

DMAIC PROJECT

**Final Presentation:
Kassi Cakes
Improvement Project**

**Presented by:
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Project Title:

Improving Customer Satisfaction by Reducing Defects and Turnaround Time in the Custom Cake Process

KASSI Cake and Pastry Shop is experiencing customer dissatisfaction due to frequent delays in serving customized cakes. The ideal serving time is 30 minutes, but delays often occur due to the time-consuming design process. The cake design varies as per customer requirement.

To analyze the issue, a record of serving times for customized cakes was kept for four weeks. The data below represents the time taken to serve each order the month of May.

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	35	30	40	35	45	50	42
2	30	35	45	30	28	30	45
3	40	35	50	25	60	65	30
4	35	40	55	40	65	70	55

In addition, the customers of the shop, has stated the following!

- "I ordered a birthday cake for my daughter's 5th birthday, and it turned out opposite to the birthday theme.
- "My wedding cake was a dream come true! It was exactly what we wanted, and we received so many compliments."
- "I frequently order custom cupcakes for corporate events, and this shop is my go-to.
- "I was disappointed with the turnaround time for my custom cookie order. I placed it well in advance, but it felt like a rush job when I picked it up, and some of the intricate designs weren't as clean as I'd hoped.
- "I needed a last-minute custom cake for an anniversary, and even with the tight deadline, that saves the day!



Define Phase

Clarifying the problem & Setting the Project Goal

VOC to CTQ

VOC	Drivers	CTQ
Reduced Waiting Times for Custom Cakes <i>Supporting Verbatim: "Frequent delays in serving customized cakes." (Problem Stmt); "...average serving time of 42.32 minutes..." (Data); (d) "I was disappointed with the turnaround time..."</i>	Adherence to Ideal/Stated Time	$\geq 70\%$ of standard custom cakes served in ≤ 30 mins 100% of orders meet the specifically quoted time for complex designs
	Lower Overall Order Completion Time	Average serving time for all custom cakes ≤ 33 mins Max serving time for any custom cake ≤ 50 minutes (unless exceptionally complex & agreed)
Consistent Service Times <i>Supporting Verbatim: Data showing range of 25-70 mins & weekly variations (Data Analysis); "delays often occur..." (Problem Stmt - implies unpredictability)</i>	Minimized Variation in Order Completion Time	Low variability in serving times for similar cake design complexities
	Clear Communication of Expected Time	System to categorize design complexity and provide realistic time estimate at order
Accurate and Well-Executed Cake Designs <i>Supporting Verbatim: (a) "I ordered a birthday cake...and it turned out opposite to the birthday theme."; (d) "...it felt like a rush job...some of the intricate designs weren't as clean as I'd hoped."</i>	Design Conformance to Customer Specifications	100% accuracy on critical design elements (theme, colors, text) per order form Multi-point verification of design details before and after decoration
	Professional Aesthetic & Craftsmanship	Designs are neat, clean, with well-executed intricate details (no "rushed" look)
		Consistent color matching to customer request or standard
Accommodation of Special Requests (when possible) <i>Supporting Verbatim: (b) "My wedding cake was a dream come true! It was exactly what we wanted..."; (e) "I needed a last-minute custom cake...that saves the day!"</i>	Ability to Assess & Fulfill Non-Standard Orders	Cakes maintain structural integrity for customer handling Defined process to evaluate capacity for last-minute/complex custom orders
	Clear Communication on Feasibility & Limitations	Ability to complete accepted special requests meeting agreed specs & time
		Clear communication of any design limitations or timeline for accepted special requests

1. Speed: Customer dissatisfaction increases significantly when wait times feel "too long." Keeping the process under 30 minutes was critical to maintaining a positive customer experience.

- *Upper Specification Limit (USL from VOC): 30 minutes*
- *Orders ≤ 30 mins (compliant)*

2. Quality: Every order must be correct.

- *Customer Spec = 0 defects per order (100% first-pass design accuracy)*

Define Phase

Six Sigma Project Charter	
Problem Statement Over a four-week period in May, Kassi Cakes recorded 28 custom cake orders with an average turnaround time of 42.32 minutes, even though customers expect their orders within 30 minutes. Only 7 of 28 orders (25%) met the 30-minute expectation; 21 orders (75%) were late, with some taking up to 70 minutes. Customers have also reported cakes that did not match the requested theme or had rushed, less-clean designs, showing that the current process does not consistently deliver on-time and accurate custom cakes for important events	
Business Case <i>Describe why should we work on this project? What is in it for the company? What happens if we don't work on this project.</i>	Opportunity Statement
Custom cakes are a core revenue stream and a key differentiator for Kassi Cakes, especially for high-visibility events like birthdays, weddings, and anniversaries. Frequent delays beyond the 30-minute expectation and design-related defects in these orders are damaging customer experience, leading to repeat-customer loss and negative reviews in exactly the segments that drive the shop's reputation and premium pricing. At the same time, rework, rushed corrections, and wasted materials from wrong designs are increasing the Cost of Poor Quality and reducing profit margins on custom orders. Addressing this process now protects both revenue growth and brand reputation in Kassi Cakes' most strategic product line	The opportunity is to redesign and stabilize the custom cake process so that it can reliably meet the 30-minute turnaround expectation and deliver cakes that consistently match the approved design specification on the first pass. By closing the 12.32-minute timing gap and drastically reducing Wrong Design Execution defects, Kassi Cakes can convert dissatisfied event customers into repeat advocates, reduce rework and waste, and improve margins on its most visible and profitable product line

