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Reducing Call Transfer Time Using Lean Six Sigma

Abstract

Determining where to transfer an incoming call to within an organization can be time consuming even for the most seasoned receptionists. The time the caller is waiting to be transferred can positively and negatively impact the remaining customer interaction for those downstream of the receptionist. This study will investigate the current average call time to transfer an incoming caller, make recommendations to reduce the average wait time, and monitor the suggested changes to determine the results. The goal of the study is to reduce the average transfer time by 50%, in an effort to save the callers and the organization money. By reducing the transfer time by half, the customer will experience savings in time spent on the phone, and the organization may be able to reduce the staff necessary to transfer the incoming calls.

Methods and Materials

This project required cross-collaboration within the organization as well as input from external customers. The project included the following:

- A core team consisting of representatives from the finance, customer service, and operations departments, and senior management. The core team met bi-monthly to report back project status and receive updates.
- Process maps were used to determine the flow of information in the system and, in conjunction with metrics assisted in identifying opportunities for improvement.
- Data for this project was pulled from the on-site phone system (ShoreTel) and analyzed with MiniTab and Microsoft Excel.
- The project activities followed the Lean Six Sigma roadmap of Define, Measure, Analyze, Implement and Control.

Define

- Based on the impending retirement of one of the receptionists and a wait time on average of 88 seconds to have a call transferred, we need to improve the wait time callers experience when calling our organization.
- The average length of the calls, multiplied by the number of calls, multiplied by the hourly rate of a physician, is currently costing our outside customers nearly $73,500 per year.
- The goal is to improve wait time to 45 seconds or less, resulting in nearly a reduction of 50%, and savings of approximately $35,000 to our outside customers.

Measure

- In conjunction with outside customers, the team developed a list of dimensions that are critical to quality (CTQ).
- Sample data regarding call times was collected from the phone system to develop benchmark and provide foundation for analysis. Sample was random and taken during one month of operations.
- Call times were further classified by other dimensions such as receptionist answering the call and department to which the call was routed. Calls to specific individuals were removed from the data set.
- Call times were then categorized and developed in to a Pareto Chart to assist in analysis of data.

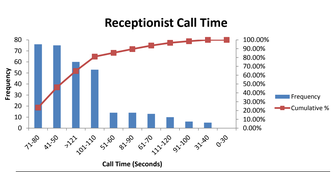

Figure 1: Pareto chart showing length of call with receptionist

Measure (continued)

- An attribute agreement analysis (MSA) was conducted to determine the overall error rate of the receptionists. Overall error rate was 90% as shown below. This indicated that the receptionists are accurately triaging calls.
- A process map was developed to further assist with analysis of opportunities in later phases. The process chart below is what receptionists use to determine the routing of incoming calls.

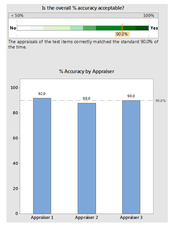

Figure 2: Results of MSA study

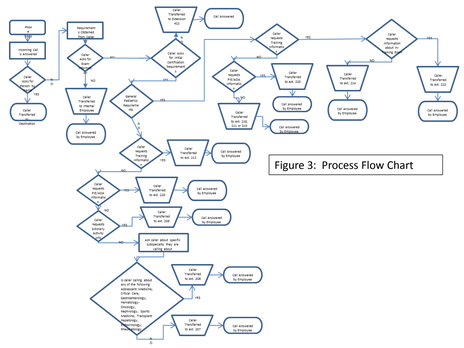

Figure 3: Process Flow Chart

Analyze

Using various Lean Six Sigma tools, we were able to identify reasons for the increased wait times, providing actionable information to identify opportunities for improvement within the current process.

- The study focused on the calls to departments specifically as calls directed to an individual took less than twenty-five seconds.
- To determine if any correlation existed between the average wait time and the other dimensions we ran tests within MiniTab. The only dimension that had a direct correlation on the wait time was which receptionist answered the call, further confirmed with an analysis of variances (ANOVA) as shown below.

