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Performance Improvement Interventions: an Action Research Case Study

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Abstract

The purpose of this action research study was to design, implement, and evaluate the impact of interventions created to solve a specific organizational problem pertaining to the Service Technicians. This problém arose as Service Technicians failed to accurately account for their time on their timecards. On further investigation, it was found that this problém occurred in 30% of the timecards. Also, the failure of Service Technicians to accurately complete their timecards appeared to be randomly distributed with no visible pattern by technician or type of job. The desired performance was that the Service Technicians fill out their timecards correctly 100% of the time, and that the customers were billed for clean-up charges, rather than billing their clean up time back to the company. This would ensure that their time on each customer service work order was accurately accounted for. By utilizing a systematic and simple approach to problém solving, the authors of the study were able to achieve significant outcomes for the case study company. The results of the interventions were positive, as the error rate was reduced from 30% to near 0. After accounting for $15,000 in expenditures for the project, the cost savings for the first year were $60,000. The return on investment was 400%.

Keywords: action research; case study; error rates, performance; problem solving

1. INTRODUCTION

Regardless of type or size, organizations are focusing on process improvements for purposes of adding value for both its customers and its employees. These organizations have utilized different approaches ranging from the application of simple process improvement tools like TQM to more sophisticated techniques such as lean and six-

sigma. All these approaches help to identify, analyze, and improve on existing processes within an organization [2].

A series of discussions with the Chief Operating Officer led to clearly identifying the billing problem that needed to be resolved in the Service Department. The purpose of this action research study became to design, implement, and evaluate the impact of interventions designed to solve a specific organizational problem. The scope of the project was rather narrow. To help the client identify a business problem, resolve it, and evaluate the results.

2. Organizational Context

The marine company was founded in the 1950's as an organization with a purpose "to help sailors and promote the sport of sailing." That purpose remains in place today and serves as the basic "mission" of the organization. For several months before the action research project began the management team had discussions with employees, suppliers, customers, and representative of the wider community to gather the information necessary to define a "vision" for the future, create a set of guiding values, determine the critical business goals, and established business strategies. They have created a vision for the future, defined some core values, and set some broad goals.

The organization's vision for the year 2030 contains the following themes:

1. Operating clean and green facilities.
2. Staff training and retention at an exceptional level compared to organizations of like

   size.
3. Seen as a valued member of the community.
4. Continuous, contiguous and controlled growth.
5. A new lakefront campus and modernized marina.

To date some key strategies and broad business goals have been defined for each major sector of their business.

3. Methodology

To systematically address this problem and to create a structure for future problem solving, the researchers decided to develop and implement a four-step approach to problem solving. The four steps include: problem identification, conducting analysis, identifying potential solutions, and developing an evaluation and implementation plan.

3.1 Define the Problem

To ensure that we were addressing the right problém for the case study company, we decided to meet wtih the Chief Operating Officer (COO) to get his perspective. In our discussion, the COO identified the Service Department as a starting point for launching a companywide business performance improvement process. One significant problem

the COO identified was that 30 percent of the Service Technicians failed to accurately account for their time on their time cards, resulting in a significant loss of revenue to the company. According to him, "The failure of Service Technicians to record all their billable time on their time cards 100% of the time" was the main problém. The overall costs for incorrectly allocating billable hours have been calculated to be approximately $88,000 per year.

3.2 Perform Gap and Root Cause Analysis

After our meeting with the COO, we decided to investigate the problém futher. We did this by performing gap and cause analyses. An initial gap analysis revealed several potential likely causes. Those likely causes were then framed as "look for" statements [3]. The following table summarizes the results:

Table 1*"Look for statements"*

Level	"Look for" Statements	Likely Root Cause(s)
Organization	Linkage between performance and organizational goals.	Performers likely don't "see" a connection.
Management	Timely and sufficient feedback.	Feedback is not timely and is sporadic.
	Goals communicated at all levels.	Goals are not clearly and consistently communicated.
Process/Function	Job aids.	No clear connection between work order form and time card.
	Task interference.	Technicians perform a number of duties simultaneously.
	Clear and complete job instructions.	No clear written job instructions exist.
	Follow up to see job instructions are followed.	No follow up is done to determine if job instructions were followed.
Job Performer	Conflicting job demands.	Technicians are often taken off one job and moved to another on short notice making it difficult to track time accurately.
	Clear, personal consequences	No consequences are in place.
	Appropriate incentives.	No incentives in place to do reward service technicians for doing things right.

