CelDial: Case Study Analysis

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INTRODUCTION

Celdial is a company manufacturing telecommunication products. It kick-started its venture by manufacturing cellular telephones. However due to steep growth in demand, the company grew in both vertical and horizontal domain, adding a range of new products. Carried on its high demand, the company closed the distribution channels and opened its own sales outlet.

However due to poorly planned expansion, the company focused only on opening new plants, sales offices and stores and ignored the fundamentals of effective and measured expansion.

The management is now forefront to improving the prospects of the company by refocusing on the performance and improving the organizational structure of the firm.

OBJECTIVE

CelDial had an increase in customer demand and to fulfil the same, they expanded their operations and manufacturing processes. In this pursuit, they opened up new plants, sales offices and stores.

During the expansion project, their focus was based only on the expansion and none on how effective the expansion project will be. To assess their performance, the organization decided to implement data warehousing system. With the help of data warehouse, they will be able to measure potential costs and benefits. There are primarily two systems involved defined as:

1. Operational System

Operations consists of two divisions:

- Manufacturing
- Sales

Manufacturing has research departments and processing plants.
The research department is responsible for coming up with new ideas for products and test it before introducing it in the market. After successful testing, details about the product is updated in CelDial's database.
The database is accessed by manufacturing plants for production. Manufacturing plants process and pack the product to be sent for sale.

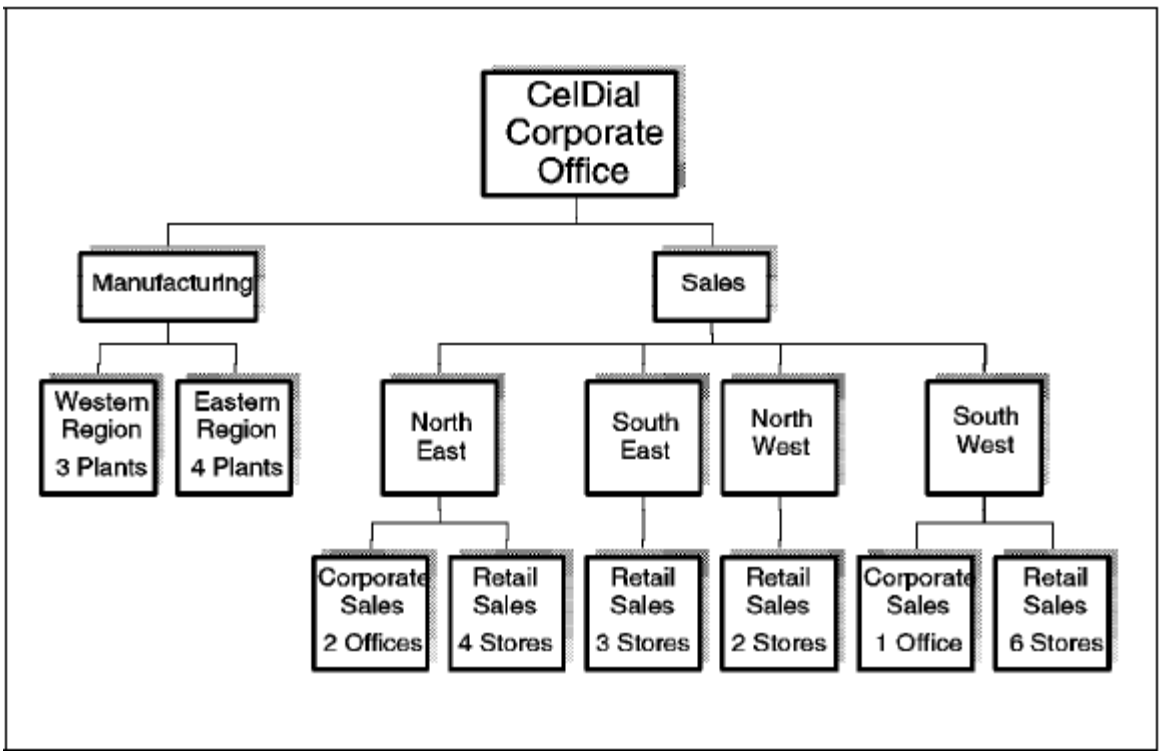

Figure 1 CelDial Organization Chart

Sales department earlier had third party distributer but due to increased popularity within customer base, they shifted to owning sales outlets. Sales outlet can either be a retail store or corporate sales office. In either of them, discount is subjected to negotiation and on the volume of purchase.

