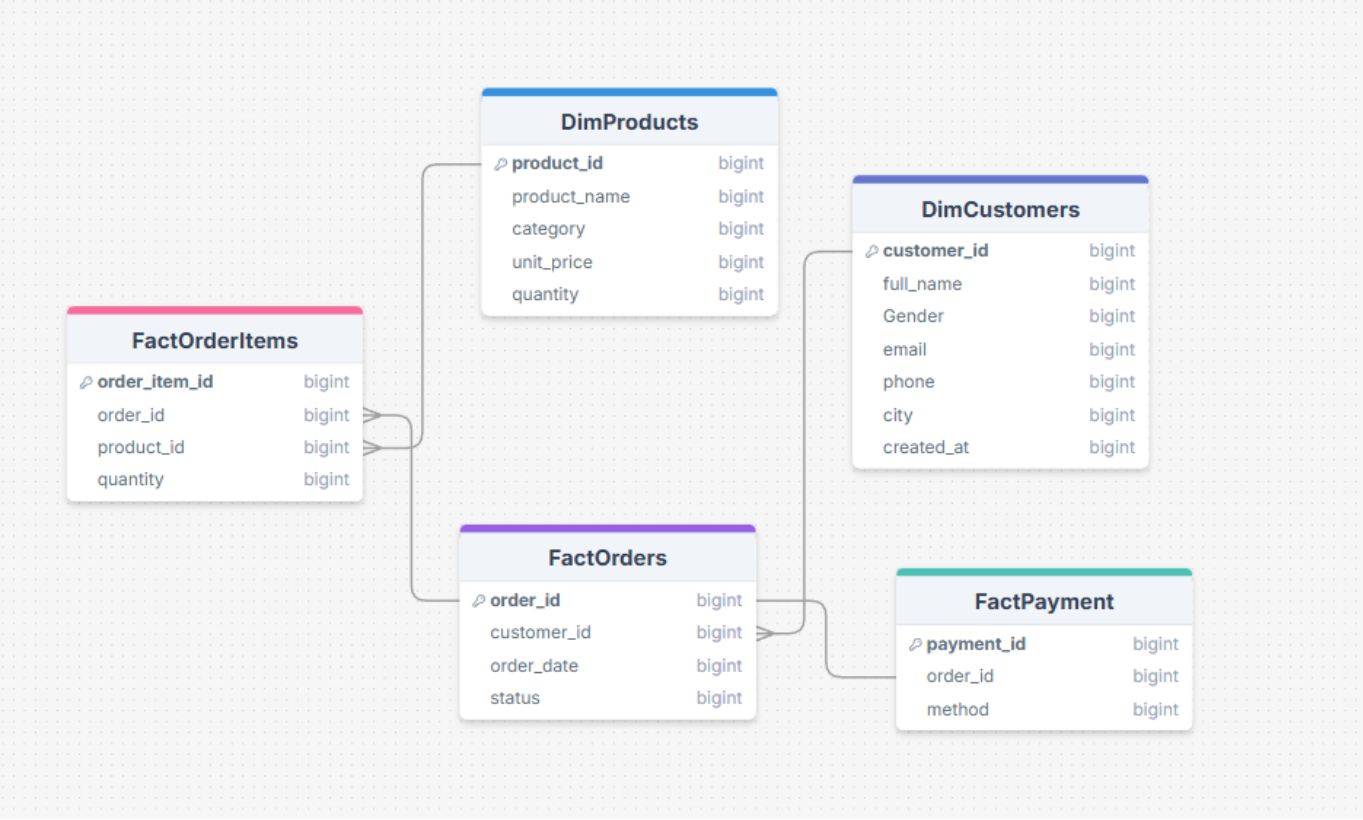
UrbanCart Analysis & Business Insights by PostgreSQL

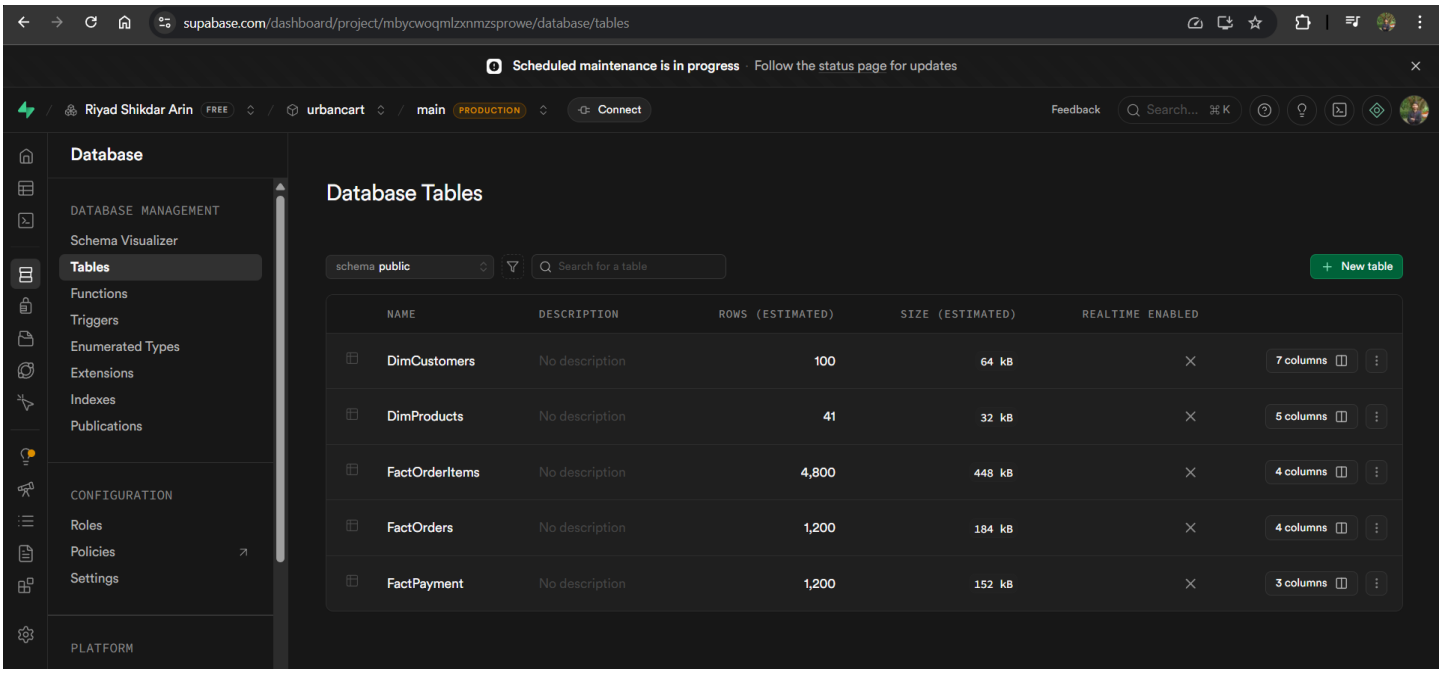
- UrbanCart is a growing online retail platform operating across multiple cities. It offers a wide range of consumer products and processes thousands of customer orders each month. This analysis aims to uncover key business insights that can help UrbanCart make better decisions and improve overall business performance.

