

Mopex Consulting

DMAIC Framework



Operational Excellence, made measurable

Mopex Consulting Ltd

Operational Excellence, made measurable

Mopex DMAIC Framework



Baseline [No. 1] Data Measure Overview

Process Name	Cookie Process	Batch	1
Part Name	Cookie	Time	
Machine/Operator	Pete	Date	09/09/2025

[6 Sigma Data](#)
[Std Dev Data](#)
[50 vs 65 Data](#)
[Distribution Data](#)
[Variance Data](#)
[Cp & Cpk Data](#)

Parameter	Weight
Size	100
Target (Nominal)	100
USL	95
LSL	105
Mean(μ)	100
Std Dev (σ)	8

Calculating 6 Sigma - Discrete Data

Number of Opportunities (U)	100
Number of Opportunities (O)	1
Number of Defects (D)	31
Defects per Opportunity (DPO)	31%
DPMO	0.31000
OPPMO	310000
Yield	69.0%
6 Sigma	2
Z Score	0.97702

Non-Competitive

USL	95
LSL	105
Cav	0.199
Cav	0.228
6 Sigma	1.2

Calculating 3 Sigma - Continuous Data

Mean(μ)	100
Variance	61
Std Dev (σ)	8

Drive structured problem-solving and performance uplift using the DMAIC methodology—Define, Measure, Analyze, Improve, Control.

Pre-Project Assessments

DMAIC Maturity Results and 90 Day Roadmap

LEAN Maturity Results and 90 Day Roadmap

Dimension	Current Level	Target Level	Gap	Priority	Owner	Notes
Problem Definition	3	4	1	Medium	Mopex Lead	Governance dashboard needed
Data Collection	2	4	2	High	Ops Lead	SPC rollout in progress
Root Cause Analysis	2	4	2	High	Analyst	Predictive modelling roadmap
Solution Design	4	5	1	Low	QA Lead	ISO 9001 embedded
Sustainment	3	5	2	Medium	Ops Lead	Toolkit standardisation
Team Capability	3	4	1	Medium	BI Lead	Power BI templates in dev
Governance & ROI	2	3	1	High	Mopex Lead	Link to Benefits Tracker

- 90 Day Roadmap
- Dimension
 - Data Collection
 - Root Cause Analysis
 - Governance & ROI

DMAIC Maturity Scoring Card

LEAN Maturity Scoring Card

Dimension	Focus Area	Score	Description
1	Problem Definition	1	No structured DMAIC use, reactive
2	Data Collection	2	Basic DMAIC awareness, inconsistent
3	Root Cause Analysis	3	DMAIC tools used, some repeatability
4	Solution Design	4	Structured projects, measurable
5	Sustainment	5	Embedded DMAIC culture

Full Scoring Tables

Problem Definition	Score
1 No clear problem statement, symptoms confused with causes	<input type="checkbox"/>
2 Basic problem identified, scope unclear	<input type="checkbox"/>
3 Problem defined with scope, impact, and stakeholders	<input checked="" type="checkbox"/>
4 Problem validated with data, aligned to strategic goals	<input type="checkbox"/>
5 Problem definition drives project charter, fully scoped and approved	<input type="checkbox"/>

Data Collection	Score
1 No data collected, decisions based on assumptions	<input type="checkbox"/>
2 Limited data, inconsistent sources	<input checked="" type="checkbox"/>
3 Relevant data collected, some validation	<input type="checkbox"/>
4 Data collection plan executed, data integrity confirmed	<input type="checkbox"/>
5 Comprehensive data set, statistically validated, supports analysis	<input type="checkbox"/>

Root Cause Analysis	Score
1 No root cause analysis, fixes applied to symptoms	<input type="checkbox"/>

Mopex DMAIC Maturity Level Scoring

- Disclaimer -

Score	Level	Interpretation
1	Initial	No structured DMAIC use, reactive problem-solving
2	Emerging	Basic DMAIC awareness, inconsistent application
3	Defined	DMAIC tools used, some repeatability
4	Managed	Structured projects, measurable improvements
5	Optimised	Embedded DMAIC culture, scalable impact

Metric	Outcome
DMAIC Maturity Index (%)	54%
Avg. Maturity Score	3
DMAIC Maturity Level	Defined

Maturity Scores

DMAIC Dimension

Mopex DMAIC Project Framework

Purpose: Drive structured problem-solving and performance uplift using the DMAIC methodology—Define, Measure, Analyse, Improve, Control.

