Human Resources – The Data Warehouse Toolkit

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# Case Facts

# Data Warehouse Concepts

## Human Resource Managers are responsible for keeping track of employee information and maintaining records of an organization’s staff. This includes many different pieces of information from the skills that an employee provides, their salary, management, cost center, benefits, etc. In a large organization, you can imagine how the profile of many employees change and how often. Perhaps one of the biggest challenges of designing a data warehouse to include the Human Resource Management process involves considering the mounds of information to maintain for each employee and how to record each attribute that may change through the employee’s career. Below is one example of how to implement the Human Resource Management data into a data warehouse.

## Step 1: Select the Business Process

The Human Resources Management process involves the following tasks:

* Tracking employee’s skills, appraisal reviews, organization, manager
* Maintaining benefit information
* Employee Onboarding

## Step 2: Declare the Grain

* Employee Fact – One row for each employee
* Employee Headcount Snapshot Fact – one row per month, per organization

## Step 3: Identify the Dimensions/Attributes

* Employee: Employee Key (PK), Employee ID (NK), First Name, Middle Name, Last Name, Street Address, City, State, Zip Code, Job Grade, Salary, Education, Original Hire Date (FK), Last Review Date (FK), Appraisal Rating, Change Reason Code, Change Description, Effective Date, Expiration Date, Current Row Indicator
* Insurance: Insurance Plan Key (PK), Insurance Carrier, Insurance Plan, Effective Date, Termination Date, Premium Cost
* Vacation: Vacation Plan Key (PK), Paid Time Off Days, Sick Days
* Month: Month Key (PK), Month/Year, Number of Holidays, Season
* Organization: Organization Key (PK), Cost Center Name, Cost Center Number, Department Name, Department Number, Division Name, Business Unit Name, Company Name
* Manager: Manager Key (PK), Employee ID (NK), First Name, Middle Name, Cell Phone Number

## Step 4: Identify the Facts

* Employee Fact – One row for each employee
  + Employee Key (FK)
  + Manager Key (FK)
  + Organization Key (FK)
  + Vacation Plan Key (FK)
  + Insurance Plan Key (FK)
* Employee Headcount Snapshot Fact – one row per month, per organization
  + Month Key (FK)
  + Organization Key (FK)
  + Employee Count
  + New Hire Count
  + Transfer Count
  + Promotion Count
  + Salary Paid
  + Promotion Count
  + Overtime Paid
  + Retirement Fund Paid
  + Retirement Fund Employee Contribution
  + Vacation Days Accrued
  + Vacation Days Taken
  + Vacation Days Balanced

# Summary

The above describes a draft of a data warehouse schema that describes a variety of attributes that is necessary to maintain and store for a Human Resource Department. Two very different fact tables are proposed: Employee Fact Table and Employee Headcount Snapshot Fact Table.

The Employee Fact Table is a factless fact table. The majority of description employee information is stored in the Employee Dimension table. This table handles type 2 slowly changing dimensions by adding a new row each time an item on the table changes. The Change Reason Code and Change Description help identify what attribute was modified on the table. The effective date and termination date allow Human Resource personnel to query the data by a certain date to identify an employee profile at a certain point in time. In addition, other dimension tables such as Manager, Insurance Plan, and Vacation Plan delivers information as it pertains to who supervises the employee and what benefit options where chosen.

The Employee Headcount Snapshot Fact Table provides monthly information of important statistics of the employees for an organization. For example, a manager might be interested to know the number of vacation days his employees have remaining in order to be prepared for the rest of the year. If many employees have a large amount of vacation time remaining and must use it by a certain time, then the manager can be prepared to possibly be shorthanded. Human Resources may use Retirement Fund Paid and Retirement Fund Employee Contribution in order to balance payroll processing.

The Employee Fact table provides detailed information about a specific employee while the Employee Headcount Snapshot provides a high level look over a organization given a specific month. Each can be queried, and data sliced to provide meaning information for analysis.