ER Diagram:



UrbanCart Analysis & Business Insights by PostgreSQL

- In this project, PostgreSQL was used as the primary database, with data hosted on **Supabase**, a **cloud-based PostgreSQL platform**. The required tables were created and managed in **Supabase**, and SQL was used to query and analyze the data. This setup enabled efficient data transformation and analysis using joins, aggregations, and CTEs to derive meaningful business insights.



1. How many total orders has UrbanCart received so far?

```
select
count (order_id) as total_order
from public."FactOrders"
```

	total_order bigint
1	1200

- The total **orders** are **1200**.

2. How many unique customers have placed at least one order?

```
select
count(distinct customer_id) as unique_customers
from public."FactOrders";
```

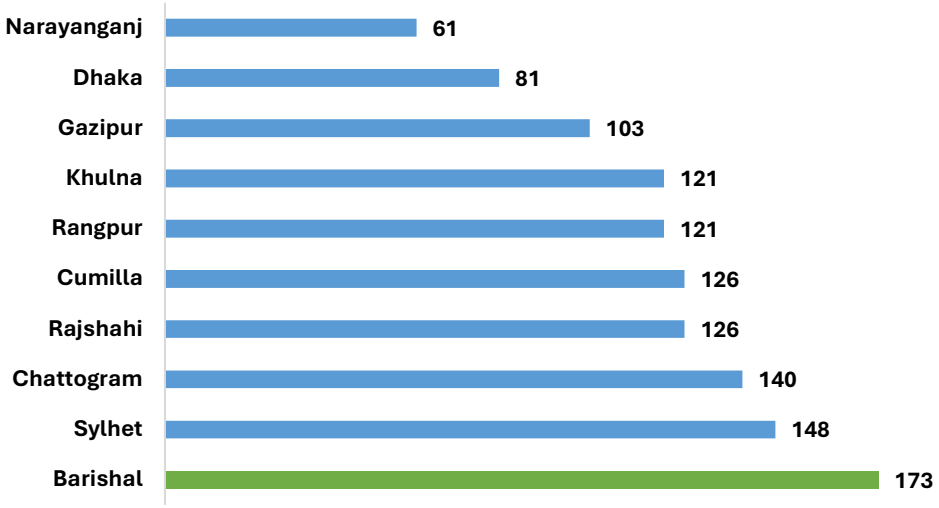
	unique_customers bigint
1	100

- Total unique customers who placed at **least one order** the amount is **100**.

3. Which cities generate the highest number of orders?

```sql
select
city,
count(order_id) as total_order_per_city
from public."FactOrders" as o
join public."DimCustomers" as c on c.customer_id=o.customer_id::bigint
group by city
order by total_order_per_city desc
```

	city text	total_order_per_city bigint
1	Barishal	173
2	Sylhet	148
3	Chattogram	140
4	Rajshahi	126
5	Cumilla	126
6	Rangpur	121
7	Khulna	121
8	Gazipur	103
9	Dhaka	81
10	Narayanganj	61



- The chart shows the total number of orders by **city**. **Barishal** records the **highest** number of orders at **173**, whereas **Narayanganj** has the **lowest** order count, with **61** orders.

4. What percentage of customers have placed more than one order?

```sql
with orders_per_customer as (
    select
        customer_id,
        count(order_id) as order_per_customer
    from public."FactOrders"
    group by customer_id
)

select
    round(count(*)::numeric/ (select count(distinct customer_id) from public."FactOrders")* 100,2)
    as percentage_repeat_customers
from orders_per_customer
where order_per_customer > 1;
```

	percentage_repeat_customers numeric
1	100.00

- The percentage of repeated **customer** is **100**.

5. What is the monthly trend of total orders over time?

```sql
select
to_char(date_trunc('month', order_date), 'Month') as month,
count(order_id) as total_orders
from public."FactOrders"
group by date_trunc('month', order_date)
order by 2 desc;
```

	month text	total_orders bigint
1	October	413
2	November	371
3	September	243
4	December	173

- This chart shows the total number of orders by month. **October** has the **highest** number of orders, with **413** orders, while **December** has the **lowest** number of orders, with **173**.