Use Cases	Service Description
Defect reduction and quality improvement	<ul style="list-style-type: none"> Phase 1. Define
Process optimisation and variation control	Purpose: Frame the problem, scope, and success criteria.
Compliance and audit readiness	<ul style="list-style-type: none"> Phase 2. Measure
Cost reduction and performance uplift	Purpose: Quantify current performance and validate the issue.
Root cause analysis and solution design	<ul style="list-style-type: none"> Phase 3. Analyse
	Purpose: Identify and validate root causes.
	<ul style="list-style-type: none"> Phase 4. Improve
	Purpose: Design and implement targeted solutions.
	<ul style="list-style-type: none"> Phase 5. Control
	Purpose: Sustain gains and prevent backsliding.

Mopex DMAIC Toolkit (Suggested Assets)

Asset	Format	Purpose
DMAIC Project Charter Template	Word/Excel	Define scope and objectives
SIPOC & Process Map Templates	Excel/Visio	Visualise process boundaries
CTQ Tree & VOC Capture Sheet	Excel	Translate customer needs
Root Cause Analysis Pack	Word/Excel	Analyse and prioritise causes
Kaizen Event Planner	Excel	Structure rapid improvement
Control Plan & SPC Dashboard	Excel/Power BI	Monitor and sustain performance
Benefits Tracker & ROI Model	Excel	Quantify impact and payback
Report-Out Slide Deck	PowerPoint	Communicate results to client

DMAIC Project Tracking Documents linked to Dashboard

Mopex DMAIC Project Charter

Section 1: Project Definition
 Project Title: Reduce Defects in Muffin Labelling Process
 Sponsor: Client QA Director
 Project Lead: Mopex Consultant
 Start Date: 16/03/2026
 Target Completion: 20/04/2026

Section 2: Problem Statement
 The muffin packaging line has a defect rate of 9%, primarily due to mislabelled packs. This leads to rework, customer complaints, and audit failures.

Mopex DMAIC Metrics Register

Category	U.O.M	Target	Actual	Status
Quality	%	≤ 2%	9%	On Track
Quality	%	≥ 97%	91%	At Risk
Compliance	%	≥ 95%	78%	Off Track

Mopex Business Case

Business Case Summary
 Project Name: Reduce Defects in Muffin Labelling Process
 Problem Statement: The muffin packaging line has a defect rate of 9%, primarily due to mislabelled packs. This leads to rework, customer complaints, and audit failures.
 Goal Statement: Reduce rework rate ≥ 97%
 Scope: Assembly Line A, QA Inspection, SOP review
 Benefit Type: Cost Avoidance + Productivity
 Financial Impact (£): £40,000 annualised benefit
 Strategic Fit: Supports quality KPIs and audit readiness
 Risks & Assumptions: Requires SOP compliance and dashboard rollout

Mopex Benefits Tracker & ROI Model

Benefit ID	Initiative	Domain	Forecasted	Actual Benefit	Owner	Status	Notes
B-001	Redu						

Mopex Project Progress Chart

Company Name: Muffin & Co Bakery
 Project Name: Reduce Rework in Assembly Line A
 Project Start Date: 16/03/2026
 Project End Date: 20/04/2026

Task Description	Category	Owner	Status	Progress	Start	End	Duration
Define Phase	Milestone		In Progress	40%	16/03/2026	20/03/2026	5
Problem Statement	Goal	Delivery Lead	Complete	100%	16/03/2026	16/03/2026	1
Project Scope	Goal	Compliance Lead	Complete	100%	17/03/2026	17/03/2026	1
Voice of Customer	Goal	PM	Overdue	0%	18/03/2026	18/03/2026	1
Business Case	Goal	Delivery Lead	Not Started	0%	19/03/2026	19/03/2026	1
Charter	Goal	Compliance Lead	Not Started	0%	20/03/2026	20/03/2026	1
Measure Phase	Milestone		Not Started	10%	23/03/2026	27/03/2026	5
Process Map	Goal	Delivery Lead	In Progress	50%	23/03/2026	23/03/2026	1
Data Collection Plan	Goal	Compliance Lead	Not Started	0%	24/03/2026	24/03/2026	1
Baseline Metrics	Goal	PM	Not Started	0%	25/03/2026	25/03/2026	1
Measurement System Analysis	Goal	Delivery Lead	Not Started	0%	26/03/2026	26/03/2026	1
Control Charts	Goal	Compliance Lead	Not Started	0%	27/03/2026	27/03/2026	1
Analyse Phase	Milestone		Not Started	0%	30/03/2026	03/04/2026	5
Root Cause Analysis	Goal	Delivery Lead	Not Started	0%	30/03/2026	30/03/2026	1
Value-Added Analysis	Goal	Compliance Lead	Not Started	0%	31/03/2026	31/03/2026	1
Bottleneck Diagnosis	Goal	PM	Not Started	0%	01/04/2026	01/04/2026	1
Cause & Effect Matrix	Goal	Delivery Lead	Not Started	0%	02/04/2026	02/04/2026	1
Process Capability	Goal	Compliance Lead	Not Started	0%	03/04/2026	03/04/2026	1

