Improving On-Time Delivery Rate in PMO Projects

Ghanaesun

ROADMAP

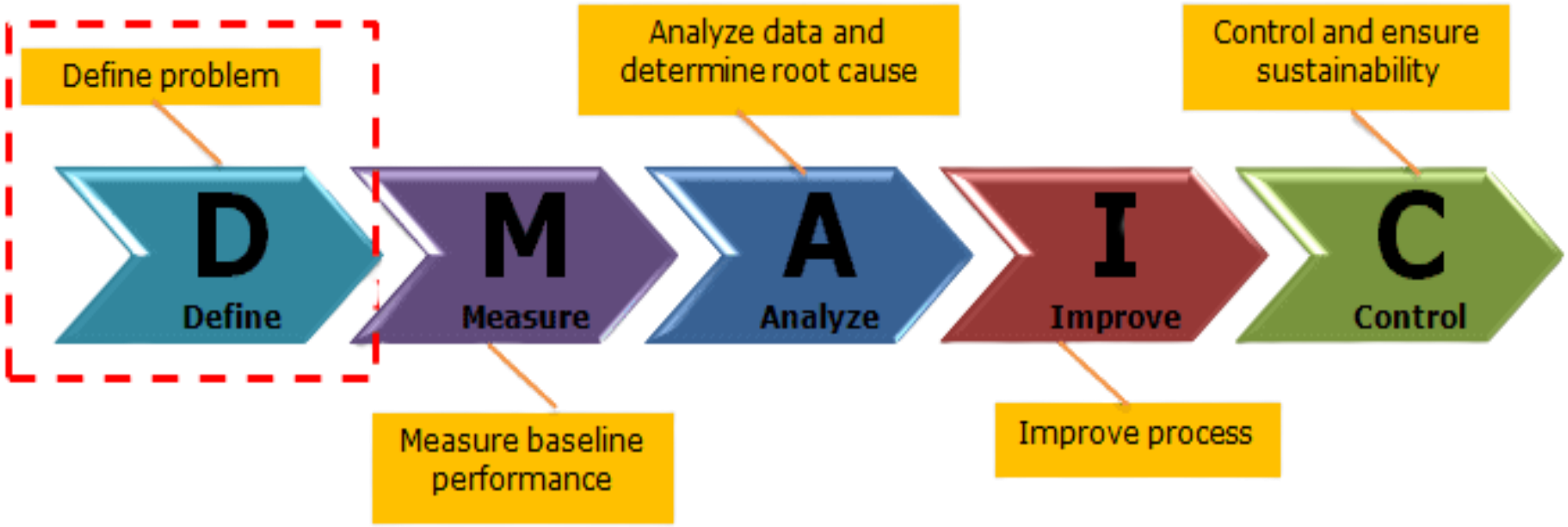
OVERVIEW

Background

PMO’s current On-Time Delivery (OTD) rate averages 80% over the last nine months, with significant variability ranging from 74% to 84%, which is well below the organizational target of 90%. This performance gap results in frequent project delays, leading to client dissatisfaction, contractual penalty costs, and inefficient utilization of project resources.

Delayed project closures also create resource bottlenecks, impacting the start of new initiatives and reducing overall PMO throughput. In addition, schedule overruns contribute to cost escalations, management firefighting, and reduced confidence in the PMO’s delivery capability.

DEFINE PHASE

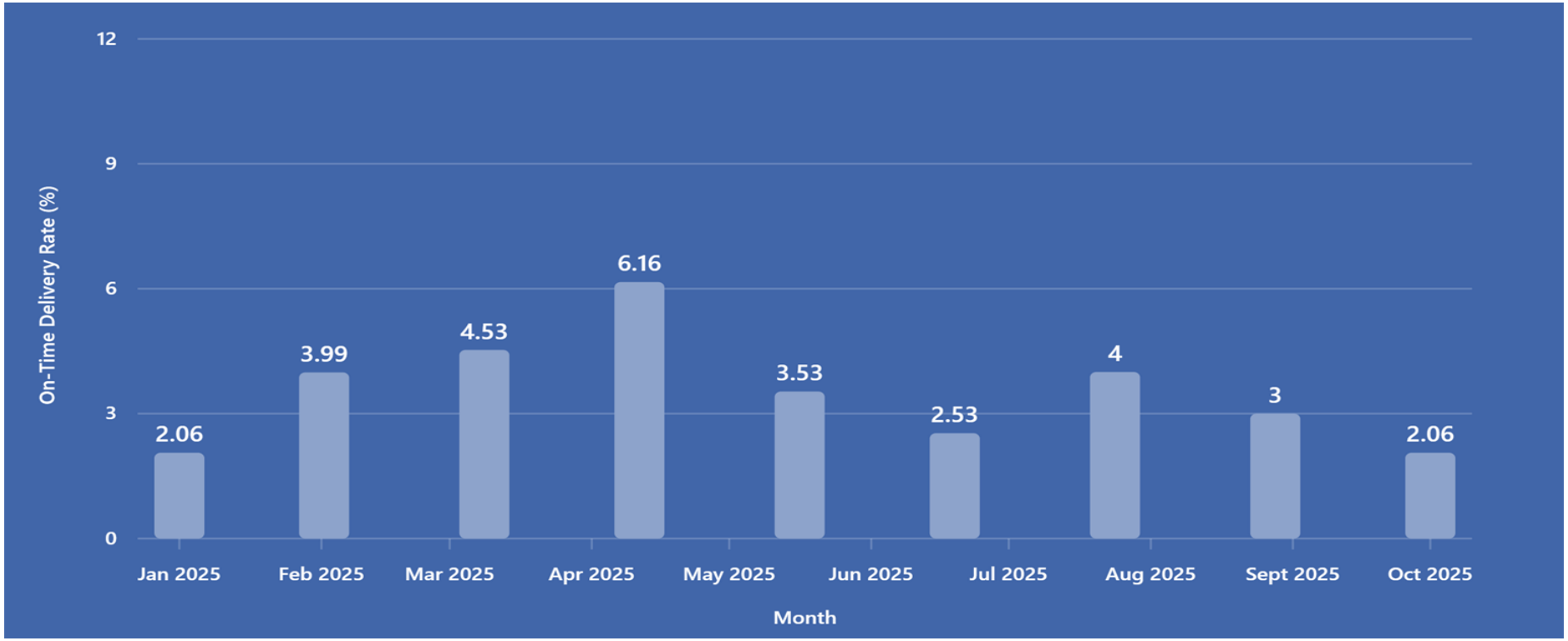


VOC & CTQ

CTQ Tree :

Voice of customer	Critical to X	Primary Metric for improvement
Projects must be delivered on or before the agreed timeline without compromising quality	Critical-to-Time (CTT): Timely completion of milestones and overall project delivery.	**Primary Metric -** Percentage of projects delivered on or before the planned end date **Secondary Metric -** Schedule Variance

