MULTIDIMENSIONAL DATA MODEL

Multidimensional data model stores data in the form of data cube. Mostly, data warehousing supports two or three-dimensional cubes.

A data cube allows data to be viewed in multiple dimensions. Dimensions are entities with respect to which an organization wants to keep records. For example in store sales record, dimensions allow the store to keep track of things like monthly sales of items and the branches and locations. A multidimensional database helps to provide data-related answers to complex business queries quickly and accurately. Data warehouses and Online Analytical Processing (OLAP) tools are based on a multidimensional data model. OLAP in data warehousing enables users to view data from different angles and dimensions

Working on a Multidimensional Data Model

On the basis of the pre-decided steps, the Multidimensional Data Model works.

The following stages should be followed by every project for building a Multi dimensional Data Model :

Stage 1 : Assembling data from the client : In first stage, a Multi Dimensional Data Model collects correct data from the client. Mostly, software professionals provide simplicity to the client about the range of data which can be gained with the selected technology and collect the complete data in detail.

Stage 2 : Grouping different segments of the system : In the second stage, the Multi Dimensional Data Model recognizes and classifies all the data to the respective section they belong to and also builds it problem-free to apply step by step.

Stage 3 : Noticing the different proportions : In the third stage, it is the basis onwhich the design of the system is based. In this stage, the main factors are recognizedaccording to the user's point of view. These factors are also known as "Dimensions".

Stage 4 : Preparing the actual-time factors and their respective qualities : In the fourth stage, the factors which are recognized in the previous step are used further for identifying the related

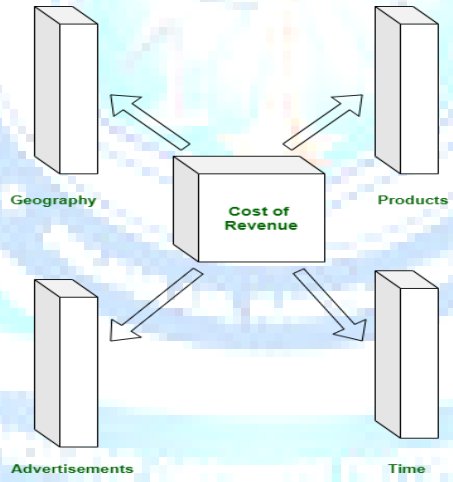
qualities. These qualities are also known as “attributes” in the database.

Stage 5 : Finding the actuality of factors which are listed previously and their qualities : In the fifth stage, A Multi Dimensional Data Model separates and differentiates the actuality from the factors which are collected by it. These actually play a significant role in the arrangement of a Multi Dimensional Data Model.

Stage 6 : Building the Schema to place the data, with respect to the information collected from the steps above : In the sixth stage, on the basis of the data which was collected previously, a Schema is built.

For Example :

1. Let us take the example of a firm. The revenue cost of a firm can be recognized on the basis of different factors such as geographical location of firm’s workplace, products of the firm, advertisements done, time utilized to flourish a product, etc.



2. Let us take the example of the data of a factory which sells products per quarter in Bangalore. The data is represented in the table given below

Location = "Bangalore"				
Time (quarter)	Type of item			
	Jam	Bread	Sugar	Milk
Q1	350	389	35	50
Q2	260	528	50	90
Q3	483	256	20	60
Q4	436	396	15	40

In the above given presentation, the factory's sales for Bangalore are, for the time dimension, which is organized into quarters and the dimension of items, which is sorted according to the kind of item which is sold. The facts here are represented in rupees (in thousands).

Now, if we desire to view the data of the sales in a three-dimensional table, then it is represented in the diagram given below. Here the data of the sales is represented as a two dimensional table. Let us consider the data according to item, time and location (like Kolkata, Delhi, Mumbai). Here is the table :

	Location="Kolkata"			Location="Delhi"			Location="Mumbai"		
	item			item			item		
Time	Milk	Egg	Bread	Milk	Egg	Bread	Milk	Egg	Bread
Q1	340	604	38	335	365	35	336	484	80
Q2	680	583	10	684	490	48	595	594	39
Q3	535	490	50	389	385	15	366	385	20

3D data representation as 2D

This data can be represented in the form of three dimensions conceptually, which isshown in the image below :