FINANCIAL KPI ANALYSIS FOR A STARTUP

BY: VAISHALI DEVI

OBJECTIVE

The objective of this project is to analyze the financial performance of an early-stage startup using key business metrics, understand customer acquisition trends, and evaluate profitability through both visual dashboards and cohort analysis.

KEY GOALS:

- Track monthly revenue growth
- Evaluate CAC, LTV, and Burn rate
- Analyze LTV:CAC ratio
- Understand customer retention patterns through cohort analysis

DATASET OVERVIEW

We worked on a monthly dataset of a startup covering the period from January 2021 to December 2023.

Main Columns:

- Date, New Customers, Marketing Spend, Avg Income
- Derived Metrics: Monthly Revenue, CAC, Burn Rate, LTV, LTV:CAC

This data was prepared and calculated using Excel

KPI CALCULATIONS IN EXCEL

The following financial KPIS were calculated using excel
- Monthly Revenue = New Customers * Average Income
- CAC = Marketing Spend/ New Customers
- Burn Rate = Marketing Spend – Monthly Revenue
- LTV:CAC Ratio = LTV / CAC

	Month	New customer	Marketing spend	CAC	Avg Income	LTV (Lifetime value)	DATE FIELD	Calculated	Monthly revenue	Burn rate
2	Apr-2021	39	5000	128.2051282	30,000	15000	4/1/2021	117	1170000	-1165000
3	Apr-2022	54	4500	83.33333333	31,000	15500	4/1/2022	186	1674000	-1669500
4	Apr-2023	52	6000	115.3846154	28,000	14000	4/1/2023	121.333333	1456000	-1450000
5	Aug-2021	64	5500	85.9375	29,000	14500	8/1/2021	168.727273	1856000	-1850500
6	Aug-2022	69	4800	69.56521739	30,000	15000	8/1/2022	215.625	2070000	-2065200
7	Aug-2023	51	6500	127.4509804	32,000	16000	8/1/2023	125.538462	1632000	-1625500
8	Dec-2021	45	5800	128.8888889	35,000	17500	12/1/2021	135.775862	1575000	-1569200
9	Dec-2022	40	5400	135	28,000	14000	12/1/2022	103.703704	1120000	-1114600
10	Dec-2023	58	4400	75.86206897	30,000	15000	12/1/2023	197.727273	1740000	-1735600
11	Feb-2021	54	7000	129.6296296	29,000	14500	2/1/2021	111.857143	1566000	-1559000
12	Feb-2022	57	6200	108.7719298	32,000	16000	2/1/2022	147.096774	1824000	-1817800
13	Feb-2023	56	5200	92.85714286	34,000	17000	2/1/2023	183.076923	1904000	-1898800
14	Jan-2021	68	4200	61.76470588	28,000	14000	1/1/2021	226.666667	1904000	-1899800
15	Jan-2022	55	4700	85.45454545	30,000	15000	1/1/2022	175.531915	1650000	-1645300
16	Jan-2023	73	4300	58.90410959	32,000	16000	1/1/2023	271.627907	2336000	-2331700
17	Jul-2021	63	4100	65.07936508	35,000	17500	7/1/2021	268.902439	2205000	-2200900
18	Jul-2022	55	5100	92.72727273	28,000	14000	7/1/2022	150.980392	1540000	-1534900
19	Jul-2023	53	6900	130.1886792	30,000	15000	7/1/2023	115.217391	1590000	-1583100
20	Jun-2021	55	6800	123.6363636	29,000	14500	6/1/2021	117.279412	1595000	-1588200
21	Jun-2022	46	5200	113.0434783	32,000	16000	6/1/2022	141.538462	1472000	-1466800
22	Jun-2023	57	4800	84.21052632	35,000	17500	6/1/2023	207.8125	1995000	-1990200
23	Mar-2021	53	4500	84.90566038	34,000	17000	3/1/2021	200.222222	1802000	-1797500
24	Mar-2022	54	5200	96.2962963	28,000	14000	3/1/2022	145.384615	1512000	-1506800
25	Mar-2023	55	6300	114.5454545	30,000	15000	3/1/2023	130.952381	1650000	-1643700
26	May-2021	59	4700	79.66101695	32,000	16000	5/1/2021	200.851064	1888000	-1883300
27	May-2022	56	4100	73.21428571	31,000	15500	5/1/2022	211.707317	1736000	-1731900
28	May-2023	60	5100	85	29,000	14500	5/1/2023	170.588235	1740000	-1734900
29	Nov-2021	61	5000	81.96721311	30,000	15000	11/1/2021	183	1830000	-1825000
30	Nov-2022	50	6700	134	31,000	15500	11/1/2022	115.671642	1550000	-1543300

