Meeting Flower Inventory with Demand

Lean Six Sigma Green Belt Mini-Project for ITP 303

April 3rd, 2023 - June 11th, 2023
California Polytechnic State University, San Luis Obispo

Bloom House Flowers and Gifts

Torrance, California

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This report may be used as an example for future lean six sigma classes.It may also be used in whole or part in research publications with proper attribution.

Project Description

Meet demand more efficiently with inventory by calculating both on a given day across an indefinite time period while categorizing demand by reason. Collecting data will reduce the future chances of wasting product or failing to meet customers' needs, while creating categories will uncover trends for future learning.

Problem Statement and Objective

Bloom House Flowers has no operational infrastructure for recording purchases or the inventory supporting them. Because of this, demand is unable to be met in 2 ways. First, there is too much floral inventory, which rots with time. Second, there is not enough inventory. Both matter in this industry because immediately impressing and retaining a customer happens within seconds and minutes. The objective of this project is to optimize inventory by considering periodic and situational factors affecting demand over time.

Sponsoring Organization

Bloom House Flowers and Gifts

Champion/Sponsor

Champion/Sponsor: Jung Sook Kim, Owner of Bloom House Flowers and Gifts
jjj3kim@gmail.com, 310-997-5575

Executive Summary

Bloom House Flowers and Gifts is a self-proprietary, small business run by Jung Sook Kim. Kim produces various arrangements and decorations varying in scale. On a smaller, volatile basis, Kim sells flowers individually to customers, as well as handmade arrangements and homemade candles typically purchased as housewarming or romantic gifts. On a larger, reservation-based scale, Kim produces arches and stands of assorted flowers meant for funerals or weddings.

For most sole-proprietorships, most business operations are handled by one person. Kim alone is responsible for purchasing inventory, designing flower arrangements, and delivering the final product. She has contact with numerous delivering and stationery suppliers (inputs), designs impromptu flower orders in no longer than 10-15 minute time frame (process), and has part-time drivers to deliver flowers when she must remain at the store's physical location (output).

However, since Kim does not have a business education and is running this company alone, she lacks the time to acknowledge and improve the minutiae of margins. Overshadowed by the main process of designing flowers is the fact that inventory is often wasted and does not consider demand levels during a given period. Since Kim focuses on manufacturing products rather than eliminating inventory waste, this mini-project intends on addressing the frequent waste associated with the company's inventory in relation to demand.

This company is predicated on its ability to properly contain the closest amount of inventory capable of meeting demand. Since the flower industry's demand is volatile and price elastic, the common demand-inventory relationship consists either of 1) days where there are less sales than there exists inventory or 2) days where there is more inventory than there exists available inventory. Therefore, the objective of this project was to accomplish the rarer 3rd scenario, which is the equilibrium where demand is consistently met with inventory.

To accomplish this, our general goal was to implement a system utilizing data to record demand, inventory, and sales. On any given day, days' total demand/sales (output) would be recorded and compared against days' beginning and ending inventories (inventory), as well as total purchases from suppliers (inputs). With each customer sale, we will record the reason (e.g. wedding, funeral, holiday, etc.) to lay the foundation for documenting historical trends over time that would inform Kim about common jumps or slumps in demand. Since this company cannot spend money on additional labor or expensive technology, our recommendation consists of simple and free-to-use database management systems that will allow for future querying and analysis.

Recommendations

- Implement database function to record purchases of inventory
    - Flower types
    - Herb types
- Implement database function to record sales with reasoned categories
    - Example:
        - Purchase 1: x of Flower 1, y of Flower 2, z of Herb 3
            - Reason: Wedding
        - Purchase 2: x of Flower 2, y of Flower 3, z of Herb 2
            - Reason: Housewarming
- Implement days' beginning and end of demand/inventory levels
    - Days' Beginning
    - Add amount from purchases
    - (Subtract amount from sales)
    - **Include reasons for sales**
    - Days' End (becomes next "Days' Beginning"
- Implement simple visualization software to chart adherence to expected demand/inventory levels based on historical data
    - Microsoft Access
    - Oracle APEX
    - EngineRoom

Elevator Speech Outline

Lean Six Sigma Definition:

Lean Six Sigma is the systems thinking approach that reduces waste and improves process efficiency. This is achieved by identifying bottlenecks, measuring problems and deficiencies, analyzing the reasons for these results, improving the bottleneck based on data, and controlling the process with findings for the future.

Define:

Organization: Bloom House Flowers

Champion: Jung Sook Kim

Process/Problem: Developing equilibrium between demand and inventory to reduce excessive waste and prevent supply shortages. The problem was either wasted inventory or a lack of it when customers entered the store.

Measure:

Key Measure(s): Total demand for a given day, as well as days' beginning and ending inventories. Days' purchases and wasted product will also be measured.

Analyze:

Analysis: Root Cause Tree Analysis will determine the factors influencing deviations from equilibrium, while a box plot will consider 5 measurements and seek to pinpoint areas for improvement.

Improve:

Improvement: Will NOT be centered around additional labor sources or expensive technology implementation. Since this is a small business, improvements will focus on business understanding and organized documentation of measures not previously considered.

Control:

Learned: Qualitative and quantitative measures are important to this business. Ongoing data collection, continuous improvement, and reception to new ideas will benefit numerous organizations. Solutions are reasonable and attainable without diverging too far from tradition and comfort.

