

MySkill Data Analysis Bootcamp: Final Project

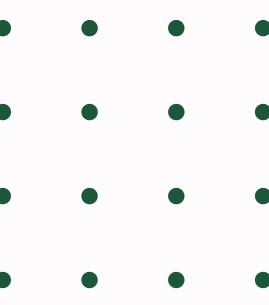
# **ECOMMERCE PERFORMANCE ANALYSIS**

**2021 - 2022 PERIOD**

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# Data Understanding

Ecommerce data terdiri dari 4 table Order, Payment, Customer, dan SKU\_detail

## ● Order Table

```
1 #Mengambilkan 5 baris pertama  
2 df_od.head()
```

	id	customer_id	order_date	sku_id	price	qty_ordered	before_discount	discount_amount	after_discount	is_gross	is_valid	is_net	payment_id
0	ODR9939707760w	C713589L	2021-11-19	P858068	26100	200	5220000.0	2610000.00	2610000.00	1	1	0	5
1	ODR7448356649d	C551551L	2021-11-19	P886455	1971942	5	9859710.0	2464927.50	7394782.50	1	0	0	5
2	ODR4011281866z	C685596L	2021-11-25	P678648	7482000	1	7482000.0	2065344.62	5416655.38	1	0	0	4
3	ODR3378927994s	C830683L	2021-11-22	P540013	3593680	1	3593680.0	1455440.40	2138239.60	1	1	1	5
4	ODR4904430099k	C191766L	2021-11-21	P491032	4413220	1	4413220.0	1059172.80	3354047.20	1	1	1	4

variable	class	description
<b>order_detail:</b>		
id	object	angka unik dari order / id_order
customer_id	object	angka unik dari pelanggan
order_date	object	tanggal saat dilakukan transaksi
sku_id	object	angka unik dari produk (sku adalah stock keeping unit)
price	int64	harga yang tertera pada tagging harga
qty_ordered	int64	jumlah barang yang dibeli oleh pelanggan
before_discount	float64	nilai harga total dari produk (price * qty_ordered)
discount_amount	float64	nilai diskon product total
after_discount	float64	nilai harga total produk ketika sudah dikurangi dengan diskon
is_gross	int64	menunjukkan pelanggan belum membayar pesanan
is_valid	int64	menunjukkan pelanggan sudah melakukan pembayaran
is_net	int64	menunjukkan transaksi sudah selesai
payment_id	int64	angka unik dari metode pembayaran

### Detail description of Order Table:

table order menunjukkan detail keseluruhan dari setiap order yang dibuat oleh user, dengan **id** sebagai primary key yang menunjukkan setiap order.

# Data Understanding

## ● Payment Table

```
1 #tampilkan 5 baris pertama  
2 df_pd.head()
```

		id	payment_method
0	1		cod
1	2		jazzvoucher
2	3		customercredit
3	4		Payaxis
4	5		jazzwallet

## ● Customer Table

```
1 #Mengambil 5 baris pertama  
2 df_cd.head()
```

	<code>id</code>	<code>registered_date</code>
0	C99650SL	2021-07-10
1	C180415L	2021-07-18
2	C535451L	2021-07-23
3	C177843L	2021-07-12
4	C951682L	2021-07-27

### **customer\_detail:**

**id** object angka unik dari pelanggan

`registered_date`    `object`    tanggal pelanggan mulai mendaftarkan diri sebagai anggota

## payment\_detail:

**id** int64 angka unik dari metode pembayaran

`payment_method` object metode pembayaran yang digunakan

A 6x6 grid of 36 green circular dots arranged in six rows and six columns.

