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Customers Buying behavior Analysis

Analyzing the spending behavior of a
customers in different accessories

Customer Buying Behavior Analysis

Customer Buying Behavior Analysis involves studying and understanding the purchasing patterns, preferences, and motivations of customers. It is a crucial aspect of modern business intelligence, enabling companies to tailor their products, services, and marketing strategies to meet customer demands effectively.

In this project, SQL has been used as the primary tool to explore and analyze customer transaction data. The analysis is designed to provide actionable insights into how customers interact with a business, what they purchase, and the factors influencing their decisions.



In this Presentation

Overview

- General customer insights
- Product and category insights
- Sales and discounts
- Customer preferences

Before Online Shopping

- People needed to go to physical stores to make purchases.
- People with accessibility and mobility issues can't shop easily.
- People can only buy items available locally.

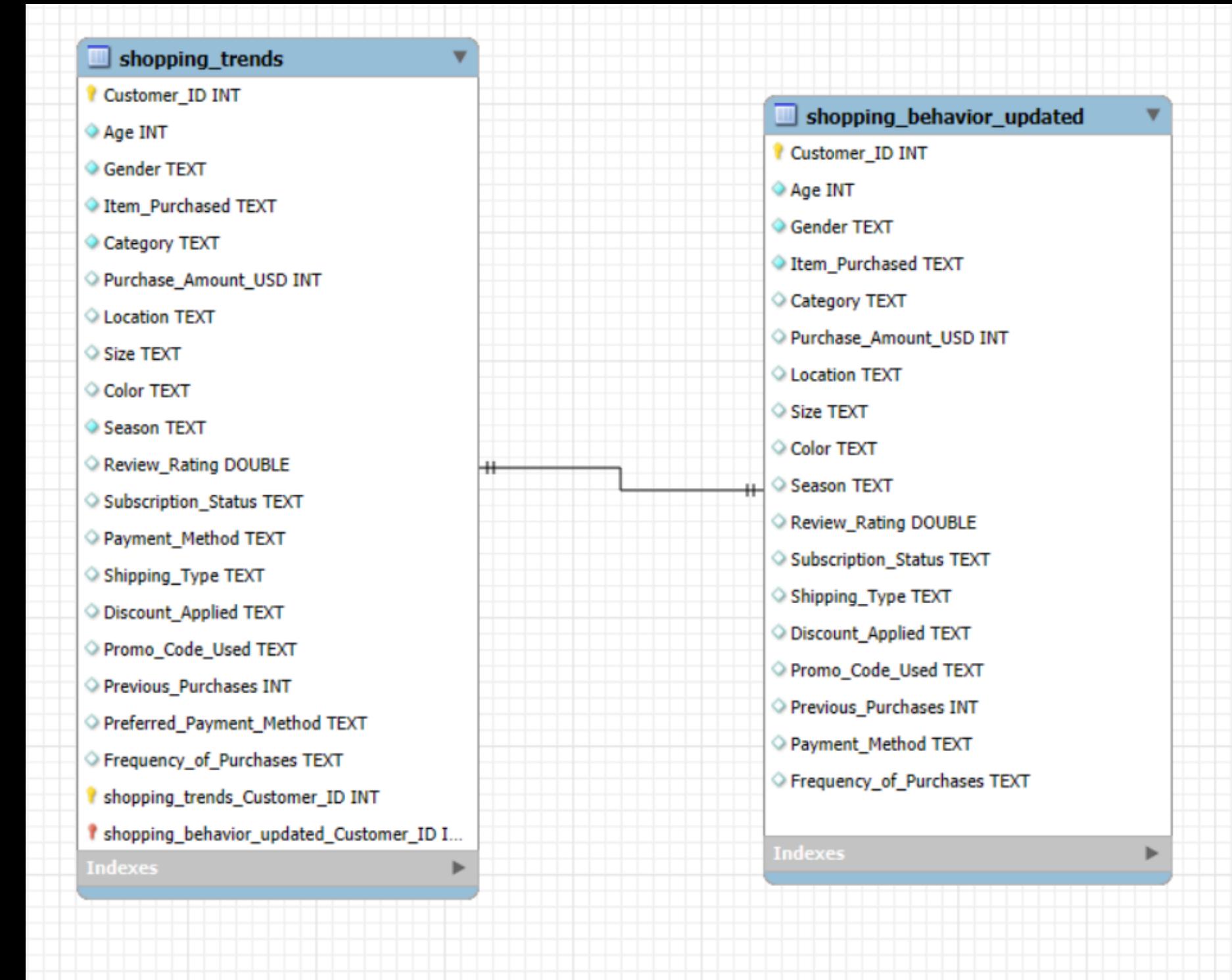
After Online Shopping

- People can shop for their needs in the convenience of their homes.
- People can buy from stores all over the world.
- Job opportunities in delivery and fulfillment centers have increased.

