—without adding overhead.

Decision-Making Structure

A. Governance Bodies (Lean by Design)

Body	Purpose	Authority	Members
Executive Steering Committee (ESC)	Direction, prioritization, escalations	Final decision	CEO (Chair), CFO, COO
Transformation Working Group (TWG)	Design & execution coordination	Recommend & execute	Program Lead, Ops, Finance, Quality, HR leads
Functional Owners	Day-to-day delivery	Implement	Plant/Function Heads

Design Principle:

Decisions are made **at the lowest competent level**; only escalations go to ESC.

2) Review Cadence (Integrated, Not Additive)

Forum	Cadence	Duration	Focus
Weekly Ops Huddle	Weekly	30 min	Exceptions, risks, immediate actions
Monthly Performance Review (MBR)	Monthly	90 min	KPI trends, initiative progress
Quarterly Steering Review (QBR)	Quarterly	2 hrs	Value realization, roadmap decisions

What we avoid: New standing meetings.
What we do: Reuse existing reviews with sharper content.

3) Ownership Model (RACI-Style)

A. Governance RACI (Core)

Activity	CEO	CFO	COO	Program Lead	Function Heads
Set priorities & success criteria	A	C	C	R	I
Approve roadmap & funding	A	R	C	C	I
Execute initiatives	I	I	A	R	R
Resolve cross-functional issues	A	C	R	R	C
Track benefits realization	I	A	C	R	C

Legend: R=Responsible, A=Accountable, C=Consulted, I=Informed

B. Initiative-Level RACI (Example)

Initiative	Sponsor (A)	Owner (R)	Contributors (C)	Informed (I)
Product Margin Transparency	CFO	Finance Controller	Ops, Sales	CEO
Predictive Downtime	COO	Maintenance Head	IT/Analytics	CFO
COPQ Monetization	Quality Head	Plant QA	Finance	COO
Demand Forecasting	Sales Head	Planning Lead	Ops, HR	CEO

Rule:

One **Accountable**, one **Responsible**—no shared accountability.

4) KPI Tracking Approach

A. KPI Design Principles

- **Few but decisive** (10–15 max at exec level)
- **Leading + Lagging** indicators paired
- **Outcome-linked**, not activity-based
- **Owned** and reviewed on a fixed cadence

B. KPI Pyramid

Level 1 – Enterprise (ESC)

- EBITDA Margin
- Cost of Poor Quality (% revenue)
- Unplanned Downtime (%)
- Forecast Accuracy
- Benefits Realization (₹)

Level 2 – Functional (MBR)

- Product Gross Margin
- Asset Availability
- Defect Rate / FPY
- Overtime Hours / Output per Worker

Level 3 – Operational (Weekly)

- Exception alerts
- Threshold breaches
- Action closure status

C. KPI Lifecycle

1. **Baseline** (from 2024–25 data)
2. **Target** (quarterly, realistic)
3. **Owner** (named)
4. **Thresholds** (green/amber / red)
5. **Action** (pre-defined for amber/red)

No KPI without a **pre-agreed action**.

5) Decision Rights & Escalation

Scenario	Decision Owner	Escalation Trigger
KPI breach (Amber)	Function Owner	If unresolved in 2 weeks
KPI breach (Red)	Program Lead	Immediate
Scope change	ESC	Any material impact
Resource conflict	COO	If cross-functional

6) Governance Artifacts (Lightweight)

- **1-page KPI Dashboard** (auto-updated)
- **Action Tracker** (owner, due date, status)
- **Benefits Register** (baseline → realized)
- **Risk Log** (top 5 only)

No heavy documentation. Everything must fit into **existing reviews**

7) Why This Governance Works

✓ Fast decisions
✓ Clear accountability
✓ Minimal overhead
✓ Scales with maturity
✓ Protects value realization

Governance here is a **value enabler**, not a control mechanism.

PHASE 4 EXECUTION TRACKING (PMO VIEW)

90-Day Execution Status:

Timeframe: Day 1–90
Scope: Quick wins + early medium-term foundations

Purpose: Demonstrate execution discipline, risk visibility, and leadership governance.