# Data Understanding

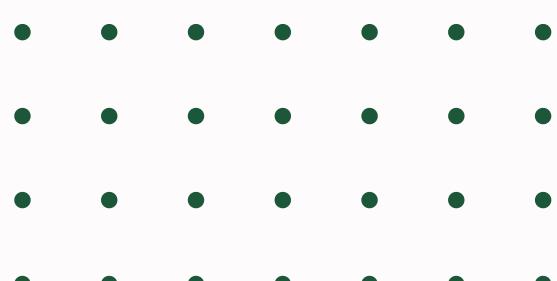
## • SKU Detail Table

```
1 #Mengampilkan 5 baris pertama  
2 df_sd.head()
```

	<b>id</b>	<b>sku_name</b>	<b>base_price</b>	<b>cogs</b>	<b>category</b>
0	P798444	AT-FSM-35	57631.70	46052	Kids & Baby
1	P938347	AYS_Haier-18HNF	3931789.26	3499256	Appliances
2	P826364	Atalian_DV206A-Brown-41	324597.00	243426	Men Fashion
3	P467533	Darul_Sakoon_Food_Bundle	2870.42	2378	Superstore
4	P229955	HP_15AY-15-Ay072NIA-ci3	2265625.00	1631250	Computing

## sku\_detail:

<b>id</b>	<b>object</b>	angka unik dari produk (dapat digunakan untuk key saat join)
<b>sku_name</b>	<b>object</b>	nama dari produk
<b>base_price</b>	<b>float64</b>	harga barang yang tertera pada tagging harga / price
<b>cogs</b>	<b>int64</b>	cost of goods sold / total biaya untuk menjual 1 produk
<b>category</b>	<b>object</b>	kategori produk



# Analysis by year: 2021 - 2022 Trends



Grafik Analysis Trend 2021 - 2022 by Value Sales (Before Discount), Net Profit dan AOV (Average Order Value)

Tools: Looker Studio

## Action from data:

- Campaign Q3 spesifik nya di agustus 2022 bisa digunakan untuk meningkatkan traffic transaksi, terlihat dari AOV dan sales yg dihasilkan
- Campaign april 2022 bisa digunakan kedepannya dengan goal meningkatkan value sales dengan net profit yang lebih besar

## 01

pada bulan Agustus 2022, terjadi peningkatan Value sales (before discount) sebesar 235 jt dan AOV meningkat sebesar 4,3 Juta dibanding bulan sebelumnya (peningkatan terbesar selama 2021 - 2022)

secara net profit menurun sebesar 36 Juta, menunjukkan cost yang dikeluarkan untuk penjualan setiap produk juga meningkat dibanding bulan juli 2022

## 02

Di April 2022 value sales dan net profit yang dihasilkan terbesar selama di 2021 - 2022 yaitu sebesar 698 Juta dan net profit 177 juta.

Secara AOV lebih kecil dibanding agustus 2022 menunjukan traffic transaksi lebih sedikit. tetapi secara cost yang dibutuhkan lebih sedikit dengan hasil value sales yg lebih besar.

# Analysis by month 2021 and weeks Q4 2022

## ● Total Sales (each months) 2021

Month 2021	Total Sales
August	228M
December	217M
October	208M
November	180M
July	148M
September	145M
June	43M
January	37M
February	36M
May	34M
March	24M
April	22M

Table Total sales after discount 2021

Highest Total Sales in 2021

**August 2021  
228 M**

## ● Weekend and weekdays performance Q4 2022(oct - dec 2022)

Month	Avg Sales Weekend	Avg Sales Weekday	Diff (Value)	Diff (%)
October	634,260	874,690	-240,430	-38%
November	607,794	641,862	-34,068	-6%
December	410,599	813,574	-402,975	-98%

Table Avg sales after discount weekend, weekday, diff value dan diff % di oct - dec 2022

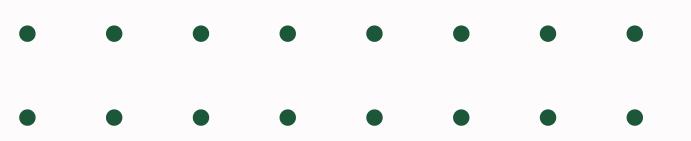
Campaign di **october** bisa disimpulkan paling menguntungkan secara sales, karena **average total sales weekend dan weekday** paling besar di Q4 sebesar 1.5 juta, walaupun secara perbedaan avg sales masih di angka -240 ribu (-38%).

