QA Matrix Analyses and Online Update:

The automation of data flow for quality assurance matrix (QA Matrix) of Unilever Besan

Sabancı Üniversitesi — FACULTY OF ENGINEERING AND NATURAL SCIENCES

UNILEVER

Student(s)
Duygu Ay
Destan Düzgünoğlu
Sena Söyleyici
Ali Topçuoğlu

Faculty Member(s)
Kemal Kılıç
Tonguç Ünlüyurt
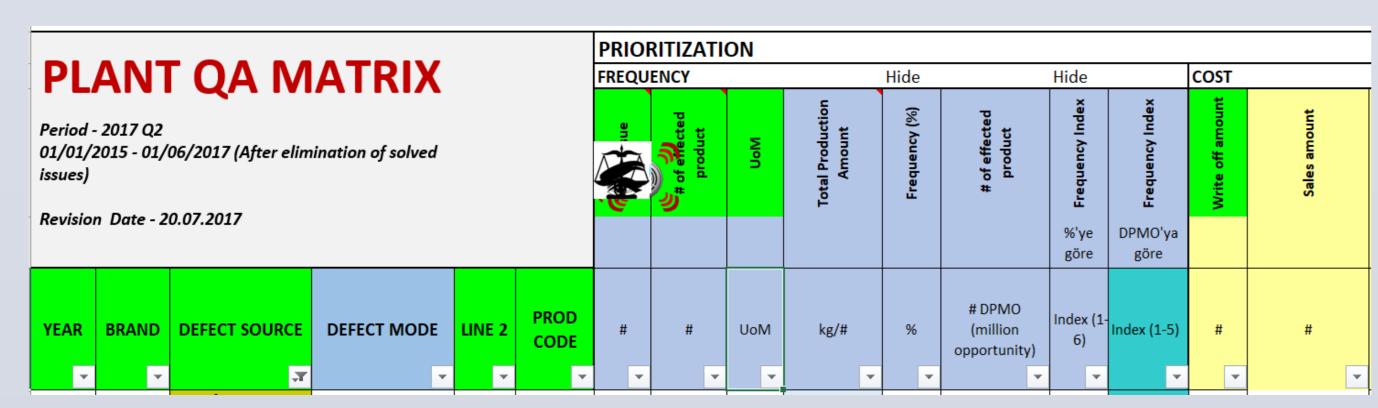
Company Advisor(s)
Serdar Baysan

ABSTRACT

Quality assurance (QA) is an important part of production. It helps in improving the company's credibility, customer satisfaction, efficiency and it may also give some advantages in competing with other companies. If it is further examined, quality assurance might indirectly increase profits. Quality Assurance Matrix (QA Matrix) is a tool that a lot of firms use to track down the defects and its sources of these defects. It also ranks the defects and helps to create a chart. From that chart, we can see which defect is the most significant and we could decrease the possibility of that defect arising again by dealing with the reason of the prioritized defect. Each company may have different interpretations of the matrix. In this project, we focus on the main problem of the firm which is the data flow and updating the matrix. Almost all of the data is inserted manually by one person. We will focus on how this data can be collected automatically and how it can be updated.

OBJECTIVES

Our project is about automation of data flow for quality assurance matrix (QA Matrix) of Unilever Besan. QA Matrix is a method that takes potential or actual quality concerns, ranks their significance to customer satisfaction and evaluates the stability of the manufacturing and inspection processes. Unilever wants to ease the process of entering big data, because it is in the responsibility of one person and that person is responsible for her own responsibilities as well as gathering the necessary information from different departments and combining them to the matrix and updating in each six months in order to keep up with the recent defects manually. Also, QA has been always one of the biggest problems of companies. In Unilever, they are responsible for Lipton Tea production and packaging as well as Knorr products and a small portion of Carte d'Or's bakery products. During the production, inevitably there will always be some defects. These defects can cause big problems for firms, so they need to use quality assurance systems to understand why these defects occur and how they can be prevented. Unilever uses QA Matrix to categorize and then prioritize the mistakes to deal with them.