The retail stores sell product over the counter. Store can only order from one manufacturing plant. It saves data about the order and not about the customer. The stock manager looks into products that have to be stocked or sold.

A corporate sales office sells to corporate customers only. A corporate customer places an order either via a sales representative or on a phone call at an office. If the order placed is for multiple locations, the order is split and order is sent to the manufacturing plant closest to the shipping location.

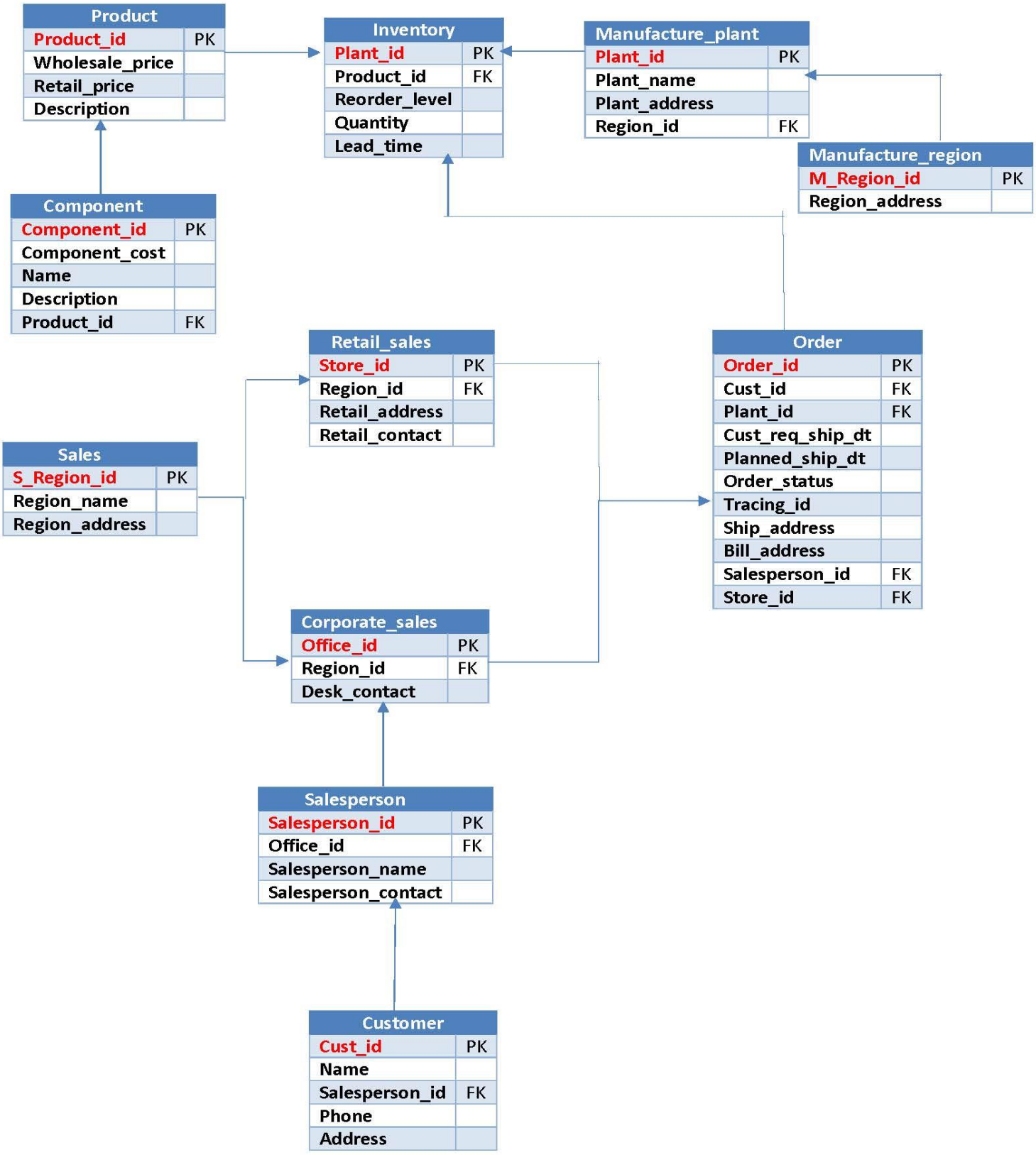

Figure 2: ER-DIAGRAM

2. Data Warehouse System

The proposed Data Warehouse system aims to analyze the cost and revenue data of the product manufactured and sold by CelDial.