sedangkan campaign di bulan **november** bisa disimpulkan paling efektif untuk mengejar sales yang propotional antara weekday vs weekend, **karena perbedaan avg sales hanya diangka -34 ribu (-6%)**

Periode	Avg Sales Weekend	Avg Sales Weekday	Diff (Value)	Diff (%)
Total 3 months	558,865	751,973	-193,108	-34.55%

Table total 3 months average sales weekend and average sales weekday

Campaign marketing weekend dan weekday di Q4 2022 bisa disimpulkan cukup baik dikarenakan **separa perbedaan avg sales masih dibawah 40%, yaitu -193 ribu (-34.5%)**



# Analysis by month 2021 and weeks Q4 2022: Query and Python Code

## ● Total Sales (each months) 2021

```
select
format_date('%B',order_date) as month_2021,
round(sum(after_discount)) total_sales
from
`ecommerce.order`
where is_valid = 1
and (order_date between '2021-01-01' and '2021-12-31')
group by 1
order by 2 desc
```

tools: big query

## ● Weekend and weekdays performance Q4 2022(oct - dec 2022)

```
1 df['day']=df['order_date'].dt.day_name()
2 df['month']=df['order_date'].dt.month_name()
3 df['month_num']=df['order_date'].dt.month
4
5 data16 = pd.DataFrame(df[(df['is_valid']==1) \
6 & (df['day'].isin(['Saturday','Sunday']))\ 
7 & (df['order_date'] >= '2022-10-01') & (df['order_date'] <= '2022-12-31')]\ 
8 .groupby(by=['month_num','month'])["before_discount"].mean()\ 
9 .round()\ 
10 .sort_values(ascending=False)\ 
11 .reset_index(name='avg_sales_weekend'))\ 
12
13 data16
14
```

	month_num	month	avg_sales_weekend
0	10	October	634260.0
1	11	November	607794.0
2	12	December	410599.0

tools: google colab



# Analysis by Category

## ● Sales by Category in 2022

Category	Total Sales
Mobiles & Tablets	918M
Entertainment	365M
Appliances	316M
Computing	214M
Men Fashion	136M
Women Fashion	93M
Home & Living	79M
Health & Sports	54M
Beauty & Grooming	46M
Superstore	33M
Kids & Baby	26M
Others	22M
Soghaat	18M
School & Education	17M
Books	7M

Table Total sales by category in 2022

Best Category in 2022

**Mobile & Tablets  
918 M**

## ● Sales by Category in 2021 vs 2022

Category	Total Sales 2021	Total Sales 2022	Growth Value
Mobiles & Tablets	371M	918M	548M
Entertainment	162M	365M	203M
Appliances	219M	316M	98M
Men Fashion	59M	136M	77M
Computing	173M	214M	41M
Home & Living	46M	79M	34M
Health & Sports	34M	54M	20M
Women Fashion	84M	93M	9M
School & Education	12M	17M	6M
Superstore	29M	33M	4M
Soghaat	15M	18M	3M
Kids & Baby	24M	26M	2M
Beauty & Grooming	46M	46M	0M
Books	10M	7M	-3M
Others	40M	22M	-19M

Table Total sales by category di 2021 dan 2022, beserta growth nya

Category dengan peningkatan terbesar di 2021 vs 2022 adalah **Mobile & Tablets** yaitu sebesar 548 Juta dan di peringkat kedua ada **Entertainment** di 203 Juta

Category yang perlu jadi concern kedepannya adalah **Books** dan **Others**, dikarenakan secara growth value menurun dibanding 2021, yaitu -3 juta untuk category books dan -19 juta untuk category others

# Analysis by Category: query

## ● Sales by Category in 2022

```
select
sd.category,
sum(o.after_discount) total_sales
from
`ecommerce.order` o left join `ecommerce.SKU_detail` sd on sd.id = o.sku_id
where
is_valid = 1
and (order_date between '2022-01-01' and '2022-12-31')
group by 1
order by 2 desc
```

