

SQL Mini Project Report

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Project Title: E-Commerce Sales & Inventory Analysis Using SQL

1. Introduction

The objective of this project is to analyze an e-commerce dataset (categories table) using SQL to extract business insights. The dataset contains 3000+ products with columns including category, product name, price, discount, quantity, stock availability, and weight. The project focuses on solving real-world business questions such as revenue analysis, stock management, pricing, and top-selling products.

2. Dataset Description

Column Name	Description
category	Product category
name	Product name
mrp	Maximum retail price
discountPercent	Discount applied on product (%)
availableQuantity	Current stock available
discountedSellingPrice	Price after discount
quantity	Number of units sold
outOfStock	TRUE if out of stock, FALSE otherwise
weightInGms	Weight of product in grams

3. Questions Solved

Q1: Find the total revenue per category

Multiply discountedSellingPrice * quantity and sum per category. Shows which categories generate the most revenue.

SQL File 6* Query 1 SQL File 3* SQL File 5* SQL File 5* SQL File 7* SQL File 8* SQL File 9* SQL File 10* %

```

7 * RENAME TABLE zepto_v2 TO categories;
8
9
10 # 1.Find the total revenue per category.
11
12 * SELECT category,SUM(discountedSellingPrice * quantity) as total_revenue
13   FROM categories
14  GROUP BY category;
15

```

category	total_revenue
Fruits & Vegetables	44099700
Cooking Essentials	1361323400
Munchies	1361323400
Dairy, Bread & Batter	333048300
Beverages	333048300
Packaged Food	1734991700
Ice Cream & Desserts	1734991700
Chocolates & Candies	1734991700
Meats, Fish & Eggs	369397600
Beauty	179207600

Result 1 x

#	Time	Action	Message	Duration / Fetch
1	21:03:24	use sql_project2	0 row(s) affected	0.000 sec
2	21:03:52	SELECT category,SUM(discountedSellingPrice * quantity) as total_revenue FROM categories GROUP BY category	14 row(s) returned	0.016 sec / 0.000 sec

Q2: Find which category gives the highest profit margin

Since no cost column exists, profit is assumed as discountedSellingPrice relative to mrp. Categories with higher average selling price compared to MRP indicate higher margins.

SQL File 6* Query 1 SQL File 3* SQL File 5* SQL File 5* SQL File 7* SQL File 8* SQL File 9* SQL File 10* %

```

16 # 2.Find which category gives the highest profit margin
17
18 * SELECT category,SUM((mrp - discountedSellingPrice)*quantity) as highest_profit
19   FROM categories
20  GROUP BY category
21 ORDER BY highest_profit desc;
22
23 #3.List the top 10 best-selling products based on total quantity sold
24

```

category	highest_profit
Packaged Food	167973200
Ice Cream & Desserts	167973200
Chocolates & Candies	167973200
Cooking Essentials	149006100
Munchies	149006100
Personal Care	105938300
Paan Chutney	105938300
Meats, Fish & Eggs	48413300
Dairy, Bread & Batter	35555300
Beverages	35555300

Result 2 x

#	Time	Action	Message	Duration / Fetch
1	21:03:24	use sql_project2	0 row(s) affected	0.000 sec
2	21:03:52	SELECT category,SUM(discountedSellingPrice * quantity) as total_revenue FROM categories GROUP BY category	14 row(s) returned	0.016 sec / 0.000 sec
3	21:06:37	SELECT category,SUM((mrp - discountedSellingPrice)*quantity) as highest_profit FROM categories GROUP BY category ORDER BY highest_profit desc	14 row(s) returned	0.016 sec / 0.000 sec

Q3: List the top 10 best-selling products based on total quantity sold

Use SUM(quantity) grouped by product name and order descending. Highlights products in high demand.

SCHEMAS

Filter objects

- classimodels
- my_work2
- mywork
- sql_joins
- sql_project
- sql_project2
 - categories
 - Views
 - Stored Procedures
 - Functions
 - transactions
 - triggers

Administration Schemas

Information

No object selected

Result 3 x

Read Only

```

22
23 #3.List the top 10 best-selling products based on total quantity sold
24
25 SELECT name,SUM(quantity) as total_quantity
26 FROM categories
27 GROUP BY name
28 ORDER BY total_quantity desc LIMIT 10;
29
30

```

name	total_quantity
Kellogg's Original Corn Flakes	4050
MTR Roasted Vermicelli	3750
Pedigree Puppy Dry Dog Food Food Chicken & Mlk	3609
Kellogg's Special K Original Corn Flakes	3570
Ching's Secret Green Chili Sauce	3315
Whiskas Kitten (2-12 months) Dry Cat Food Foo...	3300
Sunfeast YIPpee! Magic Masala Noodles	3225
Mother's Recipe Piddle - Mango	3000
Godrej Yummeez Chicken Nuggets	3000
Savlon Moisture Shield Germ Protection Handwa...	3000

Q4: Find all products that are out of stock but have high demand

Filter outOfStock = TRUE and quantity > AVG(quantity). Identifies products that require restocking urgently.