Tool Plan Outline

Define

1. Project Charter
2. Flow Chart

Measure

1. Line Graph
2. Scatter Plot

Analyze

1. Root Cause Tree Analysis
2. Box Plot

Improve

1. Corrective Action Matrix
2. 5-S Approach

Control

1. Project Close-Out
2. Control Plan

–DEFINE–

Tool 1: Project Charter

Why?: The first phase of Lean Six Sigma's DMAIC process is to Define. The goal of this phase is to set a course of action by identifying the company's main business processes, areas for growth, and points of potential risk. In this phase, the process improvement team is tasked with defining the company's general structure, while also identifying what projects to complete and within what capacity. Common questions involve asking "what are we trying to accomplish?", "what is the business case?" and "who is the customer and what do they want?". The Project Charter tool is a tabular method for identifying simple and general aspects of a company. It divides sections by who is involved, what is the process to be improved, and what factors play a role in choosing a process as well as those affecting the process itself.

Tool:

Team Leader	Marcus Kim	Champion	Jung Sook Kim
Team Members	Marcus Kim, Jung Sook Kim	Process & Owner	Tying Inventory to Demand
Business/Location	Bloom House Flowers -- 24228 Crenshaw Blvd	Key Customers	Middle-to-Upper Class Southern Californians

Problem Statement	Inventories are not meaningfully tied to demand	Goals/Metrics	Record deviations in inventory from demand
Business Case	Reduce waste and improve ability to meet demand and increase profits.	Deliverables	Adjusted inventories informed by demand.
Project Description/Mission	To better support inventory levels with meaningful measurements of demand over time.	Explanation of Benefits Source	Reduced waste will lead to increased profit margins.
Risk assessment	Low-Risk, High Reward: No startup costs to meaningfully record pre-existing values.	Expected Resource Needs	Spreadsheet documenting inventory and demand during and within time periods.
In-Scope	Documenting demand over time in order to reduce inventory waste.	Out-of-Scope	External events affecting demand.

Expected Business Benefits	Reduced waste and increased profit.	Revenue	Will not directly affect revenue.
Hard Cost	The cost of inventory from floral wholesalers.	Speed	Will not speed up process.
Soft Cost	The cost of documentation and measurement.	Compliance	Document inventory and demand each day, week, month

Milestones	When demand is met perfectly with inventory.	Official Dates	Each period as designated.
Target Start Date	As Soon as Possible	Start Date	6/20/2023
Target Improvements Date	Each Month	Improvement Dates	Monthly
Target Project Completion Date	1 Calendar Year	Project Completion	1 Calendar Year

Interpretation:

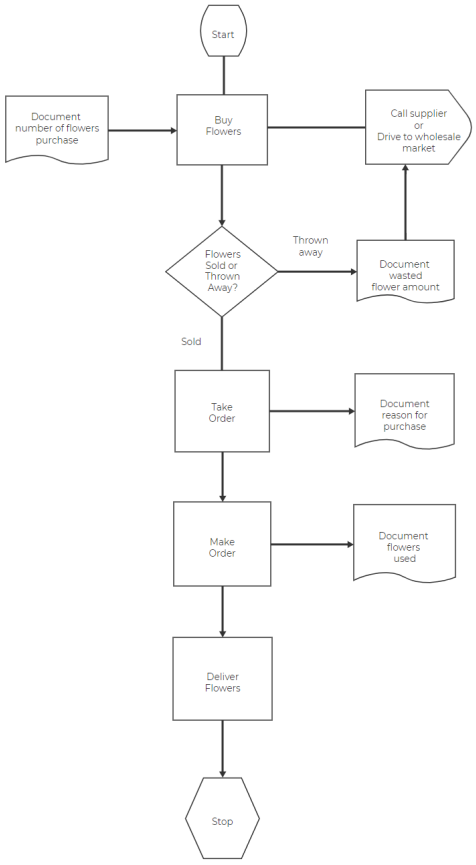
The Project Charter tool provides a snapshot at what this project is and why the process "meeting demand with inventory" was chosen to be improved. It identifies the risks, costs, and deadlines associated with this project, all in one graphical table. This tool helped me determine if this project was worth pursuing in the long term, if there were

hidden factors that I had not originally considered when brainstorming a project idea, and what areas within the project needed to be addressed. Because of this tool, I felt confident that approaching this process was within the scope of this class's objective and company's goals.

Tool 2: Flow Chart

Why?: As previously explained, Bloom House Flowers and Gifts is a sole-proprietorship run by a woman without formal business experience. Though Kim is a capable businesswoman, she does not hold an affinity towards complicated processes or expensive technologies, even if they provide massive marginal benefits. Because Kim prefers sticking to her traditional roots and preferring a low-risk approach to business, the Flow Chart tool combines them with a structured model that will help visualize where and when components of this improvement project will be implemented. Throughout this project, we believe this flowchart will create an easy-to-follow standard business process that will be maintainable no matter how complicated the additional software may seem.

Tool:



