The main objective is to minimize IBC transactions by a dynamic re-arrangement model in storage area. The project aims to model the situation of the current storage area, to generate a rearrangement of items in the storage room and a final positioning map for all storage keeping units (SKUs), including the order of all transactions and taking into account an increasing trend of the storage keeping units (SKUs) number so that the benefit from the limited storage space is maximized and the waste is minimized. Relocation of items in a warehousing system is usually used when the handling machines or the warehouse itself become the bottleneck. This project addresses to the optimization problem of relocation in a warehouse with dynamic operating policy.

Motivation & Objectives

Problem Overview and Methodology

Although the general solution is seen to be the rearrangement of items in the warehouse, the logistics problem of the probiotics factory is more complex and needs a better definition. To have a better understanding of the main problem in the storage area of the probiotics factory, the problem is divided into sub-problems. For each problem the KPI is measured by the transaction number of IBCs. ABC classification of the intermediate products is supposed to help the decision for the placement of any IBC.

Items to be Rearranged

Storage Keeping Units called IBCs (Intermediate Bulk Container) are the bins supposed to store and protect the powder as being an intermediate product before packaging. IBCs are the only items stored in the storage room in this project. The content, the weight and the cell count of the stored powder are different and they are the key parameters to differentiate the bins for the rearrangement.

Algorithm Flowchart for IBC Rearrangement

Layout, Representation and Result

Walking aisle divides the storage area into two parts, in which 3 rows with 12 columns and 1 row with 18 columns of IBC locations are found. Excel serves to demonstrate the layout. Cells represents the places assigned for the IBCs and a cell value is the number of the bin placed on that cell (place). Empty spaces have zero value.

The algorithm gives the initial and the proposed final maps to user including the transactions in order:

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