In "looking" for likely root causes it became apparent there were no personal consequences to the performer, and no clear instructions, or job aids.

The "Five Whys" cause analysis technique, as described by Piskurich [3] was then used. The dialogue with the supervisor of the Service Technicians is described as follows:

The presenting performance problem: "The failure of Service Technicians to apply all their billable time to their timecards."

1. **Why** do they fail to apply all their billable time?

   Answer: 'They are not applying all of their work time to specific customer work orders."

2. **Why** are they not applying all of their work time to specific customer work orders?"

   Answer: "They think of their work in two compartments – billing the customer for their work hours specifically tied to doing the maintenance or repair work and the clean up time to the company."

3. **Why** do they think of their work in two compartments?

   Answer: "The work order requires them to log their time right on the form and translate those hours to their time card. Clean up time is recorded separately on their time card."

4. **Why** do they record their time on the same job for the actual work and clean up work separately?

   Answer: "That's the way it's always been done even though they have been repeatedly asked to record the time they spend in clean up to a specific customer order on their time card."

5. **Why** do they continue to do it wrong, even after repeated requests from management?

   Answer: "No real consequences in place if they do it wrong. While the supervisor reviews the cards it is done inconsistently."

Our initial analysis pointed to factors in the work environment. The Service Technicians have the knowledge and skills to do the tasks correctly but they still aren't doing it. The Behavioral Engineering Model in Table 2 [1] offers the following insights:

Table 2 *"Likely root causes of human performance problems"*

	Information	**Instrumentation**	**Motivation**
Environmental	Infrequent, if any, feedback. Lack of clear performance expectations. Not guides in place.	Lack of "prompts" or job aids. Time cards lack "categories." No written directions or instructions.	No financial incentives in place. No informal rewards or recognition for worthy performance.
Individual	Knowledge	Capacity	Motives
	Service Technicians "know" how to complete time cards accurately.	Service Technicians have the requisite skills to fill out their time cards correctly.	Service technicians have no personal reasons to fill out their time cards correctly.

3.3 Proposed Solution

The proposed solution set was determined by closely examining the performance gap, the root causes, and the array of possible solutions. The Service Technicians were not accurately recording all the time they spent on a customer service order in a consistent manner. The interventions included providing them with job aids or tools to help or prompt them to fill out their time cards correctly. The enterprise-wide software system, the "Dock-Master," offered an opportunity to automate the customer service work order process and link directly to the time and attendance system. Once job aids were developed and implemented and the two processes (customer service work orders and time and attendance) connected and automated the incidence of errors were decreased. Lastly, putting proper incentives in place motivated the Service Technicians to "do it right the first time." Table 3 captures the proposed interventions.

Table 3 *"Proposed interventions"*

1.	On the job training	Knowledge and Skills
2.	Rewards	Incentives

The first intervention included on the job training for service technicians to use a new automated time and customer service work order system correctly. The expected key results were: job costs correctly allocated, accurate customer billing, complete and accurate customer service work orders, and accurate financial statements. The results would contribute to better business performance in achieving forecasted revenue, increasing sales, achieving profit targets, and expense reduction. All those measures were tracked monthly.

The second intervention was focused on feedback and rewards. The balance of consequences needed to be altered to ensure the service technicians receive timely feedback on their performance and are rewarded appropriately. Before the intervention there were positive consequences for not filling out the time cards correctly and some punishing consequences for taking the time to fill out the time cards correctly. The same measures apply from the first intervention. It is possible to tie both interventions to specific business goals to demonstrate a positive set of results and a return on the investment made to resolve the issue.