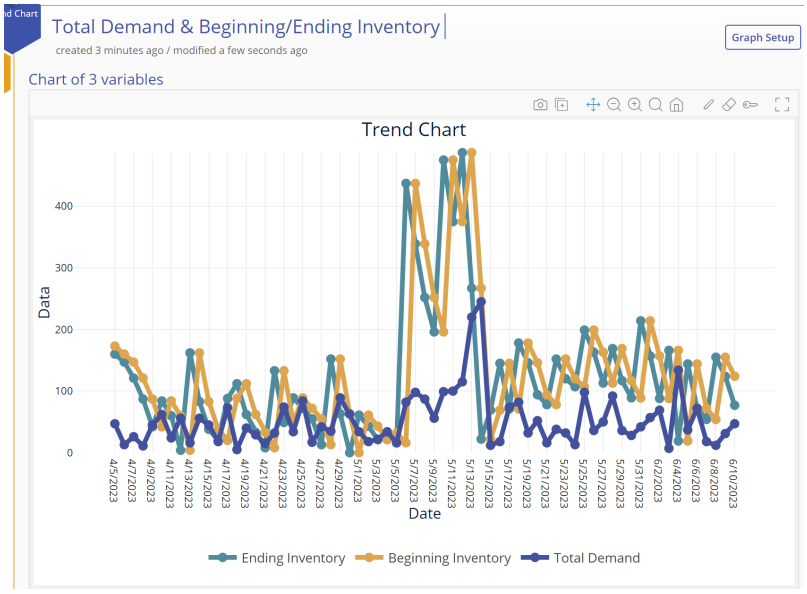
Interpretation: Though Kim was originally hesitant to utilize software altogether, this flow chart simplified the aggregate processes to assist her during the implementation of later softwares. Additionally, the middle column of activities in this flowchart simply documented the business rules of Bloom House Flowers and Gifts and the voice of Kim, who had previously explained the typical activities of her business. Therefore, this flow chart combined the difficulties of novel technology with the simplicity of Kim's previous knowledge to create a more structured process that others outside of Kim could understand. For this reason, we believe this standard work process will serve to minimize errors and simplify the implementation of future process improvement projects.

–MEASURE–

Tool 1: Line Graph

Why?: The key measures of this process involved 1) the number of sales in terms of amount of individual flowers used (demand) as well as 2) the number of inventory to begin and end a given day (supplementary measures include total purchases of inventory and total wasted inventory, which will be utilized in different phases). A trend chart simply depicts the relationship between a time variable, in this case the day of the year, against a numeric, in this case the number of flowers. By utilizing a trend chart, simple, visual findings could be observed and communicated easily with the technology-averse owner of Bloom House Flowers. For this reason, a trend chart was used for its simple ability to visualize numeric data against time data.

Tool:



Interpretation: The first outlier is seen at the middle section of the graph. This jump in demand and inventory reflects Mother's Day, which was implicitly understood by Kim as a historically flower-demanding day. However, unlike in previous years, this jump was affirmed by a data-driven visual. Besides visualizing and affirming pre-existing notions, this chart was also able to visualize the current disparity between demand and inventory on regular days too. On nearly every day, inventory exceeded demand. Though the data shows few instances of wasted flowers, this graph clearly shows that there is currently more inventory being bought than there exists demand from consumers.

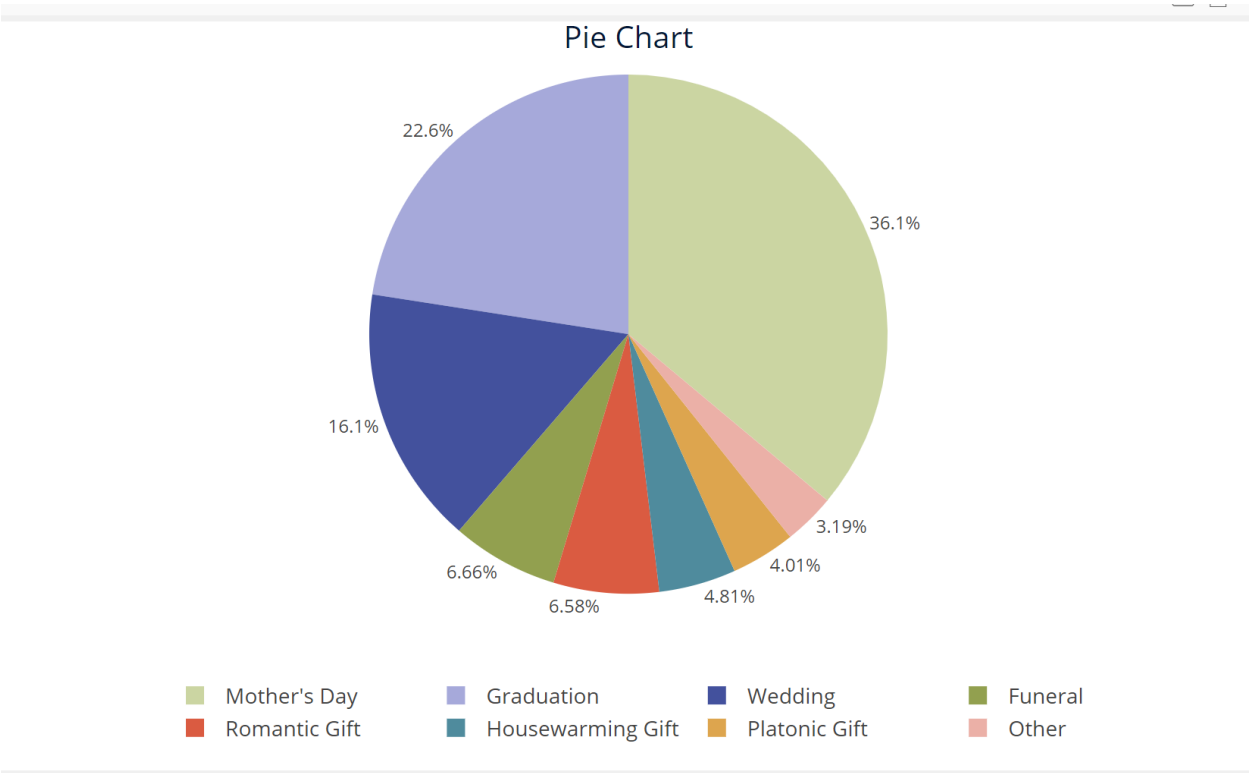
A positive way to look at this trend was derived from Kim. She mentioned that this is not necessarily a problem, because in any service provider, it is often more beneficial to have more product than less product.