TABLEAU DASHBOARD

An interactive Tableau Dashboard was created with the following visualizations:

- **CAC vs LTV**: A combo chart (bar + line) showing monthly comparison
- **New Customers Trends**: Line graph showing acquisition volatility over time

These visuals helped track trends, spikes and dips in customer acquisition and marketing effectiveness.
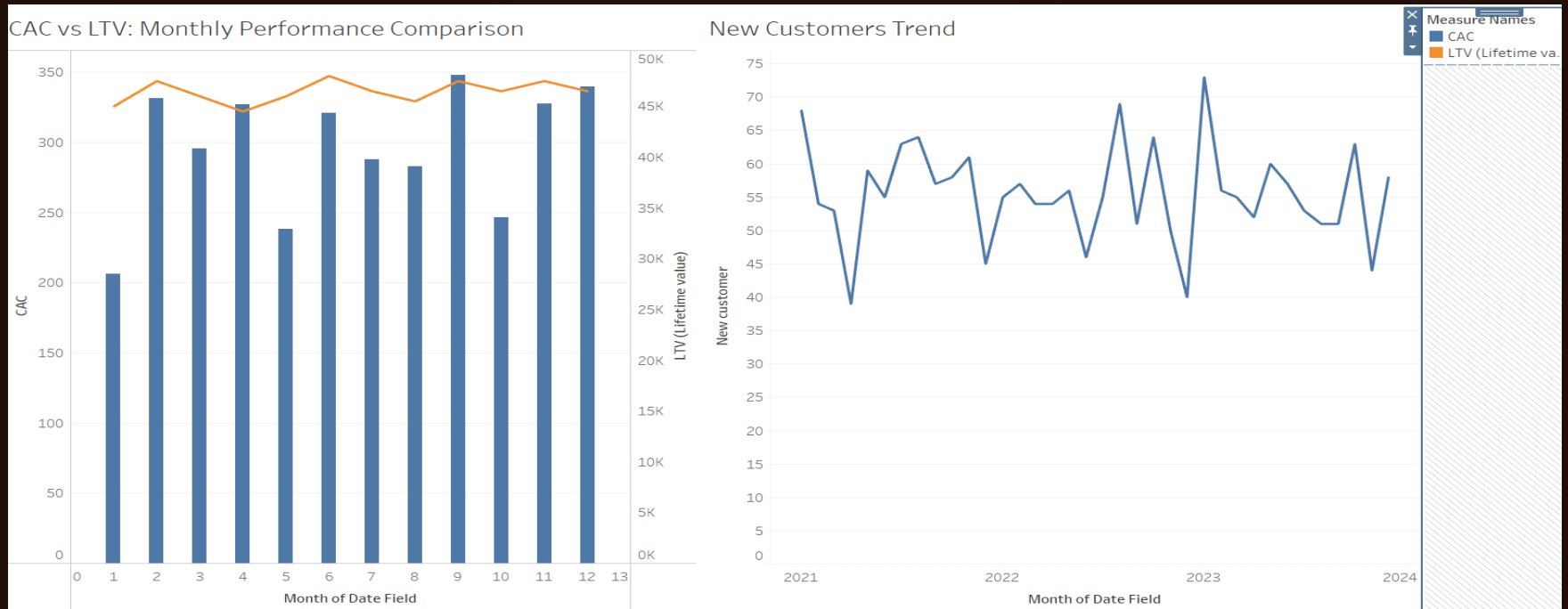
COHORT ANALYSIS IN PYTHON

Using Python (Pandas + Seaborn), cohort analysis was performed to evaluate **monthly customer groups** and their **revenue behavior over time**.