Project Goal

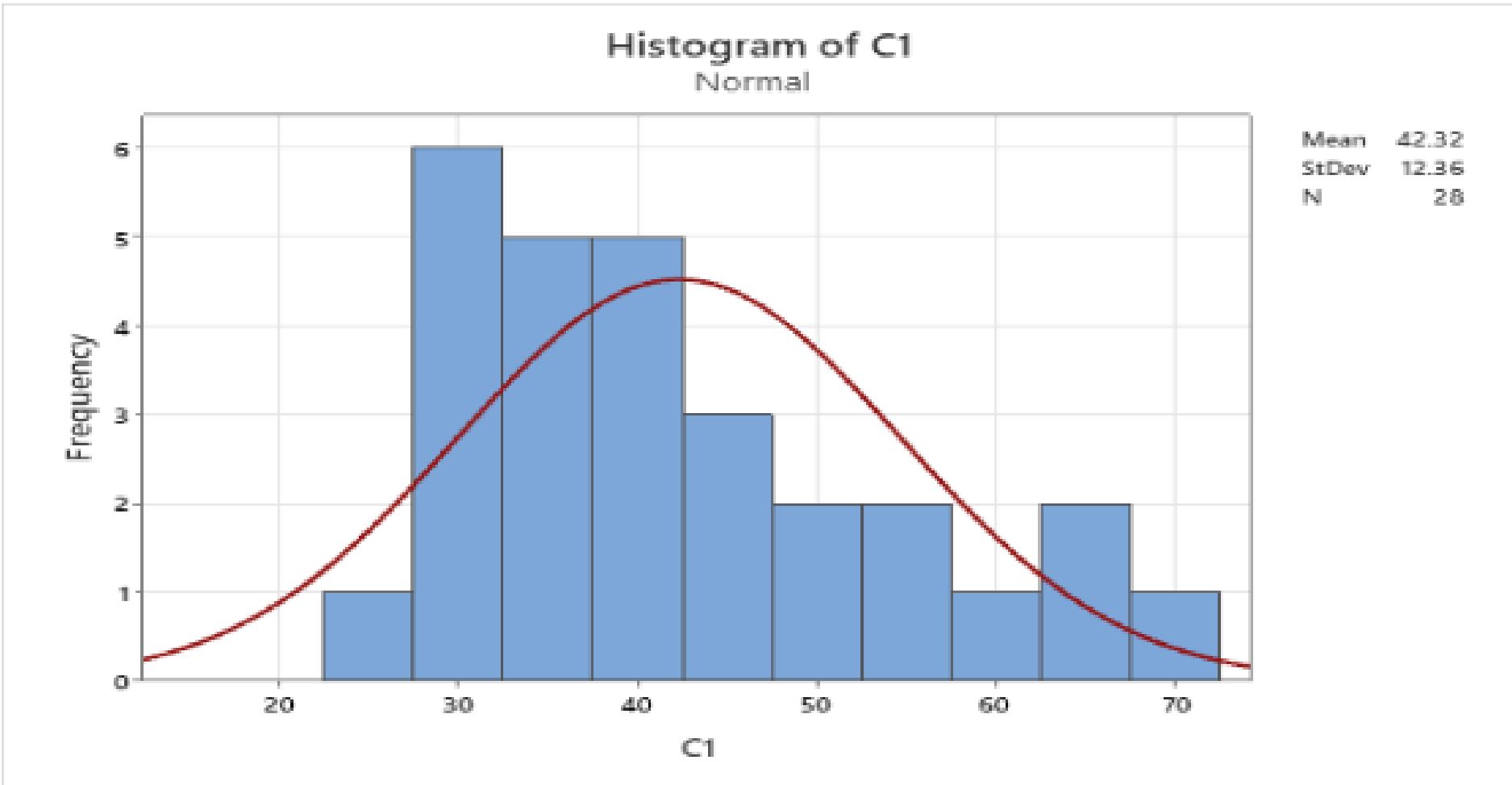
- 1. Reduce the average turnaround time to ≤ 33 minutes.
- 2. Reduce "Wrong Design Execution" defects by 90%.
 - To be completed by the end of Q3 2025.

