



Case Study 2

Dimensional Modeling

1. Northwind Business

1.1. About Northwind

Northwind is a specialty foods distributor. It buys specialty foods from suppliers worldwide and resells them to customers worldwide. It is particularly interested in analyzing its sales and shipping activities and decisions so it can improve its customer order process. To do this it has decided to build a business intelligence data warehouse (BIDW).

1.2. Northwind Business Processes

The Northwind supply chain includes these major business processes:

- Purchase Foods
- Store Foods in Inventory
- Receive Customer Orders
- Ship Customer Orders

Since its objective is to improve the customer order process, Northwind has decided that the first BIDW project will include both the Receive Customer Orders business process and the Ship Customer Orders business process.

1.3. Northwind Business Questions

Some of Northwind's business questions are:

- What were our top selling products? This month? This quarter? YTD? This month last year? Last YTD?
- Who are our best customers in terms of sales? How many orders did our best customers place last month? What was the average order amount? What was the average number of items per order?
- How many orders were shipped on time? Late? How late?
- How much did we sell by each product category in each time period?
- Which employee sold the most orders?

1.4. Analysis of Northwind Business Rules Based on Their ER Data Model

Northwind has a data model of its normalized operational database, also known as an ER model as shown in Figure 1. An analysis of this model reveals the following business rules.

- Each customer order has one or more line items. Each line represents the sale of one product.
- Products are grouped into product categories, as shown by the one-to-many relationship between the Categories table and the Products table.
- Suppliers supply many products, but each product is purchased from only one supplier, as shown by the one-to-many relationship between the Suppliers table and the Products table.
- Each customer order is sold by a sales employee.



- Northwind has sales regions, each consisting of several sales employee territories.

2. Northwind E/R to Dimensional Model

Convert the E/R model to a dimensional model using Dimensional Normal Form (DNF) methodology.

- An Excel template is provided to design and submit your solution.
- Use the three-step DNF design method described in slides 72-74 of session 5.0, Dimension tables.
- Create SQL Scripts for each of the reports identified in Section 1.3

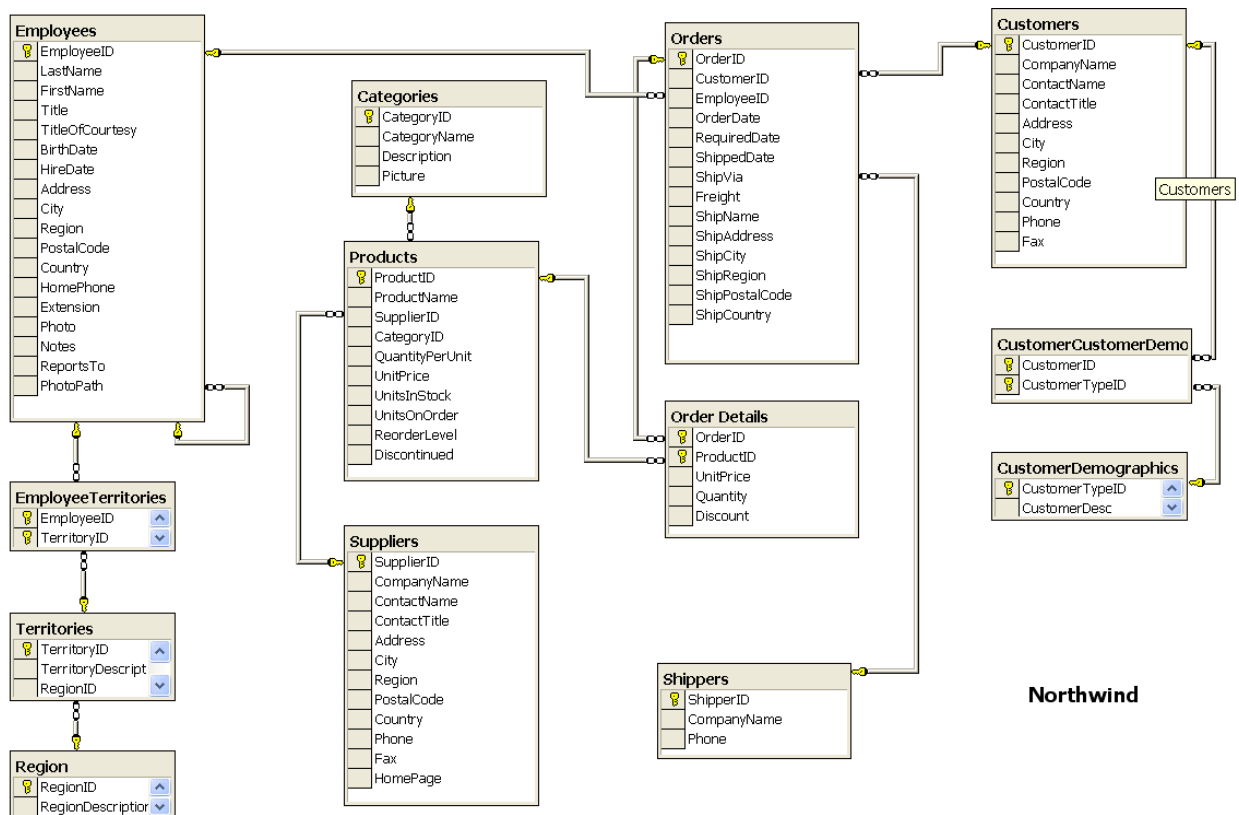


Figure 1. Northwind's E-R Model

- *Case Adapted From UCI BIDW Course*