INCREASING PRODUCTIVITY IN A PARTS DISTRIBUTION CENTER WITHOUT AFFECTING QUALITY

By

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Abstract

The purpose of this paper is to discuss the importance of productivity and quality in order to achieve operational goals in a Parts Distribution Center. It considers the factors which supports productivity and quality as performance indicators. Then it presents a cause and effect diagram to help display the potential causes that might affect productivity and quality. The work in concluded by mentioning the importance of feedback as key element to augment opportunities to increase productivity.

Introduction

In an operational area, like a Parts Distribution Center, management has to make decisions thinking on long term, have a process for solving problems in order to add value to the organization by developing its people, and to recognize that continuously solving root problems drives organizational learning. The environment were both productivity and quality are monitor, measure and improved is driven by a production system.

Productivity is a measurement of how efficiently inputs are being converted into outputs. It measures how well resources are used. The more efficiently a company uses it resources, the more productive is (Reid, 2007).

Productivity=output/input

In this case, outputs are lines (parts) and inputs are hours dedicated to pick, pack and ship a part to a customer. Productivity tracks performance over time and helps managers identify problems. Performance is an accomplishment of a given task measured against preset standards of accuracy, completeness, cost, and speed (Reid, 2007).

Quality can be better defined as a way to satisfy the customer needs by being free of defects and significant variations. According to Edward Deming, often referred to as the 'Father of Quality', only 15 percent of quality problems are due to worker error and the remaining 85 percent are caused by process and systems (Reid, 2007). Quality is secured through standard operations, which are generally determined under the working conditions. It must be built in by the process itself thus workers must check their own work for not to transfer defects to the customer. Defective items must never reach the subsequent process.

Background

A Parts Distribution Center is an operational area driven to achieve the goals management sets in order to generate a profit. One of its major objectives is to deliver a customer the correct part and correct quantity according to a place order. To accomplish this, efficiency (productivity) and quality (errors) are two measurements of performance to meet. These are measured on a monthly basis by employee and as a whole, and are compared against a target. During the year, employee appraisals are discussed to provide feedback on their performance. It is management responsibility to make sure targets are achieved or exceeded. If targets aren't met the process is visited to find ways to improve it.

Productivity and quality can be affected by layout, equipment, process, people, materials, methods, environment and/or measurements. In order to determine the reasons for this two, the following methods were applied:

a. Validation of data record
b. Cause-and-effect diagram
c. Feedback interventions