Customers Buying behavior Analysis

Entity-Relationship Diagram (ERD)

- Shopping Trends
- Shopping Behavior Updates



The List of Questions that are Analysed

1

General customer insights

- What is the distribution of customers by age groups, gender and location?
- What is the average purchase amount by age group or gender ?
- How does the frequency of purchase vary by subscription status ?
- How frequently does a customer purchase items on a weekly, monthly or annual basis ?
- One time buyers Vs repeat buyers ?
- Purchase frequency by location
- Purchase frequency by location

2

Product and category insights

- Most purchased items or category by gender
- Most popular sizes and colors by category
- Items performing better in specific seasons
- Top rating products
- Highest average purchase amount by category

3

Sales and discounts

- Impact of discount on purchase amount
- Correlation between discounts and ratings
- Percentage of purchase with promo codes
- Purchase amount difference for discounted vs non discounted items
- Categories benefiting most from discounts

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Customer preferences

- Preferred payment method
- Purchase frequency by shipping type
- Subscription status influence on category purchases
- Impact of previous purchase on future purchases
- Correlation between seasonality and high ratings

General customer insights

1. What is the distribution of customers by age groups, gender and location?

Input :

```
select age, gender, location from shopping_behavior_updated  
group by age, gender, Location ;
```

As the data is large in size i have taken two sample parts both with distinct Gender and there respective age & locations

Output :

	age	gender	location
▶	55	Male	Kentucky
	19	Male	Maine
	50	Male	Massachusetts
	21	Male	Rhode Island
	45	Male	Oregon
	46	Male	Wyoming
	63	Male	Montana
	27	Male	Louisiana
	26	Male	West Virginia
	57	Male	Missouri
	53	Male	Arkansas
	30	Male	Hawaii
	61	Male	Delaware
	65	Male	New Hampshire
	64	Male	New York

	age	gender	location
▶	23	Female	Maryland
	67	Female	Wisconsin
	23	Female	Idaho
	26	Female	Wyoming
	52	Female	Indiana
	52	Female	Texas
	52	Female	Ohio
	35	Female	Kansas
	24	Female	South Carolina
	43	Female	Michigan
	25	Female	Nebraska
	46	Female	Wisconsin
	22	Female	Illinois
	70	Female	Louisiana
	49	Female	Ohio

2. What is the average purchase amount by age group or gender ?

Input :

```
select AGE, GENDER, round(AVG(Purchase_Amount_USD)) AS PURCHASE_AMOUNT_USD from shopping_behavior_updated group by AGE, GENDER;
```

Output

AGE	GENDER	PURCHASE_AMOUNT_USD
48	Male	53
22	Male	60
24	Male	62
44	Male	67
37	Male	63
58	Male	58
32	Male	57
62	Male	55
51	Male	65
28	Male	60
43	Male	58
34	Male	55
23	Male	61
60	Male	58
23	Female	50
67	Female	49
26	Female	62
52	Female	58
35	Female	64
54	Female	66

3. How does the frequency of purchase vary by subscription status ?

Input :

```
select subscription_status, count(frequency_of_purchases) as frequently_purchased from shopping_behavior_updated  
group by subscription_status;
```

Output :

	subscription_status	frequently_purchased
▶	Yes	1053
	No	2847

4. How frequently does a customer purchase items on a weekly, monthly or annual basis ?

Input :

```
select frequency_of_purchases, count(*) as frequency_of_purchase from shopping_behavior_updated  
group by frequency_of_purchases order by frequency_of_purchase desc;
```

Output :

	frequency_of_purchases	frequency_of_purchase
▶	Every 3 Months	584
	Annually	572
	Quarterly	563
	Monthly	553
	Bi-Weekly	547
	Fortnightly	542
	Weekly	539

