

EXPLORATORY DATA ANALYSIS

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OVERVIEW:

The exploratory data analysis (EDA) of Dabi loans at BRAC assesses various performance parameters, including Total Income, Total Interest Expenses, Operating Expenses at Branch and Head Offices, Capital Investments, and Loan Portfolio metrics. Dabi loans specifically target low-income women, facilitating business investments and consumption stability. Concurrently, Progoti loans are designed to stimulate employment and local economies, particularly benefiting small businesses. Leveraging Python tools, this EDA investigates the financial performance, borrower outcomes, and broader societal impacts of both loan programs. Through data analysis and visualization, the study aims to gauge their contributions to economic empowerment, poverty alleviation, and community development, reflecting BRAC's commitment to sustainable social impact.

We were provided with BRAC performance data in Excel format for various years.

Dabi Loans: 2005-2013

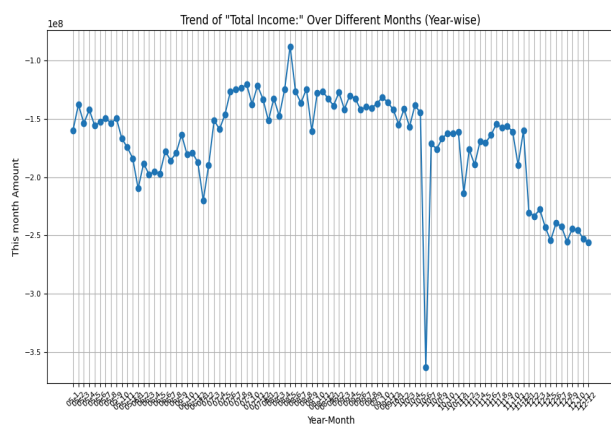
Progoti Loans: 2008, 2009, 2014

Snapshot of the example of the type of data:

	Region Name	Area Name	Branch code	Branch Name	Accounts Code	Head of Accounts	This month Amount	Cumulative Amount	Product Type	Year	Month	Date
0	B.Baria-1	Akhaura	803.0	Akhaura	1501555.0	1.1 Interest Income on Loan	-182302	-182302	consumer	2005	1	2005-01-31
1	B.Baria-1	Akhaura	803.0	Akhaura	1501592.0	1.3 Gain due to early repayment	-30316	-30316	consumer	2005	1	2005-01-31
2	B.Baria-1	Akhaura	803.0	Akhaura	NaN	Total Income:	-212618	-212618	consumer	2005	1	2005-01-31
3	B.Baria-1	Akhaura	803.0	Akhaura	1502215.0	2.1 Int. Prov. on Gr. Savings & Dep.	29394	29394	consumer	2005	1	2005-01-31
4	B.Baria-1	Akhaura	803.0	Akhaura	1502225.0	2.2 Interest on BRAC loan	51663	51663	consumer	2005	1	2005-01-31
...
6291355	Hobigonj	Madhabpur	7162.0	Madhabpur Bazar	1509551.0	A.2 Principal Disbursement	2102000	22476250	consumer	2012	12	2012-12-31
6291356	Hobigonj	Madhabpur	7162.0	Madhabpur Bazar	1509553.0	A.3 Principal Realised	-1832789	-21735118	consumer	2012	12	2012-12-31
6291357	Hobigonj	Madhabpur	7162.0	Madhabpur Bazar	NaN	Total Principal Outstanding	1103266	14660762	consumer	2012	12	2012-12-31
6291358	Hobigonj	Madhabpur	7162.0	Madhabpur Bazar	1509429.0	A.5 Opening Interest Outstanding	15931	147599	consumer	2012	12	2012-12-31

DABI LOANS

Total Income:



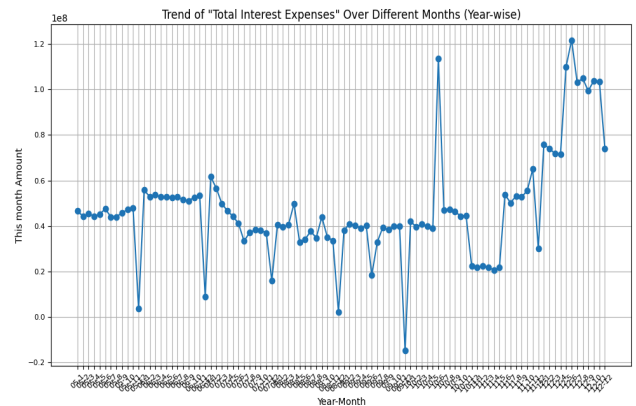
Yearly Decline: There is an observable overall decrease in Total Income from year to year, indicating a potential trend of declining revenue generation.