3.4 Develop Evaluation and Implementation Plan

The Service Department Supervisor interviewed all six Service Technicians immediately after conducting the on-the-job training session using the job aide. The following questions were asked:

1. Was the job aide helpful?

2. How easy was the job aide to use?

3. Anything missing, need to be included or eliminated?

The Service Department Supervisor documented the responses to each of the questions. All six Service Technicians found the job aide helpful and easy to use. They all also reported a good amount of satisfaction with both the job aide and the on-the-job training session. Some typical open-ended comments included: "The job aide made it easy!" "The job aide was very helpful." "It was a snap to use."

Also, one of the authors of this study conducted follow up interviews one week after each of the Service Technicians completed the training program. The same results were obtained. All six Service Technicians reported the job aide was helpful and easy to use. They also had no suggestions to improve either the training or the job aide. Similar open-ended comments mirrored those made to the supervisor: "The job aide worked nicely." "Without the job aide I would have been confused."

An Observational Checklist was designed for the Service Department Supervisor to use to determine if the Service Technicians were able to accurately allocate their time in the on-the-job training session and back on the job. The Observational Checklist included a description of the following steps:

1. Log in to Dock-Master.

2. Locate and pull up a specific customer work order.

3. Enter the time spent on the Customer Service Work Order in each section where Service Technician time is allocated.

4. Scroll down the page and enter the same time spent on the Customer Service Work Order to the time and Attendance fields.

All six Service Technicians were able to accurately account for their time and followed the appropriate steps during the on-the-job training session. Four out of six were observed to accurately account for their time back on the job when observed by the Service Department Supervisor.

Prior to the on-the-job training sessions the Service Technicians were accurately accounting for their time only 70% of the time. The error rate was running at 30%. The week after training there was a dramatic drop in the error rate and it was sustained for the month that followed.

As far as the appropriateness and effectiveness of the redesigned incentive systém was concerned, both the Service Department Supervisor and the Service Technicians found the incentive system to be both appropriate and effective. The one element the Service Technicians found ineffective was the use of a catalogue where their performance awards could be used to select merchandise.

Open ended comments included:"The catalogue items are tacky." "Kill the catalogue, give me cash." "Yes, there's both money and praise for doing things right." "The rewards are meaningful to me." "As the supervisor I can tell you there are very few complaints, except for the catalogue."

4. Conclusion and Recommendations

Based on a thorough review of the results it is clear the interventions had an impact on reducing the error rate and stemming the tide of losing revenue due to the misallocation of Service Technician time to customer service work orders. It is clear the interventions will have an ongoing positive impact on the Service Technicians and Swanson Marine's customers. The customers will get better service and a more accurate accounting of all the work done on their service orders. Employees will be more properly recognized for good or worthy performance. All around the impact was positive.

Each year the organization was losing $88,000, on average, because Service Technicians misallocated their time on Customer Service Work Orders. Interventions were designed to ensure the Service Technicians had the training and incentives to accurately account for their time on each customer service work order. On the job training sessions and the incentive system were redesigned and implemented. The results of the interventions were positive. The error rate was reduced from 30% to near 0. After accounting for $15,000 in expenditures for the project, the cost savings for the first year were $60,000. The return on investment was 400% ($60,000 /$15,000 X 100 + 400).

We further recommended that the on-the-job training process be kept in place and be included in the new Service Technician orientation program. The department level metrics should continue to be monitored to ensure the initial improvements are sustained. The positive results should be communicated throughout the organization. Department meetings should include a regular update on error rate metrics to continue to reinforce the positive results that have been achieved. Additionally, the department supervisor could discuss why the improvements are so important to the organization and how they contribute to customer satisfaction, customer retention, and ultimately to their own job security. Lastly, a new catalogue should be created to offer tangible rewards that are more acceptable to the Service Technicians.

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