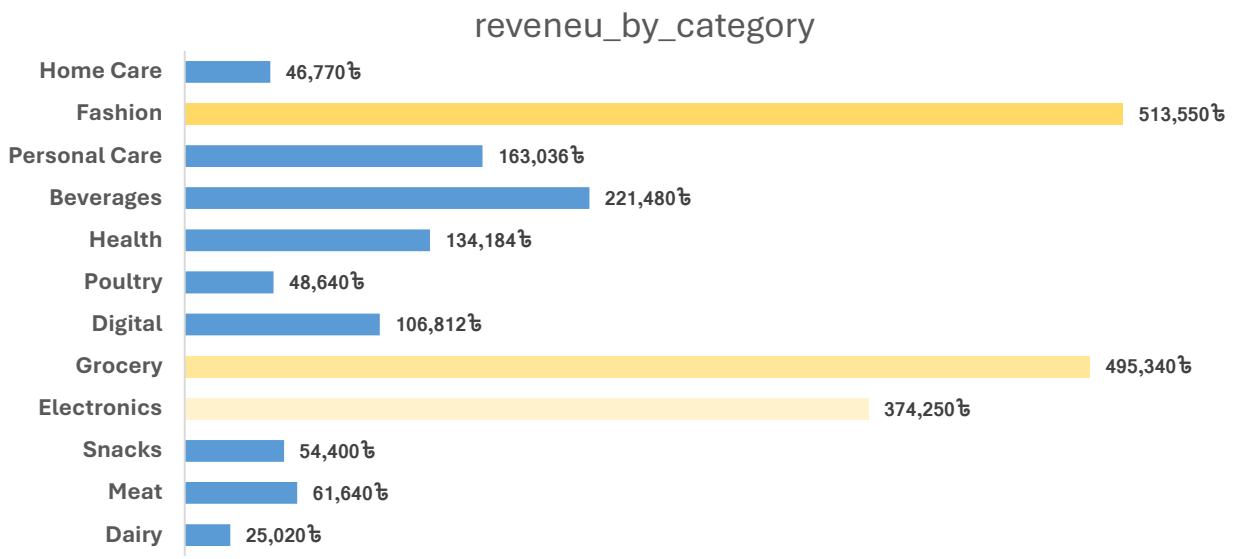
6. What is the total revenue generated by UrbanCart?

```
with multiply_amount as (
    select
        fo.order_id,
        fo.product_id,
        fo.quantity,
        p.unit_price,
        (p.unit_price::numeric * fo.quantity::numeric) as total_amount
    from public."FactOrderItems" as fo
    left join public."DimProducts" as p
      on p.product_id = fo.product_id
)
select
sum(total_amount) as revenue
from multiply_amount;
```

	revenue numeric
1	2245122

- Total **revenue** generated by UrbanCart is **৳22,45,122**.

7. Which product categories contribute the most to total revenue?

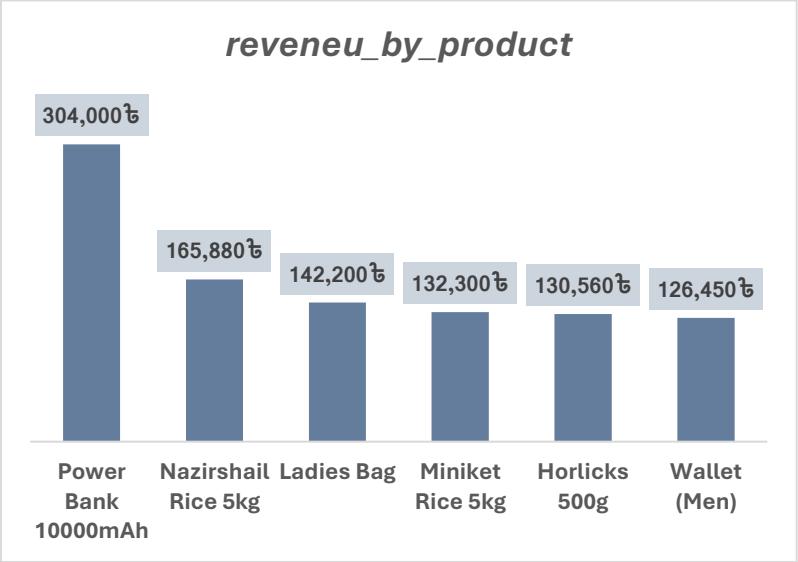


	category text	reveneu_by_category numeric
1	Dairy	25020
2	Meat	61640
3	Snacks	54400
4	Electronics	374250
5	Grocery	495340
6	Digital	106812
7	Poultry	48640
8	Health	134184
9	Beverages	221480
10	Personal Ca...	163036
11	Fashion	513550
12	Home Care	46770

- This category revenue chart shows that the **fashion** category generates the highest **revenue**, amounting to **৳513,550**. This is followed by **grocery** with **৳495,340** and **electronics** with **৳374,250**.

8. Which individual products generate the highest revenue?

	product_name text	reveneu_by_product numeric
1	Power Bank 10000mAh	304000
2	Nazirshail Rice 5kg	165880
3	Ladies Bag	142200
4	Miniket Rice 5kg	132300
5	Horlicks 500g	130560
6	Wallet (Men)	126450
7	Bru Coffee 200g	116160
8	T-shirt (Women)	105640
9	T-shirt (Men)	102900
10	Earphones	70250



- This products revenue chart shows that the **Power Bank** generates the highest **revenue**, amounting to **৳304,000**. This is followed by **Nzirshail Rice** with **৳165,880** and **Ladis Bag** with **৳142,200**.