Methodology

Validation of Data Record

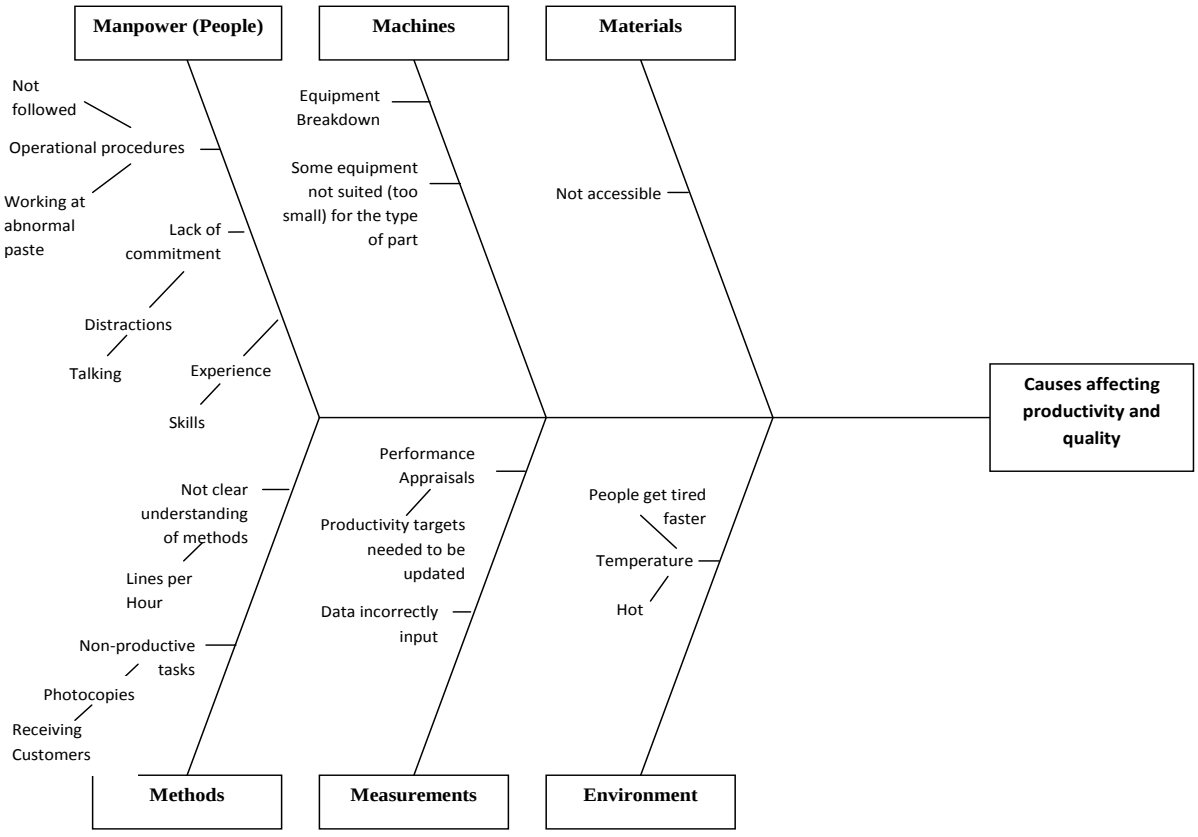
For a month period, all data recording regarding productivity and quality was reviewed and analyze. First, it was found that people were recording time (input) in the incorrect work activity thus the output numbers were not accurate. Second, there were processes done that were not consider operational (for example, getting photocopies) thus the inputs were higher and recorded decreasing the productivity. Last, there was lack of process standardization by the associates. Processes existed but they were interpreted and realized different. This was affecting the quality of the final outputs by the increase in errors.

The following countermeasure were taken in order to correct the identified problems: training of accurate data recording was provided to all work force, non operational activities were pulled out from the process and re-assigned to administrative staff and an auditing program was built-in the process in order to reduce the potential of errors (Lu, 1985). Finally, process training was provided and thru group dynamics it was re-emphasize the reason of following each

operational step. It was explained that any deviation from the process was the major cause of not performing.

Cause-and-effect Diagram

The cause and effect diagram was used in order to visually display the potential causes affecting productivity and quality. In order to get all possible causes, besides including supervision staff, employees who work daily in the Parts Distribution Center were also included. The following diagram represents the results obtained from this meeting.



The results obtained were used to improve the productivity without affecting the quality (errors) in order to comply with customer daily order.

Feedback Interventions

It was determined that feedback interventions are essential for improvement (Menden, 1983). In order to accomplish this, a formal process was established were associates performance was discussed on a weekly basis. The following information was provided: productivity by work area and errors claimed by the customer. The only errors that the employees were accounted for were: shortages, overages and mispicks (shipping a wrong part). After the intervention was completed, employees were asked if they needed any tool or training in order to comply and then the intervention was signed off for documentation purposes.

Results

The increase in productivity come from working smarter or more efficiently. To build quality in the process, all personnel must take individual and group responsibility for maintaining and improving quality. Employee motivation and performance were both improved due to feedback interventions. The process improvements produced the following:

a. Continuous process flow to bring problems to the surface
b. Built a system to stop to fix problems in order to get quality from the first (Berry, 2005)
c. Standardized tasks for continuous improvement and employee empowerment