Measure Phase

Quantify how bad the problem really was

1. TIME related customer concerns using Histogram (Baseline Performance)

The Histogram of our 28 turnaround times showed a highly variable and unpredictable process. The average time was 42.3 minutes, and the shape was wide and inconsistent, proving we could not reliably meet customer expectations.



Time Range (min)	Frequency	% of Orders
20-29	2	7.10%
30-39	10	35.70%
40-49	8	28.60%
50-59	4	14.30%
60-69	3	10.70%
70+	1	3.60%

Upper Specification Limit: 30 minutes (customer expectation)
Current Performance: Only 7 orders (25%) meet target

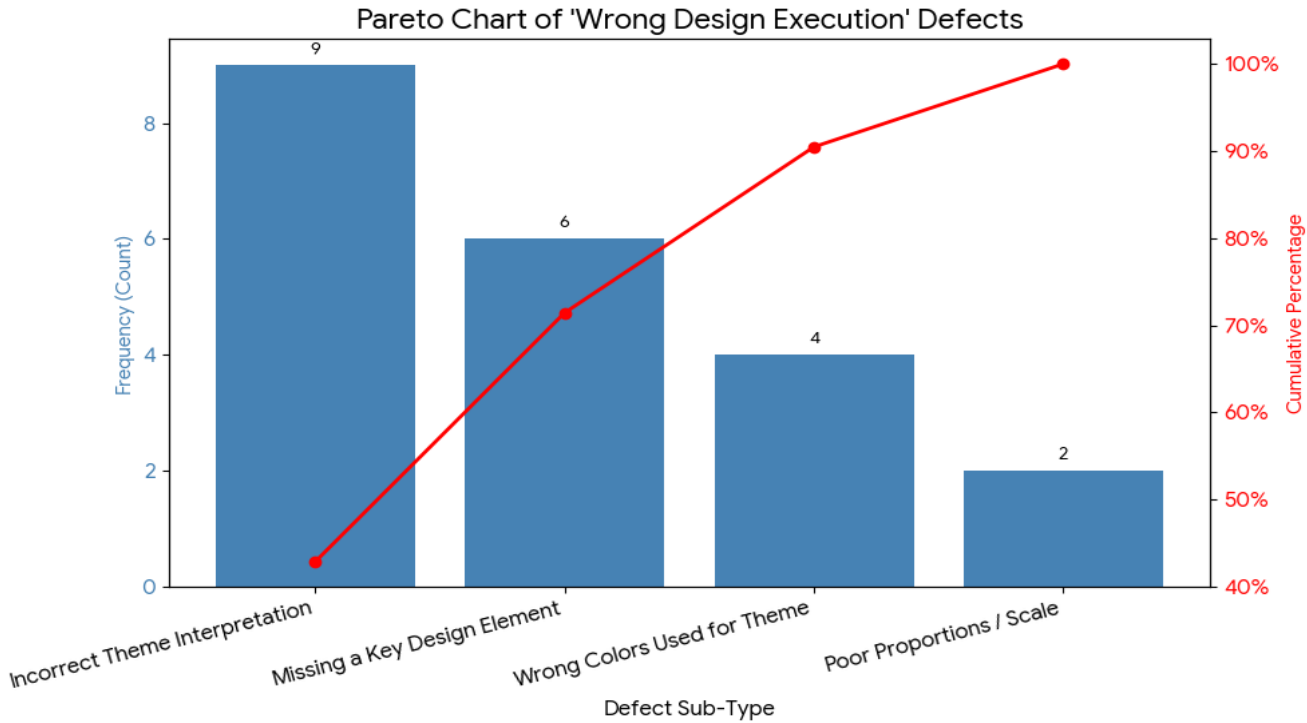
Measure Phase

Quantify how bad the problem really was

2. QUALITY concerns using Pareto Analysis (Baseline Performance)

7 quality defects were analyzed using a Frequency Table

Defect Category	Frequency	Percentage of Total	Cumulative Percentage
Wrong Design Execution	21	36.80%	36.80%
Incorrect Text/Spelling	16	28.10%	64.90%
Unappealing Color Combination	10	17.50%	82.50%
Damaged Packaging	5	8.80%	91.20%
Wrong Cake Flavor/Size	3	5.30%	96.50%
Other	2	3.50%	100.00%