## ● Sales by Category in 2021 vs 2022

```
with a as (
select
sd.category,
sum(case when order_date between '2021-01-01' and '2021-12-31' then o.after_discount end) total_sales_2021,
sum(case when order_date between '2022-01-01' and '2022-12-31' then o.after_discount end) total_sales_2022
from
`ecommerce.order` o left join `ecommerce.SKU_detail` sd on sd.id = o.sku_id
where
is_valid = 1
group by 1
order by 2 desc)
select
a.*,
total_sales_2022 - total_sales_2021 AS growth_value
from a
order by 4 desc
```

# Analysis by Category : other

- Sales by Quantity Category in 2021 vs 2022

Category	Qty 2021	Qty 2022	Qty Growth
Others	426	263	-163
Soghaat	759	612	-147
Men Fashion	237	175	-62
Beauty & Grooming	168	153	-15
Books	171	195	24
Appliances	124	148	24
Health & Sports	173	200	27
Computing	109	153	44
School & Education	184	237	53
Home & Living	193	250	57
Kids & Baby	170	227	57
Entertainment	77	150	73
Superstore	327	536	209
Women Fashion	140	489	349
Mobiles & Tablets	107	1154	1047

Table total sales by quantity setiap category di 2021 dan 2022 beserta growth

bedasarkan problem yang ada bahwa ditemukan overstock produk kategori others di 2022.

penyebab nya adalah kategori others mengalami penurunan quantity penjualan sebesar -163 pcs dibanding 2021 dan merupakan category dengan penurunan quantity penjualan terbesar dibanding category lain yang quantity penjualan nya cenderung naik.

- Top 20 Produk with minus growth Quanity

SKU Description	QTY 2021	QTY 2022	qty_growth
RB_Dettol Germ Busting Kit-bf	200	45	-155
Dawlance_MD 10 + DWB 600	23	0	-23
Telemall_MM-DR-HB-L	23	2	-21
iu_Tickets General Enclosure-Islamat	20	0	-20
RS_Rehmat-e-Shereen Mix Mithai	13	0	-13
kansai_NeverWet	10	1	-9
sindbad_Sindbad Gift Card-3	7	0	-7
emart_00-1	7	1	-6
Vouch 365 2016	5	0	-5
Am-PTV_ATS-004-M	5	0	-5
The Vitamin Company Kojic Acid Whi	4	0	-4
duma_4561253300294	4	0	-4
sockeye_QG in Quarter Grey	4	0	-4
Trans2_LW 999	3	0	-3
aw_Octane Booster-12oz /354ml	3	0	-3
MEGUIAR_G12711	4	1	-3
aw_Super Concentrated Fuel Injector	2	0	-2
MEGUIAR_X1030EU	2	0	-2
MEGUIAR_G19216	2	0	-2
seagate_SG E-2TB	2	0	-2

Table total sales and growth product kategori others di 2022 dan 2021

Kontribusi penyebab terbesar overstock dari product others di tahun 2022, adalah product RB\_Dettol Germ Busting Kit -Bf dengan penurunan sales by quantity dibanding 2021 sebesar -155 pcs.

# Analysis by Category : other python code

## ● Sales by Quantity Category in 2021 vs 2022

```
1 data2 = pd.DataFrame(\n2     df[(df['is_valid']==1) &\n3         ((df['order_date'] >= '2021-01-01') & (df['order_date'] <= '2021-12-31'))]\n4     .groupby(by=["category"])["qty_ordered"]\n5     .sum()\n6     .sort_values(ascending=False)\n7     .reset_index(name='qty_2021'))\n8\n9 data3 = pd.DataFrame(\n10    df[(df['is_valid']==1) &\n11        ((df['order_date'] >= '2022-01-01') & (df['order_date'] <= '2022-12-31'))]\n12    .groupby(by=["category"])["qty_ordered"]\n13    .sum()\n14    .sort_values(ascending=False)\n15    .reset_index(name='qty_2022'))\n16\n17\n18 data4 = data2.merge(data3, left_on = 'category', right_on = 'category')\n19\n20 data4['qty_growth']=data4['qty_2022']-data4['qty_2021']\n21 data4.sort_values(by=['qty_growth'], ascending=True, inplace=True)\n22 data4
```

