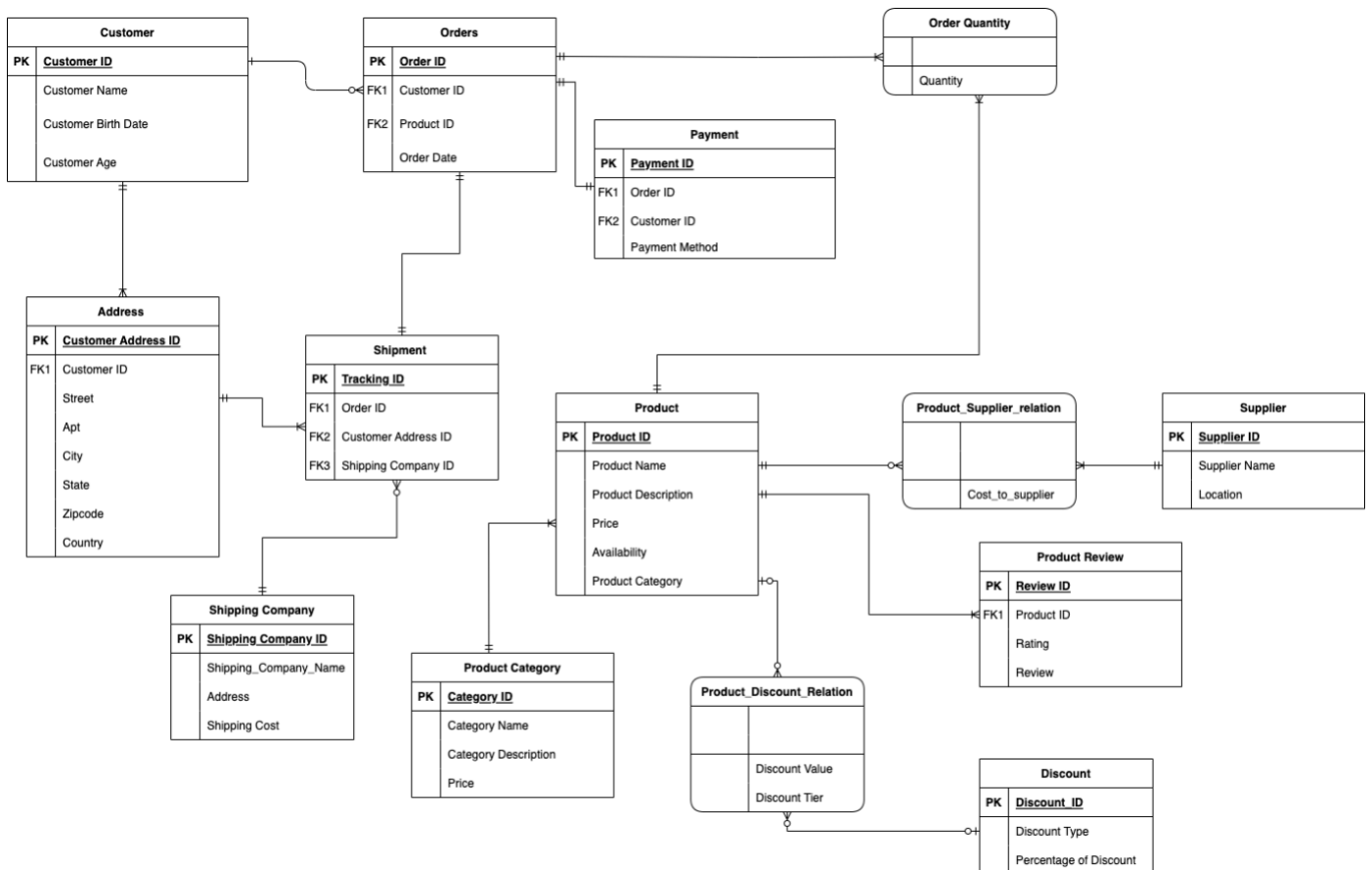# E-commerce Management System for Electronics

## Database Management and Database Design

### Project by

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**Purpose**: This project aims to focus on building a database management system for an e-commerce website which specializes in the sale of electronic goods. This system will serve as an easy way for the business to enter information about transactions, customers, orders, etc. They can then retrieve this information easily, which will in turn streamline the shopping experience. Along with tracking orders, inventory and customers, this system will also track loyalty of customers and discounts extended to them. Such a comprehensive system will help eliminate a lot of problems faced by businesses and improve the customer experience.

The above Entity Relationship Diagram has the following Entities:

- **CUSTOMER** [**Customer ID,** Customer Name, Customer Address ID, Customer Birth Date, Customer Age]
- **ADDRESS** [**Customer Address ID,** Street, Apt, City, State, Zipcode, Country]
- **SHIPMENT** [**Tracking_ID,** Order ID(FK), Customer Address ID(FK), Shipping Company, Shipping Cost]
- **SHIPPING COMPANY** [**Shipping Company ID**, Shipping_Company_Name, Address, Shipping Cost]
- **PRODUCT** [**Product ID,** Prod Name (FK), Product Description, Price, Product Category, Availability]
- **PRODUCT CATEGORY** [**Category ID,** Category Name (FK), Category Description, Price]
- **PRODUCT REVIEW** [**Review ID,** Product ID, Rating, Review]
- **SUPPLIER** [**Supplier ID,** Manufacturer Name, Location]
- **PAYMENT** [**Payment ID,** Order ID (FK), Customer ID (FK), Payment Method, Shipping Cost]
- **ORDER QUANTITY** [**Order ID, Product ID,** Quantity]
- **ORDERS** [**Order ID,** Customer ID (FK), Product ID (FK), Order Date]
- **DISCOUNT** [**Discount ID,** Discount Type, Percentage of Discount]
- **PRODUCT_DISCOUNT_RELATION** [**Product ID, Discount ID**, Discount Tier, Discount Value]
- **PRODUCT_SUPPLIER_RELATION** [**Product ID, Supplier ID**, Cost_to_supplier]

**Business Rules:**

In this schema, Customer represents the website's registered users, who can place multiple Orders for products. Each Order is associated with a Customer and contains one or more Order Items. Each Order Item represents the product, customer and the date it is ordered on. The Order Quantity associative entity tracks the quantity for each product ordered in a particular order.

Product represents an available list of products for purchase on the website, which has a name, description, category, price, availability. Each Category can have many Products, which are represented by the Category table. The Product Category table represents the one-to-many relationship between Product and Category.

Product Review will help in tracking how a certain product does.
With this schema, the website can track which users have ordered which products, what categories those products belong to, and how many of each product were ordered.

SHIPMENT represents the information of the deliverable from the website to drop location which uses the multiple ADDRESS stored for a customer.

 A shipment can be made by several shipping companies which information is tracked in the SHIPPING COMPANY entity. The Shipping cost depends on the Shipping Company.

The PRODUCT_SUPPLIER_RELATION serves as an associative entity which relates PRODUCT to SUPPLIER. It contains the attribute Cost to supplier which may differ from product to product.

The DISCOUNT entity tracks the type of discount and the percentage of discount for each product. A product can have many discounts. PRODUCT_DISCOUNT_RELATION serves as an associative entity which relates PRODUCT to DISCOUNT and has the attribute Discount Value

which tells us the specific discount value based on the discount percentage which is described by the Discount Tier attribute.

The PAYMENT entity tracks every unique order and is described by the Payment_ID, Order_ID, Customer_ID and Payment method attributes. It has a one-to-one relationship since every Payment_ID is directly related to a unique Order_ID.