9. What is the average order value (AOV) and Average Basket Size?

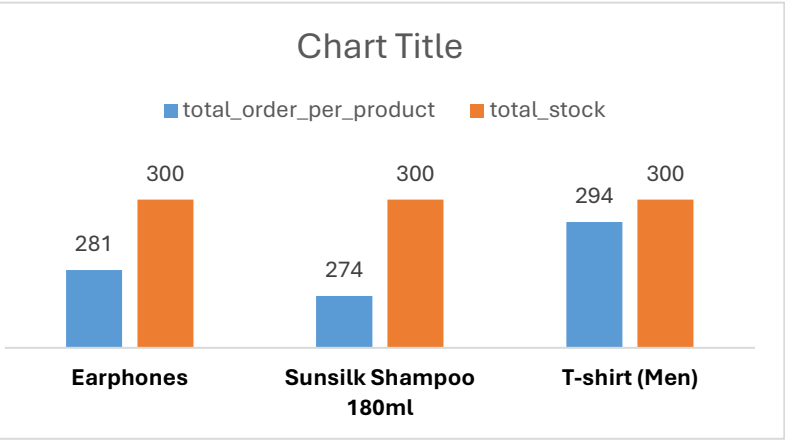
```sql
with multiply_amount as (
    select
        fo.order_id,
        fo.product_id,
        fo.quantity,
        p.unit_price,
        (p.unit_price::numeric * fo.quantity::numeric) as total_amount
    from public."FactOrderItems" as fo
    left join public."DimProducts" as p
      on p.product_id = fo.product_id
)
select
round(sum(total_amount)/count(distinct order_id),2) as avg_order_value,
round(sum(quantity)/count(distinct order_id),2) as avg_basket
from multiply_amount
```

	avg_order_value numeric	avg_basket numeric
1	1870.94	9.96

- UrbanCart got total 1200 order and the **average order value** is **1870.94** and **average basket** is **9.96**.

10. Which products are at risk of stock-out due to high sales volume and low inventory?

	product_name text	total_order_per_product numeric	total_stock numeric
1	Broiler Chicken (whole)	268	200
2	Bru Coffee 200g	352	200
3	Cap	303	200
4	Clear Men Shampoo 1...	308	250
5	Deshi Egg (12 pcs)	304	250
6	Horlicks 500g	272	180
7	Ladies Bag	237	150
8	Nazirshail Rice 5kg	319	300
9	Power Bank 10000mAh	320	90
10	Shoes Polish	286	200
11	T-shirt (Women)	278	250
12	Wallet (Men)	281	150

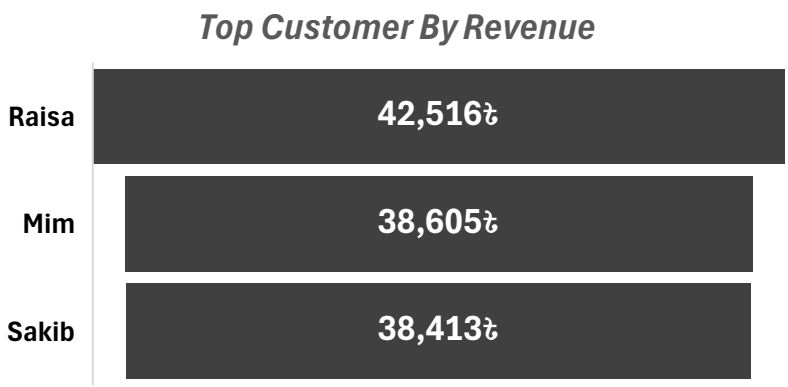


product_name	total_order_p	total_stock	Stock_status
ACI Pure Salt 1kg	265	600	Stock Available
Banglalink Internet Pack	274	999	Stock Available
Bashundhara Tissue	258	700	Stock Available
Biscuits (Mixed)	302	1200	Stock Available
Broiler Chicken (whole)	268	200	Stock Out
Bru Coffee 200g	352	200	Stock Out
Cap	303	200	Stock Out
Chanachur 200g	255	900	Stock Available
Clear Men Shampoo 180	308	250	Stock Out
Deshi Egg (12 pcs)	304	250	Stock Out
Earphones	281	300	Risk
Farm Fresh Milk 1L	278	400	Stock Available
Flour (Atta) 2kg	313	400	Stock Available
Fresh Sugar 1kg	309	500	Stock Available
GP Internet Pack	282	999	Stock Available
Green Chili 100g	243	300	Stock Available
Horlicks 500g	272	180	Stock Out
Ladies Bag	237	150	Stock Out
Lentil (Dal) 1kg	283	500	Stock Available
Lifebuoy Soap 100g	372	1200	Stock Available
Lux Soap 100g	234	1100	Stock Available
Miniket Rice 5kg	294	500	Stock Available
Nazirshail Rice 5kg	319	300	Stock Out
Onion 1kg	290	600	Stock Available
Oral Saline (ORS)	302	2000	Stock Available
Peanut 500g	318	350	Stock Available
Pepsi 1L	272	500	Stock Available
Potato 1kg	336	900	Stock Available
Power Bank 10000mAh	320	90	Stock Out
Robi Internet Pack	292	999	Stock Available
Rupchanda Soyabean O	283	800	Stock Available
Shoes Polish	286	200	Stock Out
Sprite 1L	348	500	Stock Available
Sunsilk Shampoo 180ml	274	300	Risk
T-shirt (Men)	294	300	Risk
T-shirt (Women)	278	250	Stock Out
Taaza Black Tea 400g	288	500	Stock Available
Vim Dishwashing Bar	302	900	Stock Available
Wallet (Men)	281	150	Stock Out
Water Bottle 1L	292	2000	Stock Available
Wheel Washing Powder	286	500	Stock Available

- This chart presents a **risk** analysis based on order volume and stock levels. Products highlighted in **red** are already out of stock due to high order volume, while products shown in **orange** are at risk of going out of stock in the future because of high demand and low inventory.