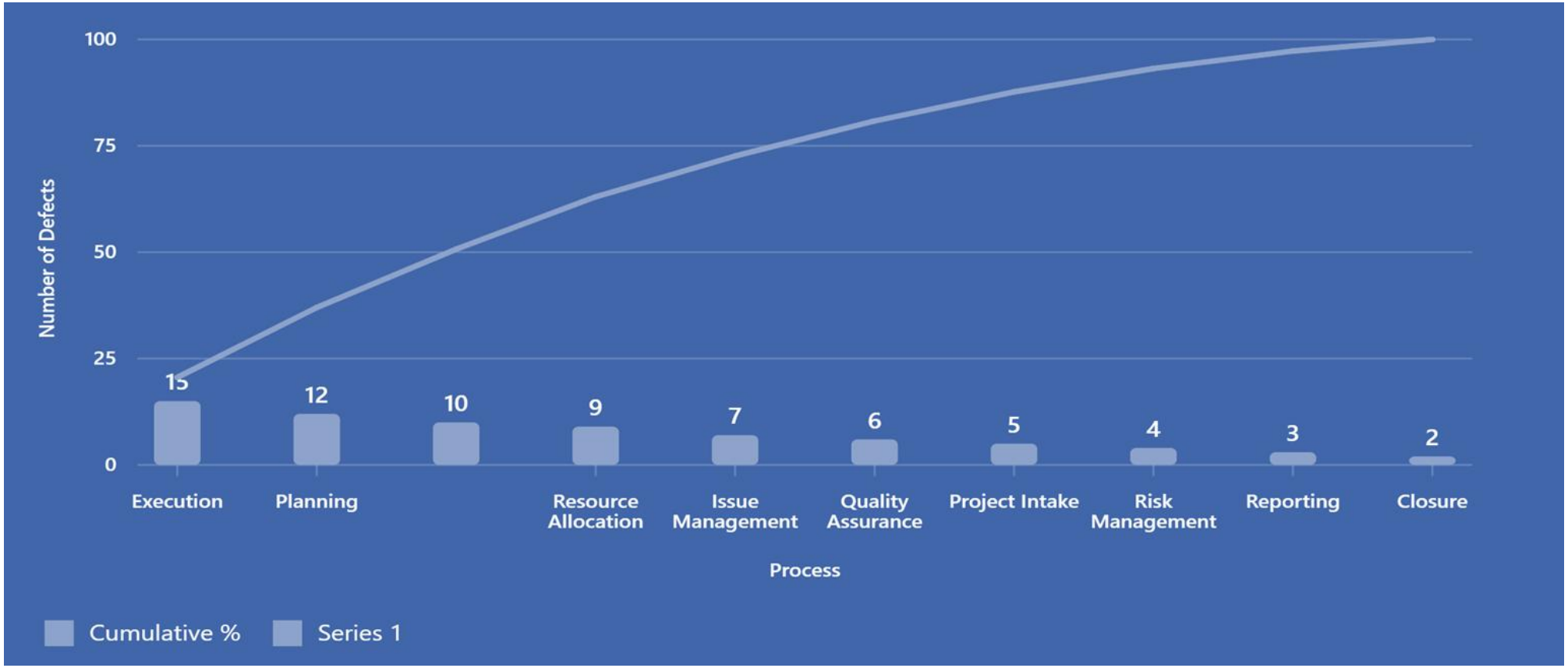
Baseline Performance of Primary Metric (9 months data)



Inference :

- Last 9 months data shows a significant variation and hence ideal problem to be taken up as a Six Sigma Project.

Pareto chart



Inference :

- Execution contributes substantially and included in the scope of the project

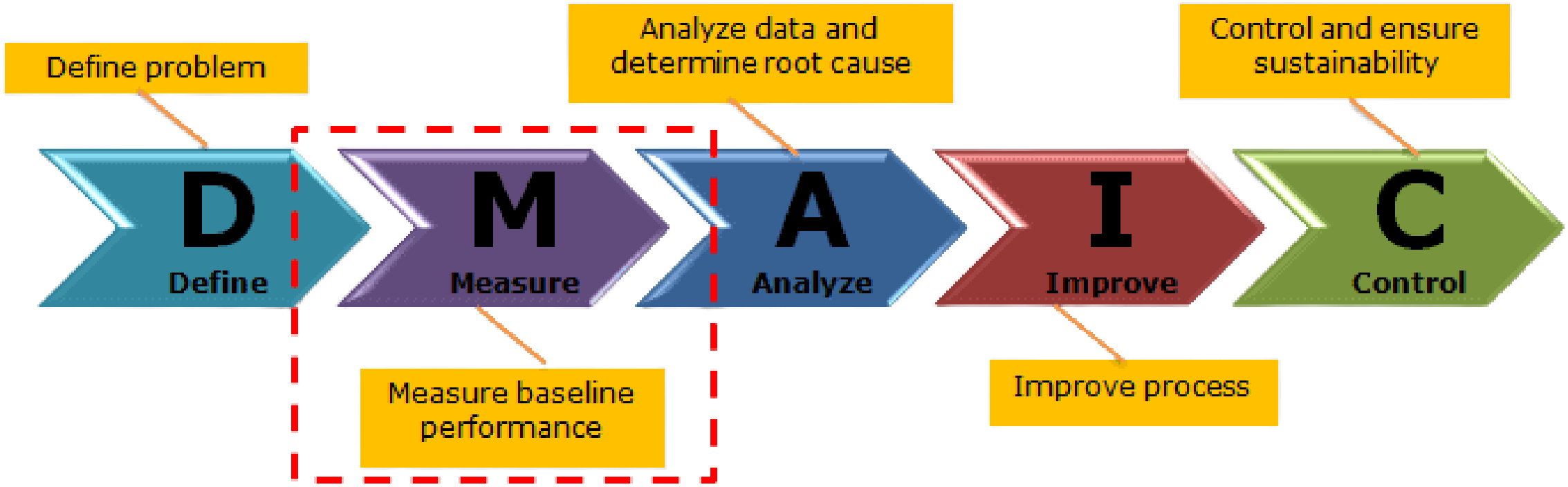
Project Charter

Project Title:	Improving On-Time Delivery Rate in PMO Projects
Project Leader	**Project Team Members:**
Ghanesun	Project Managers Resource Manager Finance Analyst
Champion/Sponsors:	**Key Stake Holders**
Plant PMO Head – Production	Project Managers Clients / End Users Vendors / Contractors
Problem Statement:	**Goal Statement:**
The current On-Time Delivery Rate for PMO projects averages 80% over the last 9 months, with high variability (74-84%). This is far below the organizational target of 90%, causing delays, client dissatisfaction, and cost overruns.	Increase On-Time Delivery Rate from 80% to 90% within 6 months, while maintaining quality and resource efficiency.
Secondary Metric	**Assumptions Made:**
Schedule Variance	Project scope and milestones are clearly defined and frozen. Resources and stakeholder availability remain stable. OTD baseline data is accurate and reliable.

Project Charter

Tangible and Intangible Benefits:	Risk to Success:
₹25–30 Lakhs annual cost savings. 5–8% improvement in resource productivity. Higher customer trust and satisfaction. Improved PMO credibility.	Scope changes or approval delays. Resource overload across projects. Inconsistent planning and tracking.
In Scope:	**Out of Scope:**
All PMO-managed projects in the current fiscal year	Technical development processes, vendor delays beyond PMO control.
Signatories:	**Project Timeline:**
PMO Head Assistant Manager – PMO	6 Months

