Uncovering User Behaviour Patterns Through User Transaction Analysis

Understanding Dataset

Familiarize Yourself with the Dataset

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Cards

Pentingnya memahami data transaksi adalah inti dari pemahaman pola perilaku pembelian pengguna. Bagian ini mengeksplorasi setiap aktivitas transaksi yang dilakukan, termasuk jumlah yang dibelanjakan, waktu transaksi, lokasi merchant, dan detail penting lainnya.

Melalui pendalaman data kartu, dapat diidentifikasi variabel-variabel kunci seperti jumlah kartu yang dimiliki, keberadaan fitur chip, dan status masa berlaku kartu.

```
#   Column                 Non-Null Count  Dtype
--  ------                 --------------  -----
0   id                     6146 non-null   int64
1   client_id              6146 non-null   int64
2   card_brand             6146 non-null   object
3   card_type              6146 non-null   object
4   card_number            6146 non-null   int64
5   expires                6146 non-null   object
6   cvv                    6146 non-null   int64
7   has_chip               6146 non-null   object
8   num_cards_issued       6146 non-null   int64
9   credit_limit           6146 non-null   object
10  acct_open_date         6146 non-null   object
11  year_pin_last_changed  6146 non-null   int64
12  card_on_dark_web       6146 non-null   object
```

Struktur Data Dataset Cards

id	client_id	card_brand	card_type	card_number	expires	cvv	has_chip	num_cards_issued	credit_limit	acct_open_date	year_pin_las	card_on_dark_wet
4,524	825	Visa	Debit	4,344,676,511,950,444	12/2022	623	YES	2	24,295	09/2002	2,008	No
2,731	825	Visa	Debit	4,956,965,974,959,986	12/2020	393	YES	2	21,968	04/2014	2,014	No
3,701	825	Visa	Debit	4,582,313,478,255,491	02/2024	719	YES	2	46,414	07/2003	2,004	No
42	825	Visa	Credit	4,879,494,103,069,057	08/2024	693	NO	1	12,400	01/2003	2,012	No
4,659	825	Mastercard	Debit (Prepaid)	5,722,874,738,736,011	03/2009	75	YES	1	28	09/2008	2,009	No

Isi Data pada Dataset Cards

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Transactions

Data transaksi adalah inti dari pemahaman pola perilaku pembelian pengguna dalam bertransaksi. Bagian ini mengeksplorasi setiap aktivitas transaksi yang dilakukan, termasuk jumlah yang dibelanjakan, waktu transaksi, lokasi merchant, dan detail penting lainnya.

Pemahaman komprehensif ini mendukung pengambilan keputusan strategis dalam pemasaran, manajemen risiko, dan peningkatan layanan pelanggan.

```
#   Column          Non-Null Count     Dtype
---  ------          --------------     -----
0   id              1159966 non-null   int64
1   date            1159966 non-null   object
2   client_id       1159966 non-null   int64
3   card_id         1159966 non-null   int64
4   amount          1159966 non-null   object
5   use_chip        1159966 non-null   object
6   merchant_id     1159966 non-null   int64
7   merchant_city   1159966 non-null   object
8   merchant_state  1018895 non-null   object
9   zip             1009034 non-null   float64
10  mcc             1159966 non-null   int64
11  errors          18654 non-null     object
12  year            1159966 non-null   int64
```

Struktur Data Dataset Transactions

id	date	client_id	card_id	amount	use_chip	merchant_id	merchant_city	merchant_state	zip	mcc	errors	year
22,562,801	2019-02-20 06:02:00	847	5,107	100	Chip Transaction	27,092	Billings	OK	74,630	4,829	[NULL]	2,019
22,562,802	2019-02-20 06:02:00	1,008	2,325	47.17	Chip Transaction	32,175	Chicago	IL	60,630	7,538	[NULL]	2,019
22,562,803	2019-02-20 06:02:00	1,105	4,119	25.78	Chip Transaction	22,204	Mission	TX	78,572	5,541	[NULL]	2,019
22,562,804	2019-02-20 06:03:00	795	5,162	23.95	Chip Transaction	20,519	Dallas	TX	75,216	5,942	[NULL]	2,019
22,562,805	2019-02-20 06:03:00	1,247	2,065	9.95	Swipe Transaction	75,936	Bakersfield	CA	93,308	5,814	[NULL]	2,019

