

# E-commerce Promotion Program

Total GMV

641M

Total shops

1385

Total customers

3093

Total transactions

4611

Total transactions with vouchers

4123

Average of gmv

138.99K

Min of gmv

1

Max of gmv

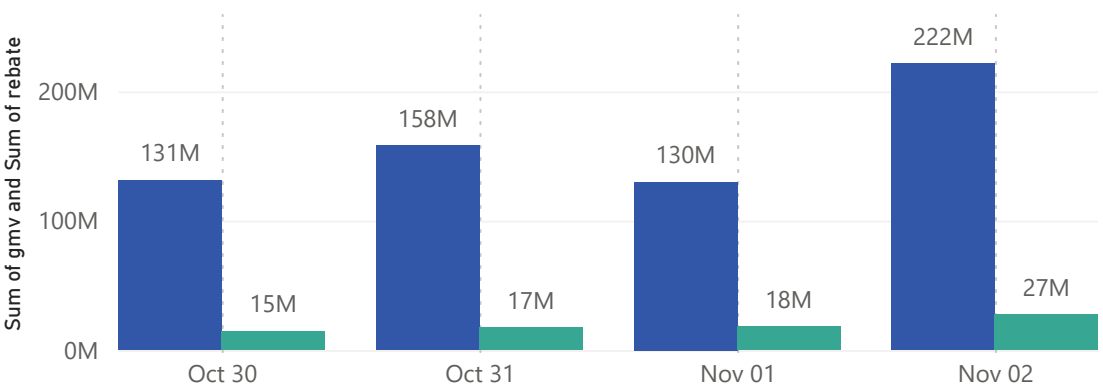
4M

Total rebate

78M

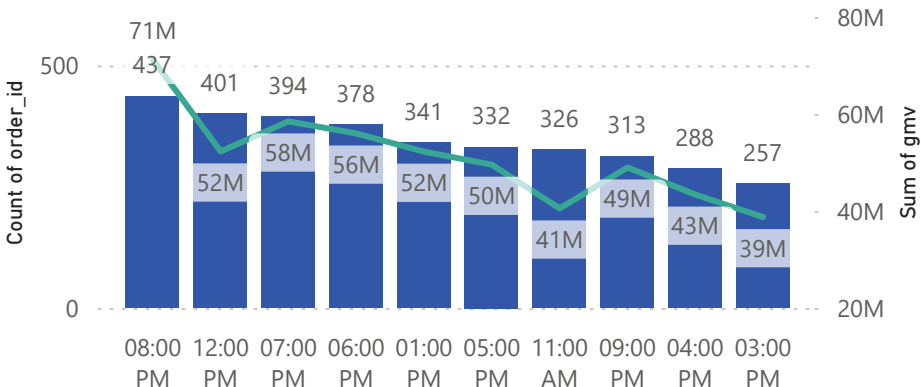
GMV and rebate by date

Sum of gmv Sum of rebate



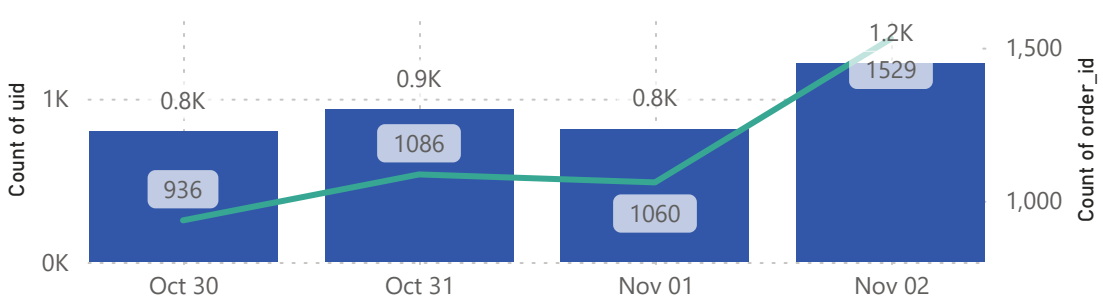
GMV and transactions by time

Count of order\_id Sum of gmv

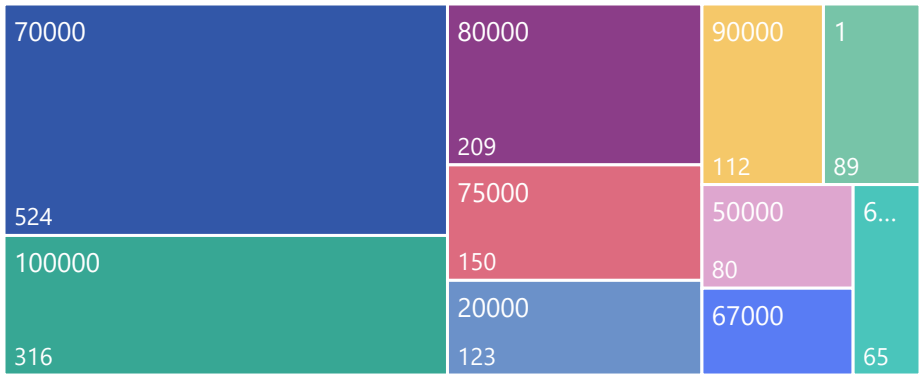


Users and transactions by date