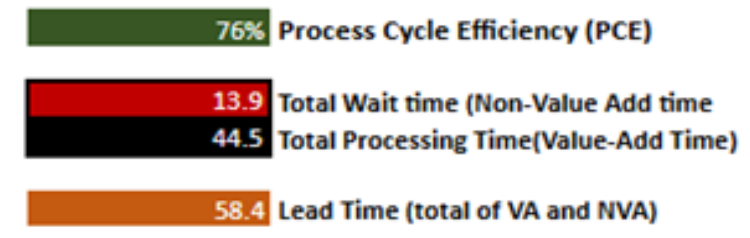
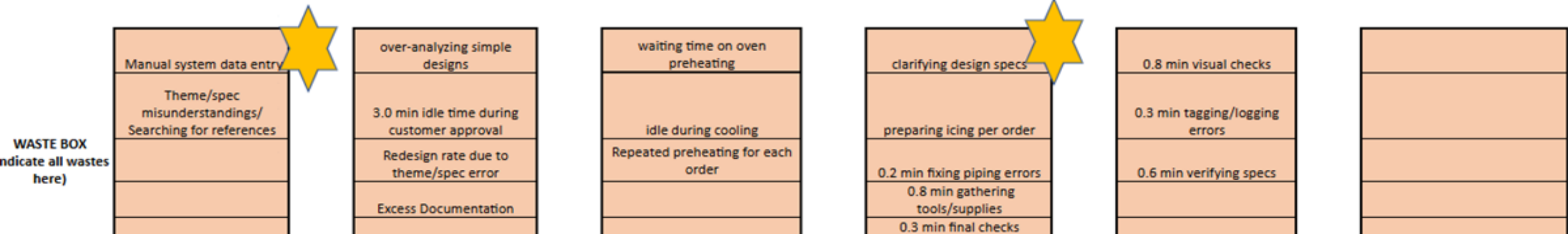
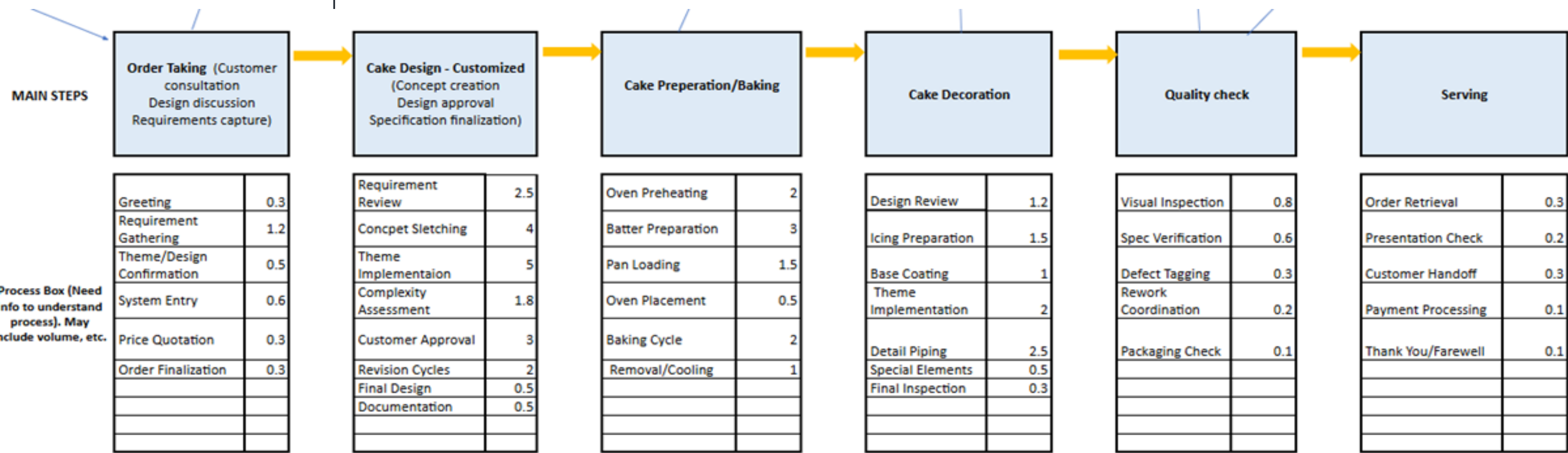


This data gives us definitive proof that we must focus our improvement efforts on fixing these two critical problems first - Top defect is Wrong Design/Theme Execution

Analyze Phase

Mapping the current state using a Value Stream

- VSM showed **13.9 minutes of Non-Value-Added (NVA) wait time**, dragging our Process Cycle Efficiency down to 76%
- The most significant delays were bottlenecked in Step 2 (Cake Design) due to long customer approval cycles, and in Baking due to equipment waiting
- The VSM waste boxes revealed hidden defects in the form of "spec misunderstandings," "redesign due to theme error," and "clarifying specs during decoration." These are process defects (rework and over-processing)