However, considering the general environment of Bloom House Flowers and Gifts as a company operating in a price elastic, and therefore competitive, industry, we believe that tackling these margins were an important next step as informed by this trend chart.

Tool 2: Pie Chart

Why?: Complementing the quantitative measure of this process, which involved how many flowers were inventoried and demanded, this process also involved looking at the qualitative reasons affecting purchases at a given time. With each purchase and documentation of the amount of flowers used, we recorded 8 different reasons for purchasing flowers during the time of our process improvement project. The seasonal reasons included with purchases were Mother's Day, Romantic Gifts, Graduation, Housewarming Gifts, Wedding, Platonic Gifts, Funeral, and Other. To complement the quantitative measures used with the Line Graph, we believed a visual relationship of the qualitative factors would help inform future findings and reveal unique insights.

Tool:



Interpretation: The greatest finding that can be made from this Pie Chart is the top three reasons why flowers were purchased this period: Mother's Day, Graduation, and Weddings. Because of the prominence of Mother's Day and Graduation and the weather of spring influencing weddings, it was inherently understood by Kim that these were major reasons affecting her flower demand in previous years.

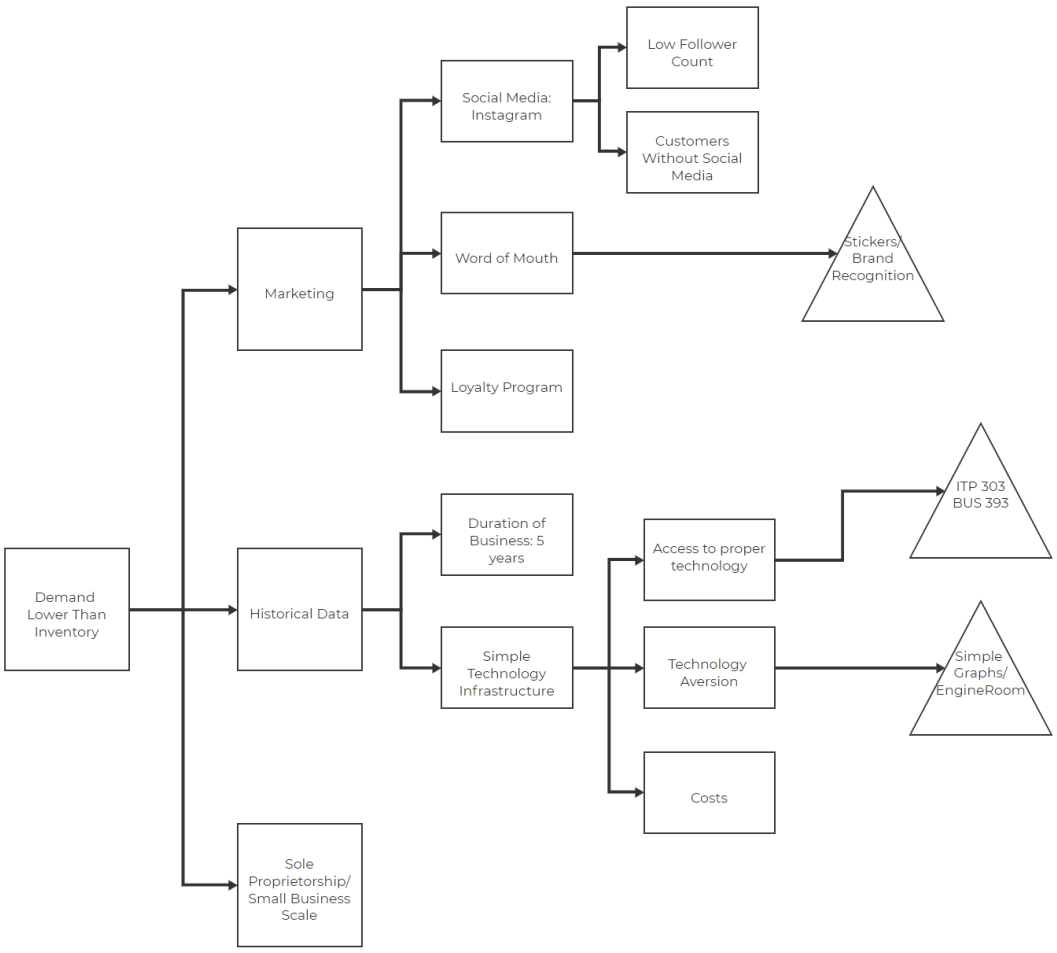
However, we believe that those 3 categories were not responsible for Kim's problems, and instead looked at the remaining 25% of her sales. Kim had previously explained how Mother's Day, Graduation, and wedding events typically required reservations and calls ahead, which allowed for a strict and easy adherence to demand with inventory. With further question-asking as a result of this pie chart, we learned that the problem for Kim was always in impromptu, smaller purchases like last-minute gifts for partners or friends. With this pie chart, the process improvement project team and Kim had a better understanding of where purchases were coming from and under what categories margins should be improved upon.

–ANALYZE–

Tool 1: Root Cause Tree Analysis

Why?: As determined by the Measure phase, the problem of this process still stands that demand is NOT met by inventory. Instead, inventory is exceeding demand, resulting in excessive waste. A Root Cause Tree Analysis aids in process improvement projects by digging into causes of a problem, what methods there are to solve the problem, and if it is solvable. A Root Cause Tree Analysis begins with the identified problem, and works backwards to determine different plausible causes, as well as causes of those causes. In the case of our use of the Root Cause Tree Analysis, we used rectangles to determine causes, while using triangles to determine solutions.

