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"Good Vibrations"

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Introduction
VIBCO, a local manufacturing company, produces a large variety of products, such as industrial vibrators, vibratory equipment, and mounting brackets and hardware. The particular production area that we chose to focus on for our project, however, was the large turbine cell.

This project, through the DMAIC process (Define, Measure, Analyze, Improve, and Control) attempted to reduce certain inventory levels in the supermarket. In order to do this, we had to identify and reduce other resources, such as labor. Putting the production of the large turbines onto a kanban system allows the company to continue to grow, as well as improve its on-time performance for its customers.

Define
The production for the large turbines at VIBCO is currently based on a schedule. When production staff, such as machinists and assemblers, are finished with their assigned work for a specific day, they then start on the next day's production goal. This creates an excess amount of inventory for some products. Employers, such as production controllers, machinists, and assemblers are then not being utilized as efficiently as possible.

Measure
In order to track our success, we had to determine some Key Performance Indicators (KPIs), including inventory levels and stockout percentages. One of our more specific goals was to improve the company’s overall performance in each of these areas. First, however, we had to determine the company’s starting position in those areas.

To calculate the total cost of inventory on hand, we collected the values for each month and added them up. This gave us an overall cost of inventory for the company. Using this data, we were then able to compare the current and potential future performance Indicators (KPIs), including inventory levels and stockout percentages. We collected the values for each month and added them up. This gave us an overall stockout percentage for the company.

Analyze
We spent a lot of time analyzing the large turbine shipment data from 2017. From this information, we were able to determine which products did not meet the demand. We collected the data on the number of units shipped each month, as well as the number of units that were not shipped. We also looked at the number of units that were shipped early, or late, and the number of units that were shipped on time.

We also analyzed the factors that go into each of the finished products. The feeder parts, and how they are made, affect the lead time of the finished product, which ultimately affects the kanban value. In addition, we created a spaghetti diagram (depicted in the right) for one of these feeder parts to show the movement of the parts within the factory. This diagram shows the flow of parts from the point of delivery of all of the parts and packaging.

Lastly, we needed to monitor and track the maximum quantity of on-hand values were greater than the average order size for each product. Again, we used the 2017 shipment data for these values. Overall, all of these analyses and calculations were done with the help of excel spreadsheets, functions, and pivot tables.

In the end, we decided to do a trial for our proposed kanban system on two products, E and J. These two products were chosen based on their order volumes and standard deviations in shipment.

"Good Vibrations"*
Lucy Moyes and Shannon Kolasinski
Supply Chain Management

Define
- Vibration is the process of creating a vibratory system, such as a large turbine, to increase the vibratory effect of the system.
- VIBCO Vibrators is a company that produces industrial vibrators, vibratory equipment, and mounting brackets and hardware.

Measure
- Key Performance Indicators (KPIs) include inventory levels and stockout percentages.
- Inventory levels and stockout percentages were determined for each product.

Analyze
- The analysis involved looking at the number of units shipped each month and the number of units that were not shipped.
- The spaghetti diagram showed the movement of parts within the factory.

Improve
- Implementing the Kanban system was the most complicated phase of this project.
- The Standard Operating Procedures (SOP) were developed, and each person in the Kanban system was trained.

Control
- The control phase is the final part of the DMAIC process.
- VIBCO's kanban system is not fully implemented, but the company plans to continue improving.

Benefits Analysis
- The main goal of this project is to improve VIBCO's on-time delivery, optimize labor, and eliminate or rearrange wasteful motions.
- The kanban system has helped to reduce other areas that need improvement.
- Implementing a kanban system for VIBCO's large turbines was not easy, but it led to improvements in overall performance.

Notes and Citations
- "Good Vibrations" is a song by Marky Mark & the Funky Bunch, released in 1991. It is a fusion of hip-hop and reggae, with a catchy melody and memorable chorus.

Acknowledgements
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