Isi Data pada Dataset Transactions

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Users

Data pengguna (Users) adalah komponen fundamental dalam membangun pemahaman holistik tentang perilaku konsumen. Bagian ini membahas berbagai atribut demografi dan finansial pengguna, seperti usia, jenis kelamin, alamat, pendapatan, batas kredit, dan jumlah kartu kredit yang dimiliki.

Eksplorasi dataset pengguna memungkinkan kita untuk mengidentifikasi korelasi antara karakteristik demografi (misalnya, usia, jenis kelamin, lokasi) dengan perilaku transaksi.

```
#   Column             Non-Null Count  Dtype
---  ------             --------------  -----
0   id                 2000 non-null   int64
1   current_age        2000 non-null   int64
2   retirement_age     2000 non-null   int64
3   birth_year         2000 non-null   int64
4   birth_month        2000 non-null   int64
5   gender             2000 non-null   object
6   address            2000 non-null   object
7   latitude           2000 non-null   float64
8   longitude          2000 non-null   float64
9   per_capita_income  2000 non-null   object
10  yearly_income      2000 non-null   object
11  total_debt         2000 non-null   object
12  credit_score       2000 non-null   int64
13  num_credit_cards   2000 non-null   int64
```

Struktur Data Dataset Transactions

id	curr	reti	birtl	bi	gender	address	latitude	longitude	per_capita_income	yearly_income	total_de	credit_score	num_credit_cards
825	53	66	1,966	11	Female	462 Rose Lane	34.15	-117.76	29,278	59,696	127,613	787	5
1,746	53	68	1,966	12	Female	3606 Federal Boulevard	40.76	-73.74	37,891	77,254	191,349	701	5
1,718	81	67	1,938	11	Female	766 Third Drive	34.02	-117.89	22,681	33,483	196	698	5
708	63	63	1,957	1	Female	3 Madison Street	40.71	-73.99	163,145	249,925	202,328	722	4
1,164	43	70	1,976	9	Male	9620 Valley Stream Drive	37.76	-122.44	53,797	109,687	183,855	675	1

Isi Data pada Dataset Transactions

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Exploring and Analyzing Dataset

Discover Knowledge Inside Data Visualization

Learn More

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Explore with SQL Query

Bagian ini didedikasikan untuk mempraktikkan eksplorasi data menggunakan SQL (Structured Query Language). Dengan SQL, kita dapat secara langsung berinteraksi dengan dataset yang tersedia, mengekstrak wawasan, menghitung metrik penting, dan mengidentifikasi pola tersembunyi. Ini adalah alat fundamental bagi setiap analis data untuk memahami struktur, kualitas, dan narasi yang terkandung dalam data.

Setiap query dirancang untuk memberikan pemahaman yang lebih dalam tentang dataset dan cara mengolahnya.

Uncovering User Behaviour Patterns Through User Transaction Analysis

```sql
SELECT gender, count(id) AS total_users
FROM users_data ud
GROUP BY by gender
ORDER BY total_users DESC;
```

Jumlah User Berdasarkan Gender

gender	total_users
Female	1,016
Male	984

```sql
SELECT card_brand, count(id) AS total_cards
FROM cards_data cd
GROUP BY by card_brand
ORDER BY total_cards DESC;
```

Jumlah Card Berdasarkan Brand

card_brand	total_card
Mastercard	3,209
Visa	2,326
Amex	402
Discover	209

```sql
SELECT card_type, count(id) AS total_cards
FROM cards_data cd
GROUP BY by card_type
ORDER BY total_cards DESC;
```

