**DW in Retail, Inventory, and Procurement**

 Please read Chapter 2 to 4 of DW book.

From this week, we begin to explore the dimensional modeling techniques with case study across industries (read the opening words on page 29). This week, we explore three major categories of supply chain in retailing industry, the retail, the inventory and the procurement.

Each chapter has two parts.

In the first part, a case study on dimensional modeling is introduced (retail, inventory, and procurement in this week). Exemplified dimension and fact tables for this industry category are created, which may serve as a good example and reference for your own data warehouse.

In the second part, in light of the case study, some important topics/skills about dimensional modeling will be introduced. They applied to different industry domains.

Following is a checklist for the topics/skills covered in each chapter and the issues you want to pay attention while review these three chapters. They also help you review these chapters in an **efficient** way.

Chapter 2:

Retail Case study

Dimension and fact tables:

* date dimension,
* product dimension,
* store dimension,
* promotion dimension
* sales transaction facts

Modeling skills:

1. Four basic steps in dimensional modeling

•&νβσπ;Select the business process

•&νβσπ;Declare the grain

•&νβσπ;Choose the dimensions

•&νβσπ;Identify the facts

2. Snowflaking: **refrain from normalizing the dimension**

3. Surrogate key: DON’T use natural operational code, **use meaningless integer**

4. The progressive pruning algorithm in market basket analysis (page 64): this is interesting, think about it: how do we find out interesting buying patterns from tens of millions of sales transaction records by using market basket analysis (refer to DM book for details if you forget about this)? The brief answer is start from upper most categories, then drilling down only for those have higher frequency combination in occurrences.

Chapter 3:

Inventory case study

This chapter introduced three inventory models:

* Periodic snapshot: take a snapshot of the inventory for each item in inventory every day; simplest but could generate huge amount of entries in fact table),
* Inventory transactions: record every transaction that affects inventory; simple; have additional dimension tables like warehouse, vendor and transaction types.
* Accumulating Snapshot: provide an updated status of the product shipment as it moves through receiving, inspection, bin placement, authorization to sell, picking, boxing, and shipping; complex; have multiple dimension tables like date received dimension, date inspected dimension, etc.

Dimension and fact tables used:

Depending on which of the three inventory models one choose, the dimension tables being used include: date dimension, store dimension, product dimension, warehouse dimension, vendor dimension, inventory transaction type dimension,

Modeling skills:

* Value chain integration: observe Figure 3.6
* Data Warehouse Bus Architecture: observe Figure 3.7 and 3.8
* **The importance of conformed dimensions and facts: page 82 to 87, very detailed discussion on the importance of conformed dimension and facts. Worth your careful reading and enhancing your understanding of bus architecture for DW proposed by Kimball**

Chapter 4:

Procurement Case Study

Dimension and fact tables:  procurement transaction fact; date dimension, vendor dimension, product dimension, contract term dimension, procurement transaction type dimension

This chapter also proposed a procurement accumulating snapshot fact table (Figure 4.2), which is equivalent to inventory accumulating snapshot fact table introduced in previous chapter.

Modeling skills

Slowly changing dimensions: this chapter introduces three ways to handling changing dimensions, sometime, to get the best outcome, we need to combine two or three of these basic ways, so we have two hybrid approaches:

* Overwrite the value (see example on page 96)
* add a dimension row (see example on page 97)
* add a dimension column (see example on page 101)
* (hybrid approach) predictable changes with multiple version overlays
* (hybrid approach) unpredictable changes with single-version overlay

### Discussion: Two Thoughts

What is your comments on the two different warehouse architectures proposed by Kimball and Inmon respectively.

You may search Inmon approach from the Internet if you do not have the book.