Regarding the Cause-and-Effect diagram the following actions were taken:

a. Manpower: training on standard operational procedures was provided to all employees and developed a recognition program
b. Machines: new equipment was purchased

c. Materials: validated what was needed and make it accessible

d. Methods: training and re-alignment of operational tasks

e. Measurement: productivity targets to be updated every six months in performance appraisals and implemented data integrity

f. Environment: fans were ordered at needed areas

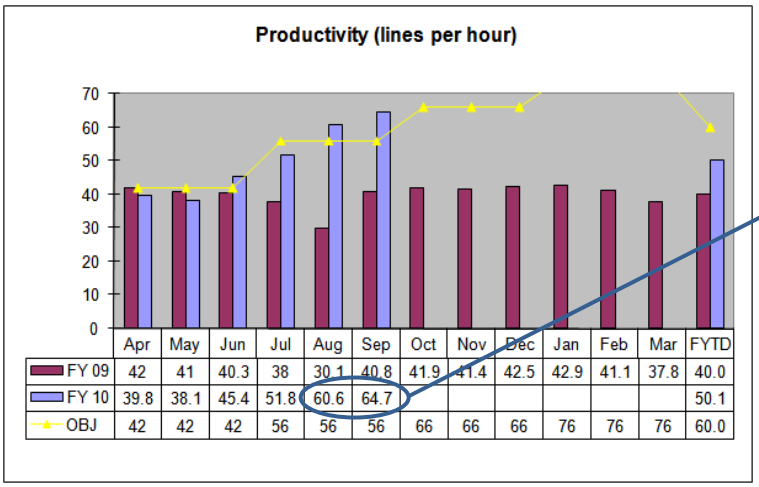
The improvements gained in productivity and quality can be clearly seen when comparing August and September 2009 results. They are summarized as follows:

a. 6.7% increase in productivity due to a 50% reduction in non-productive hours

b. 23% reduction in errors

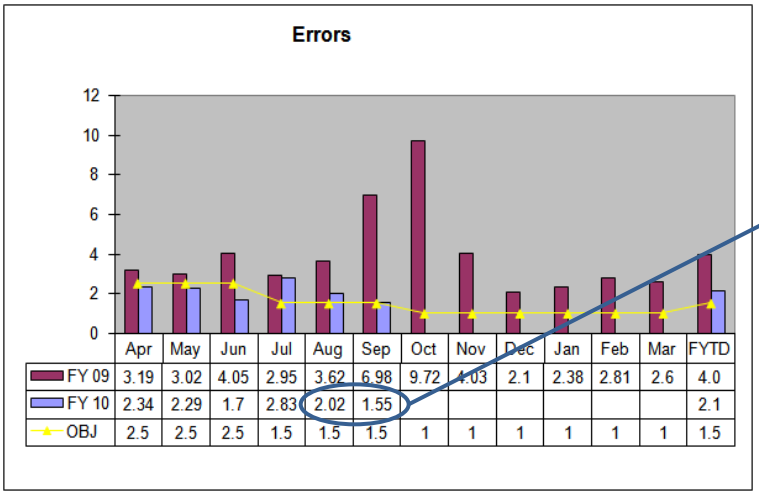
Actual numbers for this time period are display in the below graphs:

a. Productivity



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	FYTD
FY 09	42	41	40.3	38	30.1	40.8	41.9	41.4	42.5	42.9	41.1	37.8	40.0
FY 10	39.8	38.1	45.4	51.8	60.6	64.7							50.1
OBJ	42	42	42	56	56	56	66	66	66	76	76	76	60.0

b. Errors



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	FYTD
FY 09	3.19	3.02	4.05	2.95	3.62	6.98	9.72	4.03	2.1	2.38	2.81	2.6	4.0
FY 10	2.34	2.29	1.7	2.83	2.02	1.55							2.1
OBJ	2.5	2.5	2.5	1.5	1.5	1.5	1	1	1	1	1	1	1.5

Conclusion

The opportunity of working hands-on with the ways to increase productivity without affecting quality resulted in something as simple as going back to basics. It is important to create a continuous improvement culture and to follow up to every initiative that is implemented. It can be summarize as follows: before making any change in a process, spend time to learn and study the factors that might contribute to what the problem is. Talk to your people, listen their ideas and opinions since they are the subject matter experts. Make incremental changes because is easier to identify what didn't work and fix it. Create methods to detect and eliminate the things that aren't value added. Focus on your people, develop and recognize them. They are the assets that could make things go in the right or wrong direction. As all employees get involved in productivity and quality, their satisfaction will increase and the improvements will be seen.

References

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