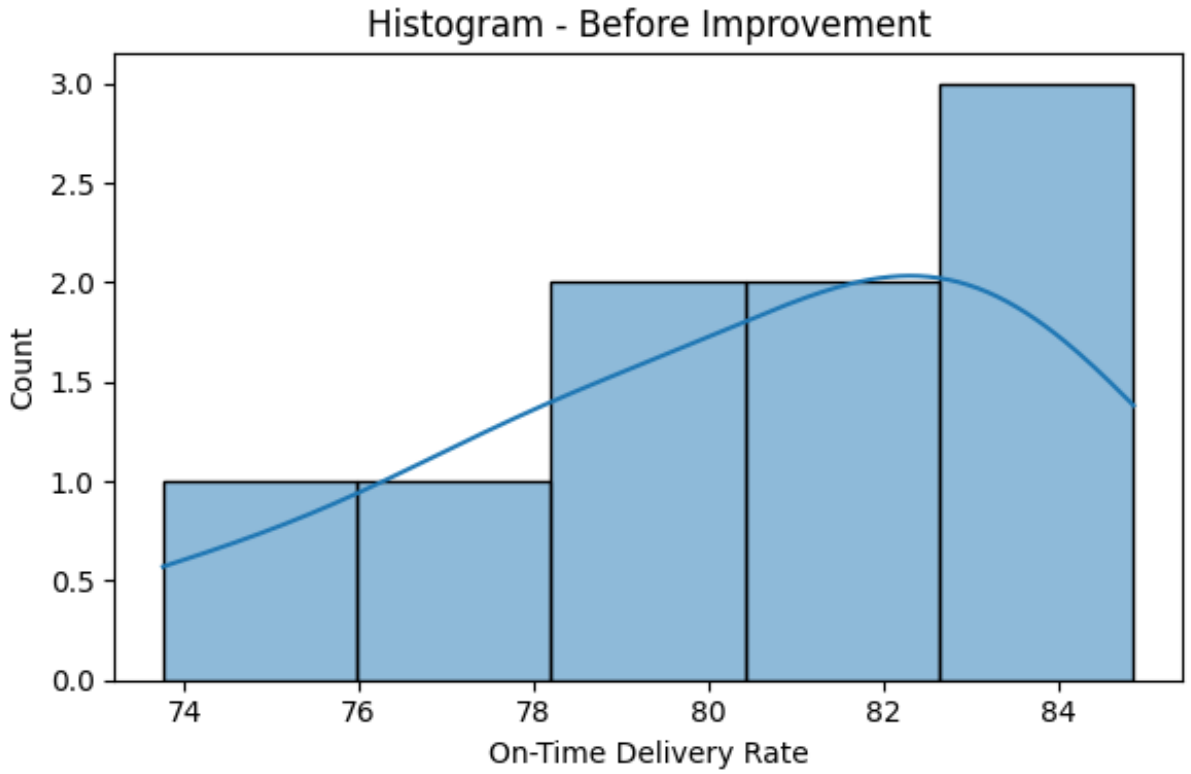
MEASURE PHASE

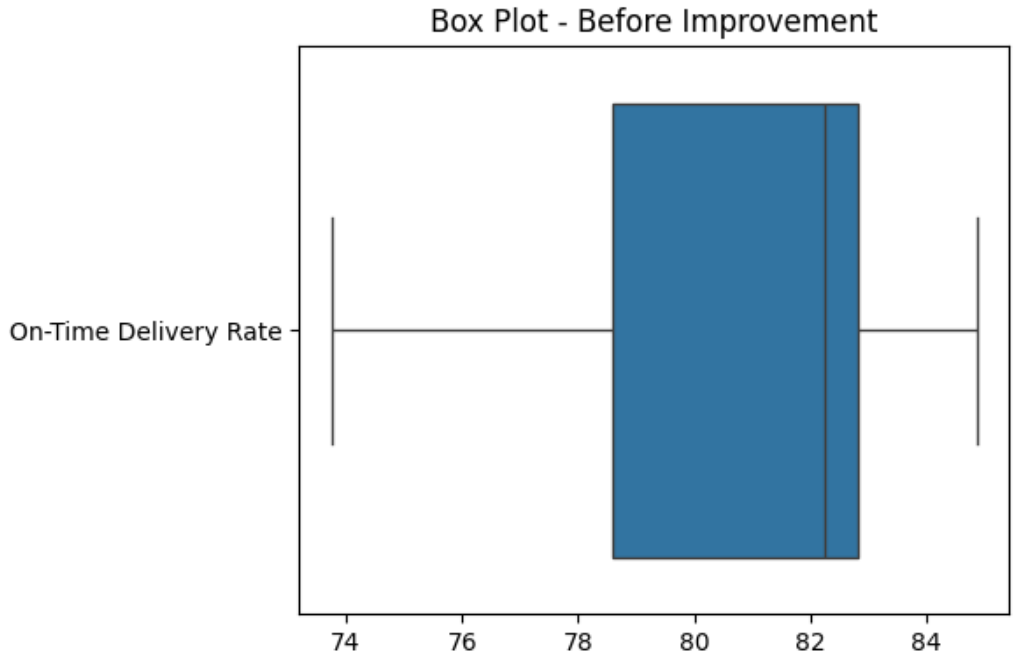


SIPOC

Suppliers (S)	Inputs (I)	Process (P)	Outputs (O)	Customers (C)
Project Sponsors	Project Charter	Define project scope and timeline	Approved project plan	PMO Leadership
Resource Managers	Resource availability	Allocate resources	Resource plan	Project Managers
Project Managers	Milestone schedule	Execute and monitor project	Project status reports	Clients / End Users
QA Team	Quality standards	Review deliverables	Approved deliverables	Clients / End Users
Stakeholders	Feedback & requirements	Close project and document lessons	Closure report	PMO Leadership

Analyse – Hypothesis testing

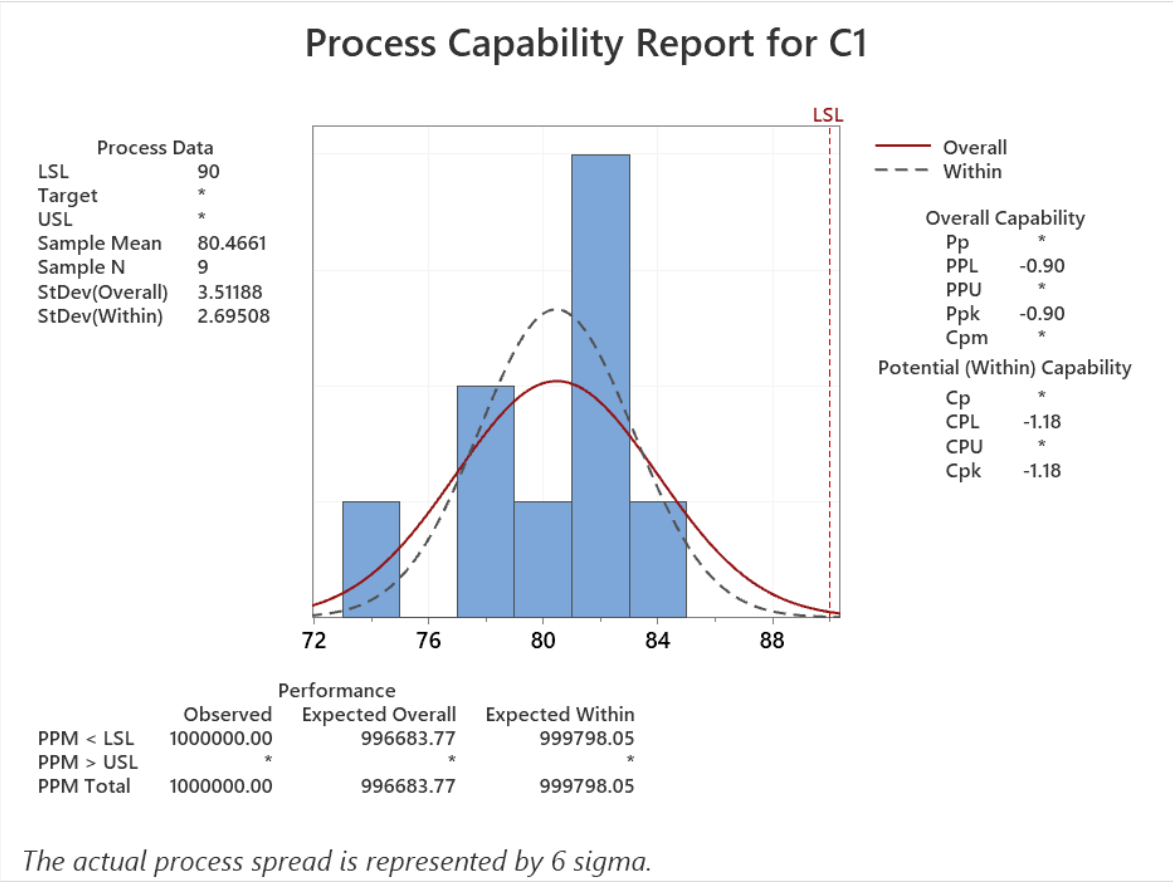




Inference :

- the On-Time Delivery rate averages ~80% with wide variability (74–85%), indicating inconsistent and unpredictable project delivery.

Capability Analysis – Before



Inference :

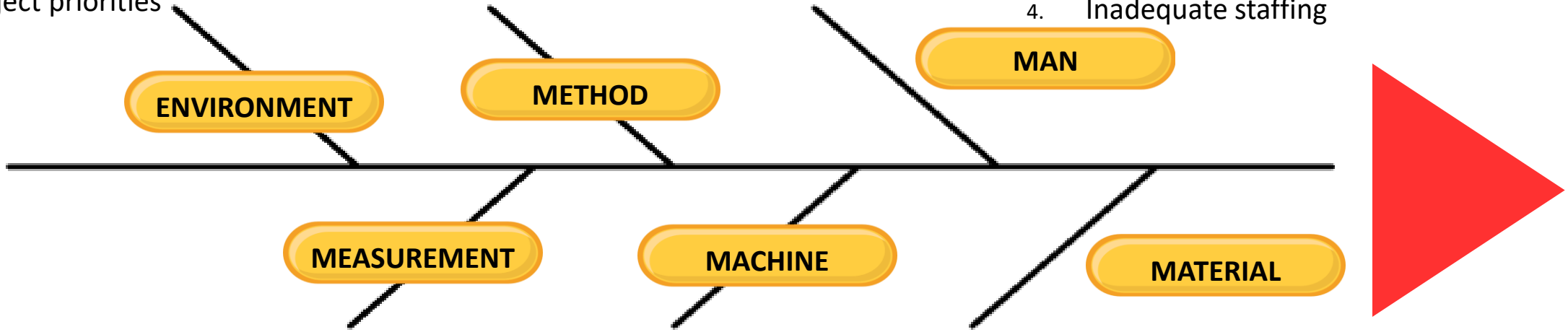
- The process is not capable, as the mean OTD (~80.5%) is far below the LSL of 90%, resulting in negative Ppk/Cpk and nearly 100% of outcomes failing the requirement.