Tool:



Interpretation: As a result of this Root Cause Tree Analysis, we found 3 factors influencing the problem of demand being lower than inventory: marketing, historical data, and business type. Marketing and business type were two causes we spent little time analyzing. Marketing is a product of word of mouth, luck, and excessive start up costs, so we determined that fixating ourselves on marketing causes was irrelevant and costly. Similarly, we also could not change the business type of a small-proprietorship, so this was also deemed irrelevant as a result of the Root Cause Tree Analysis visual findings.

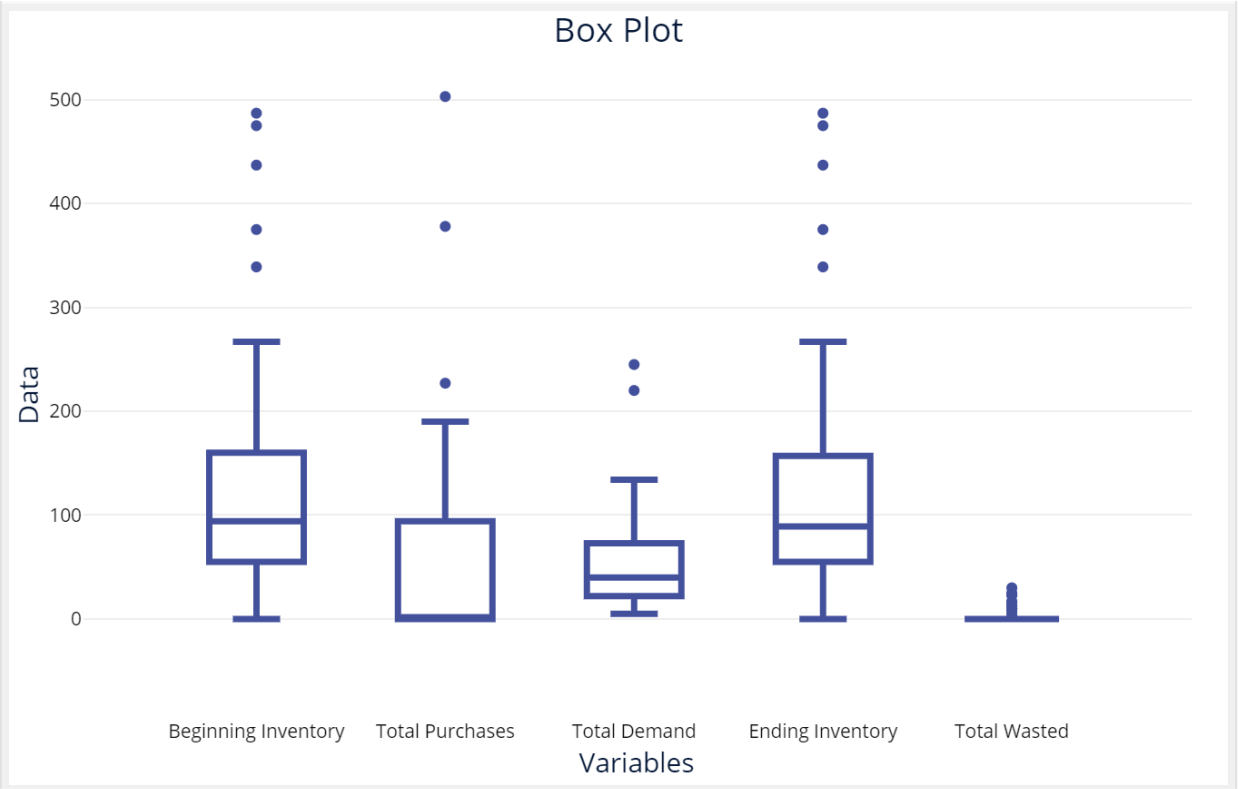
Instead, we were able to focus on analyzing historical data, or rather, the lack of it, that we believe was influencing the problem. Before implementing the Trend Chart and Pie Chart, Kim had no idea how large the disparity was between demand and inventory, nor did she understand what influenced the data for both. With those two charts implemented, we were able to tackle the root cause of Bloom House Flowers and Gift's lack of a "simple technology infrastructure". To tackle Kim's lack of access to proper technology, we were able to administer free-to-use databases powered by Oracle Apex and Microsoft Excel & Access softwares. To tackle Kim's aversion to technology, we utilized the simplicity provided by EngineRoom without any additional uses required by Kim. As previously mentioned, we veered away from solutions requiring costs and instead applied learnings from ITP-303 and BUS-393.

Though we could not tackle issues surrounding marketing or business type, this Root Cause Tree Analysis diagram allowed us to pinpoint the lack of historical data as a cause of the problem, while also determining reasons and solutions for that.

Tool 2: Box Plot

Why?: A Box Plot is a strong visual tool for displaying outliers, as well as averages and baselines in comparison to other variables. Since we were considering 5 measures in beginning and ending inventory, total demand, total purchases, and total wasted inventory by number of flowers, we believed a box plot would reveal outliers, averages, and baselines in a visual format that would compare them to one another. Utilizing a Box Plot would allow us to display all variables in a less cluttered fashion than the initial Trend Chart.

Tool:



Interpretation: Since beginning and ending inventory appear nearly identical, we based our analysis off of comparing the other three plots to these two.

For total demand, it is simple and understood that demand is currently underwhelming in comparison to beginning and ending inventories. This is a problem that will continue to be addressed by the Improve phase of this project and with extended process improvement projects in partnership with Bloom House Flowers and Gifts. More important are the insights yielded from the other two quantitative categories.

