

# MasterPlan-LE Case Study

## A Supply Chain Planning Tool with Integrated Database and Simulation

A business's Supply Chain comprises all business activities including information flow from raw material to the end customer. Recently numerous attempts have been made to analyze and develop the most effective supply chain management system. However, the complexities due to dynamic and interactive relationships between each stage of the supply chain makes its analysis very difficult.

Utilizing simulation that has preeminence capability to handle uncertainty and variability has gained great attention in supply chain analysis. However, several issues in building and executing a supply chain simulation model have been recognized.

### CHALLENGES

One challenging issue in modeling a supply chain simulation model is a determination of the appropriate level of detail. A model that is too simple might not be able to capture all the crucial characteristics of the target, while too much detail in the model requires unnecessary time and cost. It is recommended that the level of detail should be carefully determined based on the objective of the study.

One major component MasterPlan-LE interacts with the simulation model is the order history file. The simulation model takes advantage of the actual historical order information to generate orders in the supply chain. In fact, the periodically updated order history file is used not only for generating orders in the model but also for constructing studies and "What-If" scenarios based on the user's input through MasterPLAN-LE.

For example, if the growth of orders in a supply chain is studied, MasterPLAN-LE grows the order history file systematically based on the expected growth percentage and growth rule provided by the user. If the effect of a new distribution center is studied, MasterPLAN-LE prepares the order history file for the new distribution center based on the definition of the distribution center.

In order to accomplish the modeling strategies and integration, simulation software is used in the following reasons. It allows the user to build hierarchical model logic easily and has a template to design routes efficiently.

### IDS ENGINEERING SOLUTION

The variety of individual studies and scenarios in a supply chain analysis is limitless. However, the proposed supply chain analysis perceives several major issues typically handled in a supply chain analysis, i.e., Growth realization, Material Redirection, and System Modification, and provides solutions in a systematic way.

Growth is realized in two perspectives: in terms of customers and suppliers. To the suppliers, there could be a growth of customer orders. There could also be a growth of customers. Likewise, there could be a growth of supplies to the customers. In such cases, a positive or a negative growth could be expected. MasterPlan-LE grows systematically the order history database corresponding to the situation and generate new summary order transactions to be fed to the simulation model.

### BENEFITS

By integration with simulation and database, a comprehensive supply chain analysis tool, MasterPlan-LE is developed. Its effectiveness and efficiency to handle the complex supply chain analysis is illustrated with a real world problem.

The significance of the MasterPlan-LE can be found not only from its powerful functionality described in this paper but also from the fact that the whole functionality is fully customizable for many different organizations. In addition to that, web-capability of the MasterPlan-LE surely extends the range of application in many areas. Finally, further research on developing reusable supply chain simulation modules for the MasterPlan-LE might be an immediate challenge to enhance the supply chain analysis tool.



### MARKET

Large Retail Supply Chain

### FACILITY

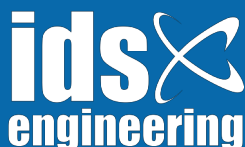
Over 4200 retail stores supplied by 10 distribution centers nationwide.

### CHALLENGE

Modeling a supply chain simulation model is a determination of the appropriate level of detail.

### SOLUTION

MasterPlan-LE



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