Jumlah Card Berdasarkan Type

card_type	total_card
Debit	3,511
Credit	2,057
Debit (Prepaid)	578

```sql
SELECT use_chip, count(id) AS total_transactions
FROM transactions_data_2019 td
GROUP BY by use_chip
ORDER BY total_transactions DESC;
```

Total Transaksi Berdasarkan Guna Chip

use_chip	total_transactions
Chip Transaction	823,180
Swipe Transaction	196,799
Online Transaction	139,987

Uncovering User Behaviour Patterns Through User Transaction Analysis

```sql
SELECT count(1) AS total_transactions
FROM transaction_data_2019 td;
```

Total Transaksi

total_transactions
1,159,966

```sql
SELECT count(distinct merchant_city) AS
total_transactions FROM transaction_data_2019 td;
```

Total Merchant

total_merchant
7,123

```sql
SELECT round(avg(ud.current_age)) AS average_age
FROM users_data ud
RIGHT JOIN transaction_data_2019 td
ON ud.id = td.client_id ;
```

Rerata Umur User

average_age
54

```sql
SELECT round(avg(ud.num_credit_cards))
AS average_num_cc_users FROM users_data ud
RIGHT JOIN transaction_data_2019 td
ON ud.id = td.client_id ;
```

Rerata Banyak Credit Card User

average_num_cc_users
4

```sql
SELECT avg(ud.total_debt) AS
average_total_debt_users FROM users_data ud
RIGHT JOIN transaction_data_2019 td
ON ud.id = td.client_id ;
```

Rerata Total Utang User

average_total_debt_users
58,416.5392252876

Uncovering User Behaviour Patterns Through User Transaction Analysis

```sql
SELECT sum(amount) AS sum_of_amount_user
FROM transaction_data_2019 td;
```

Total Amount Transaksi

sum_of_amount_user
49,475,055.31

```sql
SELECT avg(ud.yearly_income) AS
average_yearly_income_users FROM users_data ud
RIGHT JOIN transaction_data_2019 td
ON ud.id = td.client_id ;
```

Rerata Income Pertahun User

average_yearly_income_users
46,763.7376293788

```sql
SELECT merchant_city, count(id) AS total_transactions
FROM transaction_data_2019 td GROUP BY merchant_city
ORDER BY total_transactions DESC LIMIT 5;
```

Top 5 Merchant dengan Transaksi Terbanyak

merchant_city	total_transactions
ONLINE	141,071
Houston	12,324
Brooklyn	7,342
Miami	7,298
Los Angeles	6,759

```sql
SELECT td.errors, count(id) AS total_transactions
FROM transaction_data_2019 td WHERE errprs is not null
GROUP BY errors
ORDER BY total_transactions DESC LIMIT 3;
```

List Transaksi Error yang dilakukan User

errors	total_transactions
Insufficient Balance	11,558
Bad PIN	2,800
Technical Glitch	2,333
Bad Card Number	701

```sql
SELECT date(date) AS transaction_days, count(id) AS
total_transactions, sum(amount) AS total_amount
FROM transaction_data_2019 GROUP BY transaction_days
ORDER BY transactions_days ASC LIMIT 3;
```

Trend Total Transaction dan Total Amount

transaction_days	total_transactions	total_amount
2019-01-01	4,139	142,163.05
2019-01-02	3,379	165,321.96
2019-01-03	3,825	157,387.87