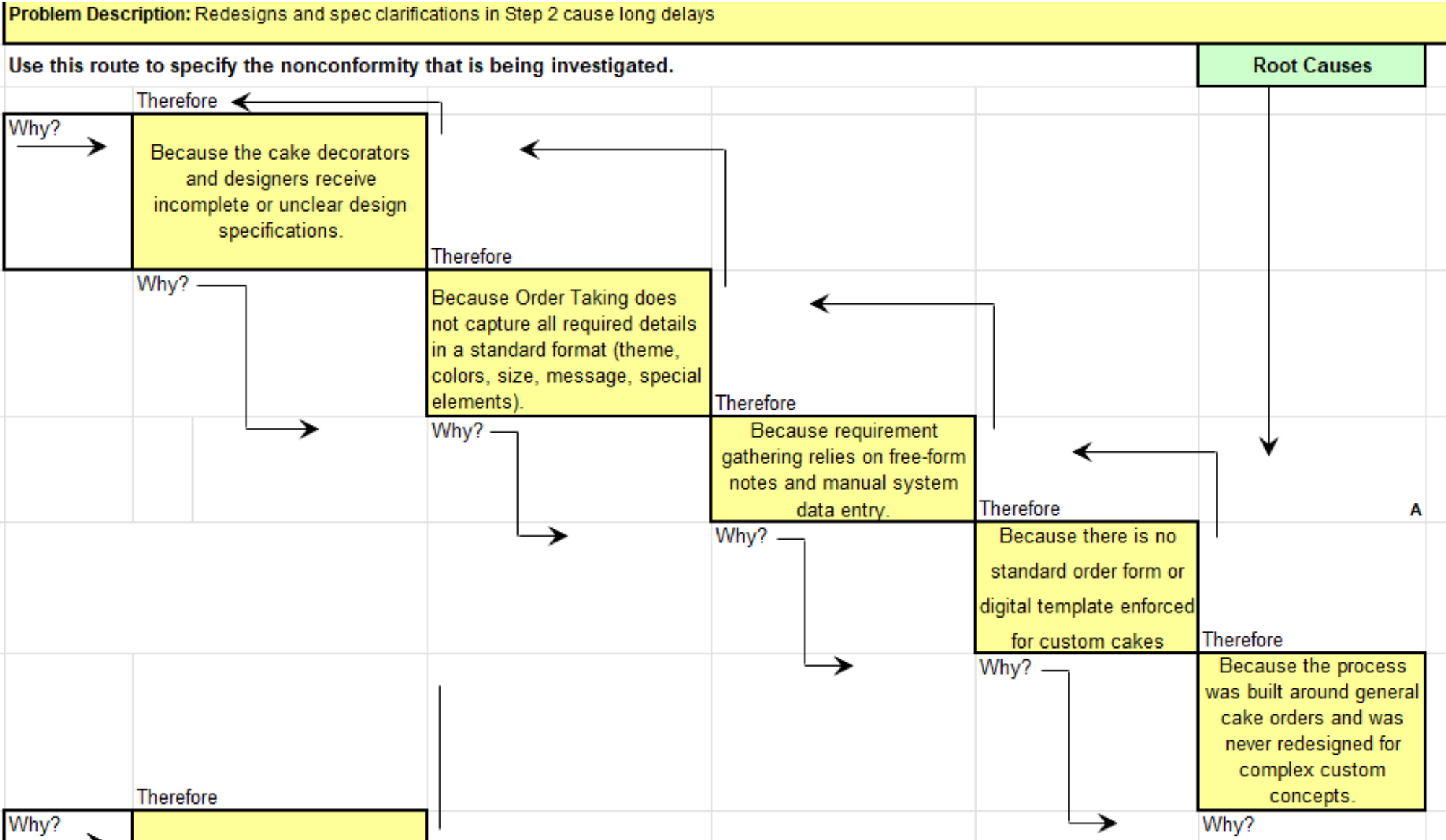


Analyze Phase

Finding the Root Cause – Time & Quality Aspects

Root Cause Analysis via 5 Whys

Process was simply not designed to handle complex visual requirements. It lacked a formal, system for capturing and verifying a customer's cake design



Improve Phase

Designed a solution to fix the process at its source

Outcome (y)	ROOTCAUSE ADDRESSED (X)	PROJECT LIST	
		<i>Weight of Outcomes Measure</i>	
Reduce Defects & Turnaround Time	Non-standard process for capturing visual design requirements and customer sign-off.	1	Standardized Visual Order Process
Reduce Turnaround Time	Long wait times from process flow (queuing and cooling).	2	Process Flow Redesign (to reduce waits)
Reduce Defects & Turnaround Time	Inconsistent staff knowledge and skills on ordering & decoration	3	Enhanced Staff Training Only
		4	
		5	
		6	
		7	
		8	
		9	
		10	

After brainstorming several options, we used a **Solution Selection Matrix** to choose the most practical and high-impact solution
 Project: 1. Standardized Visual Order Process, 2. Process Flow Redesign 3. Enhanced Staff Training

