Reducing Turnaround Time on Mobile Detailing

Introduction

Spectrum Dynamics is a professional mobile detailing business that offers high-end detailing services to customers in the Houston area. Professional detailing consists of multi-stage paint corrections, long-term paint protection, interior cleaning, headlight restoration, blemish removal, engine compartment, wheel cleaning, and ceramic coating services. The company travels to care for customer's vehicles at their own homes or places of business. This requires the company to have a vehicle that can carry equipment and supplies. Due to Houston's extreme climate, most of the equipment and supplies must be kept in storage and loaded onto the vehicle before a scheduled job. The lengthy process of loading, unloading, and setting up a work station is uncompensated in the service quote. The inefficiency of this process leads to increased work cycle time and effort. This results in a decrease in revenue for the company and less services being performed. We will examine this problem using Lean Six Sigma and aim to reduce the work cycle time for each service call.

Methodology and Results

Improvement Cycle #1: Understanding Your Process

The current process used is demonstrated in the SIPOC diagram and flow chart found in appendix A and B. The process starts with Spectrum Dynamics scheduling a customer for a particular service. The specific equipment and supplies required for the service are taken from inventory and loaded onto the work vehicle. The company travels to the customer and gives an estimate. If the estimate is approved, the equipment and supplies are unloaded and a work station is setup so that work can begin. The car is then serviced. Payment is made by the customer, and

equipment and supplies are loaded back onto the work vehicle. The last step is to leave the customer and unload the equipment and supplies back into inventory.

The purpose of using the SIPOC diagram and flowchart is to document our steps in order to understand and analyze the complete process. The data was obtained by observing the process as it was being performed at the job site. We learned through the use of these tools that there are more steps in the process than originally estimated and that it was more complex than previously anticipated. If we were to repeat the process of using these tools, we would make a more detailed flowchart that breaks down the interior and exterior services into the actual services offered. This will help better isolate the supplies required for the job at hand.

Improvement Cycle #2: Measuring Current Process Performance

In order to measure how our current process was performing, we used the Pareto chart to map the time required to carry out each step in the process. Our Pareto chart shown in appendix C shows all the steps involved that were not compensated in the service quote. The Pareto chart allowed us to pinpoint which part of the process was the most time consuming. The chart revealed that loading equipment and supplies added the most time to each job and was the largest contributor to loss in revenue.

The data for the chart was obtained through averaging the observations of several service calls over the period of a month. We found that the averages for loading takes 50 minutes, inspecting and quoting takes 22 minutes, setting up takes 22 minutes, reloading takes 21 minutes, and the final unloading takes 13 minutes. On average, the initial loading step alone takes at least twice as long as any other step. If we were to repeat the process, we would collect the data in a more discrete manner without having the employee realize they were being timed, as this may have influenced the data observed.

Improvement Cycle #3: Identifying the Cause of the Problem

In order to isolate potential causes as to why loading and unloading takes so long, we decided to formulate ideas by brainstorming. We did this by using the structured brainstorming process of round robin. We then took the ideas from the brainstorming session and organized them into individual categories to create an affinity diagram as depicted in appendix D. We found that most of the problems were related to organization and supplies. To actually isolate the root cause of the problem, we created an interrelationship digraph, shown in appendix E, and we found that the root cause of our problem was in fact due to problems with organization. This problem was amplified and led to issues regarding workflow, increasing the total time required for loading and unloading.

We used these tools because they allowed us to better isolate the potential and actual root causes of our problem. We were able to see the source where our problem came from and how it carried on to other areas. The data was collected by working with the organization's employees to see what issues could possibly affect loading and unloading.

While a majority of the issues appeared to be related to problems with supplies, we found the actual cause was an issue of organization. Issues such as unorganized supplies and equipment, unpacked or inadequate inventory, leaving supplies in the vehicle after a job, and unstructured loading and unloading all affected the other areas and added up to increase the time required for each job. If we were to repeat the process using the tools applied, we would use a different set of tools to see if it isolated the same or a different root cause.

