



Analyzing eCommerce Business Performance with SQL

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Fadillah Akbar

Data Scientist

Data scientist with a strong mathematical foundation and problem-solving abilities.

Experienced in building projects in data mining, data processing, business performance analysis, data visualization, and predictive modeling across multiple industries. Motivated to use data science to improve business impact through analytics, statistics, and machine learning.





Business Overview

"To track, monitor, and evaluate the success or failure of various business operations, it is crucial for an organization to measure business performance. In order to measure business success for an eCommerce company, this article will take into account a number of business variables, including client growth, product quality, and payment method."

Table of Content

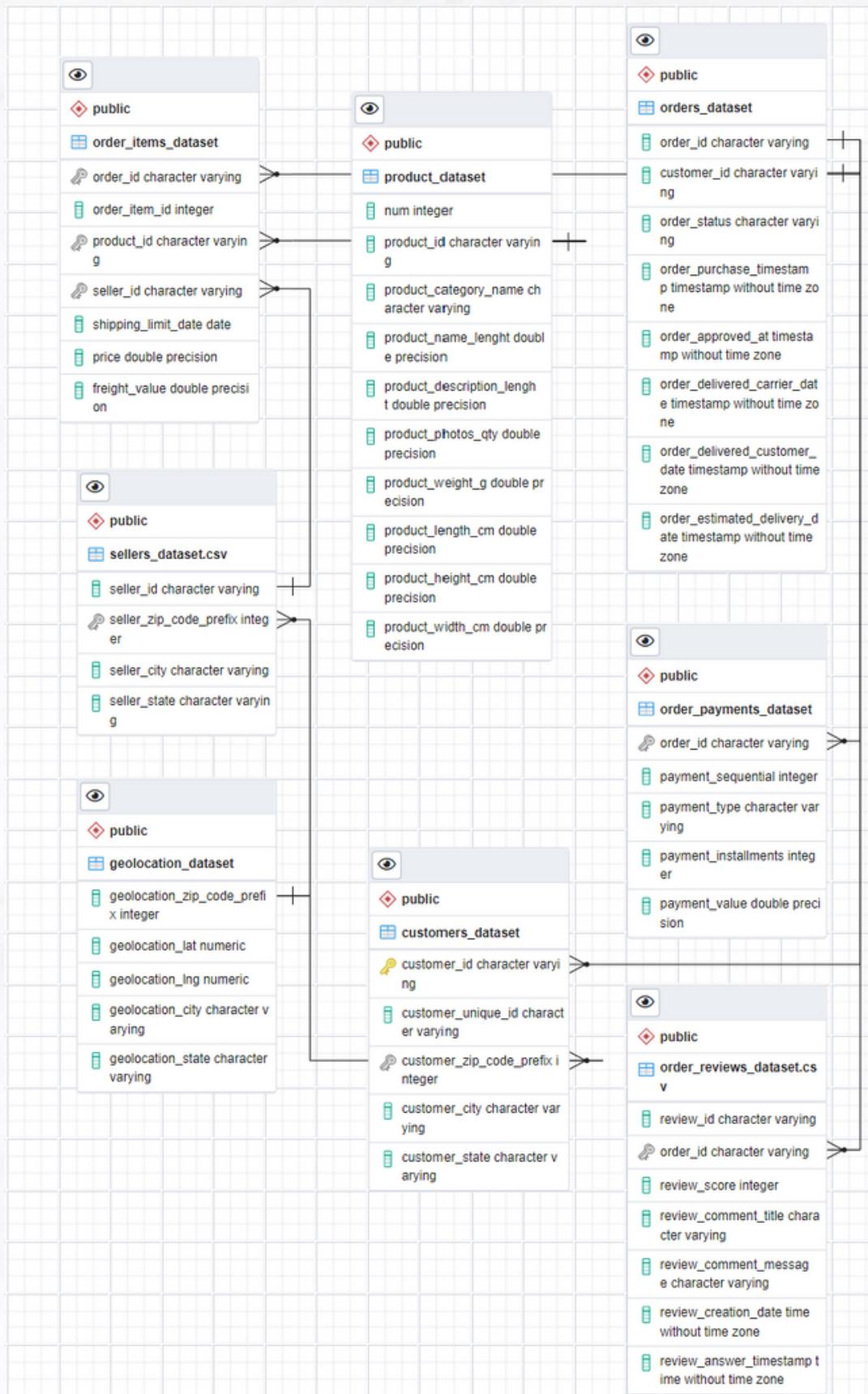
- 1 Data Preparation
- 2 Annual Customer Activity Growth Analysis
- 3 Annual Product Category Quality Analysis
- 4 Annual Payment Type Usage Analysis



Data Preparation

Prepare raw data into structured data and ready to be processed. Insert data in csv format into database tables and create entity relationships between the tables.