	category	qty_2021	qty_2022	qty_growth
1	Others	426	263	-163
0	Soghaat	759	612	-147
3	Men Fashion	237	175	-62
9	Beauty & Grooming	168	153	-15
7	Books	171	195	24
11	Appliances	124	148	24
6	Health & Sports	173	200	27
12	Computing	109	153	44
5	School & Education	184	237	53
4	Home & Living	193	250	57
8	Kids & Baby	170	227	57
14	Entertainment	77	150	73
2	Superstore	327	536	209
10	Women Fashion	140	489	349
13	Mobiles & Tablets	107	1154	1047

# Analysis by Category : other python code

- Top 20 Product with minus growth Quanity

```

1 data5 = pd.DataFrame(\n2\n3     df[(df['is_valid']==1) &\n4     (df['category']=='Others') &\n5     ((df['order_date'] >= '2021-01-01') & (df['order_date'] <= '2021-12-31'))]\n6     .groupby(by=['sku_name'])["qty_ordered"]\n7     .sum()\n8     .sort_values(ascending=False)\n9     .reset_index(name='qty_2021')\n10\n11 data6 = pd.DataFrame(\n12     df[(df['is_valid']==1) &\n13     (df['category']=='Others') &\n14     ((df['order_date'] >= '2022-01-01') & (df['order_date'] <= '2022-12-31'))]\n15     .groupby(by=['sku_name'])["qty_ordered"]\n16     .sum()\n17     .sort_values(ascending=False)\n18     .reset_index(name='qty_2022')\n19\n20 data_check = data5.merge(data6, how='outer')\n21 data_check.fillna(0, inplace=True)\n22 data_check['qty_growth']=data_check['qty_2022']-data_check['qty_2021']\n23 data_check.sort_values(by=['qty_growth'], ascending=True, inplace=True)\n24 data_check = data_check.head(20)\n25 data_check

```

	sku_name	qty_2021	qty_2022	qty_growth
0	RB_Dettol Germ Busting Kit-bf	200.0	45.0	-155.0
2	Dawlance_MD 10 + DWB 600	23.0	0.0	-23.0
1	Telemall_MM-DR-HB-L	23.0	2.0	-21.0
3	iu_Tickets General Enclosure-Islamabad	20.0	0.0	-20.0
4	RS_Rehmat-e-Shereen Mix Mithai	13.0	0.0	-13.0
5	kansai_NeverWet	10.0	1.0	-9.0
6	sindbad_Sindbad Gift Card-3	7.0	0.0	-7.0
7	emart_00-1	7.0	1.0	-6.0
8	Vouch 305 2018	5.0	0.0	-5.0
10	Am-PTV_ATS-004-M	5.0	0.0	-5.0
11	The Vitamin Company Kojic Acid Whitening Cream...	4.0	0.0	-4.0
12	duma_4561253300294	4.0	0.0	-4.0
14	sockeye_QG in Quarter Grey	4.0	0.0	-4.0
17	Trans2_LW 999	3.0	0.0	-3.0
18	aw_Octane Booster-12oz /354ml	3.0	0.0	-3.0
13	MEGUIAR_G12711	4.0	1.0	-3.0
19	aw_Super Concentrated Fuel Injector (Black)-5...	2.0	0.0	-2.0
20	MEGUIAR_X1030EU	2.0	0.0	-2.0
21	MEGUIAR_G19218	2.0	0.0	-2.0
22	seagate_SG E-2TB	2.0	0.0	-2.0