11. Which customers contribute the highest total revenue?

	customer_id bigint	full_name text	customer_per_revenue numeric
1	70	Raisa	42516
2	94	Mim	38605
3	87	Sakib	38413



- **Top customers** according to Reveneu **Raisa ৳42,516.**

12. What is the average number of products purchased per order?

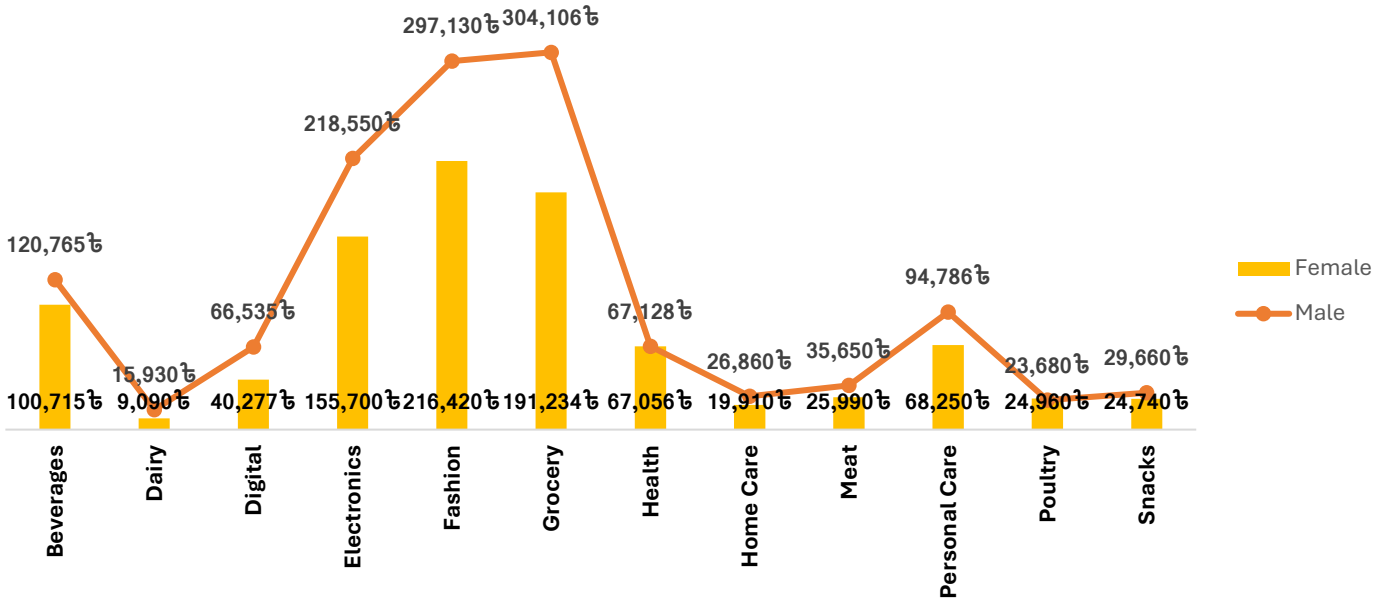
```
select
round(sum(quantity)/count(distinct order_id),2) as avg_purchase__per_oder
from public."FactOrderItems"
```

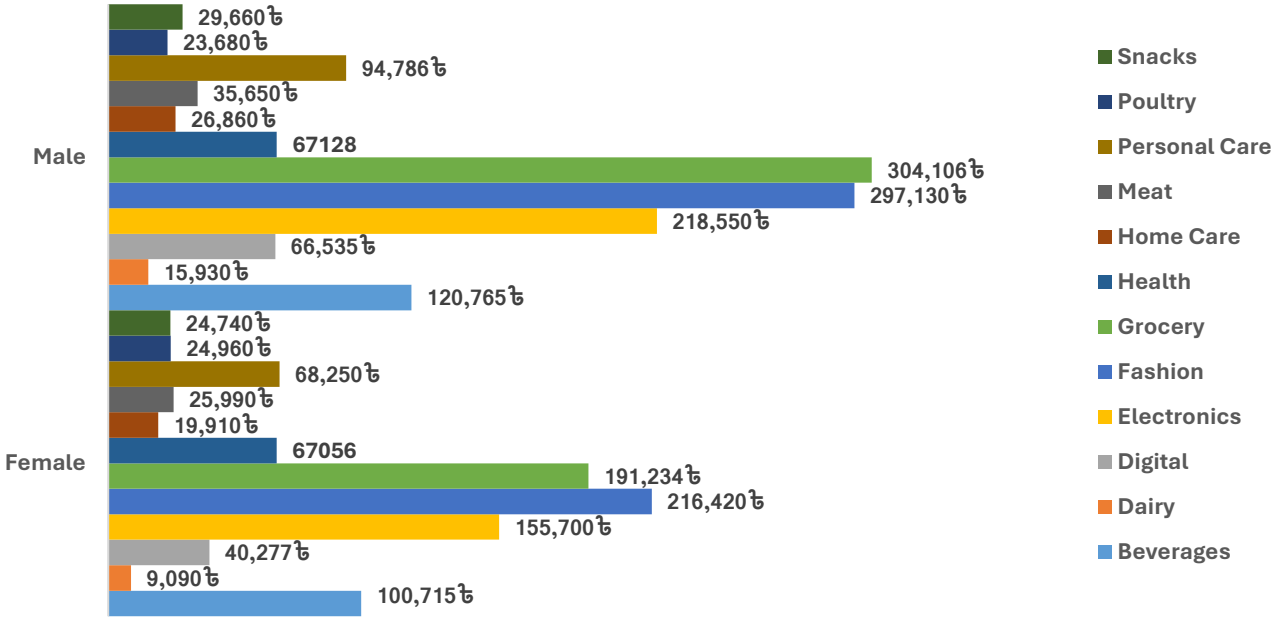
	avg_purchase__per_oder numeric
1	9.96

- The average number of product that are purchased per order that is **9.96.**

13. Do male and female customers show different purchasing patterns by category?

	category text	Gender text	gender_revenue_per_category numeric
1	Beverages	Male	120765
2	Beverages	Female	100715
3	Dairy	Male	15930
4	Dairy	Female	9090
5	Digital	Male	66535
6	Digital	Female	40277
7	Electronics	Male	218550
8	Electronics	Female	155700
9	Fashion	Male	297130
10	Fashion	Female	216420
11	Grocery	Male	304106
12	Grocery	Female	191234
13	Health	Male	67128
14	Health	Female	67056