For total purchases, we learned that most purchases came in a small number of large quantities, rather than in a large number of small quantities. The problem with this relates to the general flower industry problem of volatile demand. By buying too many flowers in small quantities, a store like Bloom House Flowers and Gifts is at risk of buying too much inventory, without the proper demand. We believe the solution to this is to continue determining historical levels of demand with data collection and analysis.

For total wasted, though its low numbers seem to contrast our analysis of total purchases, we believe this low number is due to the number of reservation-based sales completed during this period. As shown with the Pie Graph, the majority of sales were based around Mother's Day, Graduation, and weddings, which all required ahead-of-time orders that Kim could aptly prepare for, thus resulting in less waste. Though less waste is

a strong sign for Bloom House Flowers, we do not believe this is sustainable or reflective of other time periods throughout the year. For this reason, we believe an extended study of Kim's waste, especially during times of less reservation-based sales, will continue to yield interesting and informative results regarding waste. Because of the Box Plot format, we were able to garner this insight and give reason to the continuation of this process improvement project.

–IMPROVE–

Tool 1: Corrective Action Matrix

Why?: The inverse of the Project Charter is the Corrective Action matrix. Though the Improve phase is much later in the DMAIC process than the Define phase, both identify the general information tied to the start and end of a process improvement project. In the same way the Project Charter documents and sorts the general information necessary for determining which process to improve, the Corrective Action Matrix combines the many sources of improvement and their determined solutions in one spot to be utilized for the indefinite duration of the process improvement project. We utilized the Corrective Action Matrix to be a continued reference point for previous solutions and a place to build on when future ones have been determined.

Tool:

Team Name: Demand-Inventory PIP Revision: 6/11/2023
Team Leader: Marcus Kim
Date: 4/3/2023

Reference Number	Action	Person Responsible	Target Date	Effectiveness (1-10)	Current Status
1	Consult Kim about business rules	Marcus Kim and Jung Sook Kim	4/20/2023	9	Determined reasons for purchase and types of flowers used
2	Collect data	Jung Sook Kim	Daily/Ongoing	10	Collected data for the entire time
3	Implement Database with 3 entities: Demand, Purchases, Inventory	Marcus Kim	5/31/2023	7	Created databases, Short-Term effectiveness = Useful, Long-Term effectiveness = TBD
4	Adherence to Flow Chart for implementing proces	Creation: Marcus Kim / Use: Jung Sook Kim	Daily/Ongoing	7	Utilized for each step of the process, Short-Term effectiveness = Useful, Long-Term effectiveness
5	Data Visualization and Application	Marcus Kim	5/15/2023	10	Prepared data from Measure and Analyze phase to explain solutions, problems, and future actions

Interpretation: This Corrective Action Matrix is a framework to be added upon as future discoveries are made. However, in the present, this diagram already documents the many solutions and processes implemented in the previous 3 DMAIC phases as well as those that are indefinitely ongoing.

Our first step of this process improvement process was to consult Kim, as our customer, about her key metrics and desired results, which we determined to be extremely effective, informative, and necessary for the rest of this project.

As a result of her determined business rules, we were able to begin collecting data on the 5 key measures she identified, along with the 8 reasons for purchases.

Because we collected data and determined the business entities most influential to Kim and Bloom House Flowers and Gifts, we could create relational databases centered around Demand, Purchases, and Inventory using management softwares like Oracle APEX and Microsoft Access to reduce data integrity issues and increase the ability to implement algorithmic querying for more seamless analysis.

Finally, we were able to turn this data into simple graphics using EngineRoom to gain insights into what required future improvement. Because of the structure of the Corrective Action Matrix, we could determine what was and what was not working through a historic document for all project members and stakeholders to view in the present and future.

Tool 2: 5-S Approach

Why?: The 5-S Approach represents the five Japanese words: Seiri, Seiton, Seiso, Seiketsu, and Shitsuke. In English, these words translate to Sort, Set in Order, Shine, Standardize, and Sustain. This simple, action verb-based mantra specifies necessary actions for a business to take as a result of process improvement to ensure long-term results. This approach illustrates the general steps required to maintain the effects of the investment of process improvement for a hesitant businesswoman to understand easily.

Tool:

	Explanation	Tools
Sort	Organizing the problem and planning on addressing it.	Project Charter
Set in Order	Organizing data related to the problem in a numeric and qualitative manner.	Oracle APEX Microsoft Access Trend Chart Pie Chart
Shine	Visualize good and bad, solutions and problems. Consistently update business rules so databases reflect customers desires.	Oracle APEX Microsoft Access
Standardize	Simplify process improvement project's implementation of solutions and increase repeatability and reproducibility.	Flow Chart
Sustain	Ensure improvements are seen by a target date and that returns are accomplished as a result of this project.	Flow Chart, Corrective Action Matrix

Interpretation: This tool revealed the overarching steps required during and after this process improvement project. For this project and future ones, clutter must be dismissed figuratively and physically to sustain process improvement. Once sorted, problems and solutions should be identified and characterized for approachability. Once ordered, it is important to highlight next steps for action and how to execute them properly. Through standardization, the problem being addressed and future ones may be tackled by uninvolved members or new ones. Finally, sustaining strong effort and continued implementation of solutions were overarching themes communicated to Kim for this project and for future ones.

–CONTROL–

Tool 1: Project Close-Out

Why?: Though the general process improvement project should be general and continuous, there still requires a finite end point to determine when a project has maximized its expected returns. Using the Project Close-Out table allows us to determine definite end points for the many aspects composing this process improvement project surrounding meeting demand levels with inventory.

