

ISyE 3103 Introduction to Supply Chain Modeling: Logistics

Spring 2006

Homework 3

Issued: January 24, 2006

Due: February 7, 2006

50 points.

This assignment should be completed by each team in the Supply Chain Game that we played in class.

After playing the Supply Chain Game and learning more about supply chain management, you know that some important requirements for successful supply chain management at a company are the following.

1. An information system that can provide accurate and up-to-date information about the company's processes, such as purchasing, receiving, production, customer order processing, order picking, shipping, billing, and so on, as well as for communicating relevant data with other supply chain members, which includes the receiving of specific types of data from other parties and sending of data to other parties such as suppliers, carriers, and customers.
2. A good forecasting method.
3. A useful decision support system.

This assignment focuses on the first requirement above.

Consider the manufacturer in the supply chain game for this assignment. Differences with the game are the following.

1. The company has to manage multiple products.
2. Each product has multiple raw materials.
3. The company has multiple suppliers of these raw materials. Not all suppliers can supply all types of supplies. You have to keep track of who can supply what, at what price, what leadtime, etc.
4. The company has multiple customers.

Your task is to design an information system that will enable your company to manage operations efficiently. Important aspects of these operations include

1. purchase orders sent to your suppliers,

2. purchased items received from your suppliers,
3. quality control results on received goods,
4. inventory on-hand, including their locations in the your warehouse,
5. sales orders received from customers,
6. picking, packing and shipping of sales orders,
7. shipments sent with carriers.

Design a relational database to support operations at your company. Your design should include a specification of the tables (files) in the database, the fields in each table, validity checks and other measures to ensure data integrity, consistency rules for entering data, links between fields in different tables, etc. You can choose the form you think is best to present your design in. You do not have to do any ER diagrams—they are typically not very useful.

You should implement practices that will improve the operation of your supply chain. For example, to reduce the adverse impact of the bullwhip effect, work with your team members to decide which data will be shared, how the accuracy, consistency and integrity of the data will be ensured, and then design a specific mechanism to share the data.

Implement your database design on computer, using a database package of your choice (such as Microsoft Access). Enter a few example records into the database. The team should write a brief report documenting the database design, that would help the database user to use your database, and submit it with the database through ITWeb at <http://itweb.isye.gatech.edu>. (Only one team member has to submit the database and the report. Click on Gradebook, and then click on Homework 3, and you will be taken to a web page where you can upload your files.)