Minor Increase in 2008: Despite the general decline, there was a slight uptick in 2008, suggesting a temporary improvement or favorable economic conditions during that period.

Significant Dip in 2010: However, a notable and sudden drop in Total Income in 2010 stands out as an anomaly. This could be attributed to specific adverse events or strategic decisions affecting income streams during that year, warranting further investigation into its root causes and implications.

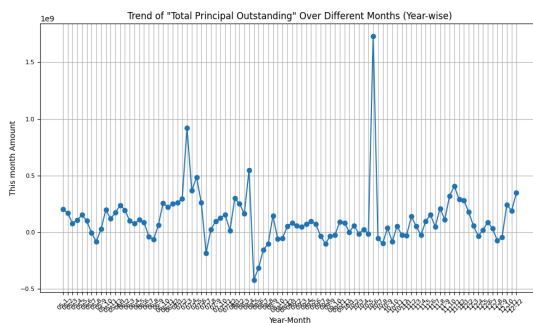
TOTAL INTEREST EXPENSES:

- **Yearly Trend:** Total Interest Expenses initially increased steadily, with a minor dip in 2007. However, starting from 2011, there was a significant acceleration in their rise.
- **Seasonal Variation:** There is a consistent pattern of a sharp decrease in Total Interest Expenses observed at the end of each year, suggesting possible seasonal adjustments or financial practices by Dabi Loans.
- **Anomaly in June 2010:** Expenses spiked abruptly in June 2010, possibly due to specific events or major financial decisions made during that period, necessitating further examination of its underlying causes.



The dip in Total Interest Expenses in 2007 and the subsequent increase from 2011 may reflect the impact of the global financial crisis. Central banks' accommodative policies, including interest rate cuts to stimulate growth, likely influenced these trends. The increase from 2011 could also indicate normalization or reversal of these policies as economies began to recover.

INTEREST PRINCIPAL OUTSTANDING

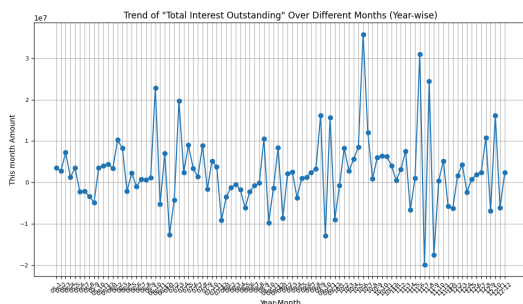


Economic Downturn:

The 2007-2008 global financial crisis impacted BRAC's lending activities, leading to fluctuations in total principal and interest outstanding due to decreased credit demand, higher default rates, and increased credit risk.

Seasonal or Cyclical Patterns:

Fluctuations in principal and interest outstanding may result from seasonal trends or economic cycles. Increased demand for credit during certain periods, and reduced borrowing during downturns or regulatory changes, can affect outstanding balances.