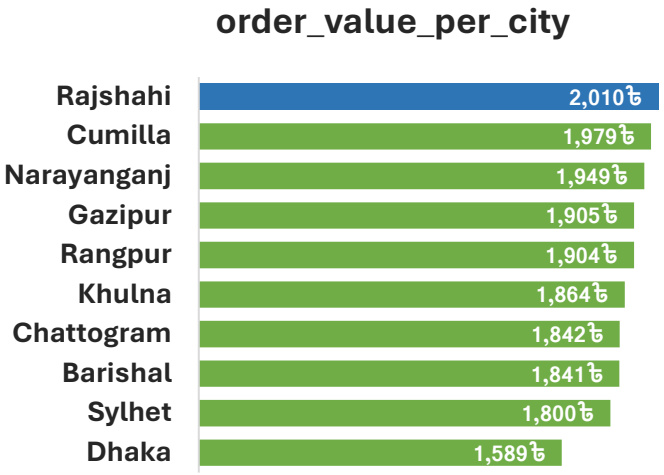




- In this chart we can see that the male and female **purchasing patterns by category** the **man** are usually buy **Grocery** then woman and **woman** buy **fashion** product more than man.

14. Which cities have the highest average order value?

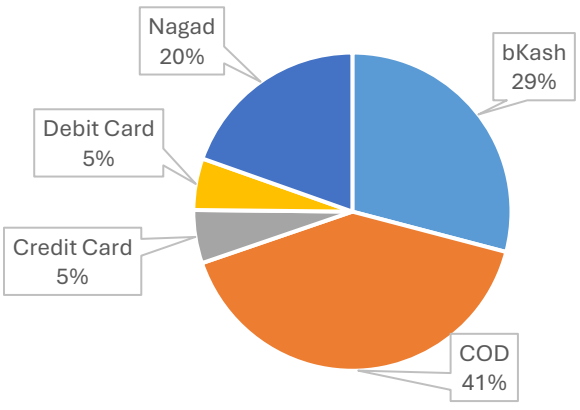
	city text	order_value_per_city numeric
1	Rajshahi	2010.42
2	Cumilla	1979.10
3	Narayanganj	1949.26
4	Gazipur	1904.75
5	Rangpur	1904.18
6	Khulna	1863.50
7	Chattogram	1841.99
8	Barishal	1840.81
9	Sylhet	1800.26
10	Dhaka	1588.68



- **Rajshahi** City have the **highest** order value compare to others the value is **2,010** BDT per order.

16. Which payment methods are used most frequently?

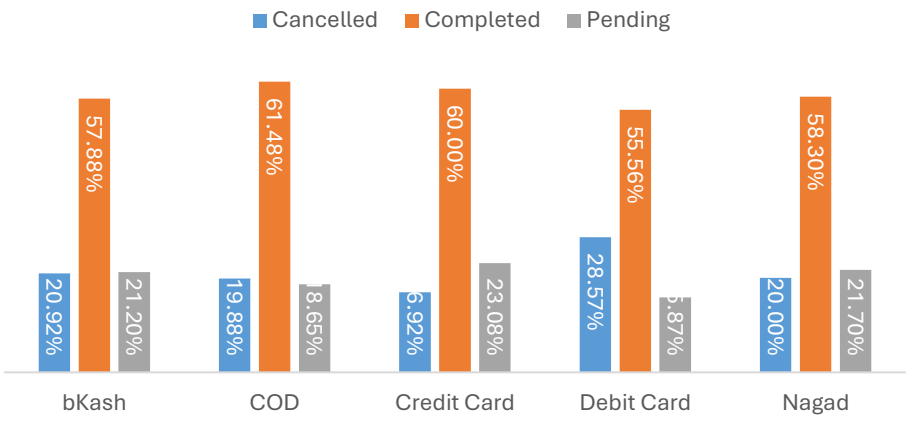
	method text	methods bigint
1	COD	488
2	bKash	349
3	Nagad	235
4	Credit Card	65
5	Debit Card	63



- we can see from the table and chart that the most used **payment** method had used while order. The **COD** used **488** times **41%** of total order.

17. Is there any relationship between payment method and order status?

	method text	status text	payments_status bigint
1	COD	Completed	300
2	bKash	Completed	202
3	Nagad	Completed	137
4	COD	Cancelled	97
5	COD	Pending	91
6	bKash	Pending	74
7	bKash	Cancelled	73
8	Nagad	Pending	51
9	Nagad	Cancelled	47
10	Credit Card	Completed	39
11	Debit Card	Completed	35
12	Debit Card	Cancelled	18
13	Credit Card	Pending	15
14	Credit Card	Cancelled	11
15	Debit Card	Pending	10



- The order **completed** stutus is **61.48%** in **COD** which sis the leargest amoung all the method. The most **Cancelled** Status is **28.57%** which is in **Dabit Card**.

18. Do certain cities prefer specific payment methods?

	city text	method text	payments_method bigint
1	Sylhet	bKash	47
2	Sylhet	Credit Card	8
3	Sylhet	Debit Card	7
4	Sylhet	Nagad	24
5	Sylhet	COD	62
6	Rangpur	bKash	26
7	Rangpur	Nagad	29
8	Rangpur	Credit Card	7
9	Rangpur	COD	54
10	Rangpur	Debit Card	5
11	Rajshahi	COD	51
12	Rajshahi	Credit Card	11
13	Rajshahi	bKash	36