Designed a solution to fix the process at its source

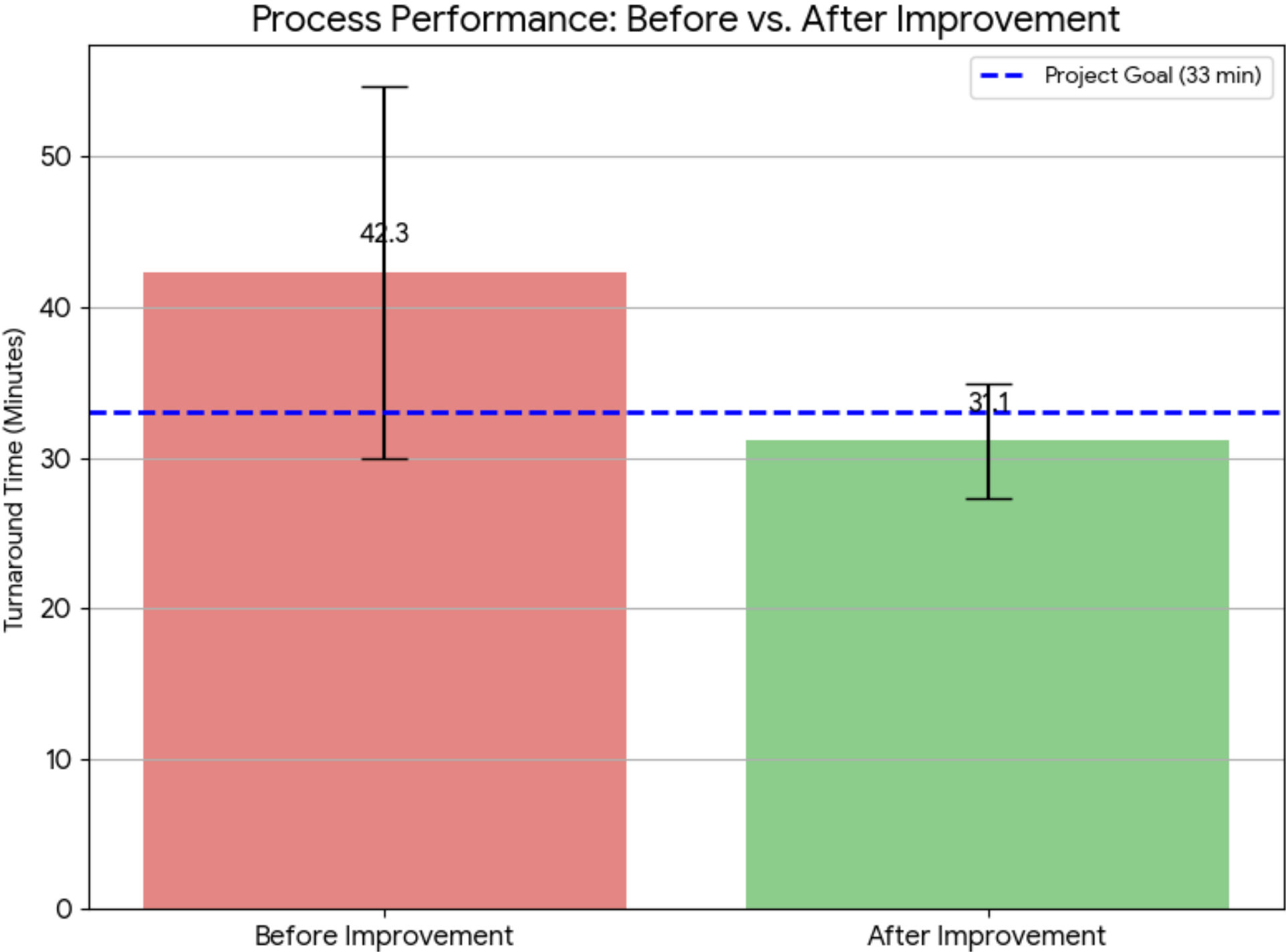
PROJECT LIST		IMPACT ON STRATEGIC GOALS				TOTAL STRATEGIC IMPACT SCORE	IMPROVEMENT SOLUTION IMPLEMENTATION CRITERIA				TOTAL WEIGHTED SCORE
		Financial Results	Customer Satisfaction	Employee Satisfaction	Leaning & Growth		Impact on Defects	Low Cost	Ease & Speed to Implement	Staff Acceptance	
Weight of Outcomes Measure		40%	30%	20%	10%	100%	40%	30%	20%	10%	100%
1	Standardized Visual Order Process	10	8	9	7	9	9	9	8	7	8.6
2	Process Flow Redesign (to reduce waits)	8	9	7	8	8	6	6	4	8	5.8
3	Enhanced Staff Training Only	5	6	9	9	6	4	10	9	9	7.3
4						0	0				
5						0	0				
6						0	0				
7						0	0				
8						0	0				
9						0	0				
10						0	0				

We implemented a **"Standardized Visual Order Confirmation Process"** at a dedicated station for special orders. This system includes:

- 1.A simple, stand-alone tablet.
- 2.A digital form where we can create a digital sketch and attach the customer's reference photo.
- 3.A mandatory digital customer sign-off to confirm the visual plan is 100% correct before it is sent to the kitchen.