STEPS:

- Created CohortMonth from signup dates
- Calculated CustomerAge in months
- Built a heatmap of revenue across cohorts

This provided insights on customer value retention and marketing impact

Cohort Analysis: Revenue by Customer Age
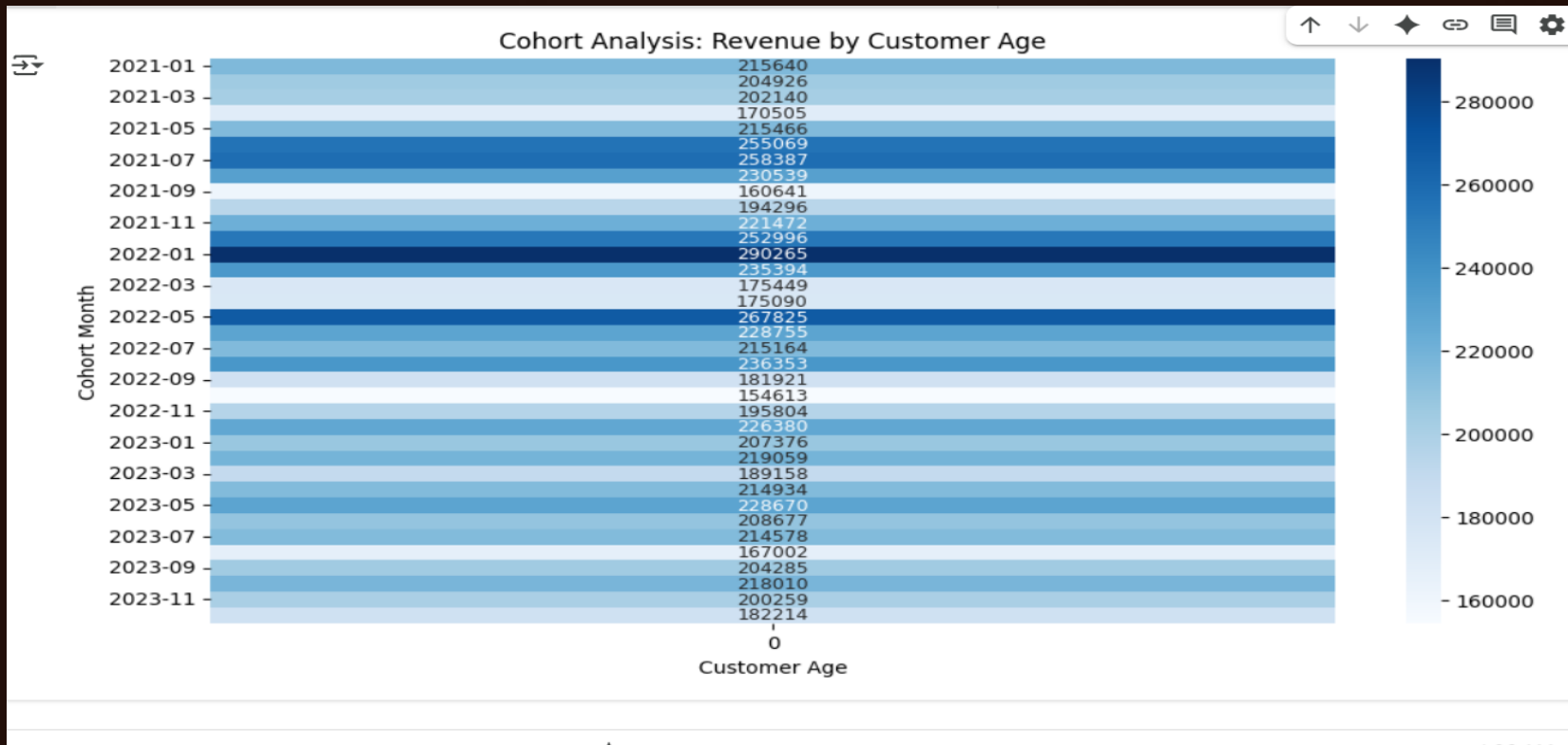
KEY INSIGHTS

- **LTV remained higher than CAC** in most months – indicating profitability

- Some months Like **March-2022 and July- 2023** had better retention and higher revenue

- A few months showed **high CAC** a**nd low revenue** – need optimization

- Burn Rate was negative in most months – a positive signal for sustainability

- Cohort heatmap showed that **early cohorts** like Jan 2021 and mid-2022 performed better over time

TOOLS AND SKILLS USED

This project showcased practical data analysis using:

- **Excel**– for Financial KPI calculation
- **Tableau** – for building dashboards
- **Python** – for cohort analysis and heatmap creation

Skills Applied:

- Data Cleaning
- KPI Modeling
- Dashboard Building
- Cohort Analysis
- Data Visualization

CONCLUSION

This analysis highlighted strong financial performance and customer value
Trends for the startup.
With LTV > CTC and low burn rate, the startup appears to be scaling efficiently.
Further optimization can be done in months with higher CAC and low retention.