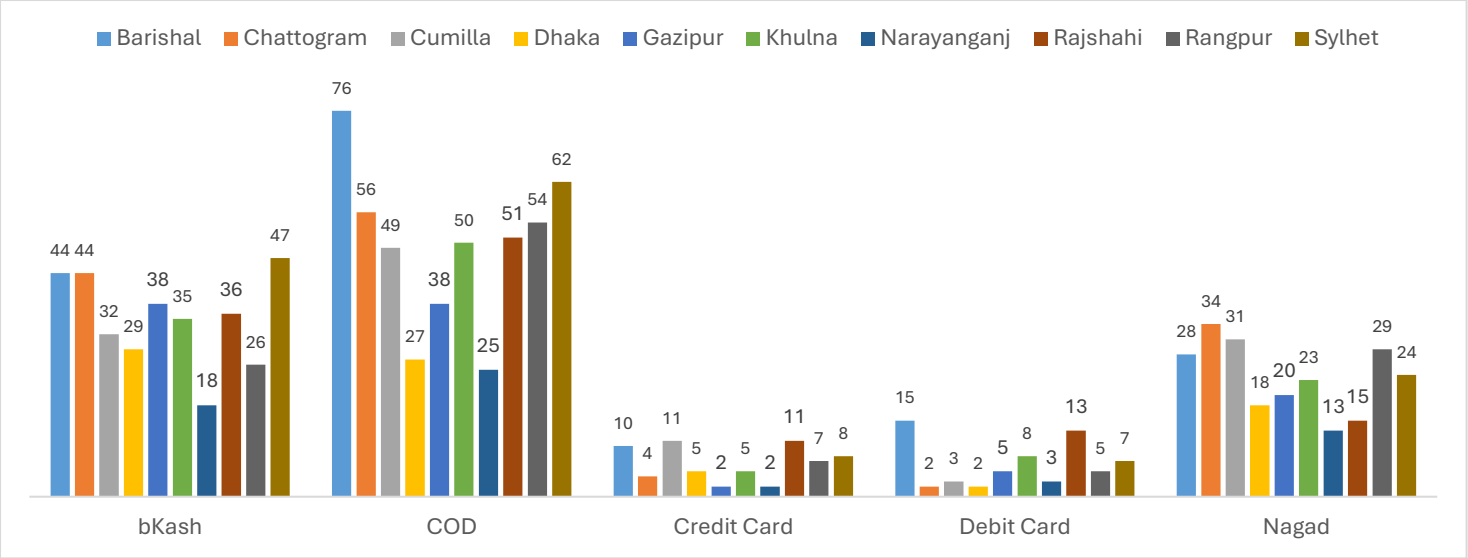
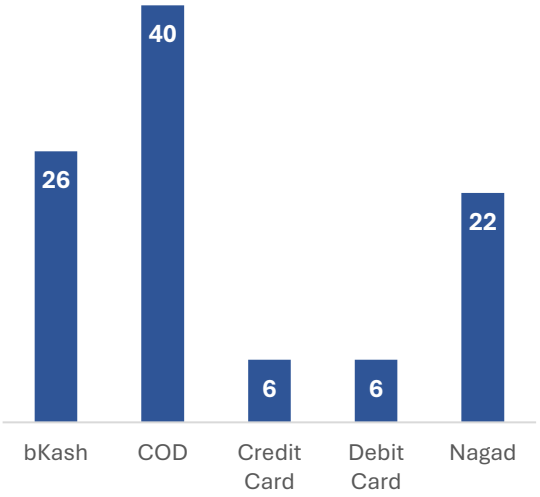


Fig. Payments methods By Cities

- This graph shows the distribution of payment methods by **city**. **Cash on Delivery (COD)** is mostly preferred in **Barishal**, while **bKash** is the most popular payment method in **Sylhet**. In **Chattogram**, customers prefer **Nagad** compared to other payment methods.

19. Are higher-value orders associated with specific payment methods?

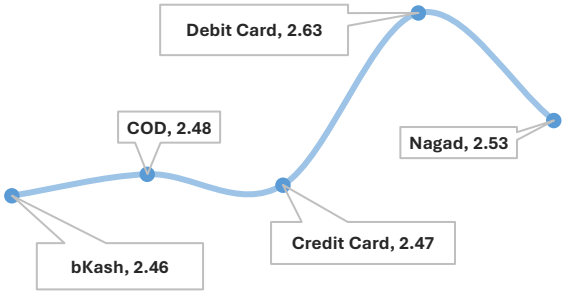
	method text	order_id bigint	amount_per_order numeric
1	COD	1036	7190
2	COD	127	6300
3	COD	71	6250
4	bKash	664	5921
5	COD	892	5830
6	Nagad	701	5760
7	bKash	903	5710
8	COD	298	5620
9	Nagad	734	5596
10	COD	720	5520



- Here, I analyzed the top 100 high-value orders. Most of these high-value orders are associated with **Cash on Delivery (COD),** accounting for **40** orders. **bKash** and **Nagad** follow with **26** and **22** orders, respectively

20. What is the average number of items per order by payment method?

	method text	items_per_method numeric
1	Debit Card	2.63
2	Nagad	2.53
3	COD	2.48
4	Credit Card	2.47
5	bKash	2.46



21. Which products are most frequently ordered together?

```
with pair_product as (
select
        fo1.product_id as product1,
        fo2.product_id as product2,
        count(*) AS times_ordered_together
from public."FactOrderItems" as fo1
join public."FactOrderItems" as fo2 on (fo1.order_id=fo2.order_id and fo1.product_id < fo2.product_id)
group by 1,2
)
select
        p.product_name,
        p1.product_name,
        times_ordered_together
from pair_product as pp
join public."DimProducts" as p on p.product_id=pp.product1
join public."DimProducts" as p1 on p1.product_id=pp.product2
order by times_ordered_together desc
limit 10
```

	product_name text	product_name text	times_ordered_together bigint
1	Potato 1kg	Peanut 500g	22
2	Farm Fresh Milk 1L	Potato 1kg	21
3	Onion 1kg	Shoes Polish	18
4	Flour (Atta) 2kg	Cap	18
5	Fresh Sugar 1kg	Sprite 1L	18
6	Miniket Rice 5kg	Power Bank 10000mAh	18
7	Deshi Egg (12 pcs)	GP Internet Pack	17
8	Bru Coffee 200g	Power Bank 10000mAh	17
9	Biscuits (Mixed)	Sprite 1L	17
10	Fresh Sugar 1kg	Oral Saline (ORS)	17