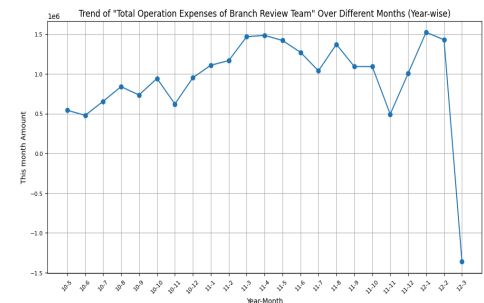
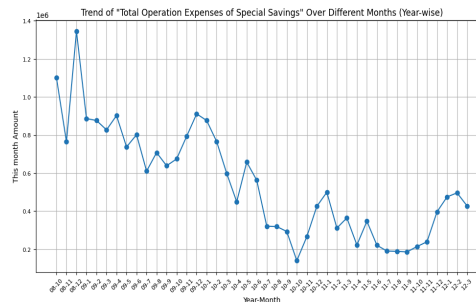
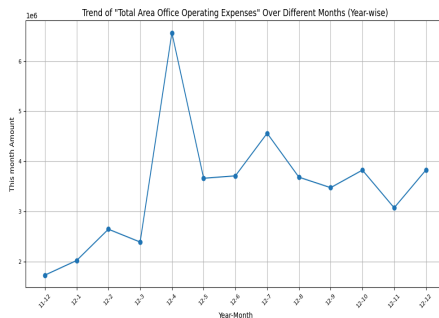
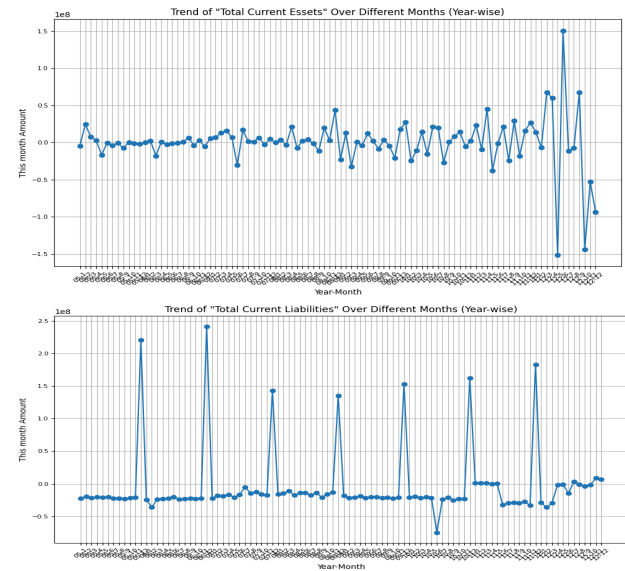
Data Anomalies or Errors:

Anomalies or errors in data reporting, especially in June 2010, could distort the observed trends in total principal and interest outstanding. This requires further investigation for data accuracy, with possible specific events or decisions also contributing to these anomalies.

Insights into BRAC's Financial and Operational Strategies:

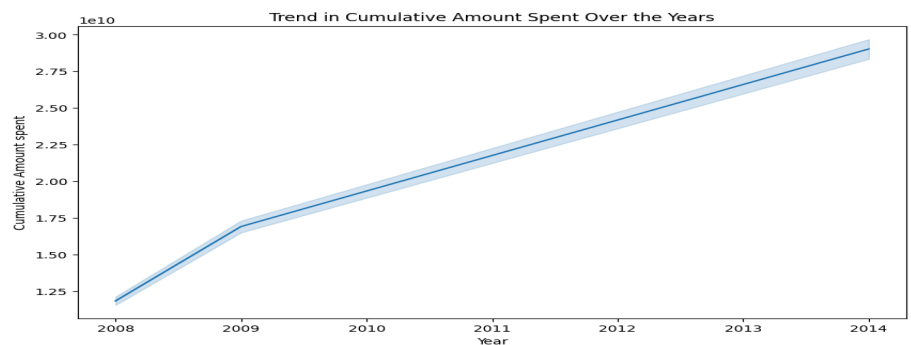
- **Strategic Cost Management:** The decreases in total capital investment (head office) and total operation expenses for special savings and the branch review team reflect BRAC's strategic cost management to optimize expenses and improve operational efficiency. Cost-cutting measures and resource reallocation may have been implemented to prioritize core activities and address inefficiencies.

- **Investment Priorities:** Changes in capital investment and operational expenses suggest shifts in BRAC's investment priorities and resource allocation. Funds may have been redirected from administrative functions to core operational areas or strategic initiatives with higher growth potential or social impact.
- **Asset and Liability Management:** Stable total current assets from 2005-2008 indicate a strong financial position, with fluctuations from 2008-2012 reflecting changes in asset composition or financial strategies. The stable current liabilities, with increases at year-end, suggest consistent management of short-term obligations and potential year-end adjustments to manage financial obligations.
- **Financial Management Strategies:** Fluctuations in total current assets highlight the importance of effective financial management. Decreases in assets relative to expenses may strain liquidity, while stability or increases suggest sufficient liquidity to support operations and investments.



