RETAIL STORE STOCK INVENTORY ANALYTICS

Problem statement:

1. **Goal of Prediction Analysis:**

First there should be a clear prediction definition statement.it should be clearly say what business trend or patten and outcome they are trying to predict,for what period of time,and for how long the prediction should be valid.This will help form the statistical hypothesis a kind of coversion of the English like problem statement into a statistical problem.Unclear prediction definition problem statement often leads to prediction wrong problems.

Solution:

Brainstorm within the management team to come up with statement that has clarity in the prerequisities,and assumption and deviation that are willing to accepted as a part of the predition analysis.communicate the same to the data analytics team precisely, which can dissects the statement and convert into a statistical and data analytics problem.

2. Quality of Data:

The quality of data we have should be accurate and reliable. Obviously, the outcome will solely depend on the data we put into the prediction. If the data is skewed, then the prediction which is dependent on it, will be skewed as well.

Solution:

The first duty of a data analytics engineer is to confirm the randomization of the data given. If the given data is non-random then the correlation and relationships between the data attributes will be skewed leading to wrong outcomes. The next point is to see the standard deviation of the data after normalization. Decision about the outliers (as to whether to keep them or discard them) should be taken so that the data that is fed into the model is consistent. Also, in case of unstructured data, proper cleansing needs to be done. Appropriate Data Mining and Data Lake Processes should be followed.

3. **Selection of data attributes/identification of patterns:**

Once the data problem is solved, now comes the activity of identifying patterns and correlations between the data attributes. These relationships should be looked at critically in relation to the problem statement in hand. Non correlated data attributes and insignificant attributes will definitely not lead to correct predictions.

Solution:

Data analysts should zero in on the attributes that are positively, negatively or cyclically correlated with each other and in some cases with respect to time. Data that is insignificant should also be identified and discarded. This will ensure that the right data attributes will form the backbone for the model and its subsequent training and testing process using Al.

4. Arriving at right AI/ML Model, AI/ML algorithm training methods:

Depending on the nature of the problem statement and the data attributes identified, the model should be carefully arrived at. If adequate thought is not given to the nature of the problem (for example whether it is a classification prediction or a regression prediction etc.) the model selected, and subsequent Al training of the model will be in vain. The constraints, limitations, assumptions of the prediction expected will also play a role in model selection.

Solution:

Data Scientists and Data Analysts should brainstorm each and every aspect of the problem and critically question the inclusion/exclusion of attributes, consideration of the right model types (Bayesian, Decision trees, Graph, Support Vector Machine, Artificial Neural Networks etc.) before arriving at the right model. Model Training is an important process for which training data needs to be carefully chosen from the available datasets in order to train the model selected.