It consists of two facts tables titled, Sale and Inventory.

The Sales fact table is associated with various dimension tables namely, Manufacturing, Customer, Time, Seller and Product.

The Inventory fact table is associated with Time, Manufacturing and Product dimensions.

Each table in turn consists of a number of attributes. This collection of data enables the user to conduct effective analysis at desired granularity which results in measurement of performance of the company.

SCOPE OF THE PROJECT

The project will enable the user to conduct various analysis on the cost and revenue of the various product models manufactured by CelDial. This analysis could be done on various grounds incorporating factors such as time, manufacturing region, plants and sales region. However, the project will be limited to direct cost and revenue as the company's records currently don't assimilate other factors. Moreover, the manufacturing costs are calculated at product level only and hence the cost of components is considered. The data warehouse will be flexible enough to accommodate any future changes to rules of allocation of manufacturing and overhead costs. The project will present a collection of data which could be effectively analyzed and hence various information can be derived as and when required. These information include but are not limited to reorder level, average quantity, on hand in the inventory, total cost and revenue at desired granularity.

UNDERSTANDING & ANALYZING REQUIREMENTS

Design Approach:

Conceptual Design

- Data Mart chosen: Sales, Inventory
- Granularity specified: Time (week, month) , Outlet (corporate, retail)
- Dimensions: Time, Customer, Product, Employee, Manufacturing
- Facts Chosen: Sales ,Inventory

Entity Details

ENTITY	FACT/DIMENSION
SALE	FACT
MANUFACTURING	DIMENSION
CUSTOMER	DIMENSION
TIME	DIMENSION
SELLER	DIMENSION
PRODUCT	DIMENSION
INVENTORY	FACT

ENTITY	NUMBER OF ATTRIBUTES
SALE	10
MANUFACTURING	4
CUSTOMER	3
TIME	4
SELLER	6
PRODUCT	9
INVENTORY	7
ORDER	10
LOCATION	4

Logical Design

Required Trace Ability Matrix

SUBJECT AREA	KEY BUSINESS MEASURES	GRANULARITY	DIFFERENT KIND OF ANALYSIS	DIMENSIONS INVOLVED IN ANALYSIS
SALES	Total revenue Total quantity sold Discount	Time: Week, month Outlet Level: Retail, Corporate	➢ Number of employees with no sales last month ➢ Total revenue for each model, for each region	Time Customer Product

			➢ Percentage of products sold based on outlet type. ➢ No sales recorded by outlet type last month ➢ Products not sold this week, month top five ➢ Percentage of products eligible for discounting ➢ products/models by revenue, by cost, by quantity	Orders Employees
INVENTORY	Total cost Total quantity Produced Reorder Level	Time: Week, month	➢ Total cost for each model type, for each region ➢ Average quantity on hand and reorder level by manufacturing plant	Product Manufacturing Time

Fact / **Dimension**	**Total Qty sold**	**Total Qty produced**	**Re-Order Level**	**Total Revenue**	**Total Cost**	**Discount**
Time	☑	☑	☑	☑	☑	☑
Customer	-	-	-	-	-	-
Seller	-	-	-	-	-	-
Product	☑	☑	☑	☑	☑	☑
Manufacturing	-	☑	☑	-	☑	-