Fish Bone Diagram

1. Frequent organizational changes
2. Remote work challenges
3. Distractions in work environment
4. Unstable project priorities

1. Unclear project planning procedures
2. Inconsistent execution practices
3. Poor risk management
4. Lack of standardized workflows

1. Insufficient training for project managers
2. Lack of accountability
3. Poor communication skills
4. Inadequate staffing



1. No real-time tracking of milestones
2. Inaccurate progress reporting
3. Lack of performance KPIs

1. Outdated project management tools
2. System downtime
3. Lack of automation
4. Incompatible software systems

1. Incomplete project documentation
2. Missing client requirements
3. Delayed approvals
4. Unavailable reference materials

Common and Special causes

Common Causes

1. Insufficient training for project managers
2. Lack of accountability
3. Poor communication skills
4. Inadequate staffing
5. Low motivation or engagement
6. Outdated project management tools
7. Lack of automation
8. Unclear project planning procedures
9. Inconsistent execution practices
10. Poor risk management
11. Incomplete project documentation
12. Missing client requirements
13. No real-time tracking of milestones
14. Inaccurate progress reporting
15. Lack of performance KPIs
16. Remote work challenges
17. Distractions in work environment

Special Causes

1. System downtime
2. Incompatible software systems
3. Delayed approvals
4. Low-quality inputs from vendors
5. Delayed feedback loops
6. Frequent organizational changes
7. Unstable project priorities
8. Limited stakeholder engagement

3M Analysis for Waste

MUDA

- Waiting time due to delayed approvals
- Over processing with excessive documentation
- Rework caused by missed deadlines

Mura

- Uneven resource allocation across projects
- Inconsistent scheduling methods
- Fluctuating workload during execution

Muri

- Project managers handling too many projects
- Unrealistic deadlines without proper planning
- Excessive reporting requirements

8 Wastes Analysis

Defects	• Incorrect project schedules requiring rework • Deliverables failing quality checks due to rushed timelines
Overproduction	• Preparing detailed reports that stakeholders do not use • Idle time due to resource unavailability
Waiting	• Moving project files between multiple systems unnecessarily • Frequent handoffs between teams without adding value
Transportation	• Moving project files between multiple systems unnecessarily • Frequent handoffs between teams without adding value
Inventory	• Maintaining too many pending tasks in backlog • Accumulating unused templates and tools
Motion	• Searching for project data across different platforms • Repeated manual updates in multiple tracking systems
Overprocessing	• Multiple layers of review for simple deliverables • Deliverables failing quality checks due to rushed timelines

Action Plan for Low Hanging Fruits

Waste Type	Example Issue 1	Root Cause	Lean Tool	Action Item	Benefit
Overproduction	Reports not used	Lack of stakeholder alignment	Voice of Customer (VoC), Kaizen	Review reporting needs with stakeholders	Reduced effort and clutter
Waiting	Approval delays	No SLA or resource planning	Process Mapping, Visual Management	Define SLAs, use RACI matrix	Faster turnaround
Transport	File movement across systems	No centralized system	Value Stream Mapping (VSM)	Consolidate tools/platforms	Reduced delays
Over processing	Excess reviews	Lack of trust or clarity	Standard Work, Kaizen	Set review limits, streamline meetings	Time savings
Inventory	Backlog overload	Poor prioritization	Kanban, 5S	Clean backlog, archive unused assets	Better focus
Motion	Searching data	No single source of truth	5S, Digitalization	Centralize data, automate updates	Improved efficiency
Defects	Schedule errors	Rushed planning, unclear requirements	Root Cause Analysis, Poka-Yoke	Improve planning, use checklists	Reduced rework

Action Plan for Low Hanging Fruits

Type	Issue	Lean Tool	Action
Muda (Waste)	All 8 wastes	VSM, 5S, Kaizen	Eliminate non-value activities
Mura (Unevenness)	Inconsistent workload	Standard Work, Load Balancing	Define roles and SOPs
Muri (Overburden)	Manual tracking, excessive meetings	Automation, Visual Management	Reduce manual effort, simplify communication

Top 12 Prioritized Root Causes (Based on Net Score)

Root Cause	Score
Unclear requirements / scope creep	324
Rushed planning / aggressive timelines	310
Resource unavailability	252
Decentralized tools / multiple systems	222
Lack of stakeholder alignment	210
No single source of truth	208
Inadequate training / skill gaps	196
No SLAs for approvals	170
Manual multi-system updates	168
Poor backlog prioritization	164
No standard work / SOPs	142
Excessive review layers	124

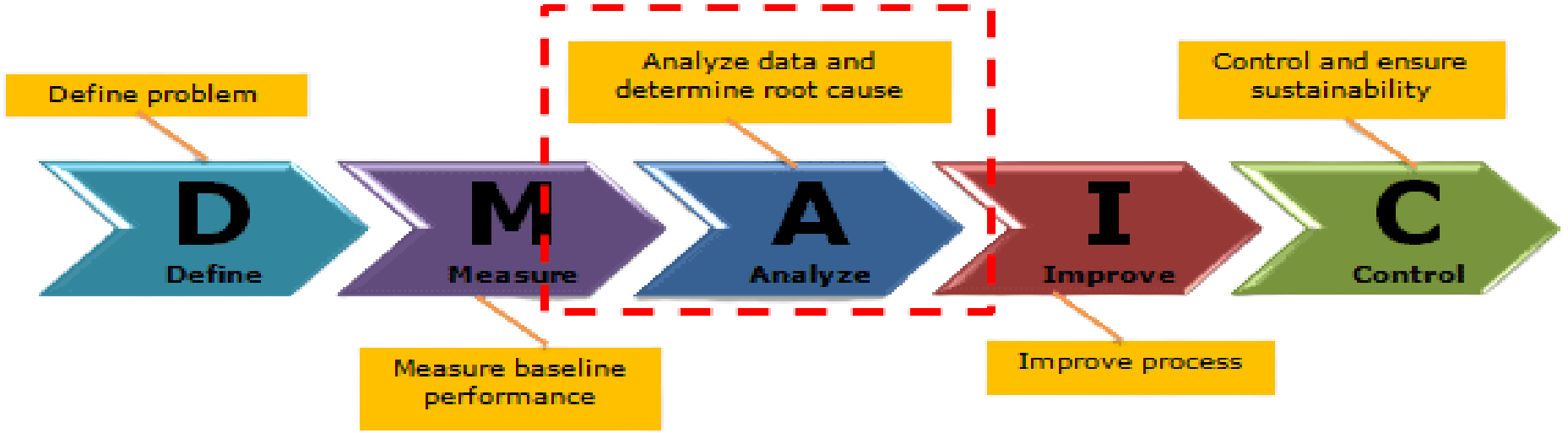
Data Collection Plan

Root Cause	Data to be Collected	Data Source	Collection Method	Frequency
Unclear requirements / scope creep	Metrics, logs, observations related to Unclear requirements / scope creep	Project management tools, meeting records, stakeholder feedback	Interviews, system reports, direct observation	Weekly or as per milestone
Rushed planning / aggressive timelines	Metrics, logs, observations related to Rushed planning / aggressive timelines	Project management tools, meeting records, stakeholder feedback	Interviews, system reports, direct observation	Weekly or as per milestone
Resource unavailability	Metrics, logs, observations related to Resource unavailability	Project management tools, meeting records, stakeholder feedback	Interviews, system reports, direct observation	Weekly or as per milestone
Decentralized tools / multiple systems	Metrics, logs, observations related to Decentralized tools / multiple systems	Project management tools, meeting records, stakeholder feedback	Interviews, system reports, direct observation	Weekly or as per milestone
Lack of stakeholder alignment	Metrics, logs, observations related to Lack of stakeholder alignment	Project management tools, meeting records, stakeholder feedback	Interviews, system reports, direct observation	Weekly or as per milestone