5. One time buyers Vs repeat buyers

Input :

```
select customer_id, round(avg(previous_purchases)) as No_of_purchase  
from shopping_behavior_updated group by customer_id having No_of_purchase = 1;
```

Output :

	customer_id	No_of_purchase
▶	105	1
	158	1
	188	1
	320	1
	356	1
	363	1
	411	1
	567	1
	620	1
	626	1
	703	1
	752	1
	877	1

1001	1
1053	1
1229	1
1264	1
1265	1
1276	1
1326	1
1351	1
1386	1
1402	1
1456	1
1464	1
1478	1
1515	1

6. Purchase frequency by location

Input :

```
select customer_id, location, round(avg(previous_purchases)) as Purchases from  
shopping_behavior_updated group by customer_id, location;
```

Output :

	customer_id	location	Purchases
▶	1	Kentucky	14
	2	Maine	2
	3	Massachusetts	23
	4	Rhode Island	49
	5	Oregon	31
	6	Wyoming	14
	7	Montana	49
	8	Louisiana	19
	9	West Virginia	8
	10	Missouri	4
	11	Arkansas	26
	12	Hawaii	10
	13	Delaware	37

	customer_id	location	Purchases
	46	Tennessee	25
	47	California	45
	48	Montana	36
	49	Nevada	38
	50	New Jersey	34
	51	Maryland	39
	52	Vermont	7
	53	Alaska	26
	54	Mississippi	35
	55	New Mexico	35
	56	South Carolina	49
	57	Mississippi	46
	58	West Virginia	17

7. Purchase frequency by location

Input :

```
select location, count(frequency_of_purchases) as Purchase_frequency from  
shopping_behavior_updated group by location;
```

Output :

	location	Purchase_frequency
▶	Kentucky	79
	Maine	77
	Massachusetts	72
	Rhode Island	63
	Oregon	74
	Wyoming	71
	Montana	96
	Louisiana	84
	West Virginia	81
	Missouri	81
	Arkansas	79
	Hawaii	65
	Delaware	86

	location	Purchase_frequency
	Colorado	75
	North Dakota	83
	Illinois	92
	Indiana	79
	Arizona	65
	Alaska	72
	Tennessee	77
	Ohio	77
	New Jersey	67
	Maryland	86
	Vermont	85
	New Mexico	81
	South Carolina	76

Product and category insights

1. Most purchased items or category by gender

Input :

```
select distinct Gender, Item_Purchased, count(item_purchased) as Purchase_count from shopping_behavior_updated group by gender, item_purchased order by Purchase_count desc;
```

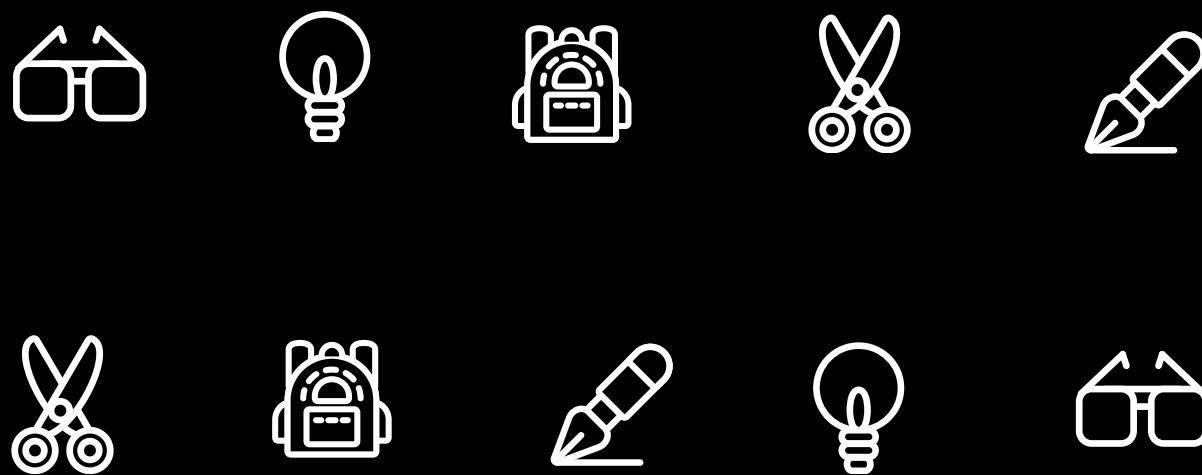
Output :