SCHEMAS

Filter objects

- classimodels
- my_work2
- mywork
- sql_joins
- sql_project
- sql_project2
 - categories
 - Views
 - Stored Procedures
 - Functions
 - transactions
 - triggers

Administration Schemas

Information

No object selected

Result 6 x

Read Only

```

31
32 # 4. Find all products that are out of stock but have high demand
33
34 SELECT name,outOfStock,SUM(quantity) as total_quantity
35 FROM categories
36 WHERE outOfStock="TRUE"
37 GROUP BY name
38 HAVING total_quantity >100
39 ORDER BY total_quantity DESC;

```

name	outOfStock	total_quantity
Ching's Secret Veg Hakka Noodles	TRUE	3000
Del Monte Original Blend Tomato Ketchup Pouch	TRUE	2850
Top Ramen Noodle	TRUE	2800
Chef's Basket Durum Wheat Penne Pasta	TRUE	2500
Safal Frozen Mixed Vegetables	TRUE	2000
Zorabian Chicken Kheema Parathas	TRUE	1800
Kellogg's Corn Flakes With Real Strawberry Pure	TRUE	1725
The Whole Truth Peanut Butter - Unsweetened ...	TRUE	1625
Yummeez Green Peas	TRUE	1503
Godrej Yummeez Chicken Breakfast Salmi	TRUE	1500

Q5: List categories where more than 20% of products are out of stock

Calculate SUM(outOfStock) / COUNT(*) > 0.2 per category. Shows categories with potential inventory issues.

Limit to 1000 rows

```

42 #5.List categories where more than 20% of products are out of stock
43 SELECT
44 category,
45 COUNT(*) AS total_products,
46 SUM(CASE WHEN outOfStock = 'TRUE' THEN 1 ELSE 0 END) AS out_of_stock_count,
47 ROUND(100 * SUM(CASE WHEN outOfStock = 'TRUE' THEN 1 ELSE 0 END) / COUNT(*), 2) AS out_of_stock_percent
48 FROM categories
49 GROUP BY category
50 HAVING out_of_stock_percent > 20;

```

category	total_products	out_of_stock_count	out_of_stock_percent
Dairy, Bread & Batter	129	28	21.71
Beverages	129	28	21.71
Biscuits	147	42	28.57

Q6: Find the ratio of in-stock vs out-of-stock items per category

Count in-stock and out-of-stock items and divide to get the ratio. Helps in monitoring stock health per category.

```
54 • SELECT DISTINCT outOfStock FROM categories;
55 • SELECT category,
56       SUM(CASE WHEN outOfStock = 'FALSE' THEN 1 ELSE 0 END) AS In_stock_count,
57       SUM(CASE WHEN outOfStock = 'TRUE' THEN 1 ELSE 0 END) AS out_of_stock_count,
58       ROUND(
59         SUM(CASE WHEN outOfStock = 'FALSE' THEN 1 ELSE 0 END) /
60         NULLIF(SUM(CASE WHEN outOfStock = 'TRUE' THEN 1 ELSE 0 END),0), 2) AS ratio_in_to_out
61 FROM categories
62 GROUP BY category;
```

category	In_stock_count	out_of_stock_count	ratio_in_to_out
Fruits & Vegetables	87	6	14.50
Cooking Essentials	448	64	7.00
Munchies	448	64	7.00
Dairy, Bread & Batter	101	28	3.61
Beverages	101	28	3.61
Packaged Food	343	45	7.62
Ice Cream & Desserts	343	45	7.62
Chocolates & Candies	343	45	7.62
Meats, Fish & Eggs	51	12	4.25
Biscuits	105	42	2.50

Q7: Identify each product category with its average discounted selling price, average MRP, and the ratio between them for business pricing analysis

Group products by category and compute the average discounted selling price, average MRP, and their ratio.

```
65
66 # 7. Identify each product category with its average discounted selling price, average MRP, and the ratio between
67 • SELECT
68     Category,
69     AVG(discountedSellingPrice) AS avg_sellingprice,
70     AVG(mrp) AS avg_mrp,
71     AVG(discountedSellingPrice) / AVG(mrp) AS ratio
72 FROM categories
73 GROUP BY Category;
```

Category	avg_sellingprice	avg_mrp	ratio
Beverages	10372.8682	11870.5426	0.87383269
Packaged Food	14107.7320	15572.6804	0.90592830
Ice Cream & Desserts	14107.7320	15572.6804	0.90592830
Chocolates & Candies	14107.7320	15572.6804	0.90592830
Meats, Fish & Eggs	16409.5238	18728.5714	0.87617595
Biscuits	5277.9592	5948.9796	0.88720412
Personal Care	18973.8372	20711.9186	0.91608303
Paan Corner	18973.8372	20711.9186	0.91608303
Home & Cleaning	14144.8454	15215.4639	0.92963615
Health & Hygiene	14585.5670	15917.5258	0.91632124

Q8: Find top 1 product per category (highest sales)

Use ROW_NUMBER() OVER (PARTITION BY category ORDER BY quantity DESC) to get top product per category.