Improvement Cycle #4: Determining Recommended Solutions

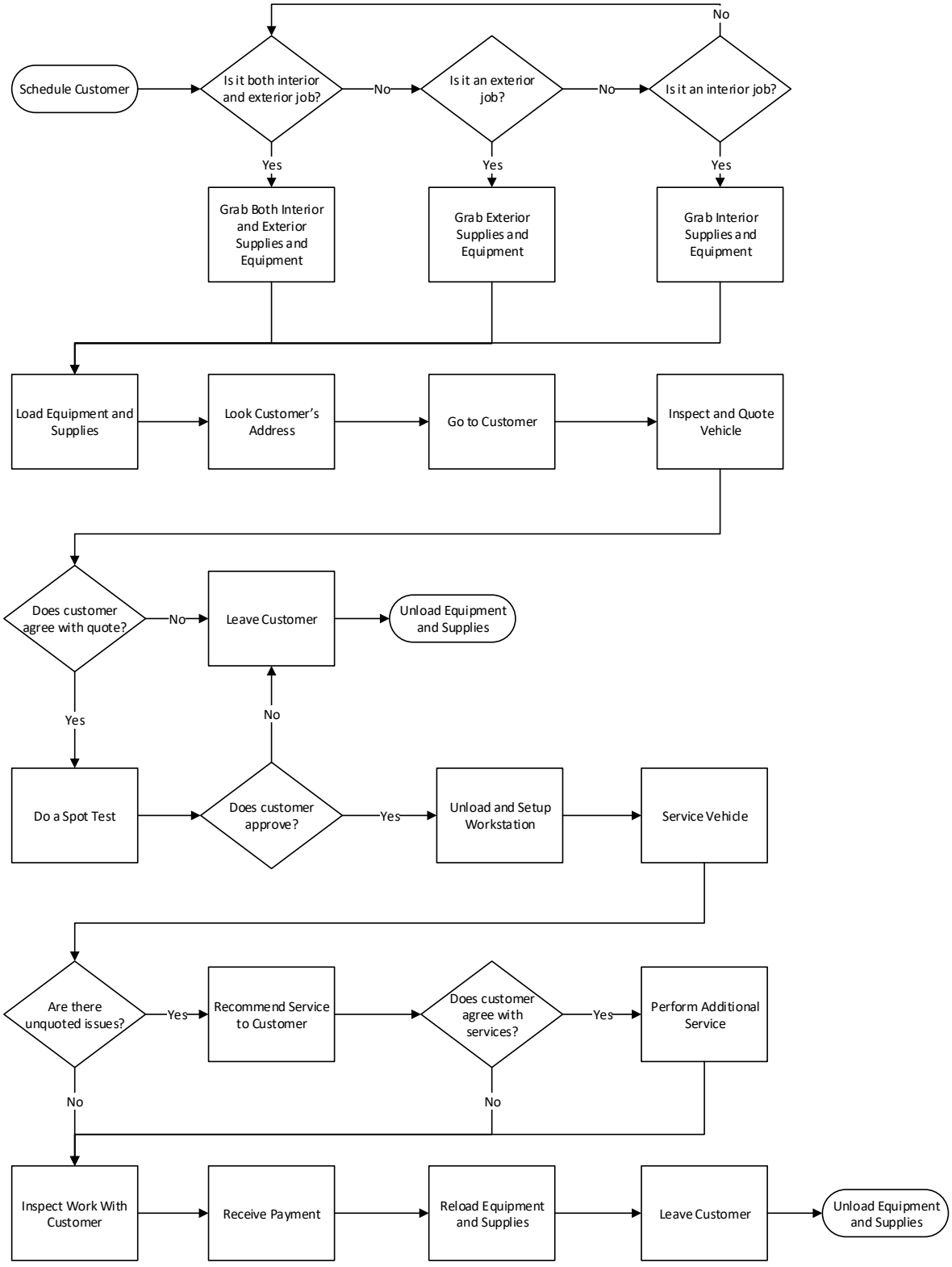
After we identified the root cause of the problem, we utilized a nonverbal brainstorming method and used pin cards to develop a list of potential solutions to address the particular issue. We found that this method allowed people to still come up with their own solutions before being influenced by other ideas because they could choose when to look at the idea cards being displayed for the group to see. Our brainstorming session resulted in a total of five potential solutions. Solution one involved creating bins for specific jobs to help organize supplies and make loading and unloading more efficient. Solution two required reducing the amount of supplies and equipment brought along. The third solution was to leave basic supplies and equipment in the work vehicle that wouldn't be affected by weather conditions. Our forth solution required creating job specific checklists that contained the necessary supplies and equipment needed for the particular service being performed. The fifth solution was to acquire a larger service vehicle that could hold a substantially larger amount of supplies and equipment.