Gender	Item_Purchased	Purchase_count
Male	Jacket	109
Male	Backpack	106
Male	Belt	106
Male	Blouse	105
Male	Sunglasses	105
Male	Sneakers	103
Male	Gloves	103
Male	Shoes	102
Male	Hat	102
Male	Sandals	101
Male	T-shirt	101
Male	Socks	101
Male	Hoodie	100
Male	Jeans	95
Male	Handbag	95
Male	Boots	94
Female	Blouse	66
Female	Sandals	59
Female	Shirt	59
Female	Handbag	58
Female	Socks	58
Female	Sunglasses	56
Female	Belt	55
Female	Jacket	54
Female	Dress	52
Female	Jewelry	52
Female	Hat	52

2. Most popular sizes and colors by category

Input :

```
select distinct size, color, count(item_purchased)
  as item_purchased from
shopping_behavior_updated
group by size, color
order by item_purchased desc;
```



Output :

	size	color	item_purchased
▶	M	Violet	87
	M	Olive	86
	M	Silver	79
	M	Gray	78
	M	Charcoal	77
	M	Maroon	76
	M	Orange	74
	M	Indigo	73
	M	White	71
	M	Magenta	71
	M	Peach	70
	M	Green	70
	M	Teal	70
	M	Black	68
	M	Beige	67
	M	Gold	66
	M	Lavender	65
	M	Red	65
	M	Cyan	65
	M	Brown	65
	M	Blue	65
	M	Yellow	64
	M	Pink	63
	M	Purple	62
	L	Yellow	59
	M	Turquoise	58
	L	Green	55

	size	color	item_purchased
L	Black	53	
L	Pink	52	
L	Cyan	48	
L	Blue	48	
L	Silver	47	
L	Turquoise	44	
L	Violet	42	
L	Orange	42	
L	Red	41	
L	Lavender	41	
L	Gray	40	
L	Brown	40	
L	Maroon	39	
L	Purple	39	
L	Olive	38	
L	Gold	38	
S	Olive	36	
S	Cyan	35	
L	Indigo	35	
L	Peach	34	
L	Charcoal	32	
L	Magenta	32	
S	Silver	32	
S	Maroon	30	
L	White	30	
L	Beige	30	
S	Peach	30	

S	Magenta	26
S	Indigo	25
S	Turquoise	25
S	Charcoal	24
S	Red	24
S	Violet	23
S	Green	23
XL	Magenta	23
XL	Beige	23
XL	Yellow	22
S	Gold	22
S	Orange	22
S	White	21
S	Pink	21
S	Brown	21
XL	Purple	21
XL	Green	21
XL	White	20
XL	Charcoal	20
XL	Teal	19
XL	Black	19
XL	Turquoise	18
XL	Cyan	18
XL	Red	18
XL	Pink	17
XL	Olive	17
XL	Orange	16

3. Items performing better in specific seasons

Input :

```
select distinct season, item_purchased, count(item_purchased) as Total_item_purchased  
from shopping_behavior_updated  
group by season, item_purchased order by Total_item_purchased desc;
```

Output :

	season	item_purchased	Total_item_purchased
▶	Fall	Jacket	54
	Spring	Sweater	52
	Winter	Sunglasses	52
	Winter	Pants	51
	Winter	Shirt	50
	Summer	Pants	50
	Fall	Hat	50
	Winter	Hoodie	48
	Fall	Handbag	48
	Spring	Shorts	47

Summer	Jacket	33
Winter	Scarf	33
Spring	Sunglasses	33
Spring	Pants	32
Winter	Sandals	32
Spring	Jeans	32
Fall	Jeans	32
Winter	Gloves	32
Summer	Jeans	31
Winter	Boots	31
Fall	Sneakers	31
Summer	Hoodie	31

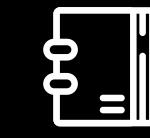
4. TOP RATING PRODUCTS

Input:

```
select distinct item_purchased, max(review_rating)
as top_ratings
from shopping_behavior_updated
group by item_purchased order by top_ratings desc;
```