Limit to 1000 rows

```

79 #8.Find top 1 product per category (highest sales)
80 SELECT *
81 FROM (SELECT category,name,quantity,
82 ROW_NUMBER() OVER(PARTITION BY category ORDER BY quantity DESC) AS rn
83 from categories ) temp
84 where rn=1;
85
86
87

```

Result Grid | Filter Rows: | Export: | Wrap Cell Contents: [↗](#)

category	name	quantity	rn
Beverages	Amul Cheese Slices	750	1
Biscuits	Britannia Toastea Premium Bake Rusk	700	1
Chocolates & Candies	Pedgree Puppy Dry Dog Food Food Chicken & Milk	1200	1
Cooking Essentials	Jivana Jaggery	950	1
Dairy, Bread & Batter	Amul Cheese Slices	750	1
Fruits & Vegetables	Banana Red	500	1
Health & Hygiene	Dabur Chyawanprakash - Sugar Free	900	1
Home & Cleaning	Shubh kart - Tejas Twisted Cotton Wicks 1000n	1000	1
Ice Cream & Desserts	Pedgree Puppy Dry Dog Food Food Chicken & Milk	1200	1
Meats, Fish & Eggs	Zorabian Chicken Cubes	500	1

Q9: Find products with high discounts but low quantity sold

Identify products with discountPercent > 30 and availableQuantity > average available quantity. These may need promotional review.

Limit to 1000 rows

```

89 select distinct availableQuantity from categories;
90 SELECT category, name, mrp, discountPercent, availableQuantity, discountedSellingPrice
91 FROM categories c
92 WHERE discountPercent > 30
93 AND availableQuantity > (
94 SELECT AVG(availableQuantity)
95 FROM categories)
96 ORDER BY discountPercent DESC, availableQuantity DESC
97 LIMIT 8,1000;

```

Result Grid | Filter Rows: | Export: | Wrap Cell Contents: [↗](#)

category	name	mrp	discountPercent	availableQuantity	discountedSellingPrice
Biscuits	Dukes Waffly Orange Wafers	4500	51	5	2200
Cooking Essentials	Chef's Basket Durum Wheat Elbow Pasta	16000	50	6	8000
Cooking Essentials	Chef's Basket Durum Wheat Fusilli Pasta	16000	50	6	8000
Ice Cream & Desserts	Chef's Basket Durum Wheat Fusilli Pasta	16000	50	6	8000
Cooking Essentials	Ceres Foods Fish Mustard Instant Liquid Masala	22000	50	6	11000
Ice Cream & Desserts	Moi Soi Manchurian Sauce - For Stir Fry Marinad...	28000	50	6	14000
Chocolates & Candies	Chef's Basket Durum Wheat Elbow Pasta	16000	50	6	8000
Cooking Essentials	Ceres Foods Nalli Nihari Instant Liquid Masala	22000	50	6	11000
Chocolates & Candies	Chef's Basket Durum Wheat Fusilli Pasta	16000	50	6	8000
Munchies	Chef's Basket Durum Wheat Elbow Pasta	16000	50	6	8000

categories 7 categories 8 x

Q10: Find the top 5 most expensive products in each category

Use ROW_NUMBER() OVER (PARTITION BY category ORDER BY discountedSellingPrice DESC) and filter rn <= 5.

```

100 # 10.Find the top 5 most expensive products in each category
101 • SELECT category, name, discountedSellingPrice, weightInGms, rn
102 FROM (
103     SELECT category, name, discountedSellingPrice, weightInGms,
104         ROW_NUMBER() OVER (PARTITION BY category ORDER BY discountedSellingPrice DESC) AS rn
105     FROM categories
106 ) temp
107 WHERE rn <= 5
108 ORDER BY category, discountedSellingPrice DESC;

```

category	name	discountedSellingPrice	weightInGms	rn
Beverages	Amulya Dairy Whitener	37200	1000	1
Beverages	Amul Cheese Slices	35900	750	2
Beverages	Yoga Bar Peanut Butter Dark Chocolate Jar	24900	400	3
Beverages	Amul Cheese - Block	24000	500	4
Beverages	Amul Butter - Pasteurised	24000	500	5
Biscuits	Danish Butter Cookies	35000	400	1
Biscuits	Karachi Bakery Cashew Biscuits	19900	400	2
Biscuits	Britannia Good Day Cashew Cookies	17200	1000	3
Biscuits	Unibic Assorted Cookies	13700	450	4
Biscuits	Lotte Choco Pie	13100	336	5

Result 9 x

4. Observations / Insights

- The Snacks and Beverages categories generate the highest revenue.
- Some categories have over 20% of products out of stock, indicating inventory management issues.
- Certain products are heavily discounted but still not selling, which may require marketing intervention.
- Top-selling products differ per category and are mostly high-demand items.
- Premium products per category can be used for upselling strategies.

5. Conclusion

This project demonstrates how SQL can be used to extract actionable insights from sales and inventory data. It covers aggregation, window functions, subqueries, and filtering to analyze revenue, stock, pricing, and product performance. Skills demonstrated: SQL queries, data aggregation, window functions, business analysis, reporting.