Count of uid Count of order\_id



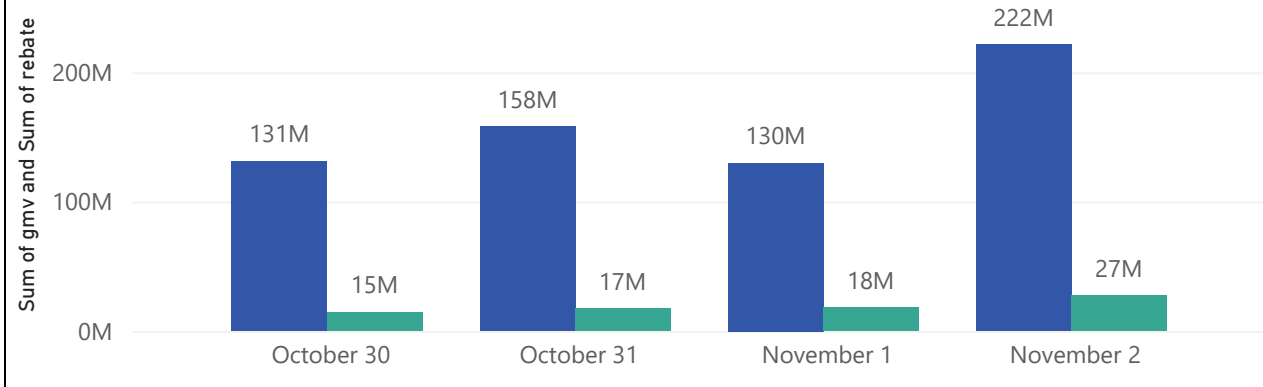
Order value



# Promotion Program Overview

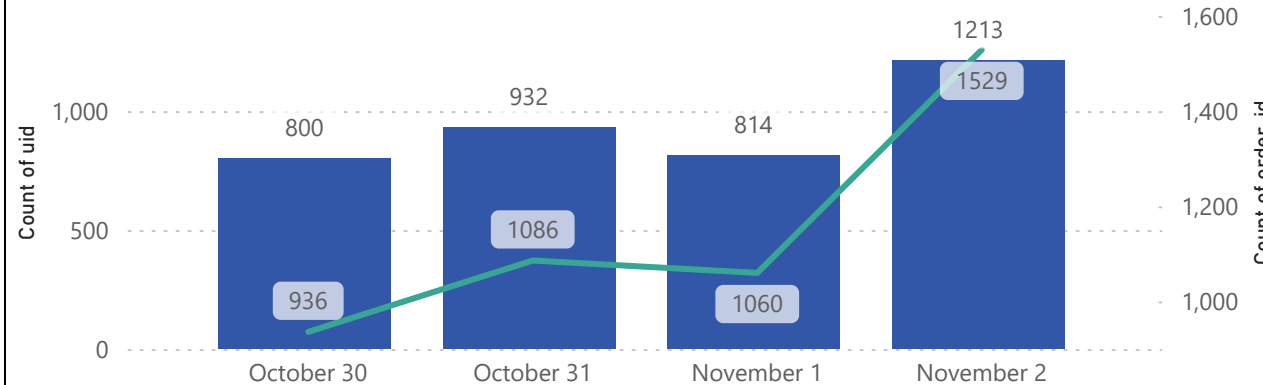
## GMV and rebate by date

● Sum of gmv ● Sum of rebate



## Users and transactions by date

● Count of uid ● Count of order\_id

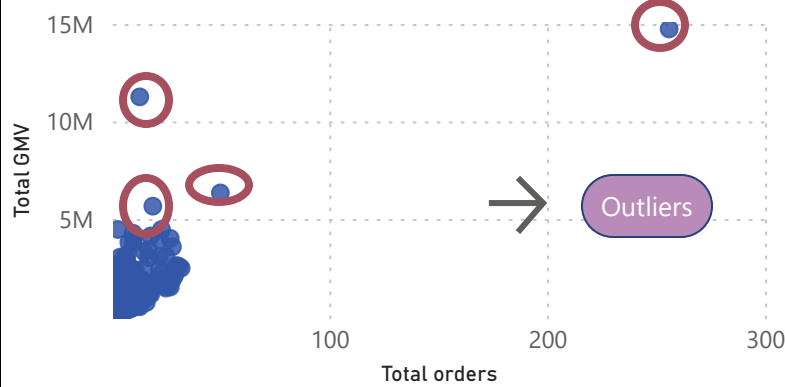


The online shopping scene from **October 30 to November 2** was incredibly lively, with **3,093 users** making purchases from **1,385 shops**. A total of **4,611 transactions** were