Output :

item_purchased	top_ratings
Blouse	5
Sweater	5
Jeans	5
Sandals	5
Sneakers	5
Shirt	5
Shorts	5
Coat	5
Handbag	5
Dress	5
Skirt	5
Sunglasses	5
Pants	5
Jacket	5
Hoodie	5
Jewelry	5
T-shirt	5
Scarf	5
Hat	5
Socks	5
Backpack	5
Belt	5
Boots	5
Gloves	5
Shoes	4.9



5. HIGHEST AVERAGE PURCHASE AMOUNT BY CATEGORY

INPUT :

```
select distinct item_purchased, max(review_rating)  
as top_ratings  
from shopping_behavior_updated  
group by item_purchased order by top_ratings desc;
```

OUTPUT :

category	Total_purchase
Clothing	60
Footwear	60
Accessories	60
Outerwear	57

Sales and discounts

1. Impact of discount on purchase amount

Input :

```
select discount_applied, round(avg(purchase_amount_usd)) as total_purchase from shopping_behavior_updated  
group by discount_applied;
```

Output :

	discount_applied	total_purchase
▶	Yes	59
	No	60

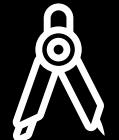
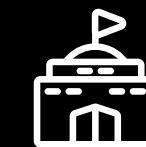
2. Correlation between discounts and ratings

Input :

```
select Discount_applied, round(avg(review_rating)) as AVG_Ratings  
from shopping_behavior_updated group by discount_applied;
```

Output :

	Discount_applied	AVG_Ratings
▶	Yes	4
	No	4



3. Percentage of purchase with promo codes

Input:

```
select promo_code_used, count(frequency_of_purchases)*100/ sum(count(frequency_of_purchases)) over()
as percentage from shopping_behavior_updated group by promo_code_used;
```

Output:

	promo_code_used	percentage
▶	Yes	43.0000
	No	57.0000

4. Categories benefiting most from discounts

Input:

```
select category, count(frequency_of_purchases) as Discounted_purchased  
from shopping_behavior_updated where discount_applied = 'yes' group by category;
```

Output:

category	Discounted_purchased
Clothing	731
Footwear	259
Outerwear	144
Accessories	543

Custom Preferences

1. Preferred payment method

Input:

```
select distinct payment_method, count(payment_method) as purchased_counts  
from shopping_behavior_updated group by payment_method order by purchased_counts desc;
```

Output:

payment_method	purchased_counts
PayPal	677
Credit Card	671
Cash	670
Debit Card	636
Venmo	634
Bank Transfer	612

2. Purchase frequency by shipping type

Input :

```
select Shipping_type, count(frequency_of_purchases) as Frequency_of_purchase  
from shopping_trends group by shipping_type;
```

Output :

Shipping_type	Frequency_of_purchase
Express	646
Free Shipping	675
Next Day Air	648
Standard	654
2-Day Shipping	627
Store Pickup	650

3. Subscription status influence on category purchases

Input :

```
select Category, subscription_status, count(item_purchased) as Items from shopping_trends  
group by subscription_status, Category order by items desc;
```

Output :

Category	subscription_status	Items
Clothing	No	1280
Accessories	No	906
Clothing	Yes	457
Footwear	No	428
Accessories	Yes	334
Outerwear	No	233
Footwear	Yes	171
Outerwear	Yes	91

4. Impact of previous purchase on future purchases

Input :

```
select Previous_purchases, count(frequency_of_purchases) as Future_purchase  
from shopping_trends group by Previous_purchases;
```

Output :

Previous_purchases	Future_purchase
14	92
2	72
23	73
49	58
31	97
19	78
8	67
4	91
26	77
10	76

13	69
7	65
41	70
45	83
38	70
48	90
18	84
15	73
25	79
39	81
35	63
29	69
21	96
43	64
3	91
5	87

5. Correlation between seasonality and high ratings

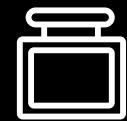
Input :

```
select Season, ceiling(avg(review_rating)) as Revie_rating  
from shopping_trends group by season;
```

Output :

Season	Revie_rating
Winter	4
Spring	4
Summer	4
Fall	4





THANK YOU FOR WATCHING



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