Data Preparation



1 Setup a workspace

Using the CREATE statement, create databases and tables while considering the data type of each column.

2 Data Importing

using the COPY statement to import data in the CSV file format into the recently built database.

3 Entity Relationship Diagram

Add primary and foreign keys to the data using ALTER statements for each table, after which export the Entity Relationship Diagram (ERD) as a visual representation.



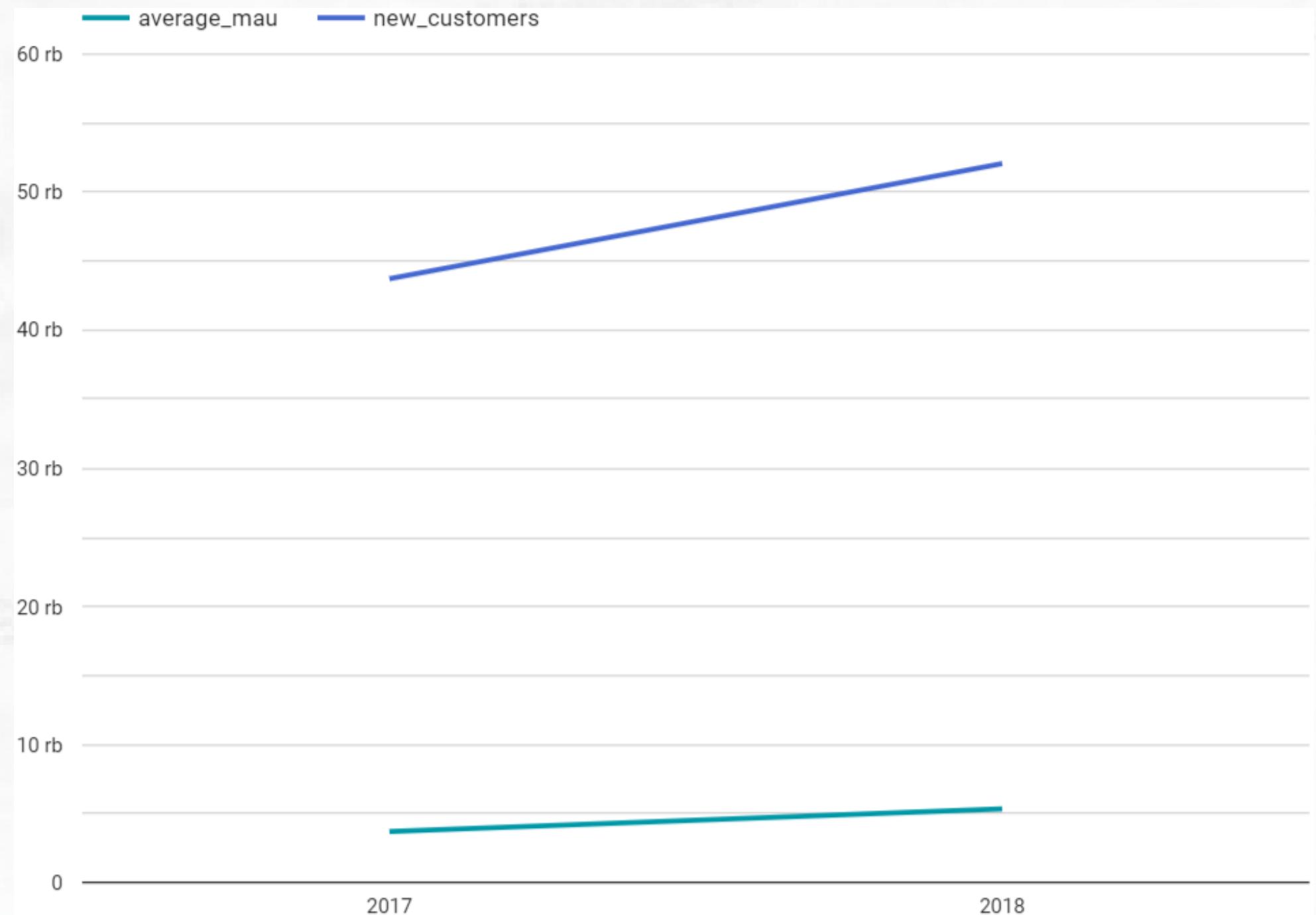
Annual Customer Activity Growth Analysis