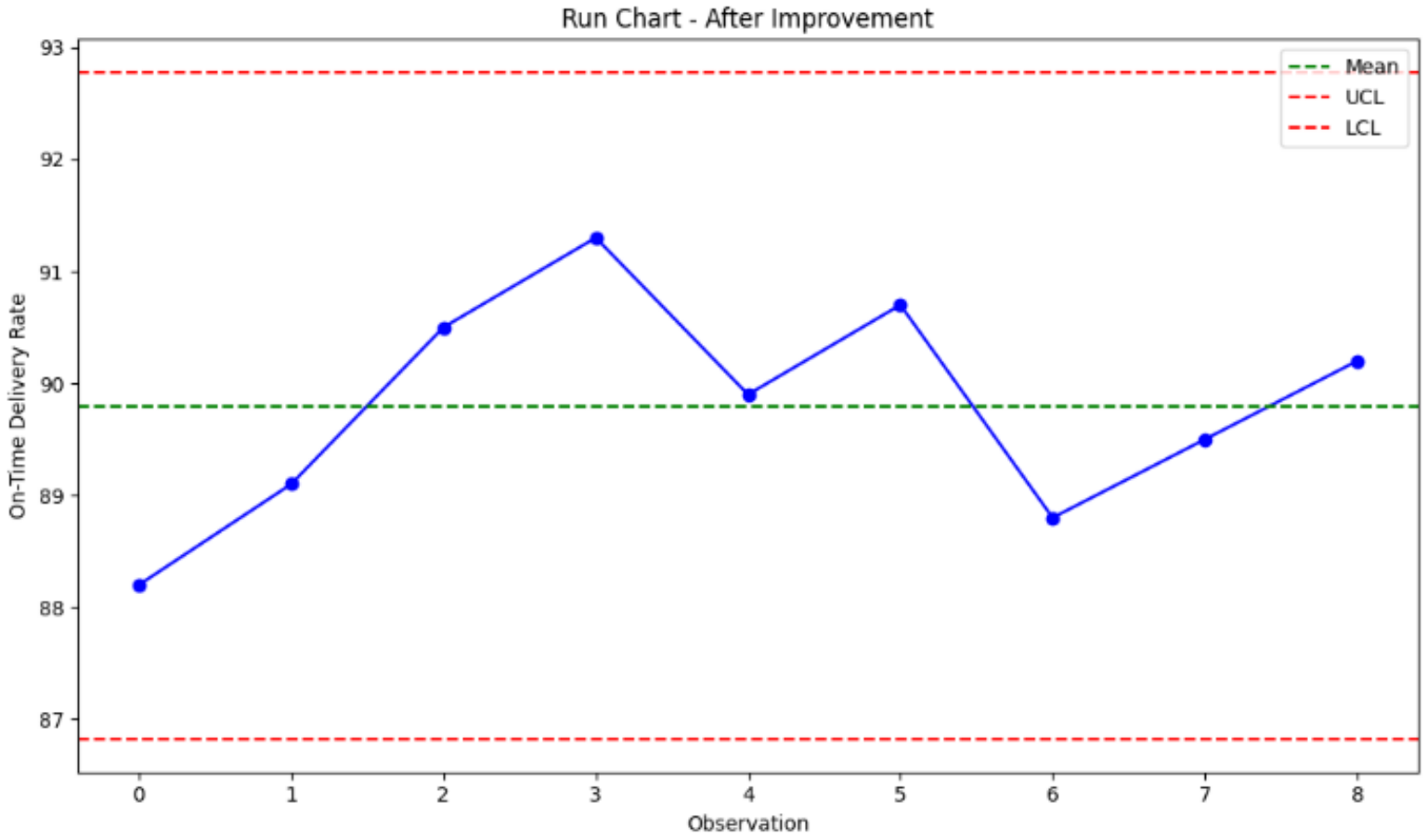
Data Collection Plan

Root Cause	Data to be Collected	Data Source	Collection Method	Frequency
No single source of truth	Metrics, logs, observations related to No single source of truth	Project management tools, meeting records, stakeholder feedback	Interviews, system reports, direct observation	Weekly or as per milestone
Inadequate training / skill gaps	Metrics, logs, observations related to Inadequate training / skill gaps	Project management tools, meeting records, stakeholder feedback	Interviews, system reports, direct observation	Weekly or as per milestone
No SLAs for approvals	Metrics, logs, observations related to No SLAs for approvals	Project management tools, meeting records, stakeholder feedback	Interviews, system reports, direct observation	Weekly or as per milestone
Manual multi-system updates	Metrics, logs, observations related to Manual multi-system updates	Project management tools, meeting records, stakeholder feedback	Interviews, system reports, direct observation	Weekly or as per milestone
Poor backlog prioritization	Metrics, logs, observations related to Poor backlog prioritization	Project management tools, meeting records, stakeholder feedback	Interviews, system reports, direct observation	Weekly or as per milestone

ANALYSE PHASE



Analyse – Hypothesis testing



Inference :

- the On-Time Delivery rate averages ~80% with wide variability (74–85%), indicating inconsistent and unpredictable project delivery.

Analyse – Hypothesis testing

Chi-Square Test for Association: reqs_unclear, on_time

Rows: reqs_unclear Columns: on_time

	0	1	All
0	52	59	111
	66.60	44.40	
1	68	21	89
	53.40	35.60	
All	120	80	200

Cell Contents
Count
Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	17.981	1	0.000
Likelihood Ratio	18.513	1	0.000

Chi-Square Test for Association: rushed_planning, on_time

Rows: rushed_planning Columns: on_time

	0	1	All
0	86	68	154
	92.40	61.60	
1	34	12	46
	27.60	18.40	
All	120	80	200

Cell Contents
Count
Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	4.818	1	0.028
Likelihood Ratio	5.019	1	0.025

Inference :

- The chi-square tests show a statistically significant association between unclear requirements and on-time delivery ($p < 0.001$) and between rushed planning and on-time delivery ($p < 0.05$), confirming both are key drivers of delivery delays.

Analyse – Hypothesis testing

WORKSHEET 1

Chi-Square Test for Association: decentralized_tools, on_time

Rows: decentralized_tools Columns: on_time

	0	1	All
0	70	61	131
	78.60	52.40	
1	50	19	69
	41.40	27.60	
All	120	80	200

Cell Contents
Count
Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	6.819	1	0.009
Likelihood Ratio	7.003	1	0.008

WORKSHEET 1

Chi-Square Test for Association: stakeholder_misaligned, on_time

Rows: stakeholder_misaligned Columns: on_time

	0	1	All
0	90	54	144
	86.40	57.60	
1	30	26	56
	33.60	22.40	
All	120	80	200

Cell Contents
Count
Expected count

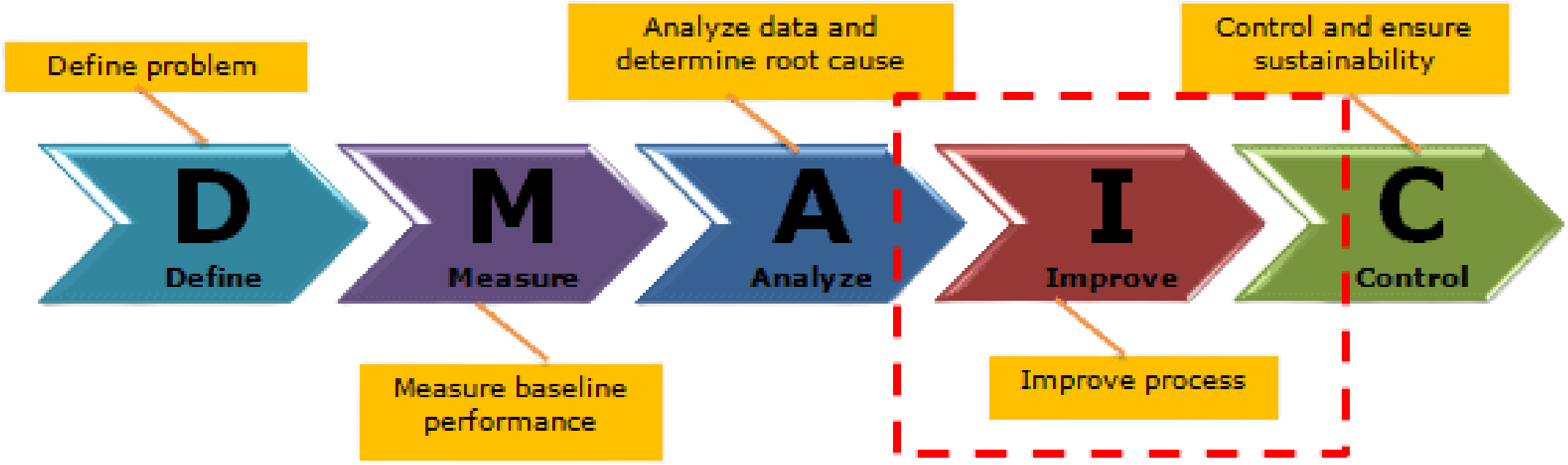
Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	1.339	1	0.247
Likelihood Ratio	1.328	1	0.249

