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Project: Inventory and Sales Management for an Online Business

The trend of selling the product online is gearing up due to wide spread presence of E-Commerce giants expanding into developing countries as well as expanding their customer base. This Database Management System is made for sellers selling their product online. It is used for collecting data of purchases from various suppliers, distributors and wholesalers as well as the sales management on different E-Commerce platforms such as Amazon.in, Amaon.com, Flipkart, Walmart.com, PayTM, Jabong, Myntra etc.

Seller orders products from distributors, wholesalers and other manufacturing companies. These purchased products are stored in warehouses. These products will be listed on E-Commerce portals for sale. Customers can see these products on E-Commerce portals and buy products. Once customer places the purchase order on E-Commerce portals, seller ships the product from the warehouse via logistic and shipping partners.

Data Requirement:

1. Data of product purchased from number of suppliers, distributors and wholesalers need to be captured. A product may have more than one supplier as well as one supplier can supply more than one product. Furthermore, products may be listed on more than one E-commerce platforms. Data such as product ID, product name, type of product, supplier ID, Supplier name etc. will be captured.

2. Sales record of each product listed on all the platforms will be captured. Each sales of the product will have a unique Sales Order ID as well as each platform will have a unique platform ID. Each sales record will have this platform ID assigned so that we can know on which platform this item was sold.

3. Items sold on the online platform can be returned by the customer as well. In that case, Returned product will have a unique return id associated with its original order id (In order to remove that sale from count in revenue and profit)

4. Data related to suppliers will be captured. Each supplier is identified by a supplier id and their company name, address, contact information, items supplied, date of supply etc. will be captured.

5. I maintain 6 warehouses in multiple cities across the state. Each warehouse will be identified by unique warehouse ID. Each warehouse related data such as total capacity, utilized capacity, items present in warehouse, Date of supply to warehouse etc. will be captured.

6. I am using three courier services for shipping my products to customers. Products will be shipped by the couriers based the platforms. Shipping charges are decided based on the type of product and platform as well as pin code of customer. These three variables will be added together at the point of sale and final shipping amount will be decided.

Processing Requirements:

All the data captured above is utilized by the owner of business to generate several reports that assist him in understanding the different components of his business.

Specifically, some of the processing that needs to be done include:

1. Identify high profit generating products which have, on average, more than 1000 number of products sold every month across all the platforms (In order to give order in bulk to supplier which will help reducing buying price further and will increase the profit margin)

2. Identify products which are being sold the least like, on average, less than 100 number of products sold every month across all the platforms (In order to reduce the selling price or to give discount to customers so that their sales can be boosted. Based on this data, order of these products to supplier will be reduced)

3. Identify the products which are returned least as well as those which are returned most by the customers in all the categories. This processing will help finding actual product which is generating the highest profit.

   (Because sometimes, it may happen that the product being sold the most may be the same product being returned the most by customer. Final profit will be calculated after deducting returned product numbers from total sales order of that product.)

4. Identify high revenue generating product which have on average, more than 50,000 INR revenue across all the platform (If the product is in High revenue category but not in high profit category, that does mean that the product is underpriced and selling price of product can be increased to increase the profit margin)

5. Identify the region of customers who are buying the most from selected categories, so that targeted campaign can be run to increase the sale in that region. Based on the volume of sale on a particular date or period, we can take decision of maintaining the inventory such as gathering more stock before the starting of that period in order to prevent the issues of product going out-of-stock etc.

6. Determine the requirement of expansion or closure of the warehouse based on the monthly and quarterly capacity utilization.

7. Determine which E-commerce portal is generating maximum sale for a particular product in every category so that more quantity of product can be listed on that E-Commerce portal.

8. Determine the buy rates fluctuation from suppliers based on the quantity of product ordered from suppliers (Will be used in the decision making process of bulk order) as well as the late delivery of items that are ordered from suppliers (Date of Order given to Supplier, Date of products received at warehouse will be captured to count this. It will be helpful to get calculation of average days taken by every supplier to supply the product after the order was given to them)

9. Calculate Total investment in terms of INR, total revenue, total profit and total expenditure for whole inventory. (To determine the percentage of profit on total investment)

Data Description:

- **Product at Warehouse:**

  The database would capture details of the product at warehouse such as Product ID, Product Name, Category of Product, Product Purchase Order Date, Product receive date, Purchase Price, Units of product ordered, Supplier Name, Supplier ID, Warehouse ID where it is stored, Number of quantities stored etc.

- **Product listed on E-Commerce Platform:**

  The database would capture details of the product listed on portals like Product ID, whether listed on each platform or not, sell price on platform, Shipping Rate, etc.

- **Suppliers:**

  The database maintain record of all the details of suppliers such as Supplier ID, Supplier Name, Type of Items Supplies, Contact Person, Contact No, Address, City, Country etc.

- **Warehouses:**

  The database keeps record of details of warehouses such as Warehouse ID, Warehouse Name, Location, Total Capacity in terms of number of items can be stored, Number of Items currently in Warehouse, Category of Item, Total Capacity Left, Capacity left per category, Rent of warehouse, Electricity bill etc.

- **Shipping Company:**

  This database keeps record of the list of courier companies such as Company ID, Company Name, Location, Contact Person, contact number, shipping provided for E-Commerce Company etc.

- **E-Commerce Portals:**

  We are considering the names of E-commerce portals as endpoints as the products being sold via either web-portal or mobile application won't affect the sales of our product as once the product is listed on the E-commerce platform, it is seen to customers irrespective of either listed on web-portal or on mobile application or both.

  This database keeps record of the list of E-Commerce portals such as Portal ID, Portal Name, Items listed for sale, selling price of Item, Units of product available, Selling price, Commission on sales etc.

- **Sales:**

  This database keeps record of the sales of each product on all the E-commerce portal such as Sell Order ID, Product ID, Product sold on which E-commerce portal, Sell Price, Stock sold, Date of Sale Order, Date when Item delivered to customer, Company who shipped the product, Customer Name, Customer City, Customer State, Pin code etc.