Analyze several metrics related to customer activity such as the number of active customers, the number of new customers, the number of customers who make repeat orders and also the average transactions made by customers each year.

Number of Monthly Active User and New Customers

year	average_mau	new_customers
2016	108.67	326
2017	3694.83	43708
2018	5338.20	52062

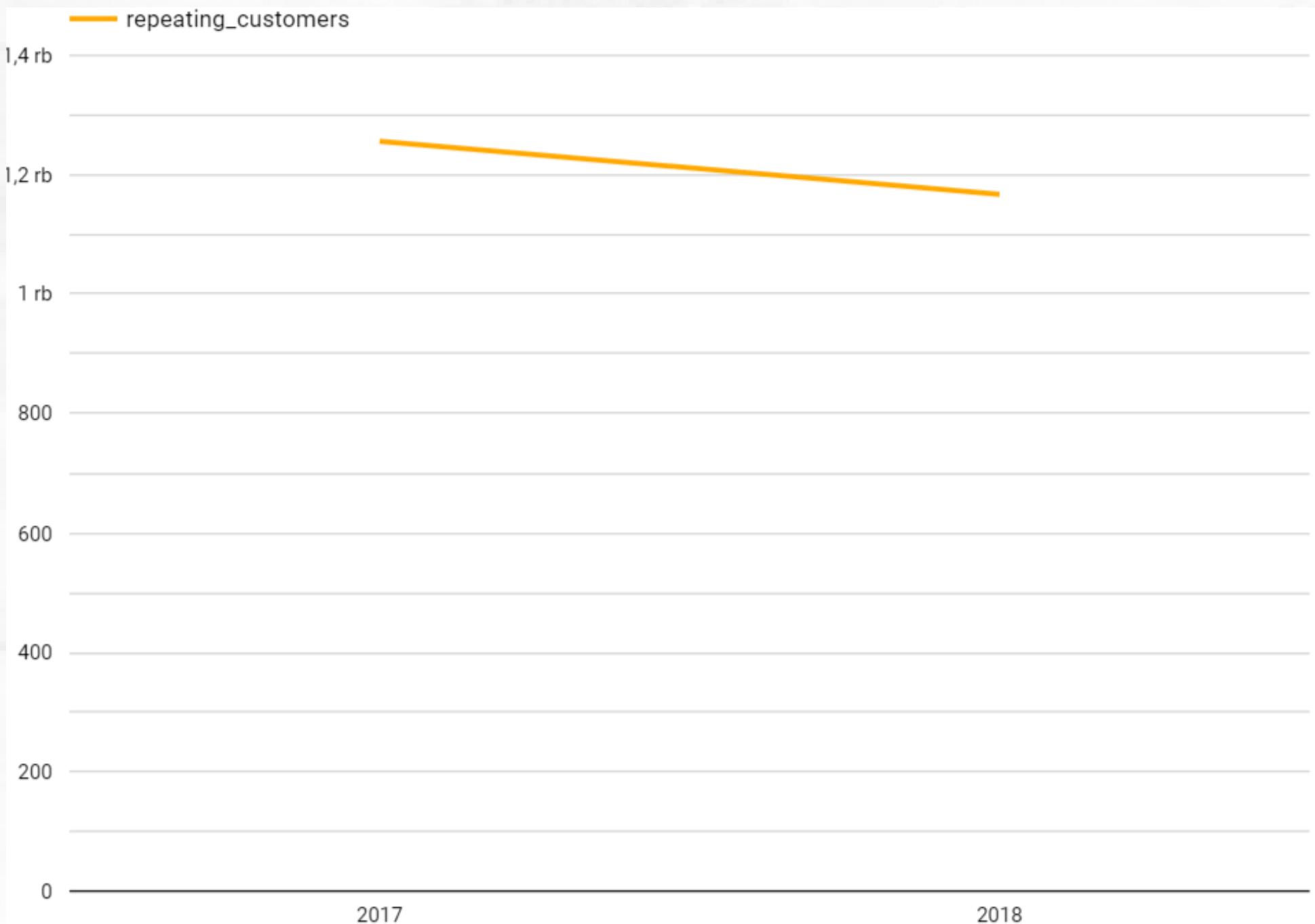
The analysis results in 2016 have a significant difference compared to the values in 2017 and 2018, as the available data begins with the transaction data in September 2016. This research shows that both the number of new customers and monthly customer activity (MAU) have increased.