To help us rate these solutions, we decided to create a prioritization matrix. We chose this tool because it allowed us to pick a solution that best fit the organization's needs based on specific criteria requirements. We used five criteria options that addressed if the solutions were inexpensive, not labor intensive, convenient, feasible, and sustainable. After rating the solutions using symbols with designated values, we totaled the amounts and found the highest scoring solution was to leave basic supplies and equipment in the work vehicle. This is the solution that will be implemented because it does not require any additional expenses or labor input. It also increases convenience for the employee because the amount of work required for the loading and unloading processes. This solution does not add any additional steps to the overall work process giving it a high level of feasibility and sustainability.

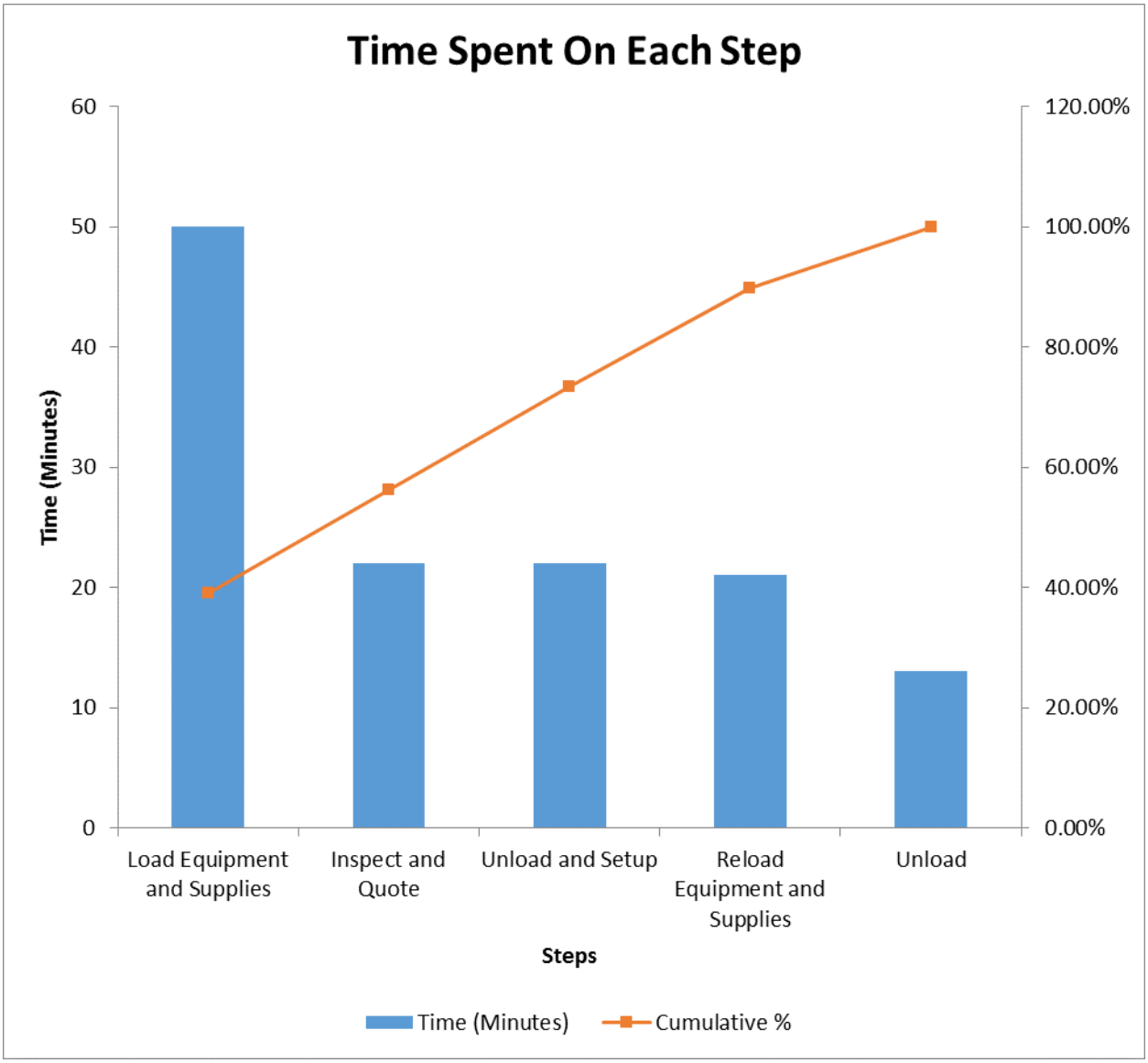
Appendix A – SIPOC Diagram

Suppliers	Inputs	Process	Outputs	Customers
Online Vendors Local Vendors Customers Company	Vehicles Website Equipment Supplies Detailer	1. Schedule Customer 2. Load Equipment and Supplies 3. Get to Customer 4. Inspect and Quote 5. Unload and Setup Work Station 6. Service Vehicle 7. Reload Equipment and Supplies 8. Leave Customer 9. Unload Equipment and Supplies	Detailed Vehicle Satisfied Customer Invoice	Car Owners Car Club Members Auto Shops