Improve Phase

Simulation - ran a one-week pilot of the new system



Reduction in Average Time: The height of the bars shows a significant drop in the average turnaround time, from 42.3 minutes down to 31.5 minutes. The "After" bar is now comfortably below our project goal line of 33 minutes. This proves our solution was effective at making the process faster on average

Significant Improvement in Consistency: The black "error bars" (which represent the standard deviation, our measure of variation) are much smaller on the "After" bar. This is statistical proof that our new process is not only faster but also much more consistent and predictable. (Note: The one outlier of '45' in our 'After' data makes the standard deviation higher than it would be otherwise, yet it is still a major improvement).

Sustaining the Gains

To ensure these improvements are permanent, we've implemented a robust **Control Plan**

CONTROL PLAN

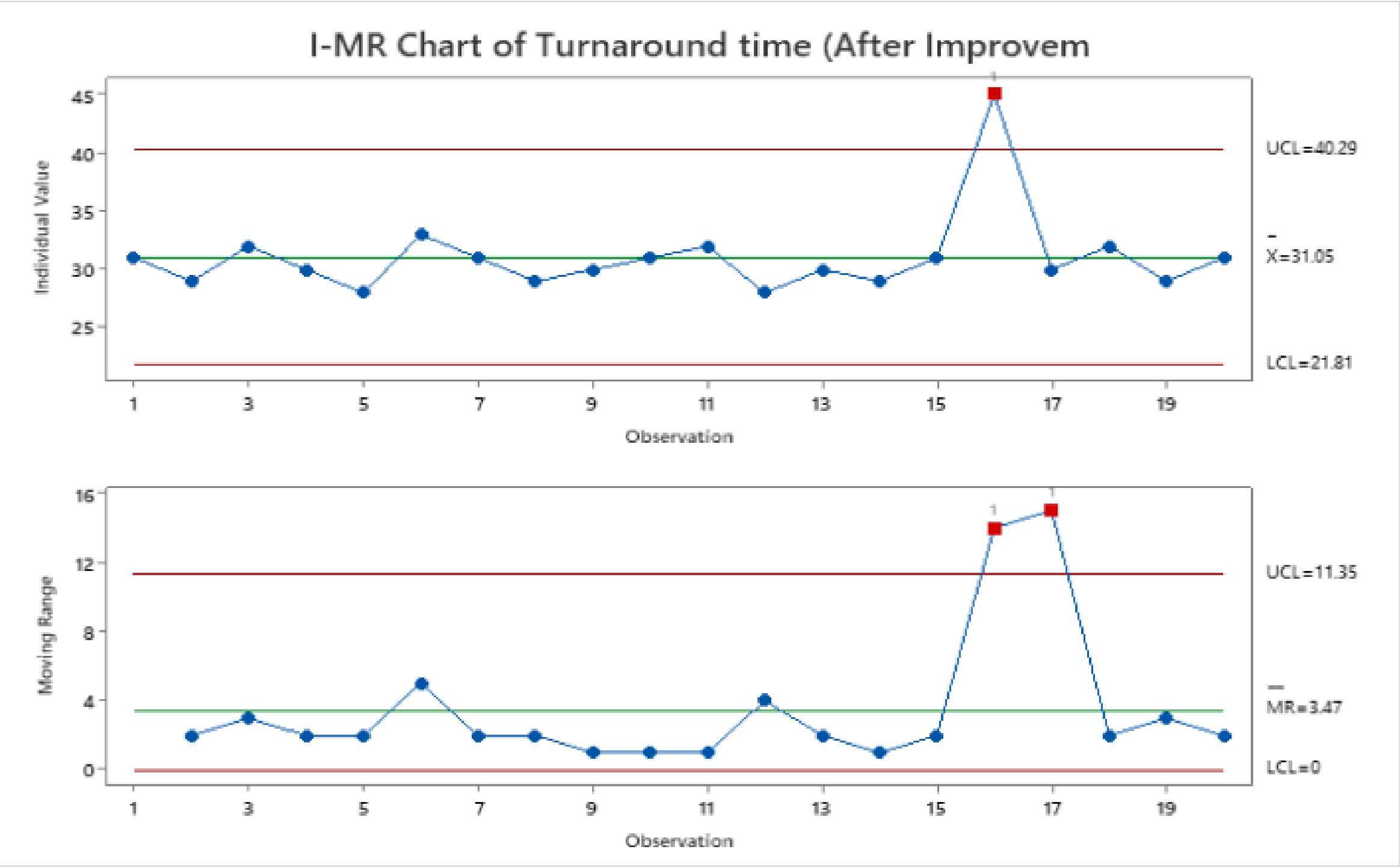
Process Step	Key Process Indicator	Performance Specification (Target)	Measurement Method (Sample Size)	Control Method	Checking Frequency	Responsibility	Action (If Out of Control)	Misc. Information
Daily Opening	Tablet & Printer Readiness	100% functional (charged, connected, paper loaded).	Visual check of all three items. (n=1)	Daily Opening Checklist	Daily (at shop opening)	Opening Staff / Cashier	Immediately troubleshoot. Do not take special orders until the system is ready.	The audit checklist is located in the daily closing binder.
Take Special Custom Order	Process Compliance	100% of orders use the tablet and have a digital sign-off.	Random audit of 5 completed special orders from the previous day.	Manager's Audit Log	Daily	Shop Manager	Provide immediate one-on-one retraining to the responsible staff member.	The calibrated thermometer is stored in the manager's office.
Final Product Quality	Wrong Design Execution Defect Rate	Weekly defect rate for this category must remain at or below 1%.	Analysis of the Defect Check Sheet data for this specific category.	Statistical Process Control (SPC) Chart (specifically an Individuals Control Chart)	Weekly (every Monday)	Shop Owner (Kassi)	If a point is out of control, immediately investigate the specific orders from that week to find the root cause of the failure.	This data will be used for identifying future training needs and for performance reviews.