Initiative Health Assessment (Traffic-Light Status)

Executive Summary

- **On Track:** 4 initiatives
- **At Risk:** 2 initiatives
- **Off Track:** 1 initiative

Overall execution is **progressing well**, with **early value delivered**, but **2 cross-functional risks require leadership intervention**

Initiative-Level Status

Initiative	Theme	Status	% Complete	PMO Commentary
COPQ Model	Quality Intelligence	On Track	75%	Defect monetization logic agreed; pilot live
KPI Framework & Ownership	Governance	On Track	80%	KPIs defined; owners assigned
Exec Dashboard (v1)	Governance	On Track	65%	CEO/CXO views live; adoption improving
Downtime Pattern Analysis	Predictive Ops	On Track	60%	Risk periods identified
Product Margin Transparency	Cost & Margin	At Risk	45%	Cost allocation debates delaying sign-off
Demand Forecasting (v1)	Demand Planning	At Risk	40%	Sales inputs delayed
Workforce Capacity Planning	Workforce	Off Track	20%	HR bandwidth & data gaps

Emerging Risks & Dependencies (PMO Lens)

A. Cross-Functional Alignment Risk (🔴)

Observed

- Finance and Operations disagree on cost drivers
- Margin model sign-off delayed

Dependency

- CFO + COO alignment required

Risk

- Margin transparency initiative stalls, delaying ROI realization

B. Data Ownership Risk (🟠)

Observed

- Sales forecasts not consistently provided
- HR productivity data incomplete

Dependency

- Functional data owners not fully engaged

Risk

- Medium-term planning initiatives slow down

C. Change Adoption Risk (🟠)

Observed

- Dashboards are available but not consistently used in reviews
- Some managers still rely on legacy spreadsheets

Dependency

- Leadership reinforcement in review forums

Risk

- Insights not converted into action

Slippages Requiring Leadership Attention

🔴 Escalation 1: Product Margin Transparency

Issue

- Disagreement on cost allocation methodology

Impact

- High — blocks margin-led decision-making

Decision Ask (Steering Committee)

Approve a **pragmatic cost allocation approach for Phase-1**, with refinement later.

🔴 Escalation 2: Workforce Planning Initiative

Issue

- HR capacity constraints; data gaps

Impact

- Medium — workforce strain continues

Decision Ask

Re-sequence workforce planning to Month 4–6
Focus next 60 days on Ops & Finance initiatives

🔴 Escalation 3: Demand Forecasting Inputs

Issue

- Sales team engagement is inconsistent

Impact

- Medium — planning remains reactive

Decision Ask

Nominate **single Sales Forecast Owner** and enforce submission cadence

PMO Risk Heatmap (Executive View)

Risk Category	Severity	Trend
Data Readiness	Medium	↔ Stable
Cross-Functional Alignment	High	↑ Increasing
Change Adoption	Medium	↑ Increasing
Capability & Bandwidth	Medium	↔ Stable

Benefits Realization – Early Signals (Indicative)

Note: Early signals, not audited benefits

Area	Early Indicator
Quality	High-impact defect categories identified
Downtime	Maintenance priorities clearer
Governance	Review quality improved
Decision Speed	Faster escalation & resolution

Executive PMO Summary :

The transformation is **on track overall**, with early wins delivered.
However, **cross-functional alignment and data ownership** are emerging as critical risks.
Timely leadership decisions in the next 30 days will **protect momentum and ROI**.

PMO Recommendations (Next 30–60 Days)

A. Re-prioritize Focus

- Lock **margin transparency** and **COPQ** before expanding scope
- Defer workforce analytics until Month 4

B. Strengthen Governance

- Steering Committee to resolve **design debates within 2 weeks**
- Enforce dashboard-based reviews (no parallel spreadsheets)

C. Reinforce Change Adoption

- Leadership to **reference dashboards explicitly** in MBRs
- Celebrate 1–2 visible wins publicly

Business Performance Analysis (KPI Review)

Context

- Baseline: 2024–2025 historical performance
- Review period: First 90 days of execution (simulated)
- KPI focus: Margin, Operations, Quality, Planning, Workforce

Performance Trends (What the Data Is Telling Us)

A. Margin & Cost Performance

Trend

- Gross margin shows **early stabilization but no structural uplift yet**
- Cost volatility persists, especially in maintenance and utilities

Interpretation

- This is expected at Day 90: **visibility has improved before savings materialize**
- Margin transparency initiative not fully operational → impact delayed