Mopex DMAIC Project Overview

Project Name: Muffin & Co Bakery
 Project Duration: 16/03/2026 - 20/04/2026
 Project KPI's: Total Phases: 5, Current Phase: Define Phase, Phase Progress %: 40%

Benefits & ROI Summary
 Total Forecasted Benefit (£): £40,000.00
 Total Realised Benefit (£): £0.00
 Net ROI (£): £24,000.00

Project Status: 10% Complete

Risks: 5 Open, 2 At Risk, 2 Off Track, 2 On Track

Metric Status: 33%

DMAIC A3 Project Reporting

Mopex DMAIC Project Report

Client/Project Details

Project Title: Reduce Defects in Muffin Labelling Process

Client Name: Muffin & Co Bakery

Mopex Consultant Lead: Mopex Consultant

Date of Report: 04/11/2025

Version Control: V.01

Business Case & Strategic Fit: Supports quality KPIs and audit readiness

Summary of Benefits (£): £40,000 annualised benefits

Project Status (RAG): Not Started

Executive Summary

Problem Statement: Assembly line B has a rework rate of 12%, causing delays, increased costs, and reduced customer satisfaction

Key Stakeholders & Engagement

Expert/Leaders/Practitioners	Role
QA Director	Sponsor
Tom Lee	Ops Lead
Jane Smith	Line Supervisor

Project Status

In Scope: []

Out of scope: []

Key risks (see RAID for full details)

Define

AS IS Process Map/SIPOC (Define the process)

Measure & Analyse

Identify significant factors (Fishbone & 5Whys)

Measurement System Analysis

Start identification of methods to validate measurement systems used to collect Y and Xs data, eg gage %R&R and TP/T or other measurement of error, as well as any corrective actions put in place before actual data collection.

VOC and CTQ Tree

Improve & Control

Improvement / Implementation Actions

Action	Due Date	RAG

Process Capability

Updated Process map (the new way of working)

Control Plan (see details in referenced documents)

Process Name	Batch
Coffee Process	1

Process Capability

Cap	Pp	Ppk	Sigma
+0.00	+0.20	+0.20	+0.5
-0.10	+0.00	+0.00	-0.5
+0.10	+0.00	+0.00	-0.5

Post Implementation on process stability

Data Note: Explain the patterns trends, common or special cause variation

Improved process capability

Related Documentation References (Where applicable)

Status: Data Collection log Ref: _____

Additional Data Charts Ref: _____

5 Whys Ref: _____

Some DMAIC Project Tools

Mopex SIPOC Diagram

SIPOC Diagram

SUPPLIERS	INPUT	PROCESS	OUTPUT	CUSTOMER
Resource Provider	Process	High level process flow	From the process	Receives suboutput from the process
Client Ops Team	Raw data, SOPs	Process 1 Process 2	Insight report, recommendations	Client sponsor, stakeholders

Baseline (As Is) Data Measure Overview

Process Name: Cookie Process, Batch: 1
 Part Name: Cookie, Time: 0
 Machine/Operator: Pete, Date: 22/11/2025

6 Sigma Data | 5M vs 6S Data | Distribution Data | Variance Data | Cp & Cpk Data

Parameter	Weight
Size	100
Target (Nominal)	100
LSL	95
USL	105
Mean(μ)	100
Std Dev (σ)	8

Calculating 6 Sigma - Discrete Data

Metric	Value
Number of Units (U)	100
Number of Opportunities (O)	1
Number of Defects (D)	31
Yield	31%

Mopex Current State VSM

Company Name: Auto-filled from intake form
 Process Name: e.g. Muffin Packaging Line
 Processed Area: e.g. Factory 1
 Assessor Name: Mopex Consultant
 Date of Assessment: Date picker
 Framework Linkage: Dropdown: LEAN, DMAIC, QMS, etc.
 Waste Diagnostic Ref: Link to Waste Diagnostic Sheet

Current State VSM Map

Step #	Process Step	Cycle Time (CT)	Lead Time (LT)	VA/NVA	Owner	Waste Type(s)	Notes / Evidence
1	Mix Batter	5 min	5 min	VA	Ops	Overprocessing	Manual double-check
2	Bake Muffins	12 min	12 min	VA	Ops	Waiting	Oven cooldown down
3							
4							
5							