22. Which product pairs appear most often across all orders?

```
with pair_product as (
select
        fo1.product_id as product1,
        fo2.product_id as product2,
        count(*) AS times_ordered_together
from public."FactOrderItems" as fo1
join public."FactOrderItems" as fo2 on (fo1.order_id=fo2.order_id and fo1.product_id < fo2.product_id)
group by 1,2
)
select
        p.product_name,
        p1.product_name,
        times_ordered_together
from pair_product as pp
join public."DimProducts" as p on p.product_id=pp.product1
join public."DimProducts" as p1 on p1.product_id=pp.product2
order by times_ordered_together desc
limit 10
```

	product_name text	product_name text	times_ordered_together bigint
1	Potato 1kg	Peanut 500g	22
2	Farm Fresh Milk 1L	Potato 1kg	21
3	Onion 1kg	Shoes Polish	18
4	Flour (Atta) 2kg	Cap	18
5	Fresh Sugar 1kg	Sprite 1L	18
6	Miniket Rice 5kg	Power Bank 10000mAh	18
7	Deshi Egg (12 pcs)	GP Internet Pack	17
8	Bru Coffee 200g	Power Bank 10000mAh	17
9	Biscuits (Mixed)	Sprite 1L	17
10	Fresh Sugar 1kg	Oral Saline (ORS)	17

- The most order togather products are **Potato 1 kg and Peanut 500g.**They order togather is **22** times.

23. Are there product pairs that consistently drive higher order values?

```
with order_value as (
   select
      o.order_id,
      sum(p.unit_price::numeric * fo.quantity::numeric) as order_total
   from public."FactOrders" o
   join public."FactOrderItems" fo on o.order_id = fo.order_id
   join public."DimProducts" p on p.product_id = fo.product_id
   group by 1
),
product_pairs as (
   select
                        fo1.order_id,
      fo1.product_id as product_1_id,
      fo2.product_id as product_2_id
   from public."FactOrderItems" fo1
   join public."FactOrderItems" fo2
      on (fo1.order_id = fo2.order_id
     and fo1.product_id > fo2.product_id)
)
select
   p1.product_name as product_1,
   p2.product_name as product_2,
   count(*) as times_bought_together,
   round(avg(ov.order_total), 2) as avg_order_value
from product_pairs pp
join order_value ov on ov.order_id = pp.order_id
join public."DimProducts" p1 on p1.product_id = pp.product_1_id
join public."DimProducts" p2 on p2.product_id = pp.product_2_id
group by 1, 2
order by avg_order_value desc;
```

	product_1 text	product_2 text	times_bought_together bigint	avg_order_value numeric
1	Power Bank 10000mAh	Ladies Bag	4	5433.00
2	Power Bank 10000mAh	Nazirshail Rice 5kg	9	5092.67
3	Power Bank 10000mAh	T-shirt (Women)	10	4494.60
4	Power Bank 10000mAh	Broiler Chicken (whole)	12	4489.75
5	Ladies Bag	Miniket Rice 5kg	7	4438.71
6	Power Bank 10000mAh	T-shirt (Men)	7	4391.29
7	Power Bank 10000mAh	Flour (Atta) 2kg	8	4181.00
8	Ladies Bag	Wallet (Men)	3	4173.00
9	Power Bank 10000mAh	Vim Dishwashing Bar	9	4156.33
10	Power Bank 10000mAh	Lux Soap 100g	4	4123.75
11	Power Bank 10000mAh	Farm Fresh Milk 1L	9	4097.44
12	Power Bank 10000mAh	Shoes Polish	10	3979.30

- The **Power Bank 10000mAh and Ladies Bag** pair average order value is higher than other pair the value is **5433**.

24. Which product combinations could be recommended as bundles to increase revenue?

```
with product_pairs as (
  select
    fo1.order_id,
    fo1.product_id as product1,
    fo2.product_id as product2,
    (p1.unit_price * fo1.quantity +
     p2.unit_price * fo2.quantity) as pair_revenue
  from public."FactOrderItems" fo1
  join public."FactOrderItems" fo2
    on fo1.order_id = fo2.order_id
   and fo1.product_id < fo2.product_id
  join public."DimProducts" p1 on p1.product_id = fo1.product_id
  join public."DimProducts" p2 on p2.product_id = fo2.product_id
)
```

```
select
   d1.product_name as product_1,
   d2.product_name as product_2,
   count(*) as times_ordered_together,
   round(sum(pair_revenue), 2) as total_pair_revenue
from product_pairs pp
join public."DimProducts" d1 on d1.product_id = pp.product1
join public."DimProducts" d2 on d2.product_id = pp.product2
group by 1,2
order by total_pair_revenue desc
limit 10;
```

	product_1 text	product_2 text	times_ordered_together bigint	total_pair_revenue numeric
1	Miniket Rice 5kg	Power Bank 10000m...	18	58450.00
2	Bru Coffee 200g	Power Bank 10000m...	17	53430.00
3	Banglalink Internet Pack	Power Bank 10000m...	14	41267.00
4	Broiler Chicken (whole)	Power Bank 10000m...	12	41100.00
5	Miniket Rice 5kg	Nazirshail Rice 5kg	15	37310.00
6	Nazirshail Rice 5kg	Power Bank 10000m...	9	36140.00
7	Wheel Washing Powder 1...	Power Bank 10000m...	11	34010.00
8	T-shirt (Women)	Power Bank 10000m...	10	32870.00
9	Taaza Black Tea 400g	Power Bank 10000m...	10	32490.00
10	Nazirshail Rice 5kg	Wallet (Men)	13	32460.00

25. Based on product co-occurrence and customer behavior, which products should UrbanCart promote together to maximize

- Based on product co-occurrence and customer purchasing behavior, **Miniket Rice 5kg** and **Power Bank 10000mAh** should be promoted together by UrbanCart to maximize revenue. This product pair is ordered together more frequently and generates higher revenue than any other product combination. Promoting these two products as a bundle could increase sales and support UrbanCart's long-term business growth.

Thank You !