generated, of which **4,123 transactions** used discount codes, contributing to an order value of **641M and 78M** refunded from discount codes.

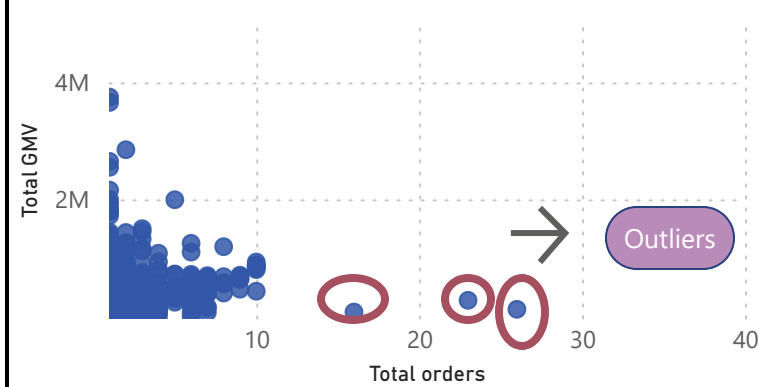
The promotional campaign (offering a **30% discount** for orders **over 70K**, with a **maximum discount of 20K**) was a success, with **4,123 transactions** applying the discount, accounting for **89.4% of all orders**. The highest order value reached **4M**, while the lowest was **1**, with an average order value of approximately **140K per order**.

