

Product Backorder

A SRS of the project work being carried out at

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Chapter 1

Introduction

A backorder is a customer order that has not been fulfilled. A backorder generally indicates that customer demand for a product or service exceeds a company's capacity to supply it. Total backorders, also known as backlog, may be expressed in terms of units or dollar amount.

Backorders are products that are temporarily out of stock, but a customer is permitted to place an order against future inventory.

Loss bearing by the company due to back order and risk associated with the high back order products.

Predict future backorder risk using predictive analytics and machine learning.

Identify the optimal strategy for inventorying products with high backorder risk.

1.1 Document Purpose

The intended audience of this SRS consists of:

1. Project guide
2. Internship guide
3. Viva panel

4. Team lead

The SRS:

1. Contains a general description of the Product Backorder software requirements.
2. Gives information of the overall description about Product Backorder and where it is required.

1.2 Product Scope

Bosch is across three main regions, namely Europe, US and Asia/Pacific. The Business solution unit of the company lies mainly in Asia/Pacific region. The requirements for the estimating the product backorder risk for all the products.

With the help of Product backorder products can we analysed and the backorder risk for the products can be determined for different types of product of Bosch.

Product Backorder helps in maintaining the optimal stock for the particular product accordingly.

1.3 Definitions, Acronyms and Abbreviations

Backorder	<p>A back order is a customer order that has not been fulfilled.</p> <p>A back order generally indicates that customer demand for a product or service exceeds a company's capacity to supply it..</p>
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Chapter 2

Overall Description

A company may have back orders if they run out of the stock in their stores, in which case, it can just place a new order to restock its shelves. A company may also have to take back orders if its suppliers have run out of the resources and raw materials necessary to manufacture the demanded goods. In this case, the company will have to wait until the manufacturing company or supplier has gotten the resources to commence production.

A predictive analysis can identify which products are most likely to experience backorders giving the organization information and time to adjust. Machine learning can identify patterns related to backorders before customers order. Production can then adjust to minimize delays while customer service can provide accurate dates to keep customers informed and happy. This approach enables the maximum product to get in the hands of customers at the lowest cost to the organization.

The result is a win-win: organizations increase sales while customers get to enjoy the products they demand.

2.1 Product Perspective

Backorder costs are important for companies to track, as the relationship between holding costs of inventory and back order costs will determine whether a company should over- or under-produce. If the carrying cost of inventory is less than back order costs.

A manufacturer has a data set that identifies whether or not a backorder has occurred. The challenge is to accurately predict future backorder risk using machine learning.

2.2 Users and Characteristics

Bosch employee uses this application for check product backorder request. The person who is concern with backorder risk and inventory management of the product will be normally the users.

2.3 Operating Environment

The R Project is of multiple R scripts. It is built using a tool Rstudio and R is used to execute them. It can be run from windows operating system environment. The Project also has hardware requirement. But for smooth running of the Project: the hardware, software and technology used should have following specifications:

1. R (3.4.3)
2. R Studio (1.1.442)
3. Ability to use Internet for Required R packages to install.
4. CSV file to store and import data.

5. Operating Systems and Versions

- Windows 7 (preferably)
- Windows 10

2.4 Assumptions and Dependencies

For getting the result for the product the input must have sales and forecasting for the sales for the product.

Product must also have current stock quantity and transit quantity.

Product should also include the performance average , part risk factors and local current backorder quantity if any.

Chapter 3

External Requirements

This section specifies how the interface of the application is developed. Product backorder being a R project, there are no hardware interface but user interfaces where user can view input there product detail and predict risk for the back order.

3.1 Hardware Interfaces

Our application does not contain any hardware interface.

3.2 Software Interfaces

Product backorder is the R project used to predict the risk for product. It has the model which on made using either classification or regression. then model helps to predict the risk for the product input.

Operating system used will be Windows 7 / 10 and R with R studio for development.

Chapter 4

Functional, Behavioral Requirements

Functional requirements for the proposed system, which define the fundamental actions of the system and contains all the information of the software requirements for the development of the Product backorder.

4.1 Functional Requirements

The modules of Product backorder are:

Data Analysis : Understanding the data set of product, exploring the data and its dimensions , preprocessing the data from source. This is done using inspecting,cleaning and transforming.

Data Modeling : Data is divided into training and testing where under the two broad domain i.e., Classification and Regression the algorithms are selected for creating the model on training data set for prediction of the product risk. Creating model from different machine learning algorithms.

Data Visualization : The data with different perspective have being visualized on the basis of features, values to find facts about the data. Using Representation of data from different visualization technique.

Data Prediction : Analyzing the best accuracy of the model using different

methods where with the best accuracy models we need to predict using user input for the product the risk related to the product. This prediction is done using the help of model created on training data set.

4.2 Behavioral Requirements

Product backorder Initially, the product requirement to predict the risk is being captured and input for prediction and pass through the model. outcome for the features of the product can be high backorder risk or low backorder risk can be achieve as the result of prediction on the different machine learning models.