# Analysis by Product

- Total Sales TOP 5 Brand Mobile & tablets in 2022

Product	Total Sales
Samsung	412M
Apple	153M
Sony	32M
Huawei	31M
Lenovo	24M

Table Total Sales by Brand di 2022

Total Penjualan all TOP 5 brand smartphone di 2022 sebesar 652 Juta dengan average 130 Juta, **Brand samsung memiliki Total Sales 412 Juta, terbesar dibanding brand smartphone lainnya**

- Top 10 product from every category in 2021 - 2022

Product Name	category	before_discount	after_discount	Net Profit	qty_ordered
IDROID_BALRX7-Gold	Mobiles & Tablets	1,037,504,000	1,037,504,000	67,860,000	2,000
samsungGALAXY S-7 EDGE 32GB LTE	Mobiles & Tablets	188,106,238	187,665,438	28,624,798	41
MACBOOK PRO 15-INCH 2.2GHZ QuadCore i7	Computing	177,190,000	177,190,000	63,788,400	13
iphone_7-128GB-wof-Matt Black	Mobiles & Tablets	130,456,732	130,398,732	18,508,148	23
Apple iPhone 6S Plus 16GB Silver	Mobiles & Tablets	129,997,720	129,997,720	31,519,288	26
iphone_7-128GB-wof-Jet Black	Mobiles & Tablets	118,927,086	118,927,086	19,451,808	21
samsung_K6000 49	Entertainment	103,887,280	103,887,280	28,684,480	20
GMZV_PS4 Pro 1TB - Region 2	Entertainment	91,685,240	91,685,240	13,839,380	30
infinix_Zero 4-Grey	Mobiles & Tablets	89,374,114	89,374,114	11,619,140	67
samsung_galaxy-s7-edge-pearl-black	Mobiles & Tablets	88,044,000	88,044,000	27,213,600	16

Top 10 Total sales (before and after discount), net profit, qty dan customer in 2021 - 2022

- 7 produk dari category Mobile & Tablets masuk kedalam top 10 Produk di 2021 - 2022
- Secara net profit terbesar ada di product IDROID\_BALRX7\_Gold sebesar 67 Juta dan Macbook Pro 63 Juta, dengan quantity transaksi terbesar ada di product IDROID sebesar 2000 qty hanya dari 2 customer, hal ini menunjukan terdapat transaksi yang sifatnya project (untuk reseller)
- Secara overall performance Produk yang terbaik ada di category computing yaitu Macbook Pro, dikarenakan Net profit yang dihasilkan 63 Juta dengan hanya dengan 13 order. Jika dimaksimalkan marketing campaign untuk meningkatkan order produk tersebut, net profit yang dihasilkan bisa lebih besar

# Analysis by Product: query

## ● Total Sales TOP 5 Brand Mobile & tablets in 2022

```
with a as (
  select
    case
      when lower(sd.sku_name) like '%samsung%' then 'Samsung'
      when lower(sd.sku_name) like '%apple%' or lower(sd.sku_name) like '%iphone%' then 'Apple'
      when lower(sd.sku_name) like '%sony%' then 'Sony'
      when lower(sd.sku_name) like '%huawei%' then 'Huawei'
      when lower(sd.sku_name) like '%lenovo%' then 'Lenovo'
    end product_brand,
    sum(o.after_discount) total_sales
  from
    `ecommerce.order` o left join `ecommerce.SKU_detail` sd on sd.id = o.sku_id
  where
    order_date between '2022-01-01' and '2022-12-31'
    and is_valid = 1
  group by 1
)
select
  a.*
from a
where
  product_brand is not null
order by 2 desc;
```