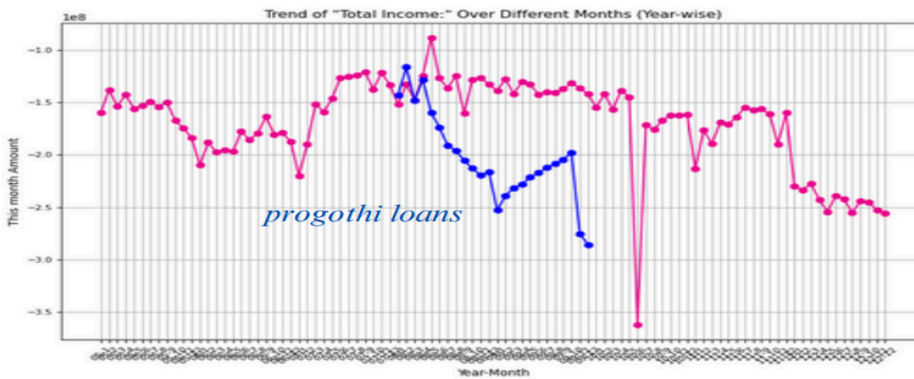
Cumulative amount spent over years

The cumulative amount spent over the years shows two distinct trends: a steep increase until 2009, followed by a gentler rise from 2009 to 2014. The steep slope initially indicates rapid expenditure growth, likely reflecting expansion efforts or increased investments. The gentler slope post-2009 suggests a shift to more controlled spending, possibly indicating strategic consolidation or efficiency improvements in BRAC's financial management.



PROGOTHI (COMMERCIAL LOANS) LOANS

Fluctuations in income from Dabi loans, reflecting personal borrowing, may indicate sensitivity to changes in individual financial circumstances, such as income levels, employment stability, and consumption patterns. Individuals may reduce discretionary spending and borrowing during economic uncertainty or downturns, leading to income volatility.



In contrast, the rapid increase in income from Pragati loans suggests a strong demand for commercial borrowing, potentially driven by economic expansion, infrastructure development projects, and business investments. This trend may align with the government's emphasis on fostering entrepreneurship, industrialization, and infrastructure development to spur economic growth.

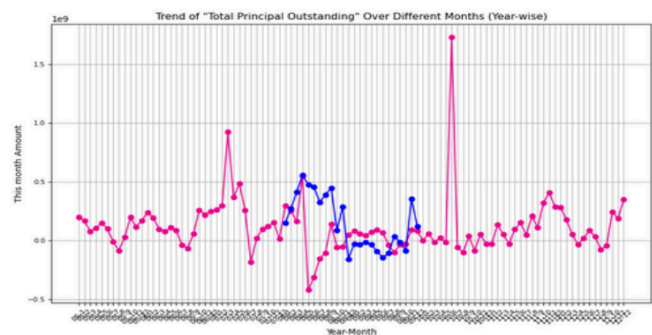
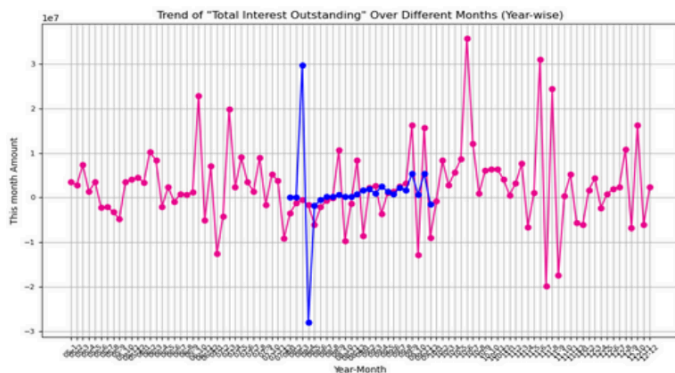
TOTAL PRINCIPAL AND INTEREST OUTSTANDING

The significant disparity in total principal outstanding between Progothi loans and Dabi loans in 2008 indicates a pronounced demand for commercial financing, possibly driven by large-scale infrastructure projects, industrial expansion, or business investments.

1. The subsequent decline in total principal outstanding for Progothi loans relative to Dabi loans from 2009 onwards may reflect shifts in economic priorities, changes in borrowing patterns, or adjustments in lending strategies by financial institutions.

2. The observed fluctuations and negative values in total principal outstanding for Progothi loans in the initial months of 2008 suggest heightened volatility and challenges in managing credit risk during that period. Economic uncertainties, market instabilities, or regulatory changes may have contributed to these fluctuations.

3. The subsequent stabilization and gradual increase in total principal outstanding for Progothi loans, with occasional dips at the end of 2009, may indicate efforts to address risk management concerns, enhance portfolio quality, and navigate evolving market conditions.



Some Monthly Distributions

