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Table of Contents:

Page 3: Learning Objectives

Page 4: Introduction

Page 4-6: Description of Work

Page 7: Internship Discussion

Page 8: Evaluation

Learning Objectives:

- A Generate reporting using SQL queries to data warehouse and/or ERP queries.
- Create dashboards in power BI or R using from data warehouse and ERP generated data.
- Work with cross-functional groups to implement projects assigned by supervisor.

Introduction:

EQI is a growing company that works with a global team to source and procure high-quality metal castings, forgings, and fabrications for its customers. With EQI's growth we've transitioned to a new ERP and have also implemented a data warehouse to get a better grasp around our data. Within EQI I work within the operations, specifically the "Demand Planning group", which is responsible for procurement decisions based on historical data and forecasts from our customers. EQI is looking to better utilize the data to make more data driven decisions and create process around how the data is utilized to create cross-team redundancy. As part of this initiative, I worked to develop a dashboard for the operations team that utilizes data from the ERP/data warehouse to provide real-time accurate data to used when making purchasing decisions. I also worked to automate existing excel documents and other projects assigned my supervisor to support our data driven approach.

Description of Work:

EQI works on several quarterly projects across all functional groups and for this "internship" one key project I worked in was our Inventory Right Sizing project. This project's aim was to create a dashboard for our demand planners to use that allows them to make data driven decisions when purchasing and provide key reports. We are currently in the process of standing up our data warehouse, but all of the data used in this project was from our data warehouse. Power Bi is the tool we as a company are looking to utilize for reporting and key visuals, so it was created in Power bi and extracted data via a SQL connector to our data

warehouse. One challenge of this project was cleaning the data tables. Because we are in the process of standing up our data warehouse a lot of the tables are still in the raw form and need manipulation to be utilized for many of the visuals/tables created for this dashboard. This dashboard is a living document that is being constantly iterated on each week, but several key pages/visuals were identified at the start to work on and completed. One of the pages/visuals created was a "Forecast Accuracy" page that details our customers accuracy relative to there forecast for different buckets of time. A key challenge with this page was manipulating the data to filter to only forecasts at lead time (which differs by each item we procure) and dynamically filtering the identified time buckets. Another is page on the dashboard is a visual of part numbers that have we have greater than 6 months of inventory relative to customers actual performance and this page has the ability to be "drilled down" into and get more details on a part-by-part basis. An additional key page is an aggregate view of our customers historical forecast to look at any aggregate changes between forecast and identify any trends in the forecasts. An additional key page that was created is a "forecast change" page, this page allows for the user to dynamically select forecasts to compare against our customers latest forecast. It also has data tables with a further breakdown into a by item analysis. An additional key page is a page that plots the items that have the highest percentage difference between trailing actual 6-month consumption vs the average forecasted next 6 months consumption. This plot used to spot any outliers where the customer is projecting better/worse performance compared to actuals. This page has an accompanying page can be "drilled into" and provides part level details. Another page that was designed is a detailed view of our customers invoices (adjusted for lead time) compared to the customers forecast at lead time. And the final key visual that

was completed was the quantity that is within our lead time being forecasted by customer compared to our inventory levels and quantity on order. Along with designing these visuals we are also working to roll this out to our demand planning team and create processes around using this tool. And as mentioned above this is a dashboard that is being iterated on every week and new visuals/pages are added. The significance of this work is to help give better visibility to key visuals to our demand planning team and help create business processes around utilizing that data.

Another Project that was worked on was automating a diversion workbook. EQI is in the process of standing up a new warehouse facility and in order to prevent any disruptions in service to our customers we created a plan to divert containers that would not cause a disruption in supply to our new facility. I took the existing workbook and created easily refreshable queries from our ERP system to populate and refresh the workbook and automate the diversions based on conditional statements. With this workbook being automated it saved time and provided accurate information for diversions.

Another project that was worked on was pulling together operation metrics to view key performance indicators for the operations group. This is a weekly excel workbook that utilizes both SQL queries and queries from our ERP that creates on time metrics to give to supervisor. Something that fell out of the scope of the internship was developing this further and creating an easier to refresh report along with better visuals that will be continued to work on. The significance of this project is to provide key performance indicators to the operations group to judge performance against stated metrics for the year.

Internship Discussion:

Were the objectives achieved?

Objectives were achieved, dashboards and reports were created utilizing data warehouse and ERP generated reports. Also worked with cross-functional groups to provide data/support for ongoing projects.

What skills (scientific and professional) were learned during the internship?

- Power BI to create dashboards and visuals to create easily shareable reports for organization.
- Time management skills learned managing several projects and prioritizing.
- Communication, presenting and contributing to cross-functional meetings.
- Data manipulation and cleaning large data sets.
- Some ETL for the data warehouse

Did the PSM coursework properly prepare the student for the scientific content of the internship?

- The PSM coursework provided key techniques for data manipulation and cleaning data

What challenges did you experience during the internship? What could you have or did to overcome them?

- Time management – meant with supervisor and utilized Microsoft planner to track and meet dates on projects.

- Data challenges – I periodically had issues manipulating the data and would use resources EQI has to contact and get support for these issues.

What is your overall evaluation of the internship experience?

- I am very fortunate to be working at EQI and to have this experience. My immediate supervisor is extremely helpful and assists with any obstacles that I encounter while working. I am given projects that are challenging and help me develop a better understanding of how to manipulate and present data.