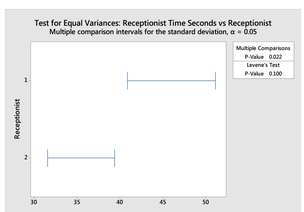

Figure 3: Results of ANOVA test

- The Failure Mode Effect Analysis (FMEA) matrix developed by the team, in conjunction with the cause-and-effect diagram(fishbone diagram) allowed us to further identify and prioritize the implementation of improvement ideas.

Process Name: Incoming Call Routing — FMEA Template

Process Step	Potential Failure Mode	Potential Failure Effects	Severity	Potential Causes	Occurrence	Current Controls	Detection	RPN
Incoming Call Time	Time too long	Upset physician Incoming Calls Back Up in Queue	5	Too Many Decision Points	6	Process Flow Chart and Staff Directory 6 with Responsibility Training and 3 Documentation	4	120
			6	Improper Training	3		4	72
		Overworked/Stressed Staff	4	Phone System Not Functioning Properly	2	Monitoring System to Monitor Phone System	1	8
	Time too short	Misdirected Calls	6	Too Many Decision Points	6	Process Flow Chart and Staff Directory 6 with Responsibility	4	144
		Disengaged Staff	4	Improper Training	3	Training and Documentation	4	48
		Disengaged Staff	4	Phone System Not Functioning Properly	2	Monitoring System to Monitor Phone System	1	8

Figure 4: FMEA Chart

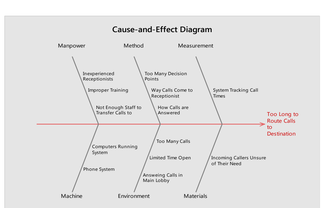

Figure 4: Fishbone diagram

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Improve

After analysis of our data, we focused our efforts on streamlining the decision points within the process and allowing certain callers to bypass the receptionist. The initial process had as few as one decision point to as many as eleven. This helped to increase the variability in the length of time a caller would be on the call. A caller that knew which individual they needed to speak with could be routed within a matter of seconds whereas an individual that had to go through multiple decision points could be waiting to be transferred in as long as four minutes.

To reduce the number of decision points, we will focus on generalizing the support from key departments rather than specializing. For example, a caller that has a question about anything regarding the initial certifying examination in a subspecialty training will be routed to a "workgroup" rather than one specific individual. This will reduce the number of decisions from six to three.

Furthermore, allowing specific callers to bypass the receptionist will effectively reduce the wait time to nearly zero for approximately 65% of our incoming calls.

Control

The only way to consider this project a success is through sustaining the changes. In order to sustain the changes we will implement the following controls:

- Develop new training for receptionists that is reinforced quarterly
- Collaborate with departments to develop more generalized approach to responding to physician inquiries (reduces specialization so receptionists can transfer a call to a group instead of an individual).
- Use call transfer sheets to specify who receives what calls as a visual cue for the receptionists. Update this quarterly.

Conclusions

- Percentage of "defective" calls (calls over 45 seconds) reduced from 80% to 28%.
- Sigma level improved from 0.65 to 2.05 and rolled throughput yield increased by 53 percentage points.
- Implementation of a press 1 feature for outside callers wishing to speak with a maintenance of certification representative will have an effective cost savings of nearly $47,000 to the outside customer (physicians).
- Cost of poor quality reduced by nearly $20,000.
- Reduction in wait times will allow for staffing of one full time receptionist, saving a net of $52,000 per year to the organization.
- Further streamlining the department response, so multiple operators in a department can provide similar response instead of specialized response will produce savings of nearly $11,000 per year to the outside customer.
- Number of decision points reduced from by 7 from 11 to 4 (Figure 5).
- Total savings to the organization and outside customers can be $130,000

Figure 5: New Process Flow Chart

Acknowledgments

Thank you to my team involved in this project for assisting in developing new ideas, and my organization for supporting these efforts. Thank you for Dr. Das for mentoring me with this project and my senior management team for providing organizational resources to make this project a success.