Number of Customers who Repeat Ordered

	year	repeating_customers
	double precision	bigint
1	2016	3
2	2017	1256
3	2018	1167

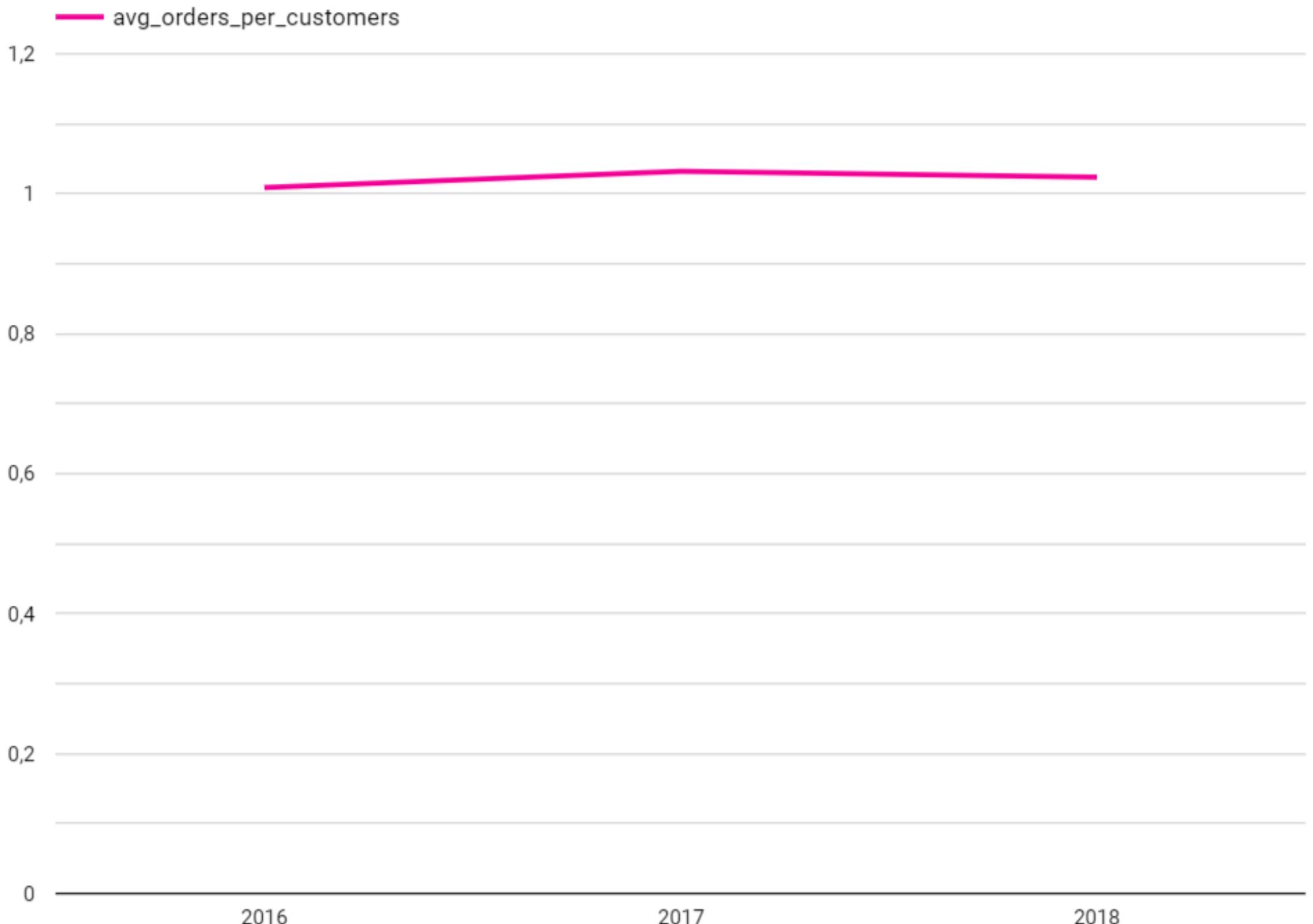
On the other side, it does not appear particularly well in terms of customer orders. It is evident that the majority of the customers only made one order in a given year. Even the proportion of loyal customers fell from 2017 to 2018.