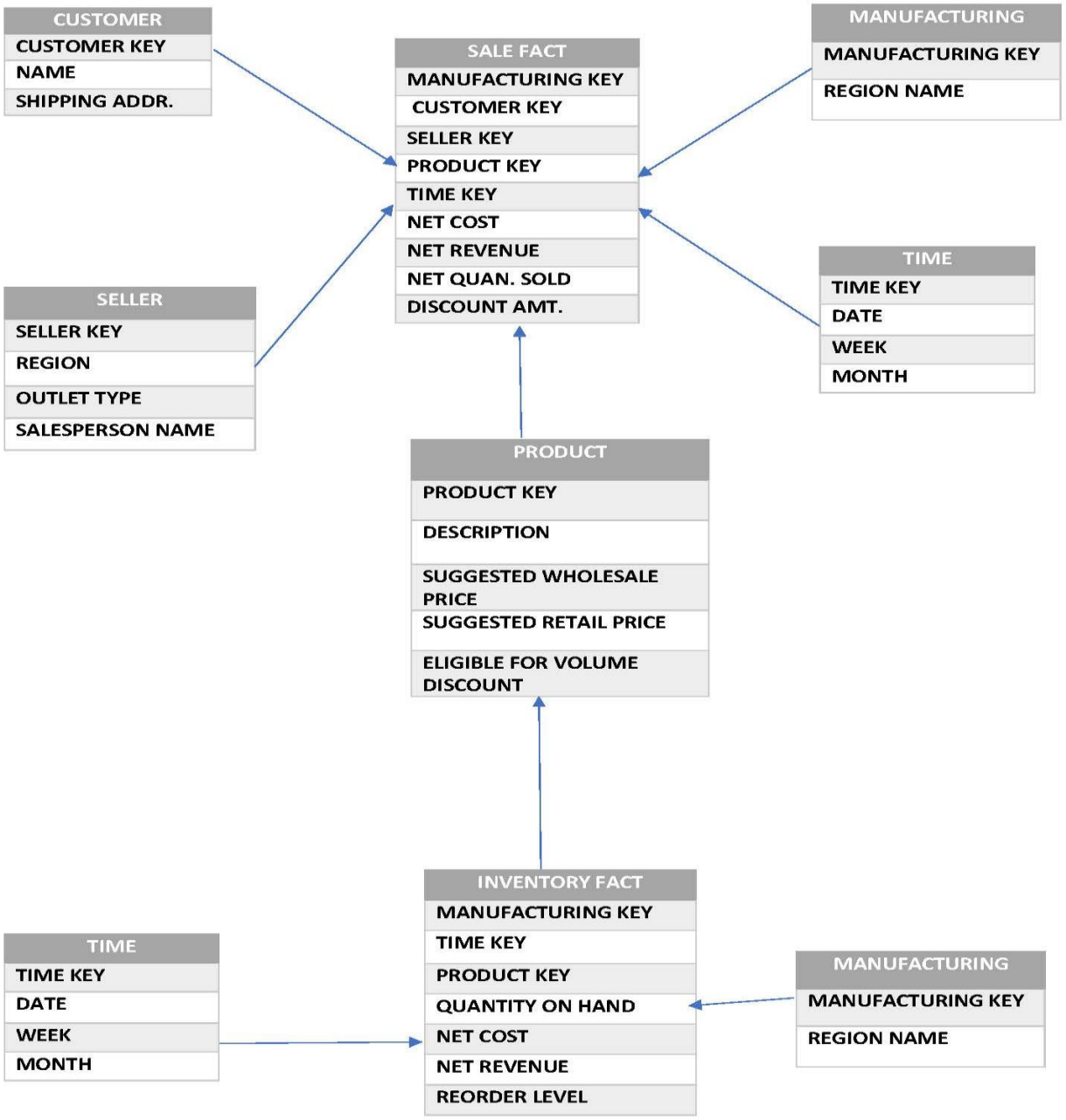

Figure 3 :DIMENSIONAL MODEL

Physical Design

Data Usage	Standard
Reorder_level	NUMBER(8)
Manufacturing_id	NUMBER(8)
Quantity_sold	NUMBER(8)
Quantity_on_hand	NUMBER(8)
Date	DATE
Week	VARCHAR2(3)
Month	VARCHAR2(3)
Customer_id	NUMBER(8)
Customer_name	VARCHAR2(20)
Ship_address	VARCHAR2(30)
Order_id	NUMBER(8)
Outlet_id	VARCHAR2(8)
Product_id	NUMBER(8)
Selling_price	NUMBER(8,2)
Saleperson_id	NUMBER(8)
Saleperson_name	VARCHAR2(20)
Wholesale_price	NUMBER(8,2)
Retail_price	NUMBER(8,2)
Discount_on_volume	NUMBER(8)
Total_cost	NUMBER(8,2)
Total_revenue	NUMBER(8,2)

Operational to Dimensional Model

Map:

Two fact tables are as follows

- Inventory Fact Table
- Sales Fact Table

Inventory Fact Table:

The dimension table associated with Inventory fact table are Time, Product and Manufacturing. The transactions concerned in this fact table are net_cost, net_revenue.quantity_on_hand and reorder_level. This in turn takes care of the reordering process as the quantity on hand goes below a certain reorder level.

Sales Fact Table:

Customer, Manufacturing, Time, Seller and Product are the dimensions of Sale fact table. The transaction associated with this fact table are net_cost, net_revenue, net_quantity_sold and

discount. This fact table takes care of the cost and revenue aspects of the sales done in a particular time duration, the discount percentage based on the quantity of order.

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