Appendix B – Flowchart



Appendix C – Pareto Chart

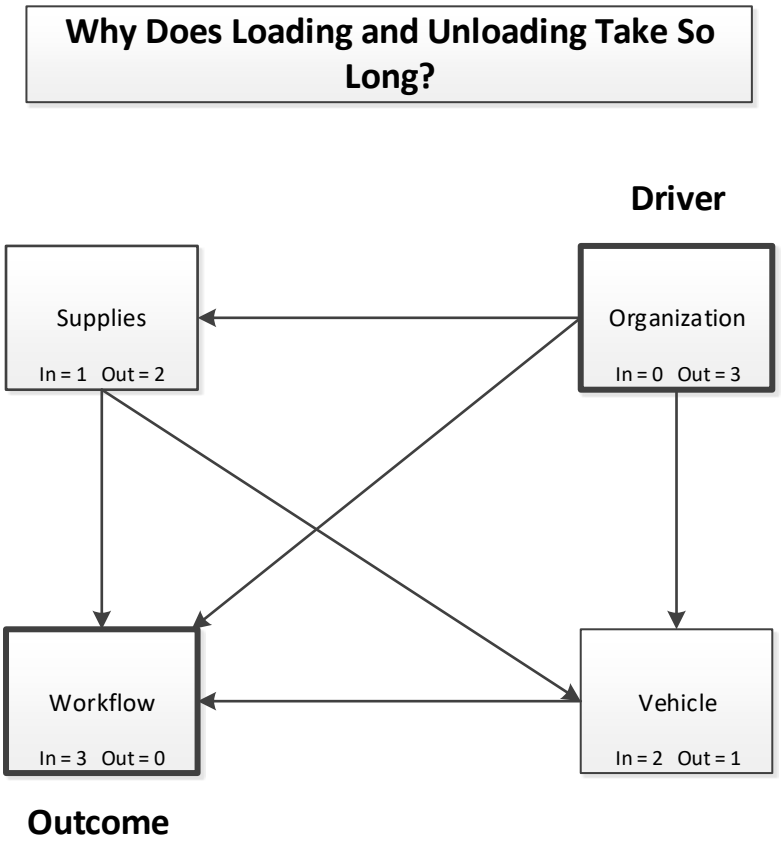


Appendix D – Affinity Diagram

Why Does Loading and Unloading Take So Long?

Organization	Supplies	Vehicle	Work Flow
Supplies unorganized	Products not diluted	Fueling service vehicle	Forgetting supplies
Supplies unpacked from delivery	Excess of same types of products	Unnecessary belongings in car	Inadequate product on hand
Failure to unload supplies after a job	Forgetting supplies	Lack of space in vehicle	No structure for loading and unloading
Unnecessary equipment	Loading unnecessary supplies		Failure to unload supplies after a job
Inadequate product on hand	Products still in stock bottle		
No structure for loading and unloading	Inadequate product on hand		

Appendix E – Interrelationship Digraph



Appendix F – Brainstorming and Benchmarking

Potential Solutions

1. Create organized bins for specific jobs.
2. Reduce amount of supplies and equipment brought along.
3. Leave basic supplies and equipment in work vehicle.
4. Create job specific checklists for necessary supplies and equipment.
5. Acquire a larger service vehicle to store supplies and equipment.

Criteria

A. Inexpensive

B. Not Labor Intensive

C. Convenient

D. Feasible

E. Sustainable

Appendix G – Prioritization Matrix

Criteria	Option 1	Option 2	Option 3	Option 4	Option 5
A	○	●	●	●	□
B	●	○	●	●	□
C	●	□	●	○	●
D	●	●	●	○	□
E	●	○	●	○	○
Total	39	25	45	27	15

Legend: ● = 9 ○ = 3 □ = 1