Average Order Quantity per Customer

	year	avg_orders_per_customers
	double precision	numeric
1	2016	1.009
2	2017	1.032
3	2018	1.024

Then in terms of the average number of orders made by customers, it looks stagnant from 2016 to 2018. However, the actual average number of orders made by customers in 2017 to 2018 has decreased although not too significant.





Annual Product Category Quality Analysis

Analyzing the performance quality of each product category in eCommerce and how it relates to the company's revenue can help us make better business development decisions.

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Top Product Category by Revenue per Year

2016



2017



2018



Category Product

Furniture
Decor

Bed Bath
Table

Health
Beauty



Revenue

\$ 46,653.74

\$ 6,921,535.23

\$ 8,451,584.76

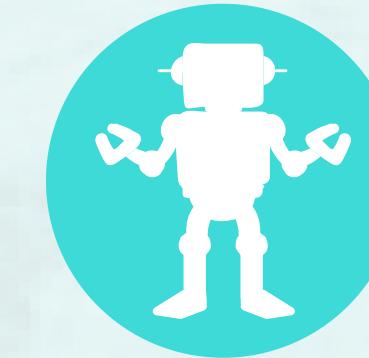
Insight

This data shows that the product category that generates the greatest income varies annually.
The company as a whole has seen annual increases in sales.

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Most Canceled Product Category

2016



2017



2018



Category Product

Toys

Sport Leisure

Health Beauty



Canceled

26

265

334

Insight

This data reveals that different product categories have consumer order cancellations at different times of the year. Every year has seen an increase in the quantity of orders that customers as a whole have canceled.

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Top Product by Revenue



Furniture Decor

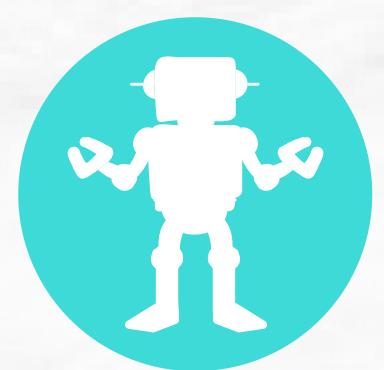


Bed Bath Table



Health Beauty

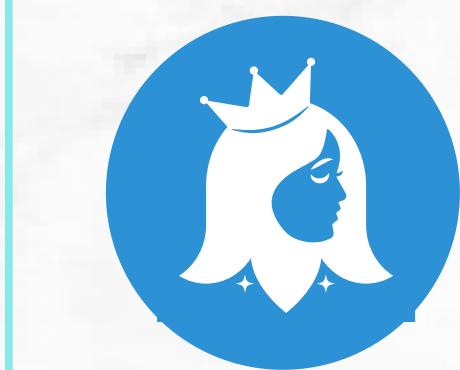
Most Canceled Product



Toys



Sport Leisure



Health Beauty

Product Category Analysis

The health and beauty product category is both the one that generates the greatest income and the one that saw the most cancellations in 2018. This is an intriguing point to make.