Cp & Cpk Calculator

Process Name: Cookie Process, Batch: 1
 Part Name: Cookie, Time: 0
 Machine/Operator: Pete, Date: 17/08/2025

Process Capability Analysis

Parameter	Weight
Size	100
Target (Nominal)	100
LSL	95
USL	105
Mean(μ)	101
Std Dev (σ)	8

Calculating 3 Sigma

Metric	Value
Mean(μ)	8
Variance	67
Std Dev (σ)	8
3 Sigma Value	2.7
$\mu - 3\sigma$	76
$\mu + 3\sigma$	126

Process Capability Index: 0.212

Mopex RCA Pareto Analysis Template

Category	Count	% of Total	Cumm. %	Observations
Batter Clamps	40	40%	40%	The Pareto Principle (80/20 rule) suggests focusing on batter clamps and dispenser clogging first—they account for 65% of the issue
Dispenser Clogging	25	25%	65%	
Operator Rushing	15	15%	80%	
No SOP for Mixing	10	10%	90%	
Environmental Conditions	10	10%	100%	

Mopex I-MR Control Chart

Process Name: Cookie Process, Batch: 1
 Part Name: Cookie, Time: 18/08/2025
 Machine/Operator: Pete, Date: 18/08/2025

Individuals Control Chart

Mean-Range Control Chart

Mopex RCA Pareto Analysis Template

Mopex RCA Countermeasures Matrix Template

Countermeasure Matrix

Root Cause	Linked Problem	Countermeasure	Type	Owner	Due Date	Status	Notes
SOP variation	High rework rate	Standardise SOP across shifts	Process	QA Lead	01/10/2025	In Progress	Draft SOP ready
Worn fixtures	Misalignment	Replace and calibrate jigs	Equipment	Ops Lead	03/10/2025	Planned	Budget approved
No maintenance schedule	Frequent breakdowns	Implement weekly PM checklist	System	Maintenance	05/10/2025	Not Started	Template needed

Countermeasure Tracker

Action	Linked Root Cause	Verified?	Impact	Owner	Status
SOP standardisation	SOP variation	<input checked="" type="checkbox"/>	High	QA Lead	Complete

Countermeasure Dashboard

KPI panel: # actions complete, % verified, top 3 root causes addressed
 Bar chart: Actions by type
 Heatmap: Root cause vs. impact
 Slicers: Filter by owner, type, status

Mopex DMAIC Framework



DMAIC Project Pricing

🌸 Mopex Six Sigma DMAIC Project Framework				
Fixed Fee Model	Deiverables	Duration (W)	Tier Range	Price Range
OpEx Lite	Diagnostic + Roadmap	2-4	Bronze	£2,280-£3,800
OpEx Core	DMAIC Optimisation Methods	6-14	Gold	£11,400-£19,000
OpEx Plus	OpEx Core + Training + Dashboard	6-18	Platinum	£19,000-£30,400+
OpEx Enterprise	Monthly DMAIC CI Governance	TBC	TBC	TBC
Milestone Model	Deliverables	Timing	% of Total Fee	OpEx Core Package Example £11,400.00
Define & Kickoff	Project charter, VOC analysis, stakeholder alignment	Week 1-2	20%	
Measure & Analyze	Data collection plan, baseline metrics, root cause analysis	Week 3-5	25%	
Improve	Solution design, pilot implementation, impact tracking	Week 6-7	25%	
Control & Handover	Control plan, SOPs, training, dashboard	Week 8-9	20%	
Bonus ROI Pack	ROI logic, DMAIC dashboard, comms assets	Optional	10%	
Month Model	Deliverables	Timing	Fee (£)	
Month 1	Waste diagnostic, process walk, Kaizen event, updated SOPs	1	£7,600.00	
Month 2	Final waste map, control actions, training handover	0.5	£3,800.00	
Month 3	Control plan, SOPs, dashboard, ROI forecast	0	£0.00	

Mopex ROI Forecast Model for DMAIC Projects

Mopex ROI Forecast Model for DMAIC Projects, it's designed to quantify the financial and operational impact of data-driven process improvement using the DMAIC methodology.

