Order Management – The Data Warehouse Toolkit

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# Case Facts

# Data Warehouse Concepts

## The order management is next up on the business process to implement into the data warehouse design. Order Management is unique because it involves several key sub-processes such as ordering and invoicing products. Many key performance indicators and “rear-view mirror” statistics can be derived from this process.

Different points of the order management business process have a potential for cardinality concerns or a potential of a variety of different attributes. For example, how often does a customer have a sales representative and how many sales representative? If the company is serving regular individual, more residential customers, the customer is not likely to have a sales representative at all. However, the larger the customer, the customer may have one or multiple sales representatives associated with it. A big design decision needs to be made here if it’s necessary to create a separate dimension table for sales representatives or to try to include all the information on the fact table.

## Step 1: Select the Business Process

The order management process effects all areas of the business, but can be broken down into the following steps:

* Quotes
* Customer Orders
* Shipping to Customer
* Shipment Invoicing
* Receiving Payments
* Customer Returns

## Step 2: Declare the Grain

* Order Line Transaction Fact – One row for each line item on an order.
* Shipment Invoice Fact – One row for each for each individual invoice line item.

## Step 3: Identify the Dimensions/Attributes

* Order Line Transaction Fact
  + Order Date: Date Key (PK), Calendar Date YYYY-MM-DD, Day of the Week, Quarter, Season, Holiday, Weekend
    - Based off a view of the Date Dimension Table, named uniquely for the order date.
  + Requested Ship Date: Date Key (PK), Calendar Date YYYY-MM-DD, Day of the Week, Quarter, Season, Holiday, Weekend
    - Based off a view of the Date Dimension Table, named uniquely for the requested shipment date.
  + Product: Product Key (PK), Product Description, Package Type
  + Customer: Customer Key (PK), Customer ID (NK), Name, Shipping Address, Shipping City, Shipping County, Shipping City-State, Shipping State, Shipping Zip Code, Bill To Name, Bill to Address, Bill to City-State, Bill to State, Bill to Zip Code, Organization Name, Corporate Parent Name, Credit Rating
  + Sales Rep-Customer: Sales Rep Key-Customer (PK), Assignment Effective Date (FK), Assignment Expiration Date Key (FK), Sales Rep Key(FK), Customer Key (FK), Customer Assignment Counter
  + Deal: Deal Key (PK), Deal ID (NK), Deal Description, Deal Terms Description, Deal Terms Type Description, Allowance Descript, Allowance Type Descript, Special Incentive Description, Special Incentive Type Description, Local Budget Indicator
* Shipment Invoice Fact
  + Invoice Date Key
  + Requested Shipment Date Key
  + Actual Shipment Date Key
  + Customer (see above)
  + Product (see above)
  + Sales Rep Key (see above)
  + Deal Key (see above)
  + Shipper Key (FK): Name, Address, State, City, Zip Code

## Step 4: Identify the Facts

* Order Line Transaction Fact
  + Order Quantity
  + Extended Order Line Gross Dollar Amount
  + Extended Order Line Discount Dollar Amount
  + Extended Order Like Net Dollar Amount
* Shipment Invoice Line Transaction Fact
  + Invoice Number
  + Invoice Line Number
  + Invoice Line Quantity
  + Extended Invoice Line Gross Dollar Amount
  + Extended Invoice Line Allowance Dollar Amount
  + Extended Invoice Line Discount Amount
  + Extended Invoice Line Net Dollar Amount
  + Extended Invoice Line Fixed Manufacturing Cost
  + Extended Invoice Line Variable Manufacturing Cost
  + Extended Invoice Line Storage Cost Dollar Amount
  + Extended Invoice Line Distribution Cost Dollar Amount
  + Extended Invoice Line Contribution Dollar Amount
  + Shipment On-Time Counter
  + Requested to Actual Ship Lag

# Summary

In the Case Facts, an issue briefly discussing the multiple possibilities sales reps may have and how it effects the warehouse design. The best approach is to ensure that the warehouse design is flexible enough to account for slowly changing dimension attributes and growing business. This is one reason why I believe the best thing to do is to create a separate dimension table for sales representatives as you have seen above. While it may be more of a one-off occasion that a customer has multiple sales representatives now, you may find as the company grows or business rules change, more and more customers have more than one sales representative.

Another key factor to point out in this design is that once again, dimension tables used from previous business process implementations are being used for the order management process. As a result, organization leaders can create an accumulating snapshot for the order fulfillment pipeline to get data-based answers for key questions. Management can find bottlenecks between when the customer places an order, the product is backlogged, the order is released to manufacturing, the product is completed and in the finished goods inventory, the order is shipped, and when the order is invoiced. Facts from the Order Line Transaction and Shipment Invoice Line tables can be compiled and help those responsible for quoting be more accurate in their quotes in order to increase profit margins, etc.