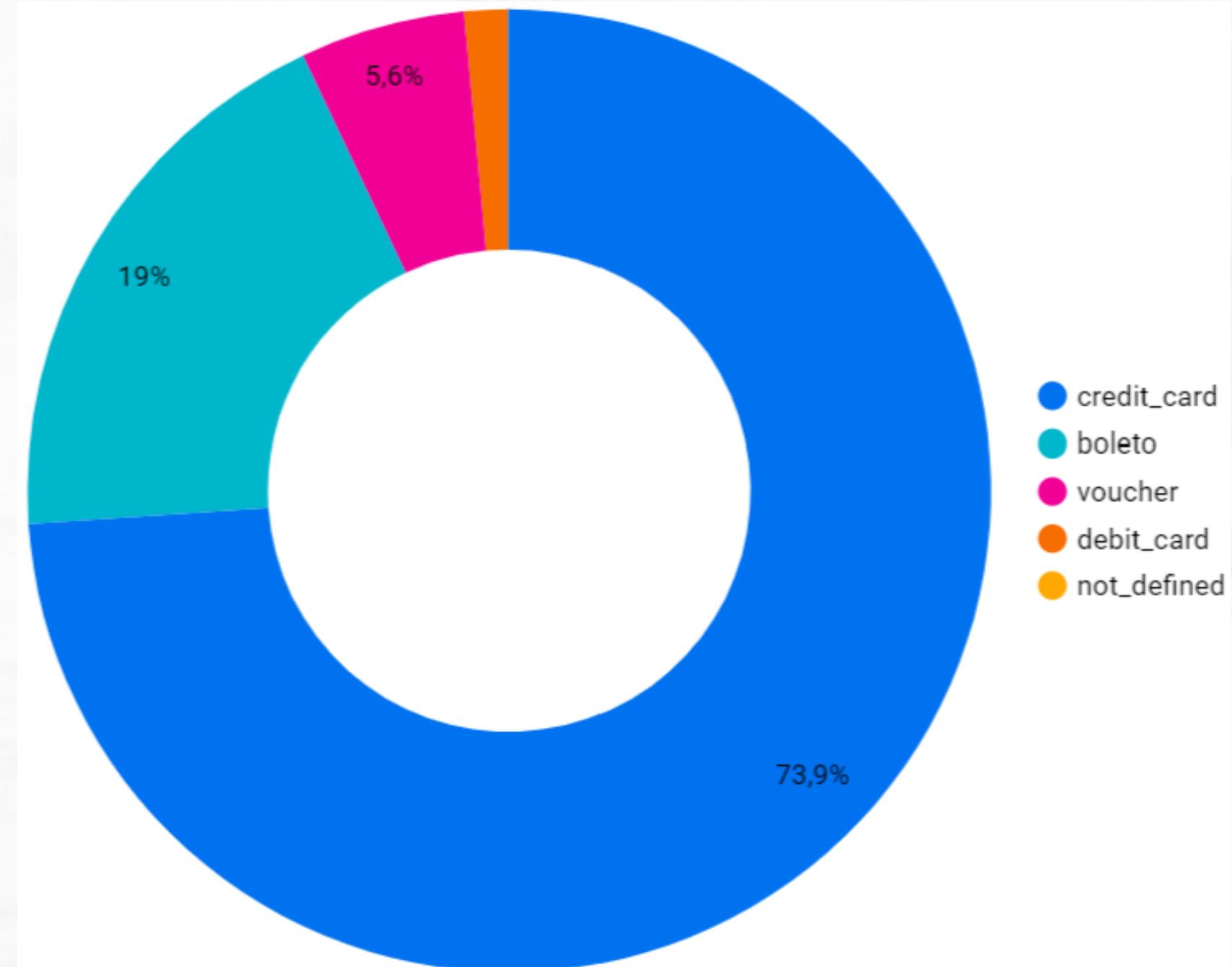
This may occur since health & beauty products currently account for the majority of all transactions in 2018. To corroborate this, additional analysis might be performed.



Annual Payment Type Usage Analysis

See and analyze the type of payment that is the favorite of customers all the time and also analyze changes in trends that occur from year to year.