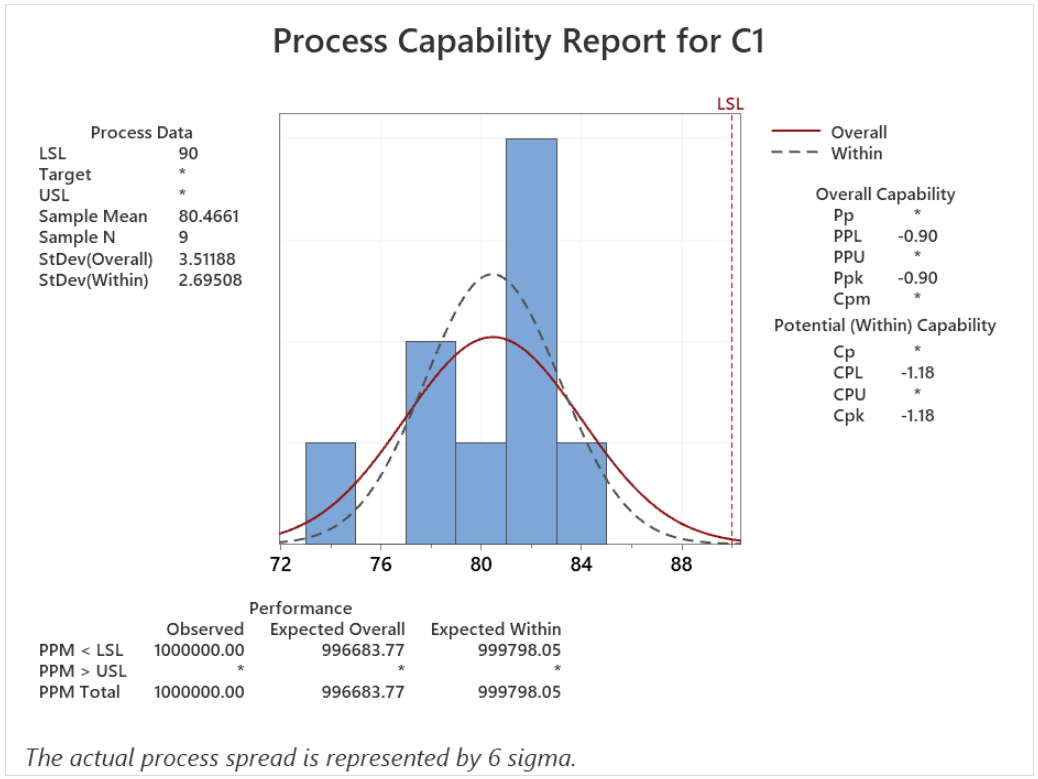
Inference :

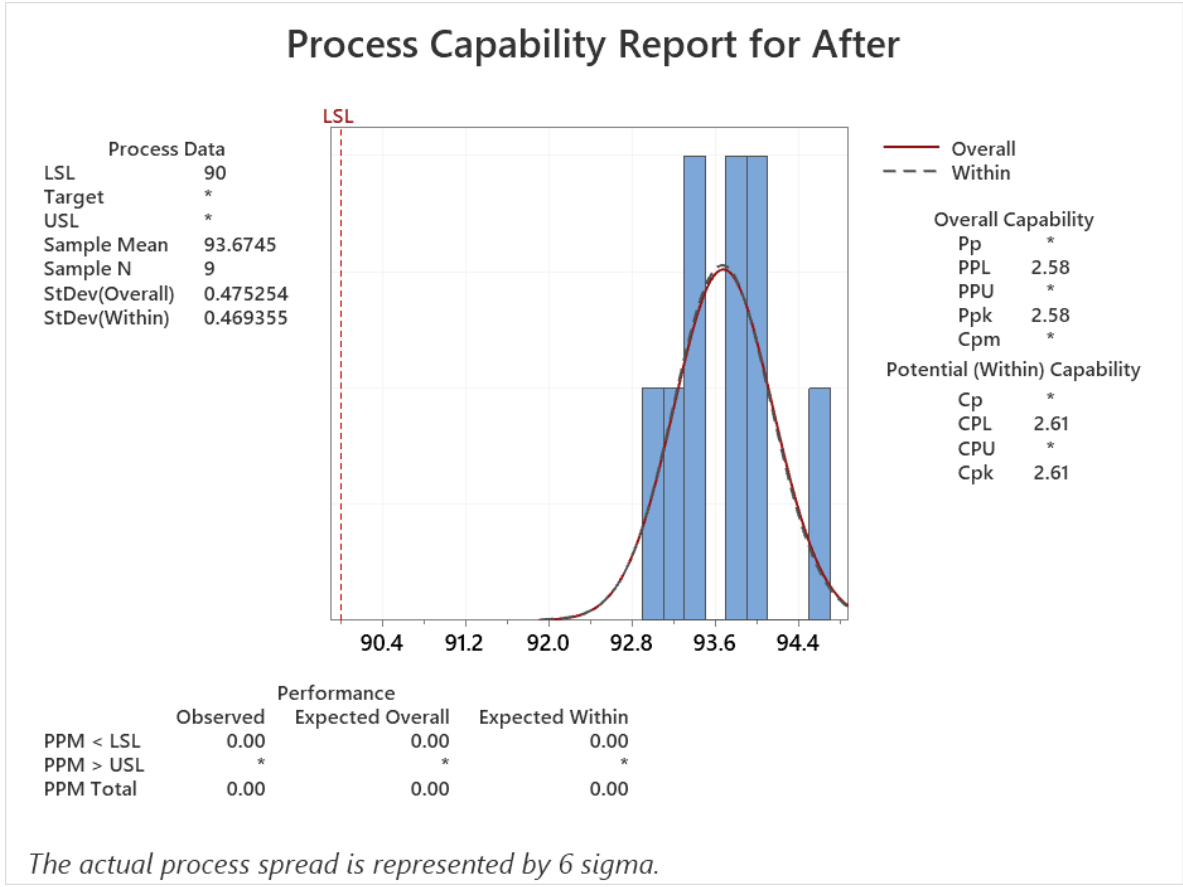
- The analysis shows that decentralized tools have a statistically significant association with on-time delivery ($p \approx 0.009$), while stakeholder misalignment does not show a significant association ($p \approx 0.25$) in this dataset.