B. Downtime & Operations

Trend

- **Downtime hours flattening**, no longer increasing month-on-month
- Certain assets and periods consistently flagged as high-risk

Interpretation

- Early analytics is improving **maintenance prioritization**
- Predictive benefits not yet realized, but firefighting has reduced

C. Quality Performance

Trend

- Total defect units are broadly stable
- **Concentration of defects narrowed to fewer categories**

Interpretation

- Focus has shifted from “many small issues” to a **few high-impact drivers**
- Financial framing (COPQ) is changing prioritization behavior

D. Demand & Planning

Trend

- Forecast accuracy remains **below target**
- Variability across regions and products continues

Interpretation

- Demand forecasting is still immature
- Benefits expected only after consistent sales input discipline

E. Workforce & Productivity

Trend

- Overtime remains high
- Absenteeism shows minor improvement in one plant, flat elsewhere

Interpretation

- Workforce initiatives lagging → no relief yet
- Operational stress remains a medium-term risk

Gaps vs Targets (Executive View)

KPI	Target	Current (90 days)	Gap
Gross Margin	+2–3%	Flat	🔴 High
Unplanned Downtime	−10%	−3%	🟠 Medium
COPQ (% revenue)	−15%	−5% (early)	🟠 Medium
Forecast Accuracy	>75%	~60%	🔴 High
Overtime Hours	−10%	Flat	🔴 High
KPI Review Adoption	>90%	~70%	🟠 Medium

Key Insight

Most gaps are **execution-related**, not solution-design related.

Early Warning Signals (Critical)

🔴 Signal 1: Margin Impact Lag

- Visibility created, but **decisions not yet translating into financial outcomes**

Risk

- Leadership impatience if benefits are expected too early

🔴 Signal 2: Workforce Stress Persistence

- Overtime unchanged while demand volatility continues

Risk

- Quality degradation and absenteeism spike in later months

🟠 Signal 3: Adoption Fatigue

- Dashboards exist, but are **not consistently referenced in reviews**

Risk

- Analytics becomes “reporting” instead of decision support

🟠 Signal 4: Dependency on Individuals

- Forecasting and margin initiatives depend on a few key people

Risk

- Progress stalls if priorities shift

Suggested Corrective Actions (Targeted & Practical)

A. Margin & Cost

Action

- Mandate margin discussion in **every MBR**, even if imperfect
- Approve interim cost allocation logic (avoid perfection paralysis)

Expected Impact

- Accelerates decision-making and benefit realization

B. Operations & Downtime

Action

- Convert downtime risk insights into **explicit maintenance action lists**
- Track “actions taken vs downtime avoided.”

Expected Impact

- Tangible downtime reduction in next 60–90 days

C. Quality

Action

- Focus only on the **top 2 COPQ drivers per plant**
- Tie corrective actions to named owners

Expected Impact

- Visible COPQ reduction, faster wins

D. Demand & Planning

Action

- Enforce a single forecast owner per region
- Freeze forecast assumptions monthly (no rolling changes)

Expected Impact

- Forecast stability and improved planning discipline

E. Workforce

Action

- Temporarily cap overtime thresholds
- Pilot workload balancing in one plant before scaling

Expected Impact

- Reduced fatigue, controlled risk

F. Adoption & Governance

Action

- Leadership to **explicitly ask for dashboard-based answers**
- Eliminate parallel spreadsheets in reviews

Expected Impact

- Sustained adoption and cultural shift

Executive Performance Summary:

At 90 days, performance trends indicate **improved visibility and stabilization**, but **financial and productivity benefits are yet to fully materialize**.

The primary risks are **execution discipline, adoption consistency, and workforce strain**, not solution design.
Targeted corrective actions over the next 60–90 days are expected to convert insights into measurable outcomes.

Executive Performance Narrative | 90-Day Review

What Is Improving

- **Visibility and decision transparency have materially improved**
  Leadership now has a single, fact-based view of performance across margin, downtime, quality, and costs.
- **Operational volatility is stabilizing**
  Downtime growth has flattened, and recurring risk patterns are now identifiable, enabling more disciplined maintenance planning.
- **Quality focus has sharpened**
  Defects are no longer viewed solely as volume metrics; early monetization (COPQ) is driving the prioritization of high-impact issues.
- **Governance discipline is taking hold**
  KPI ownership is defined, dashboards are live, and escalation paths are clearer than before.