# Signals of fraud

Total orders and Total GMV by shop\_owner\_uid

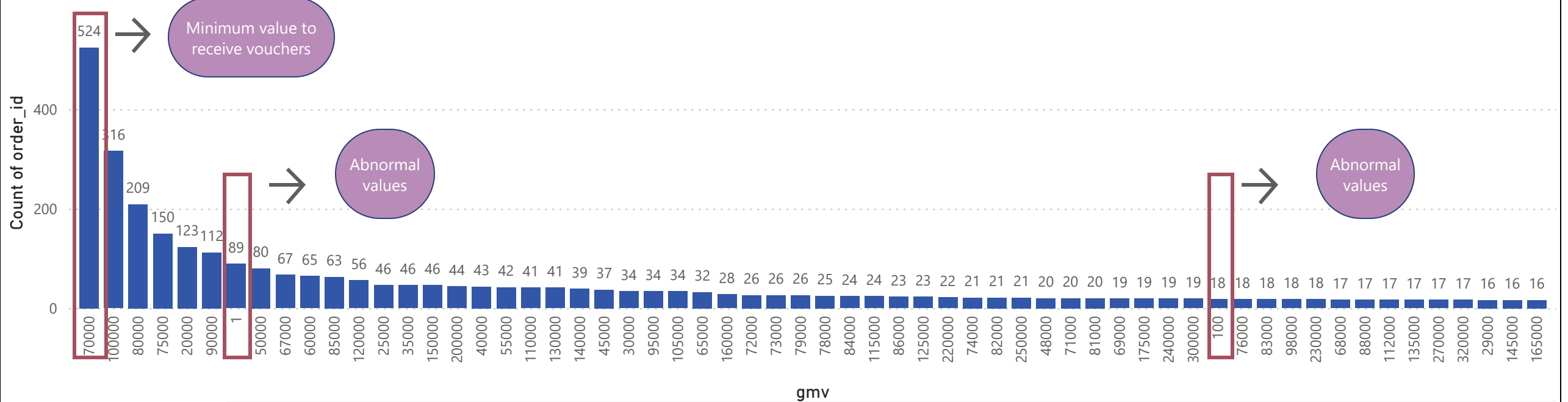


Total orders and Total GMV by uid



- Only orders with a minimum value of **70K** are eligible for the promotion. Each customer can **only use it once**.
- Orders with extremely low values, such as **1 or 100**, are **suspicious transactions**.
- Shops with **abnormally high transaction volumes** may also be considered **suspicious**.
- The time intervals between purchases are **very short**.

Order value



# Seller Fraud Detection

shop_owner_uid	transaction_cnt	z_score_count	low_value_rebate_cnt
102817559	256	32.05	0
103280547	50	5.92	9
103333474	31	3.51	0
103481792	30	3.38	0
103483282	29	3.26	0
103835793	29	3.26	17
1952823	28	3.13	25
103498278	27	3.00	2
103822259	27	3.00	19
101734628	26	2.88	13
1670424	25	2.75	2
103192062	25	2.75	17
100305004	24	2.62	23
101357005	19	1.99	1
1600299	18	1.86	1
1896850	17	1.73	2
102998337	17	1.73	7
103488130	17	1.73	8
103700663	17	1.73	5
100530690	16	1.61	12
1874810	15	1.48	3
100182968	15	1.48	10
102495598	15	1.48	7
103498440	15	1.48	2
100307126	13	1.23	8
101163904	13	1.23	11
102908478	13	1.23	4

shop_owner_uid	uid	transactions	period	gmv	rebate
102817559	1191456	8	00:00:00	20000	0
102817559	1191456	8	00:00:00	70000	20000
102817559	1191456	8	00:03:00	90000	20000
102817559	1191456	8	1 day 00:19:00	20000	0
102817559	1191456	8	1 day 05:22:00	90000	20000
102817559	1191456	8	18:26:00	20000	0
102817559	1191456	8	NULL	20000	0
102817559	1638171	4	21:14:00	80000	20000
102817559	1638171	4	22:55:00	70000	20000
102817559	1638171	4	23:54:00	70000	20000
102817559	1638171	4	NULL	78000	20000
102817559	1829318	4	00:00:00	70000	20000
102817559	1829318	4	00:01:00	75000	20000
shop_owner_uid	uid	transactions	period	gmv	rebate
1952823	100259747	3	1 day 06:00:00	67000	0
1952823	100259747	3	21:30:00	67000	20000
1952823	100259747	3	NULL	67000	20000
1952823	100305004	3	-08:05:00	67000	0
1952823	100305004	3	22:35:00	67000	20000
1952823	100305004	3	NULL	67000	20000
1952823	1302733	2	23:39:00	67000	20000
1952823	1302733	2	NULL	67000	20000
1952823	1336501	2	19:37:00	67000	20000
1952823	1336501	2	NULL	67000	20000
1952823	1703224	2	1 day 00:31:00	67000	20000
1952823	1703224	2	NULL	67000	20000
1952823	1727168	2	18:12:00	67000	20000