# Analysis by Payment

## ● Top 5 Payment Method by Order in 2022

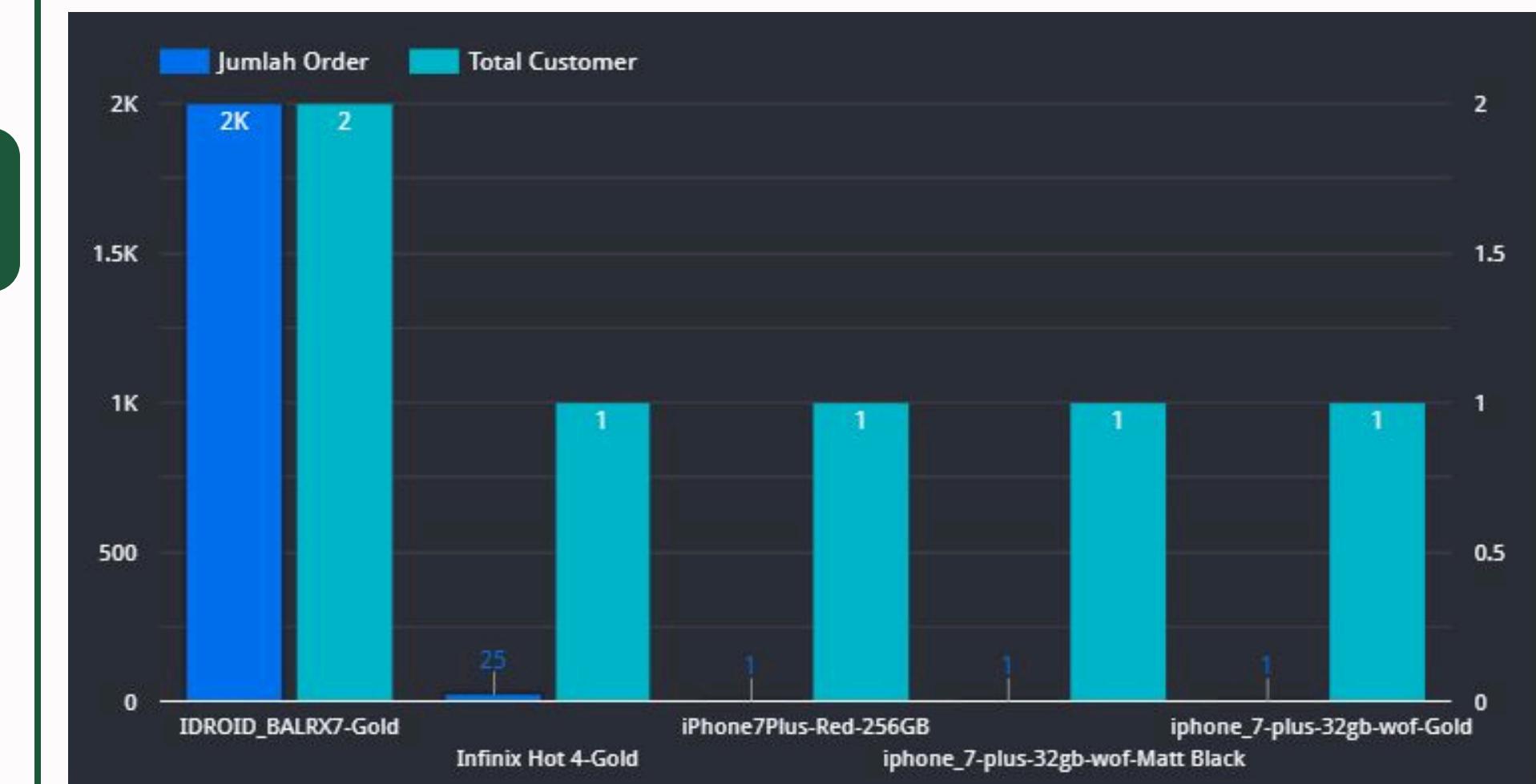
Payment Method	Total Order
COD	1809
Payaxis	181
customercredit	75
Easypay	69
jazzwallet	26

Table Total payment method bedasarkan jumlah order di tahun 2022

Payment Method COD memiliki order paling banyak di tahun 2022, dengan total order 1809. dengan jumlah banyaknya order cod di tahun 2022 perlu dimaksimalkan dan evaluasi lagi guidance dan metode dari pembayaran COD terutama ke User Customer.