Tool:

Date	4/3/2023 - 6/11/2023	Project Manager	Marcus Kim	Contact Info	mkim198@calpoly.edu
Project Name	Meeting Flower Demand	Project Sponsor	Jung Sook Kim		
Project Description	Reduce inventory levels t	Customer Contact	Jung Sook Kim	Contact Info	jjj3kim@gmail.com

Requirement	Description of how the requirement is measured	Target	Value	Date
Continued Database Use	This requirement will be met by having data existing for every day.	Data in every date cell	Binary	Ongoing
Reduced Inventory	This requirement will be met when inventory is closer to demand	Demand matching inventory	Reduction of Inventory	Ongoing
Less Wasted Inventory	This requirement will be met when smaller sales increase and less waste is simultaneously accomplished	Record small sales and experience less waste	Reduction of Wasted	Ongoing
Consistent Purchases	This requirement will be met by experiencing consistent purchases aligned with consistent demand	Begin by improving demand consistency to improve purchase	Consistency	Ongoing
Query data from Databases	This requirement will be met once a Year's Worth of data has been attained, allowing for querying on data using SQL	A year's worth of data (at least)	Completion	4/3/2024

Interpretation: The Project Close-Out tool determined 5 requirements to be met as a result of this process improvement project. The “Continued Database Use” was a result of the Oracle Apex and Microsoft Access databases implemented in the Improve phase to record Kim’s sales, purchases, and inventory levels over time, which will be ongoing. The requirement will be met by either the use or failure to use these databases. The “Reduced Inventory” requirement involves the long-term goal of having inventory meet demand, since inventory is currently exceeding demand. The goal is to reduce inventory levels to better align with demand. The “Less Wasted Inventory” requirement was created as a result of the unique reasons for purchases determined for this period, which we feel will not be reflected in other periods over time. Paired with the “Continued Database Use” requirement, we hope that collecting more data will reveal insights into why inventory may be wasted and how it can be improved. The “Consistent Purchases” requirement is also a result of a similar symptom as the previous requirement. Since many reasons for purchase were for reservation-based arrangements, purchases were not very consistent, leading to increased waste. Since this period is an outlier in terms of reasons for purchase, we hope that continued data collection will occur. Finally, as a result of collecting long-term data and results from this process improvement project, we hope we can revisit Kim and Bloom House Flowers and Gifts with powerful SQL queries capable of revealing more insights and areas for improvement.

Tool 2: Control Plan

Why?: In the same way the Pie Graph's qualitative measures complemented the Trend Chart's quantitative measures in the Measure phase, the Control Plan is a quantitative complement to the Project Close-Out's qualitative aspect of the Control phase. Unlike the Project Close-Out, which describes targets and how the process will be evaluated, the Control plan reveals the numeric side of this project's end.

Tool:

Organization	Bloom House Flowers an	Key Contact	Marcus Kim	Date (Orig)	4/3/2023
Location	Torrance, California	Phone	310-487-4545	Date (Rev)	6/11/2023
Email	mkim198@calpoly.edu	Revision #	1		

Process Name	Process Location	Input	Measurement Method	Sampling Frequency
Total Beginning Inventory	Starting Point	Beginning inventory, calculations (2-5)	Record into Inventory database	Daily
Total Ending Inventory	Ending Point	Calculations (Beginning Inventory + Purchases - (Total Demand + Total Wasted)	Record into Inventory database	Daily
Total Demand	Process	Manual counting from Owner's accounting	Record into Demand database	Each sale
Total Purchases	Starting Point --> Process	Manual counting from Owner's accounting	Record into Purchases Database	Each purchase
Total Wasted Inventory	Process --> Ending Point	Manual counting from Owner's accounting	Record into Inventory Database	Daily
Databases	Technological Infrastructure - Backbone	Data (1-5)	Data (1-5)	Daily

Interpretation: Not only are the beginning 5 key measures included here, but so are the databases implemented as a result of this process improvement project. The most important interpretation of this diagram is the importance of constant data collection. The "Sampling Frequency" indicates the daily, timely necessity to record data every day and at the time of sale or purchase. Although this is tedious, not only is it solvable with automation and code, but it will inform Kim and Bloom House Flowers and Gifts about future areas for growth that will be invaluable in the long-run.

Appendix:

Bloom House Flowers and Gifts–Demand-Inventory Data

Date	Beginning Inventory	Total Purchases	Total Demand	Total Wasted	Ending Inventory
4/6/2023	160	0	13	0	147
4/7/2023	147	0	26	0	121
4/8/2023	121	0	11	23	87
4/9/2023	87	0	45	0	42
4/10/2023	42	104	62	0	84
4/11/2023	84	0	24	0	60
4/12/2023	60	0	56	0	4
4/13/2023	4	178	16	4	162
4/14/2023	162	0	56	23	83
4/15/2023	83	0	45	0	38
4/16/2023	38	0	18	0	20
4/17/2023	20	158	73	17	88
4/18/2023	88	59	5	30	112
4/19/2023	112	0	40	10	62

Date	Beginning Inventory	Total Purchases	Total Demand	Total Wasted	Ending Inventory
4/19/2023	112	0	40	10	62
4/20/2023	62	0	29	0	33
4/21/2023	33	0	15	10	8
4/22/2023	8	164	32	7	133
4/23/2023	133	0	74	10	49
4/24/2023	49	74	34	0	89
4/25/2023	89	67	84	0	72
4/26/2023	72	0	17	0	55
4/27/2023	55	0	42	0	13
4/28/2023	13	174	35	0	152
4/29/2023	152	0	89	0	63
4/30/2023	63	0	63	0	0
5/1/2023	0	95	34	0	61
5/2/2023	61	0	18	0	43