IMPROVE PHASE



Analyse

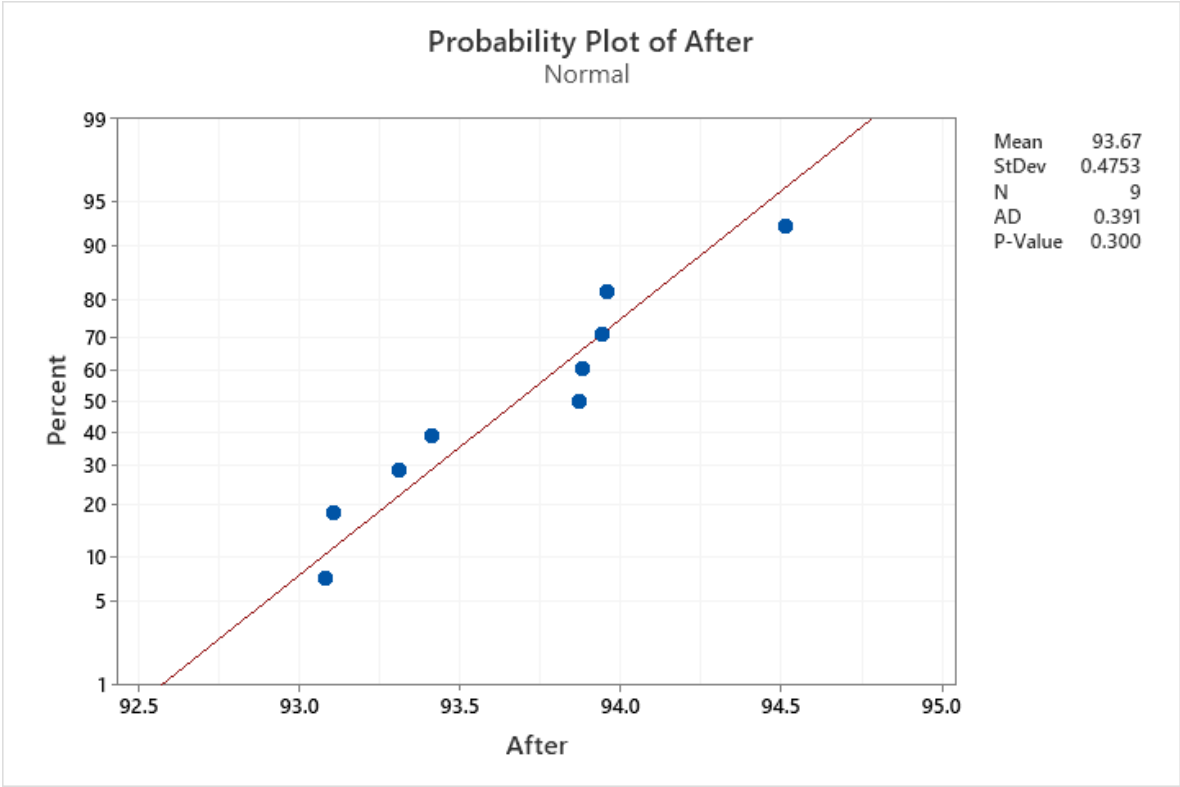




Inference :

- After improvement, the process mean has shifted above the LSL (≈93.7% vs 90%) with high capability (Cpk ≈ 2.6), indicating a stable, capable process with near-zero delivery failures.

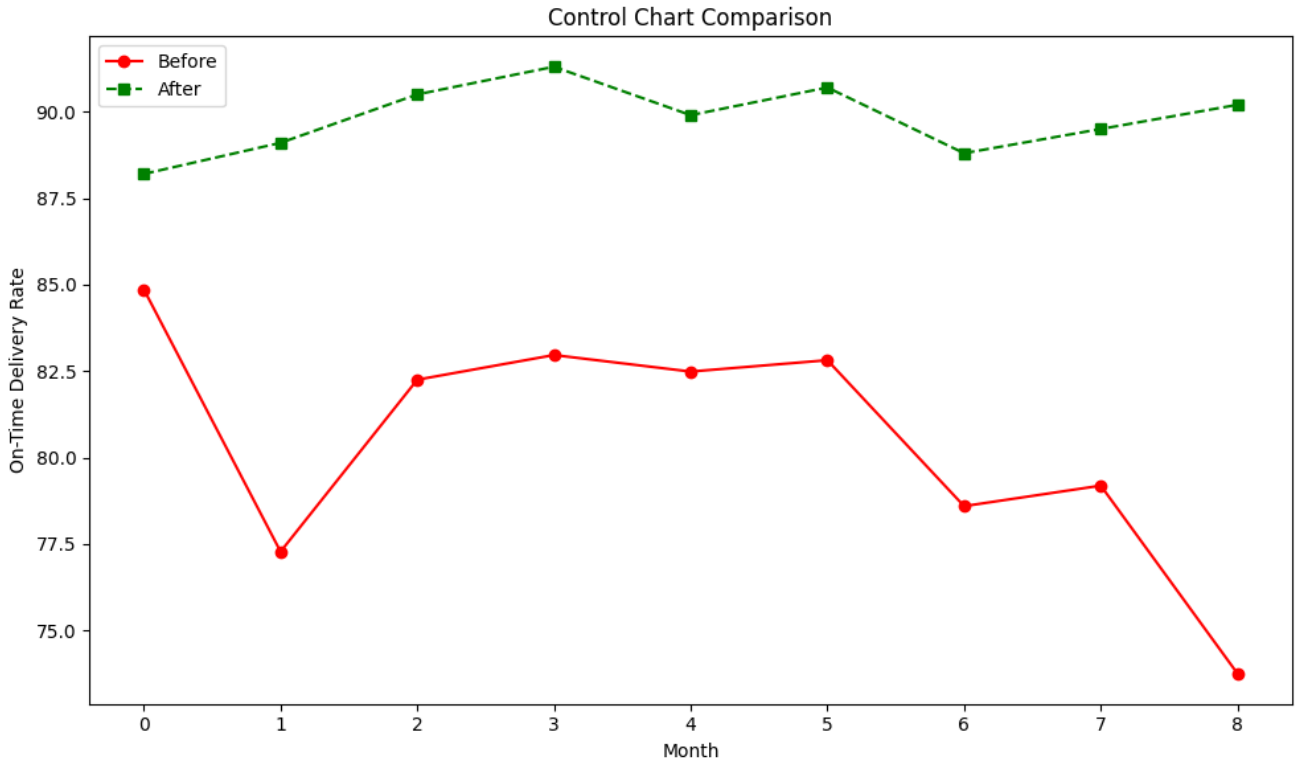
Analyse



Inference :

- The probability plot shows the post-improvement data is normally distributed (p-value = 0.300) with a stable mean of ~93.7% and low variation, validating the process for reliable capability analysis.