Best Payment  
Method 2022  
**COD  
1809  
ORDER**

- Quantity order and customer using jazzvoucher for mobile and tablets in 2022



Tools: Looker Studio

Kontribusi product terbanyak yang di transaksikan dengan Jazz Voucher adalah product IDROID yaitu sebanyak 2000 order dari 2 Customer dan Infinix HOT 10 25 order dari 1 customer.

hal ini menunjukan transaksi dengan jazz voucher memiliki benefit tersendiri untuk transaksi dengan quantity order yang banyak. sehingga bisa di rekomendasikan penggunaan jazz voucher untuk User Customer yang bersifat reseller atau transaksi project (pembelian dalam jumlah banyak).

# Analysis by payment: query

- Top 5 Payment Method by Order in 2022

```
select
p.payment_method,
count(distinct o.id) total_order
from
`ecommerce.order` o left join `ecommerce.payment` p on p.id = o.payment_id
where
(order_date between '2022-01-01' and '2022-12-31')
and is_valid = 1
group by 1
order by 2 desc
limit 5
```

# Additional: Data for gift and promo

- List Customer ID and Regis Date customer Check out but no transaction in 2022

Customer ID	Regis Date
C246762L	2022-05-08
C848774L	2021-11-07
C693415L	2022-04-12
C180595L	2022-04-22
C587425L	2022-03-22
C612225L	2022-04-24
C315164L	2021-11-05
C904928L	2022-05-18
C317777L	2021-12-06
C353808L	2022-05-09
C257393L	2021-11-09
C261226L	2022-05-17
C318081L	2022-06-17

List lengkap data customer ID dan Regis Date

[bit.ly/CustID\\_RegisDate2022](http://bit.ly/CustID_RegisDate2022)

- Top 5 Product from Mobiles and Tablets 2022 for gift

Nama Product	QTY 2022
IDROID_BALRX7-Gold	1000
IDROID_BALRX7-Jet black	31
Infinix Hot 4-Gold	15
samsung_Grand Prime Plus-Black	11
infinix_Zero 4-Grey	10

# Additional: Data for gift and promo

- Top 5 Product from Mobiles and Tablets 2022 for gift

```
1 data1 = pd.DataFrame(  
2  
3     df[(df['is_valid']==1) &\n4         (df['category']=='Mobiles & Tablets') &\n5         ((df['order_date'] >= '2022-01-01') & (df['order_date'] <= '2022-12-31'))]\n6         .groupby(by=["sku_name"])["qty_ordered"]\n7         .sum()\n8         .sort_values(ascending=False)\n9         .head(5)\n10        .reset_index(name='qty_2022')\n11    )  
12  
13  
14  
15  
16  
17  
18  
19 data1
```

	sku_name	qty_2022
0	IDROID_BALRX7-Gold	1000
1	IDROID_BALRX7-Jet black	31
2	Infinix Hot 4-Gold	15
3	samsung_Grand Prime Plus-Black	11
4	infinix_Zero 4-Grey	10

- List Customer ID and Regis Date customer Check out but no transaction in 2022

```
1 1 datas = df[\n2     (df['is_gross']==1) &\n3         (df['is_valid']==0) &\n4         (df['is_net']==0) &\n5         ((df['order_date'] >= '2022-01-01') & (df['order_date'] <= '2022-12-31'))]\n6  
[ ] 1 data9 = datas[['customer_id','registered_date']]  
2 data9  
  
customer_id registered_date  
9 C246762L 2022-05-08  
18 C848774L 2021-11-07  
19 C693415L 2022-04-12  
21 C180595L 2022-04-22  
22 C587425L 2022-03-22  
... ...  
5856 C394076L 2021-10-12  
5859 C248585L 2022-07-10  
5865 C471304L 2022-05-13  
5881 C265450L 2022-02-17  
5883 C676393L 2021-07-27  
1052 rows x 2 columns
```



**THANK  
YOU**