Based on the **3-Sigma rule**, several suspicious shops have been detected as their number of transactions exceeds the abnormal threshold of **sigma > 3**. Specifically, the shop with **owner\_uid 102817559** has an unusually high number of transactions, where a single customer places multiple consecutive orders within a very short period and uses the same discount code multiple times. This suggests a potential **collusion between the shop and the customer** to exploit the discount program, create fake reviews, and boost the shop's ranking on the platform. Additionally, the shop with **owner\_uid 1952823** shows signs of **manipulating the system** by pricing products below the minimum required amount of **70,000**, then adding a small-value item to surpass the discount eligibility threshold. Once the discount is applied, the additional item is canceled while the order remains valid, causing **Shopee to incur losses**. Similarly, the shops with **owner\_uid 103822259, 103835793, and 100305004** also exhibit **fraudulent behaviors**.

# Buyer Fraud Detection

uid	transaction_cnt	avg_order_value	z_score_transaction
100205391	26	4,669.23	18.69
100605978	23	11,957.35	16.41
1026737	16	4,688.44	11.07
100393963	10	43,061.50	6.49
103023839	10	88,200.00	6.49
103366324	10	83,000.00	6.49
103653018	10	87,000.00	6.49
103653392	10	85,000.00	6.49
103667901	10	86,000.00	6.49
103682325	10	80,000.00	6.49
103868446	10	93,000.00	6.49
100823558	9	51,666.67	5.73
103002018	9	70,555.56	5.73
103178855	9	71,111.11	5.73
103266260	9	78,333.33	5.73
103855768	9	76,111.11	5.73
1191456	8	50,000.00	4.96
100702363	8	70,000.00	4.96
102011406	8	149,000.00	4.96
103044301	8	70,250.00	4.96
103044781	8	72,500.00	4.96
103698457	8	85,000.00	4.96
2026196	7	95,714.29	4.20
100352740	7	20,715.00	4.20
100368648	7	23,285.71	4.20
100614916	7	10,000.86	4.20
103033590	7	70,714.29	4.20
103044677	7	72,142.86	4.20

uid	shop_owner_uid	transactions	period	gmV	rebate
1026737	2046542	1	NULL	1	0
1026737	102164897	1	00:12:00	1	0
1026737	103203317	1	01:06:00	1	0
1026737	104050582	1	00:17:00	1	0
1026737	104052244	1	00:40:00	1	0
1026737	104052685	1	00:06:00	1	0
1026737	104056393	1	00:59:00	1	0
1026737	104066534	1	04:17:00	1	0
1026737	104071265	1	00:37:00	1	0
1026737	104072798	1	-09:05:00	1	0
1026737	101377664	2	00:04:00	1	0
1026737	101377664	2	01:26:00	1	0
1026737	102368516	2	00:21:00	1	0
1026737	102368516	2	21:20:00	75000	20000
1026737	104071861	2	00:09:00	1	0
1026737	104071861	2	01:11:00	1	0
100205391	1011547	1	00:14:00	100	0
100205391	104011890	1	20:51:00	100000	20000
100205391	1007933	2	00:08:00	1000	0
100205391	1007933	2	NULL	10000	3000
100205391	1011829	2	00:37:00	100	0
100205391	1011829	2	00:15:00	1000	0
100205391	1011910	2	00:29:00	100	0
100205391	1011910	2	01:11:00	100	0
100205391	1011984	2	00:20:00	100	0
100205391	1011984	2	00:37:00	1000	0
100205391	104065573	2	00:02:00	1000	0
100205391	104065573	2	05:40:00	1000	0

Based on the 3-Sigma rule, the top 3 uid with a z-score > 3 have been identified: **100205391, 1026737, and 100605978.** These accounts exhibit a high purchase frequency within a short period, primarily focusing on low-value orders. This behavior suggests that these users may be **collaborating with shops on the platform to create fake orders,** manipulating the system to increase transaction counts and generate fake reviews. The main objective is to **boost the shop's credibility and ranking on the platform,** thereby attracting genuine customers. Once their goal is achieved, they may **cancel or return the orders,** causing financial losses for the e-commerce platform and compromising the system's transparency.