**Chapter Summary: Data Modeling & Relationships (Model View)**

**🔹 1. Understanding Model View**

* The **Model View** in Power BI is where you visually **create and manage relationships** between different tables in your dataset.
* This step is essential to **combine data meaningfully** across multiple tables (Fact and Dimension).

**🔹 2. Fact Table vs. Dimension Table**

| **Table Type** | **Description** | **Example Tables** |
| --- | --- | --- |
| **Fact Table** | Contains **repetitive transactional data** | Order\_Data |
| **Dimension Table** | Contains **unique reference details** | Customer\_Details, Food\_Details, Restaurant\_Details |

* 🔁 Fact tables have **duplicate values** (e.g., multiple orders by a customer).
* ✅ Dimension tables have **unique values** (e.g., one row per customer or dish).

**🔹 3. Why Create Relationships?**

* Relationships are used to **connect different tables** logically.
* Without relationships, Power BI cannot understand how tables are linked, and **cross-table calculations** (like total orders per food type) will fail or return incorrect results.

📌 **Example:**

To calculate the total number of "Main Course" orders, Power BI must link Order\_Data (fact) with Food\_Details (dimension). Without a relationship, it won’t know which orders correspond to Main Course items.

**🔹 4. Types of Relationships**

* **One-to-Many (1:\*):** One record in a dimension table relates to many in the fact table.
* **Many-to-One (\*:1):** The reverse of the above (often how it’s drawn in Power BI).
* **One-to-One (1:1):** Rare; used for tightly coupled reference tables.

**🔹 5. Automatic vs. Manual Relationships**

* Power BI often **automatically detects relationships** using column names and data types.
  + To enable: Go to **File > Options > Data Load > Auto-detect new relationships after data is loaded**.
* If relationships are **not detected**, you can:
  + Go to **Model View**,
  + **Drag and drop** the related fields,
  + Set the correct **cardinality** and **cross-filter direction**.

**🔹 6. Relationships You Created in This Chapter**

| **From Table** | **Relationship Type** | **To Table** |
| --- | --- | --- |
| Customer\_Details | One-to-Many | Order\_Data |
| Food\_Details | One-to-Many | Order\_Data |
| Restaurant\_Details | One-to-Many | Order\_Data |

✅ These relationships allow you to analyze orders by customer, food type, or restaurant easily and accurately.

**✅ Key Takeaways**

* **Fact tables** hold transactional data; **dimension tables** hold reference data.
* **Relationships** are essential to link these tables for accurate analysis.
* Power BI can **auto-detect** relationships, but you can also **create them manually** via drag-and-drop.
* Always verify **cardinality** and ensure **relationships are correctly set** for cross-table analysis to work.