Monitoring Plan

We will track the "Wrong Design Execution" defect rate weekly on a Control Chart. If it rises above 1%, the Shop Manager is required to investigate immediately

Simulated Data 2 weeks

31
29
32
30
28
33
31
29
30
31
32
28
30
29
31
45
30



Conclusion: new process is generally performing well and is stable, but a special cause of variation occurred on Day 16.

Control Plan: Check Day 16 and ask: What was different? Was a new employee working alone? Did a key piece of equipment have a minor failure? Did an unusually complex order come in that the new process

A3 DODCUMENT

Improving Customer Satisfaction by Reducing Defects and Turnaround Time in the Custom Cake Process	
Project Leader:	Team:
Executive Sponsor:	
Date:	
Define & State Problem or CI Opportunity (Define):	
Problem Statement:	
Kassi's Shop is experiencing significant customer dissatisfaction driven by two main issues: frequent delays and critical quality failures. The baseline average turnaround time is 42.3 minutes (exceeding the 33-minute goal), and a study recorded 57 total defects, with "Wrong Design Execution" being the most frequent complaint	
Scope:	The end-to-end process for custom cake orders, starting from initial customer request to final product delivery
Goal:	Reduce the average turnaround time from 42.3 minutes to \leq 33 minutes Reduce the "Wrong Design Execution" defects by 90% from the current baseline
Background / Initial Condition Measure	
Time Performance: The process is too slow. The Histogram of the 28 recorded times showed a very wide and inconsistent distribution, with a mean of 42.3 minutes.	
Quality Performance: The process produces too many errors. An improved pareto analysis (simulation) of 57 defects proves that quality is a systemic issue.	
Process Flow: The Value Stream Map (VSM) revealed a low Process Cycle Efficiency of 72.2%. It identified two major 10-minute wait times (one in queuing before production, one for cooling) as the primary bottlenecks in the process flow.	
Problem Analysis (Analyze)	
Pareto Analysis of the 57 defects proved that "Wrong Design Execution" (37%) and "Incorrect Text/Spelling" (28%) are the "vital few" problems, accounting for 65% of all quality issues.	
Root Cause Analysis on the top defect led to a specific, systemic root cause: The lack of a standardized, error-proofed process for capturing and visually verifying complex customer design requirements	

Target / Future State
The future state is a reliable, standardized process where customer design requirements are captured with 100% accuracy. A robust verification system will eliminate rework caused by misinterpretation. This will result in a faster, more predictable turnaround time and significantly higher customer satisfaction
Countermeasure (Improve)
The chosen countermeasure is to implement a "Standardized Visual Order Confirmation Process." This system will be deployed at a dedicated station for special orders to improve accuracy and reduce customer wait times. The system includes: A simple, stand-alone tablet with a drawing application to create a digital sketch. The ability for customers to send their reference photos directly to the tablet. A formal procedure for obtaining a digital customer sign-off on the complete visual plan (sketch and photos) before the order is finalized and sent to the kitchen
Implementation Plan
Design & Train (Week 1): Finalize the new order form tool design with staff input and conduct a 30-minute training session for all front-of-house employees on the new procedure. Pilot Test (PDCA - Week 2): Run a one-day pilot of the new process on a busy Saturday to measure its effectiveness and gather feedback. Refine & Rollout (Week 3): Based on pilot feedback, make any necessary adjustments and then implement the new process permanently
Demonstrate Improvement / Next Steps (Control)
Monitoring (Control Plan): The new process will be monitored via a formal Control Plan. Key controls include: A daily audit of 5 random order forms of custom cake orders to ensure 100% compliance with the new procedure. Weekly tracking of the "Wrong Design Execution" defect rate on a Control Chart to ensure gains are sustained. Next Steps: Formally hand over the Control Plan to the Shop Manager, close out the project, and document Lessons Learned and Replication Opportunities (e.g., applying this new process to custom cupcake orders).