Date	Beginning Inventory	Total Purchases	Total Demand	Total Wasted	Ending Inventory
5/3/2023	43	0	22	0	21
5/4/2023	21	57	34	12	32
5/5/2023	32	0	16	0	16
5/6/2023	16	503	82	0	437
5/7/2023	437	0	98	0	339
5/8/2023	339	0	87	0	252
5/9/2023	252	0	56	0	196
5/10/2023	196	378	99	0	475
5/11/2023	475	0	100	0	375
5/12/2023	375	227	115	0	487
5/13/2023	487	0	220	0	267
5/14/2023	267	0	245	0	22
5/15/2023	22	84	12	25	69
5/16/2023	69	94	18	0	145

Date	Beginning Inventory	Total Purchases	Total Demand	Total Wasted	Ending Inventory
5/17/2023	145	0	74	0	71
5/18/2023	71	189	82	0	178
5/19/2023	178	0	32	0	146
5/20/2023	146	0	52	0	94
5/21/2023	94	0	16	0	78
5/22/2023	78	112	38	0	152
5/23/2023	152	0	32	0	120
5/24/2023	120	0	13	0	107
5/25/2023	107	190	98	0	199
5/26/2023	199	0	36	0	163
5/27/2023	163	0	50	0	113
5/28/2023	113	148	92	0	169
5/29/2023	169	0	36	16	117
5/30/2023	117	0	28	0	89

Date	Beginning Inventory	Total Purchases	Total Demand	Total Wasted	Ending Inventory
5/31/2023	89	167	42	0	214
6/1/2023	214	0	57	0	157
6/2/2023	157	0	69	0	88
6/3/2023	88	85	7	0	166
6/4/2023	166	0	134	13	19
6/5/2023	19	162	37	0	144
6/6/2023	144	0	72	0	72
6/7/2023	72	0	18	0	54
6/8/2023	54	113	12	0	155
6/9/2023	155	0	31	0	124
6/10/2023	124	0	47	0	77

Bloom House Flowers and Gifts–Reasons for Purchase

Types	Count
Wedding	566
Funeral	234
Romantic Gift	231
Housewarming Gift	169
Platonic Gift	141
Graduation	792
Mother's Day	1267
Other	112

Shingo Model Assessment

Applicability Information

Organization Name	Bloom House Flowers and Gifts
Activity Identifier	LSS Mini-Project
Industry	Services (Flower Arranging)
Level	Entire Organization

Dimension 1: Cultural Enablers

Respect is deeply felt for and by every person in an organization.	7
Leaders seek input, listen carefully, and continuously learn.	4
Our organization has a safe and clean workplace where safety and environmental standards are continuously improving.	7
On-the-job coaching in good management practices is a regular part of our organization's culture.	1
People in this organization understand the principles and "the why" behind things we do.	7
Better ways of doing things are discovered and shared across the organization.	4
Comments on high or low scores and opportunities for improvement:	Learning is slightly below the status quo and new, innovative techniques are not frequently explored. However, the culture is positive and safe.

Dimension 2: Continuous Process Improvement

Our current state and future state is an ongoing continuous cycle that is actively pursued with a visual, detailed action plan.	4
Repeated cycles of experimentation and direct observation are used to explore new ideas and learn, even from failures.	4
Our organization understands that outcomes result from processes, and that problems are rooted in imperfect processes, not the people involved.	4
Problems and defects are detected and corrected at the point of occurrence.	7
Work is not done in advance of real demand and once started, flows uninterrupted to the customer.	7
Our processes are stable, consistent, and repeatable.	6
Control is built into work processes, and not externally imposed.	4
Managers and supervisors routinely observe the actual process in order to gather factual data to understand the problems and opportunities.	7
We focus on the overall delivery of value to the customer and not the optimization of individual functional areas.	7
Our standards and instructions are simple and visual for all work processes. They are routinely updated with improvements and are followed with regard to timing and sequence.	7
Non-value adding activities (waste) in our processes are identified and reduced or eliminated.	7

Improvement is integrated into the daily work. Associates understand it is their job both to do their job and improve their job.	4
Our organization collects and uses data to make operational and strategic decisions.	3
Comments on high or low scores and opportunities for improvement:	Low scores reflect the informal business approach used at Bloom House Flowers. Processes were developed on a trial-and-error basis, and do not appear to be in a state of continuous improvement. The value-adding process of creating flowers is strong and efficient, but the back-end processes need to be improved upon.

Dimension 3: Enterprise Alignment

Processes are managed as part of an integrated system to achieve business results.	7
Leaders hold to guiding principles through hard times.	7
Value in our organization is defined by what the customer wants and is willing to pay for.	7
Information systems provide a direct flow of pertinent information that is easily accessible and usable across the extended enterprise (no shadow systems or spreadsheets).	5
Our organization focuses on the long term and not just monthly or quarterly financial targets.	7
We have a structured process for aligning goals and strategic priorities that is simple and visible at all levels of the organization	7

Managers help associates anchor their personal values with principles of operational excellence.	7
Planning and implementation is aligned, cascaded and shared horizontally between functions.	7
All levels of the organization, even leaders, have a clear description of their daily work.	7
Organizational measures are tailored to the needs of the people doing the work at all levels.	7
All relevant stakeholders are considered in making operational and business decisions.	7
Comments on high or low scores and opportunities for improvement:	Bloom House Flowers and Gifts is extremely considerate of the customer and plans with resolve. Their values are seen well in their product and conduct.