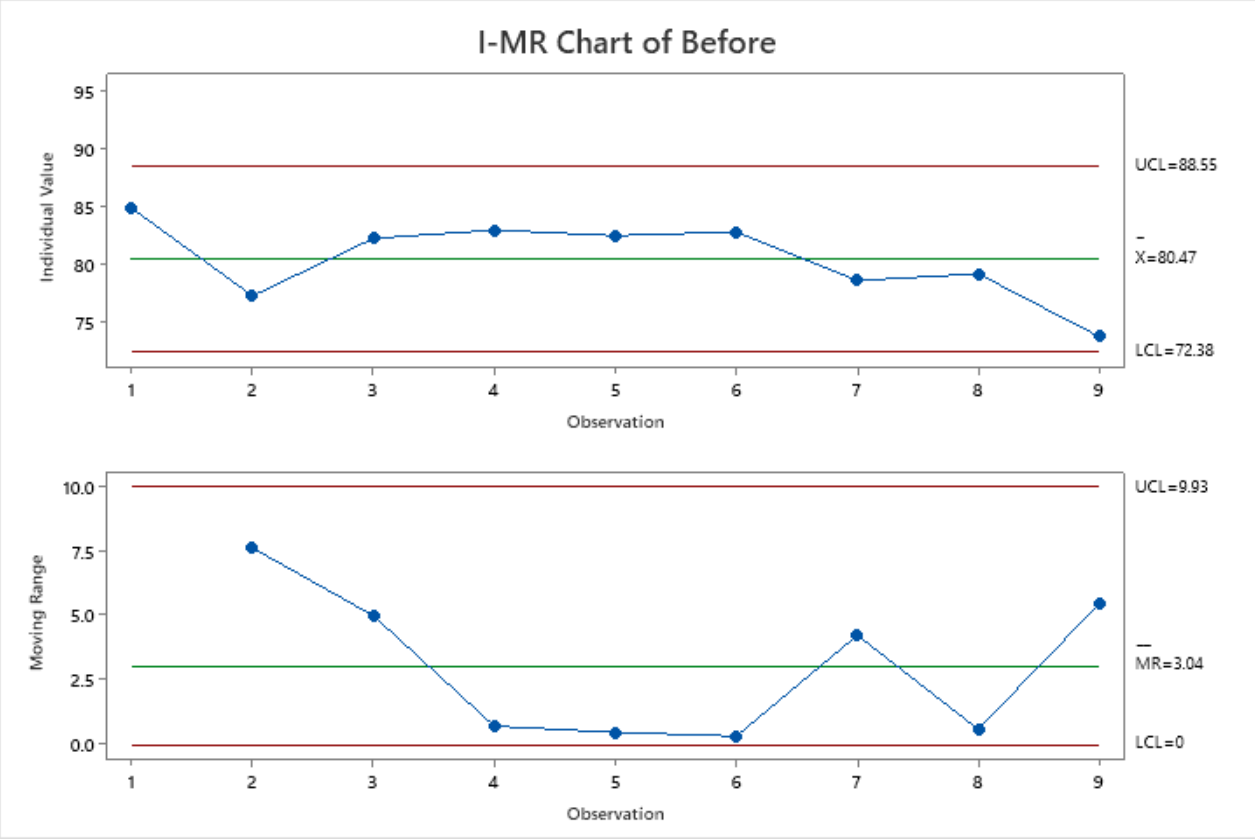
Improve

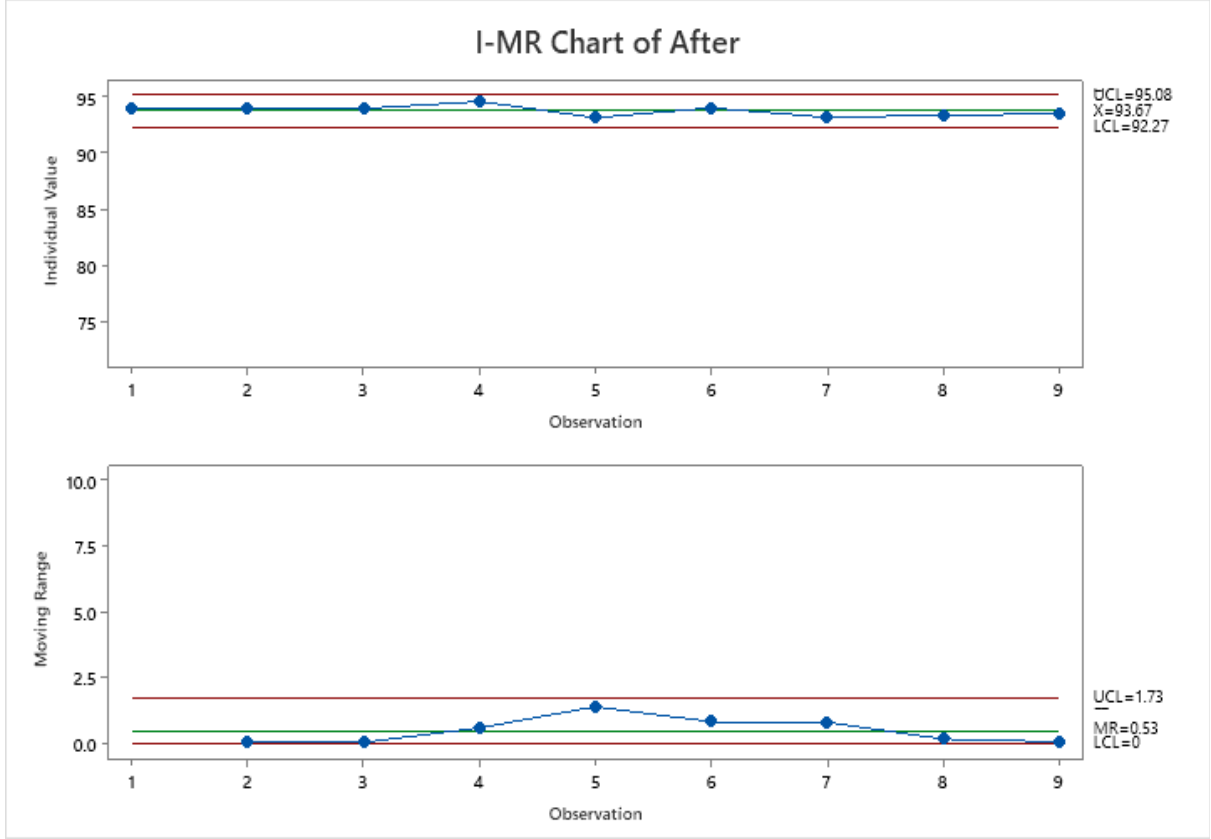


Inference:

- The control chart shows a clear upward shift and reduced variation after improvement, with On-Time Delivery consistently meeting or exceeding the 90% target, indicating a stable and controlled process.

Improve (Statistical validation for Improvement – I-MR Chart)





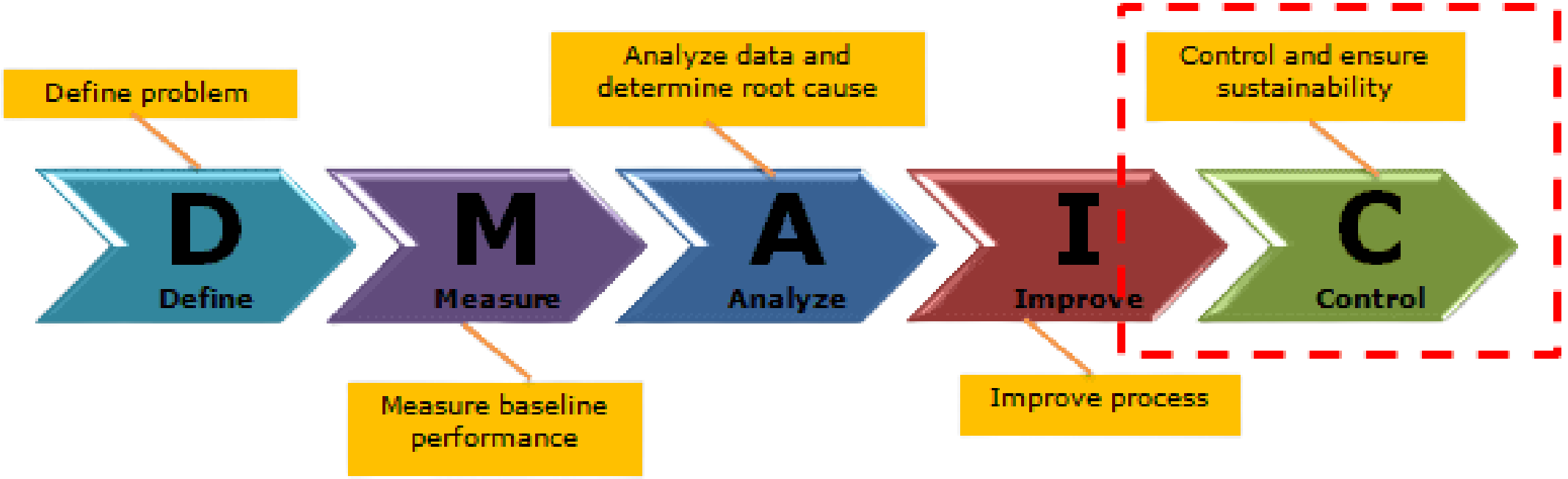
Inference:

- The I-MR charts show that the process shifted upward and became statistically stable after improvement, with reduced variation and all points well within control limits, confirming effective and sustained control of On-Time Delivery performance.

FMEA

Process Step	Potential Failure Mode	Effect of Failure	Potential Cause	S	O	D	RPN	Recommended Action
Project planning	Incomplete / weak plan	Schedule slippage	No standard WBS	9	6	6	**324**	Standard WBS & buffer templates
Resource allocation	Resource over-allocation	Task delays	Poor capacity planning	8	5	6	**240**	Capacity-based resource planning
Stakeholder approvals	Delayed approvals	Missed milestones	No approval SLA	9	4	5	**180**	Approval SLA ≤1 day
Progress tracking	Late issue detection	Recovery actions delayed	Manual tracking	7	5	5	**175**	Weekly dashboard & alerts
Change management	Uncontrolled scope changes	Rework & delays	Informal change handling	8	4	6	**192**	Formal change control process
PM handover	Knowledge gaps	Execution delays	Poor documentation	6	3	5	**90**	Handover checklist

CONTROL PHASE



Control Plan

Process Step	CTQ / KPI	Monitoring Method	Frequency	Responsibility	Reaction Plan
Project initiation	Approved project plan	Plan approval checklist	Per project	Project Manager	Escalate to PMO Head if not approved
Schedule adherence	On-Time Delivery %	Milestone tracking dashboard	Weekly	PMO Lead	Root cause review for any slippage
Resource utilization	Resource loading %	Capacity planning tool	Weekly	Resource Manager	Rebalance resources
Approval turnaround	Approval SLA	Approval log	Weekly	Stakeholder / Sponsor	Escalation after SLA breach
Scope control	Change request count	Change control register	Per change	Project Manager	Impact analysis & approval
Progress visibility	Schedule variance (SV)	Control chart	Monthly	PMO Analyst	Trigger corrective action
Governance review	OTD performance review	PMO review meeting	Monthly	PMO Head	Preventive actions & standard update

Control Plan

Control Item	Monitoring Method	Frequency	Responsible
On-Time Delivery Rate	Dashboard KPI	Weekly	PMO Analyst
Milestone Achievement	Project Review	Bi-weekly	Project Manager
Approval Timeliness	SLA Tracker	Monthly	Process Owner

Conclusion

Results after improvement

- **This project successfully stabilizes and improves PMO delivery performance, ensuring sustained ≥90% On-Time Delivery through standardized planning, disciplined controls, and continuous monitoring.**