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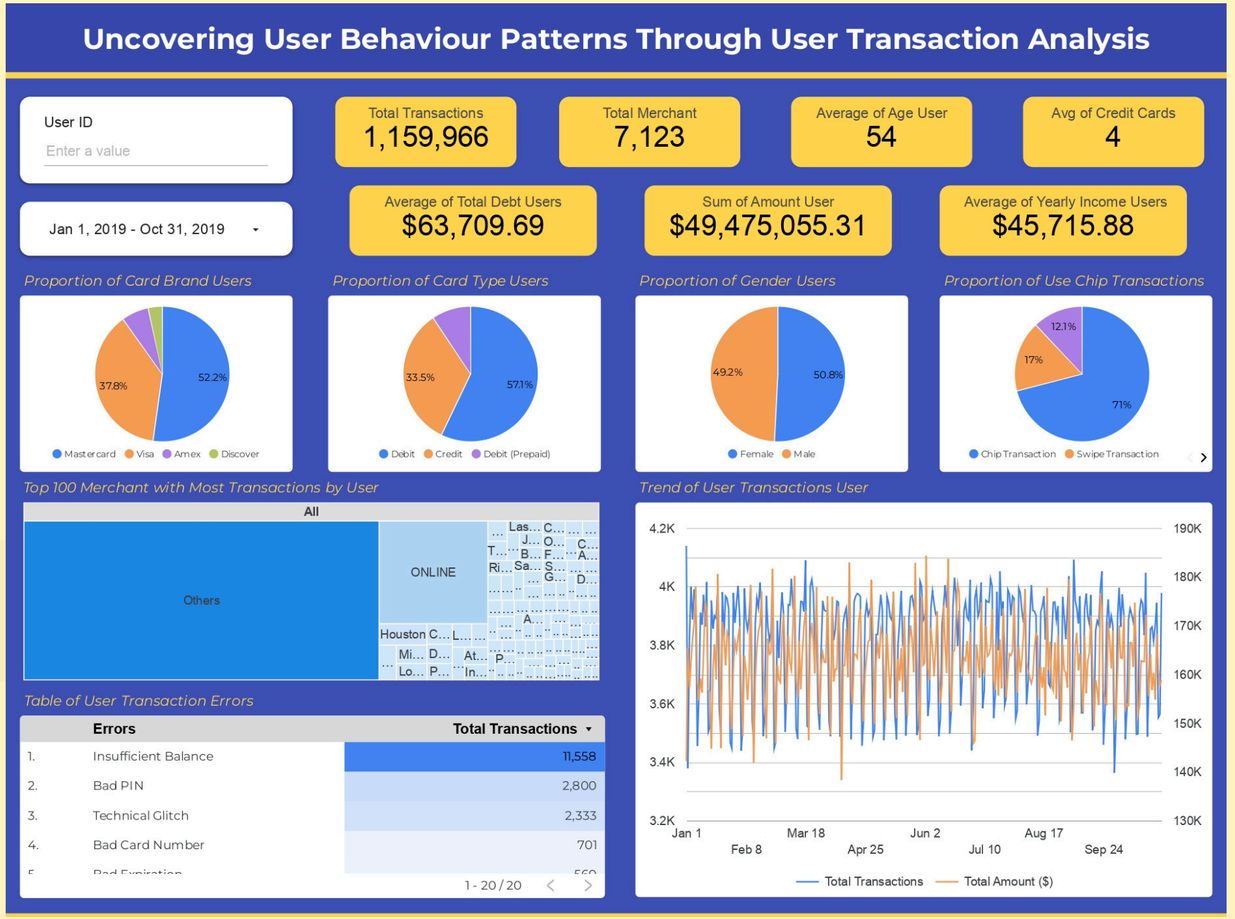
Dashboard Analysis

Bagian Dashboard Analysis ini bertujuan untuk menyajikan rangkuman visual dari seluruh temuan dan wawasan yang telah diperoleh dari analisis data pengguna, kartu, dan transaksi. Ini adalah puncak dari eksplorasi data, di mana data kompleks disarikan menjadi indikator kinerja utama (KPI) yang mudah dipahami dan divisualisasikan.

Untuk Analisis yang lebih mudah dipahami, berikut ini merupakan link dashboardnya.

[Dashboard User Transactions Analysis]



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Thank You

Let's work together!

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