A Part of QA Matrix

PROJECT SCOPE

- Determine how to provide the required data flow in the most accurate way and collecting data.
- Determination of the defect modes and their relation to each other.
- Analyzing QA matrix
- Development of a system that will automatically update the data

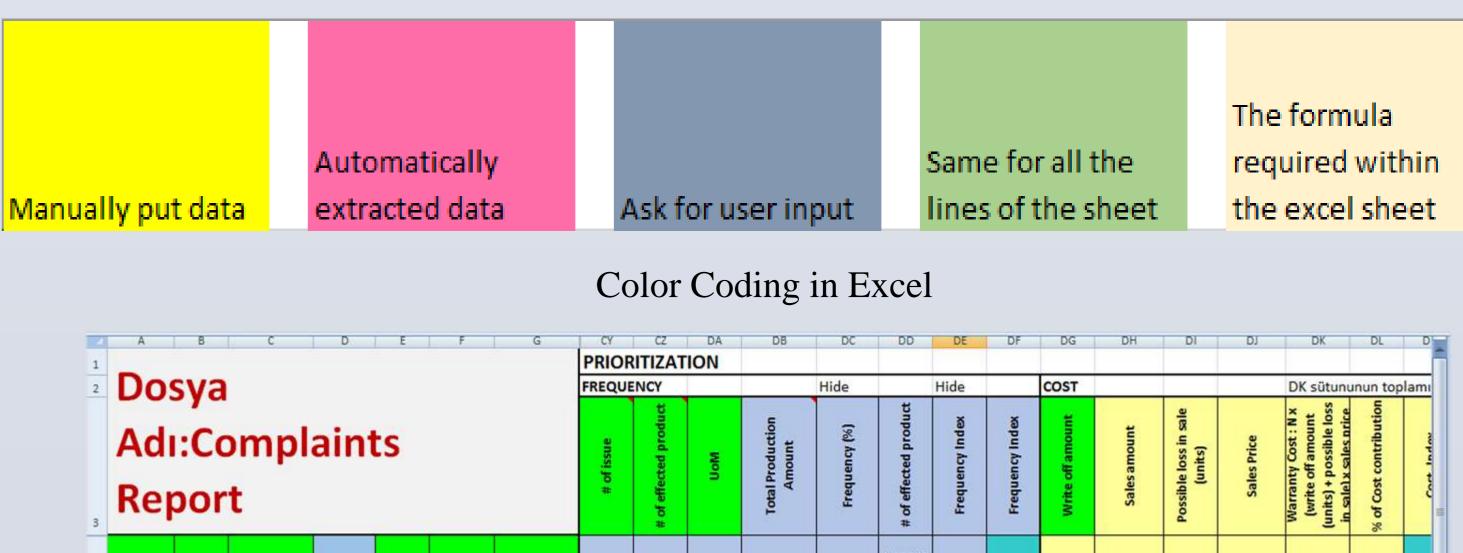## PROJECT DETAILS

CUC Defect Source Analysis

Summary of our works:

Firstly, we have observed how the data flow is provided. We tried to understand each data in QA matrix and where these data are retrieved from. We have started to investigate the matrix defect by defect. We tried to understand data flow for each type of defect, because data are retrieved from different files and online systems for each defect type. Secondly, we created an excel sheet for each defect type to see how we can automate them. We also created a separate excel sheet that gives the summary of how data flow should be. Then, we came up with some ideas to automate data flow and discussed with our supervisors. Now, we will apply our ideas with a software developer in Unilever.

Outputs of our works:

As the results of our analysis, we have prepared two different excels files. Data Analysis file is prepared to collect the historical data of 4M analysis to see the frequencies of the same 4M analysis for the same loss trees. This is done to examine if the 4M analysis parts could be automated too. We concluded that for a high percentage of the time the same 4M analysis is done however since there was not enough historical data for all of them so we consulted with our supervisor.

Data Flow contains the columns of the original QA (Quality Assurance) Matrix and it is prepared for each of the defect sources. It contains the information about where the data could be extracted from. After that the cells are color coded into four categories for better understanding. The categories were; manually put data, automatically extracted data, asked for user input, same for all the lines of the sheet and finally the formula required within the excel cell.

Color Coding in Excel

Data Flow Excel File

Conclusion

In conclusion, data analysis is an important tool for effective use of time. At the beginning of our project, everything looked so complex and difficult, because there were lots of data. After deeply analyzing all the data, we realized that data flow in QA Matrix can be automatized. Our algorithms will make the system in Unilever easier. Limitation of our project is that some data can not be automatized. Some of them should be entered manually, because some data for QA Matrix are prepared by other departments.