Module 4 XN Project: Project Scope Document

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A well-defined project scope is the initial and crucial step for the smooth execution of any project. This sets a clear vision for the target so that milestones can be achieved within the deadline. Below are some of the points which helps to define the scope of the project.

Project needs

Project needs are as follows:

- Research and understanding of the sponsor industry
- Allocation of tasks to the team members
- Pre-processing of the dataset like cleaning, treating the missing values and restricting
- Identify the important variables for the model creation
- Defining timeline for the project

Objectives and goals of the Project

For defining the goal of the project, the **SMART** guideline is followed which is Specific, Measurable, Achievable, Realistic and Timeframe (Jamaledine, 2021). In this case the sponsor Danfoss is looking for accurate sales prediction of the company post the COVID period. The objective of the project is to develop a new model using the machine learning algorithm for prediction of the sales for the company. The goal is **specific** as there is clarity regarding why what and how our goal will be achieved. The goal is **measurable** as the accuracy and the performance of the model can be measured. It is **achievable** as the data required for achieving the goal has been provided. It is **realistic** as the goal are defined and are achievable using the

model. Some challenges may spring up during the course of the project but there will should not be any major impact due to this. The **timeframe** for the goal is also set as the model needs to be ready in next two weeks.

Project Scope description

The first step is to understand the dataset by performing the initial analysis, which includes data cleaning, reformatting, and exploratory analysis. If there are any missing values in the data, a choice must be made whether to drop them or impute them using some techniques. Using tools like R or Python exploratory data analysis will be performed and different visualizations will be plotted to understand the trends and patterns in the data. This will help to understand areas where one can deep dive further in their analysis. Feature engineering will be done to comprehend the variables of interest for the model building. Machine learning algorithms like Time series analysis, K-nearest neighbours and Random Forest will be used for the analysis. The model output i.e., predicted data will be compared against real world data to verify the performance and accuracy of the model. The model with the lowest RMSE and MAPE values would be chosen for predicting the sales.

Expectations and acceptance

Acceptance criteria are requirements that must be satisfied before a project can be deemed finished and the client can accept the project deliverables. The project team can benefit from correctly stating acceptance criteria, including defining the client's expectations for the finished output. In our project, the Danfoss company gave us explicit acceptance criteria, which is the criteria based on RMSE value. The model which is build needs to be tested for the accuracy and

its performance. Based on the RMSE and MAPE values of the models the best model will be chosen. The idea is to achieve the satisfaction from our sponsor with the model output. This model should be able to give better prediction results for Danfoss than the one which they are using currently so that they are able to make accurate prediction of the sales. This will in turn help Danfoss in other areas like planning their inventory, achieving revenue efficiency and knowing the behaviour of their valuable customers. This will also aid in their strategic planning decisions like hiring process, allocation of resources and risk management.

Constraints

Every new project is bound to have some roadblocks at each milestone. The initial challenge faced was understanding the dataset, the target variable and its units. The approach to deal with the missing data was not easy as this missing data was for the unpredictable years. This was however overcome after our meeting with the sponsor. During the model creation we have the constraints to identify the correct variable for our model. The training data in the model is bound to issues such as bias and overfitting. This can be avoided by testing the model with actual data each time we make the changes. Along with all these the other constraint is to deliver the output within the designated timeline.

Necessary changes

Some of the changes are inevitable no matter how clear the action plan is defined. During the course of the project some factors do need some alterations based on the feedback from peers or mentors. After have the meeting with the sponsor Danfoss we did incorporate the feedback and make the necessary changes in the analysis.

References

Jamaledine, R. (2021, January 17). 6 Steps to Successfully Define the Scope of a Project. The Online Learning Platform. https://www.potential.com/articles/project-scope/

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