All Time Favorite Payment Analysis



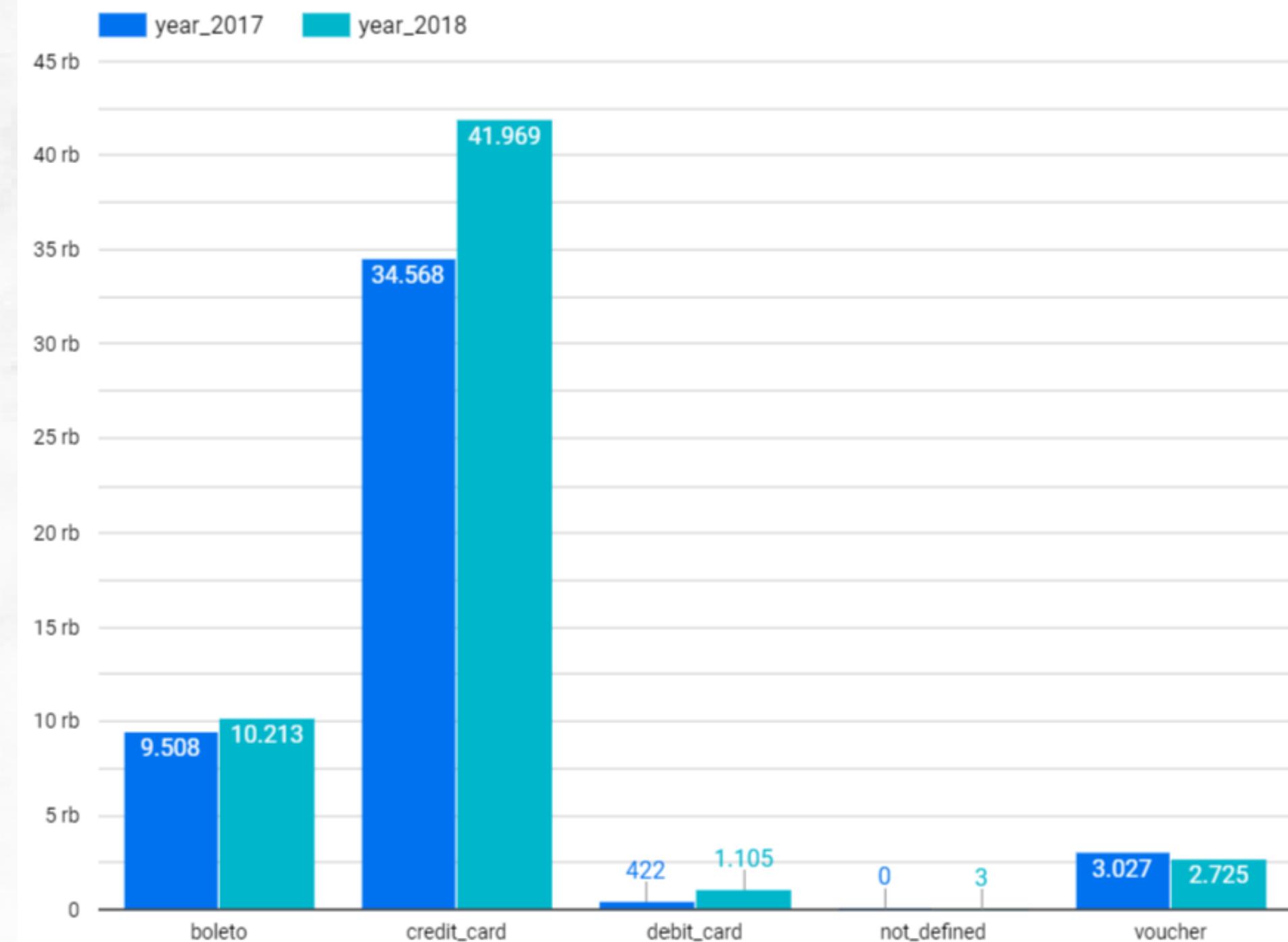
According to the analysis of each payment method used by customers, credit cards are the most popular choice. From 2016 to 2018, more than 70% of customers used credit cards as a means of payment.

This allows companies to conduct deeper monitoring of consumers' credit card usage patterns, including the length of tenor chosen, popular product categories, etc.

Annual Payment Trend Analysis

Another interesting point to be addressed is the significant increase in debit card usage, which is larger than 100% from 2017 to 2018. On the other side, fewer people used vouchers between 2017 and 2018.

This might be the result of agreements with particular debit cards or campaigns, as well as a decrease in the usage of coupons as promotional tools. By confirming this data with other departments, such Marketing or Business Development, more analysis can be done.





thank you!

The full query can be seen [here](#)