1. Cost Inputs

Category	Typical Range
Mopex Implementation Fees	£30,000–£65,000 (fixed or day rate)
Internal Resource Allocation	120–350 hours (client-side)
Tooling & Digital Assets	£5,000–£15,000 (Excel, Power BI, Python, Mopex templates)
Data Collection & Analysis	£3,000–£10,000 (surveys, ETL, dashboards)
Change Management & Training	£2,000–£6,000

2. Value Drivers

Driver	Mopex Impact Range
Defect Reduction	30–70% fewer errors and rework incidents
Process Cycle Time Improvement	15–40% faster execution across key workflows
Cost Avoidance (Labour & Waste)	£20k–£150k saved annually
Customer Satisfaction Uplift	10–25% improvement in CSAT/NPS scores
Compliance Risk Mitigation	£10k–£100k avoided exposure
Productivity Gains	10–35% increase in throughput or output

3. Example ROI Scenarios

Scenario	Cost (£)	Value (£)	ROI (%)
SME, DMAIC applied to service workflow	£40,000	£130,000	225%
Mid-size, DMAIC + LEAN integration	£60,000	£220,000	267%
Enterprise, multi-site DMAIC rollout	£85,000	£320,000	276%

Mopex DMAIC Framework



DMAIC Project Tools Available





Mopex Six Sigma Analysis

Process Name	Cookie Process	Batch	1
Part Name	Cookie	Time	0
Machine/Operator	Pete	Date	05/04/2026

Input Section	
Parameter	Weight
Size	100
Target (Nominal)	100
LSL	95



Calculating 6 Sigma - Continuous Data	
LSL	95
USL	105
C _p	0.220
C _{pk}	0.168



Mopex SD vs 6S Analysis

Process Name	Cookie Process	Batch	1
Part Name	Cookie	Time	0
Machine/Operator	Pete	Date	05/04/2026

Input Section	
Parameter	Weight
Size	100
Target (Nominal)	100
LSL	95
USL	105



99.7 - 100%	
95%	
68%	
31.4%	
31.4%	



Mopex Standard Deviation Analysis

Process Name	Cookie Process	Batch	1
Part Name	Cookie	Time	0
Machine/Operator	Pete	Date	05/04/2026

Input Section	
Parameter	Weight
Size	100
Target (Nominal)	100
LSL	95
USL	105



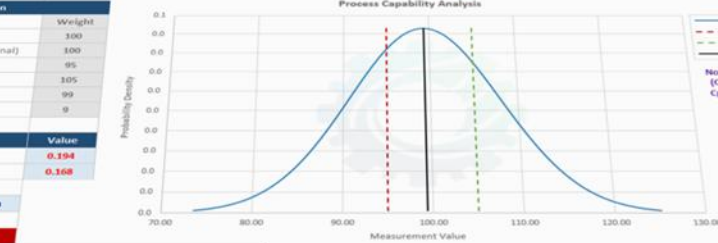
Mean(μ)	99
Std Dev (σ)	9
μ-3σ	74
μ+3σ	125



Mopex Cp and Cpk Analysis

Process Name	Cookie Process	Batch	1
Part Name	Cookie	Time	0
Machine/Operator	Pete	Date	05/04/2026

Input Section	
Parameter	Weight
Size	100
Target (Nominal)	100
LSL	95
USL	105



Metric	Value
C _p	0.194
C _{pk}	0.168

Interpretation
FALSE
Not Capable

Capability Chart					
Range	C _p	C _{pk}	P _p	P _{pk}	Sigma
100	0.194	0.168	0.194	0.168	1.0



Mopex Distribution Analysis

Process Name	Cookie Process	Batch	1
Part Name	Cookie	Time	0
Machine/Operator	Pete	Date	05/04/2026

Input Section	
Parameter	Weight
Size	100
Target (Nominal)	100
LSL	95
USL	105



Mopex Variation Analysis



Process Name	Cookie Process	Batch	1
Part Name	Cookie	Time	0
Machine/Operator	Pete	Date	05/04/2026

Input Section	
Parameter	Weight
Size	100
Target (Nominal)	100
LSL	95
USL	105



Mopex Run Chart Analysis

Process Name	Cookie Process	Batch	1
Part Name	Cookie	Time	0
Machine/Operator	Pete	Date	05/04/2026

Input Section	
Parameter	Weight
Size	100
Target (Nominal)	100
LSL	95
USL	105



Dynamic Run Chart

Mopex Data Analysis Reporting

Process Name	Cookie Process	Batch	1
Part Name	Cookie	Time	0
Machine/Operator	Pete	Date	05/04/2026

Input Section	
Parameter	Weight
Size	100
Target (Nominal)	100
LSL	95
USL	105

Calculating 6 Sigma - Discrete Data	
Number of Units (U)	100
Number of Opportunities (O)	1
Number of Defects (D)	31

DPU	0.31
DPMO	310000
Yield	69%
6 Sigma Score	0.97702

Non-Competitive
6 Sigma - Continuous Data