What Is Not Improving (Yet)

- **Financial outcomes have not materially moved**
  Gross margins and labor productivity remain flat at 90 days.
- **Demand predictability remains weak**
  Forecast accuracy is below target, limiting planning effectiveness.
- **Workforce strain persists**
  Overtime levels remain elevated, signaling sustainability and quality risk.
- **Analytics adoption is inconsistent**
  Dashboards are not yet the default input in all management reviews.

Why This Matters

- **Visibility without action delays value realization**
  If insights are not consistently used, early momentum and credibility will erode.
- **Workforce stress is a leading risk indicator**
  Sustained overtime increases the probability of future quality and safety incidents.
- **Margin improvement depends on timely decisions**
  Cost transparency and quality insights must now translate into concrete actions to protect EBITDA.
- **Leadership behavior will determine success**
  Cultural adoption—not technology—will dictate whether this transformation delivers sustainable value.

Decisions & Actions Required (Next 30–60 Days)

1. **Mandate dashboard-led performance reviews**
   No parallel spreadsheets or anecdotal reporting.
2. **Approve pragmatic margin and cost allocation logic**
   Avoid perfection paralysis; refine later.
3. **Prioritize top 2 value-leakage drivers per plant**
   Focus action where impact is highest.
4. **Enforce single ownership for demand forecasts**
   Improve predictability and planning discipline.
5. **Actively manage workforce load**
   Cap overtime thresholds and pilot workload balancing.

Executive Bottom Line

The transformation is **on the right trajectory**: foundations are in place, and risks are visible early.
The next phase requires decisive leadership action to convert insight into measurable financial and operational outcomes.

Recommended Executive KPIs (Final Set) – For Developing Dashboards

Gross Margin (%) – *Value Outcome KPI*

Why this KPI

- Ultimate indicator of whether the transformation is **creating business value**
- Directly reflects improvements in **cost, quality, and operations**
- CXO's first question: *"Is all this effort improving margins?"*

Definition

Gross Margin (%) = (Revenue – Total Cost) / Revenue

Data Sources

- Monthly_Sales (Revenue)
- Costs_Financials (Allocated costs)

Unplanned Downtime (%) – *Operational Health KPI*

Why this KPI

- Strongest **leading indicator** of cost, delivery, and quality risk
- Central to predictive maintenance and operational excellence
- Directly tied to RC1 (Reactive maintenance)

Definition

Unplanned Downtime (%) = Downtime Hours / Total Available Machine Hours

(If total available hours are not explicit, use Machine_Hours as a proxy)

Data Sources

- Production_Data (Machine_Hours, Downtime_Hours)

Cost of Poor Quality (COPQ) as % of Revenue – *Value Leakage KPI*

Why this KPI

- Converts quality issues into **financial language**
- Drives prioritization and accountability
- One of your strongest **quick wins**

Definition (Practical)

COPQ (%) = (Defect Units × Std Unit Cost) / Revenue

(Use Product_Master for standard cost)

Data Sources

- Quality_Data (Defect_Units)
- Product_Master (Std_Unit_Cost)
- Monthly_Sales (Revenue)

Forecast Accuracy (%) – *Decision Quality KPI*

Why this KPI

- Measures **planning maturity**
- Strong predictor of:
  - Overtime
  - Inventory imbalance
  - Service issues
- Bridges Sales → Ops → Workforce

Definition (Simple & Explainable)

Forecast Accuracy (%) = 1 – |Actual – Forecast| / Actual

(Use rolling 3-month average if needed)

Data Sources

- Monthly_Sales (Actual)
- Forecast (simulated / later-added table)

Executive KPI Summary:

KPI	What It Answers	Type
Gross Margin (%)	Is value being created?	Outcome
Unplanned Downtime (%)	Are operations under control?	Leading
COPQ (% of Revenue)	Where is value leaking?	Diagnostic
Forecast Accuracy (%)	Are decisions improving?	Enabler

Why These 4 KPIs Work Together

These KPIs form a **cause–and–effect chain**, not isolated metrics:

Forecast Accuracy

⬇

Downtime & Workforce Stability

⬇

Quality & Cost Leakage

⬇

Gross Margin

This makes your dashboard **story-driven** rather than just visual.

Interactive Dashboard for FOUR KPIs identified:

Developed from TABLEAU: