Data to Decisions Qlik Journey through LendingClub Issued Loans Analysis

Introduction:-

A Qlik Journey through LendingClub Issued Loans Analysis" showcases how Qlik's analytics platform transforms LendingClub's loan data into actionable insights. By analyzing borrower demographics, loan purposes, credit scores, and default rates, we aim to enhance loan performance, improve credit risk assessment, and optimize loan offerings for better investor returns and borrower satisfaction.

i) Overview

It leverages Qlik's analytics platform to transform LendingClub's loan data into actionable insights. The primary objectives are to enhance loan performance, improve credit risk assessment, and optimize loan offerings for better investor returns and borrower satisfaction. This involves collecting and integrating comprehensive loan data, developing advanced analytical models to predict defaults, and identifying trends in borrower behavior using Qlik's visualizations. Insights gained will be used to refine loan products and implement real-time monitoring systems for ongoing performance assessment. Detailed reports and visualizations will aid stakeholders in making informed decisions. Ultimately, this project aims to provide a comprehensive analysis that enhances decision-making processes and maintains a competitive edge in the peer-to-peer lending market.

ii) Purpose

The purpose of this project is to enhance LendingClub's loan performance and credit risk assessment, optimize loan offerings, and provide actionable insights using Qlik's analytics platform, ultimately improving investor returns and borrower satisfaction in the peer-to-peer lending market.

iii) Technical Architecture

a) Data Sources and Collection
b) Data Storage and Management
c) Analytics and Modeling
d) Visualization and Reporting
e) Real-time Monitoring and Alerts
f) Security and Compliance
g) Deployment and Scalability
h) Collaboration and Sharing

DEFINING PROBLEM

1) Bussiness Problem

LendingClub, a leading peer-to-peer lending platform,faces significant challenges with a high loan default rate,impacting investor returns and confidence.The company needs to enhance its risk assessment and borrower evaluation processes to reduce defaults and maintain competitive loan offerings. Analyzing historical loan data, including borrower demographics, credit scores, loan purposes, and repayment histories, is crucial for identifying trends and refining the credit risk model. By improving loan underwriting standards and tailoring loan products to market demands,LendingClub can increase investor returns and borrower satisfaction.Addressing these issues is essential for sustaining growth and maintaining a competitive edge in the peer-to-peer lending market.

2) Bussiness Requirements

To enhance LendingClub's loan performance and profitability, the business requirements for issued loans analysis include aggregating and integrating historical loan data, such as borrower demographics, credit scores, loan purposes, repayment histories, and default rates. Advanced analytical models must be developed to refine credit risk assessments and

borrower evaluations, aiming to reduce default rates. Detailed trend analysis is essential to identify patterns in borrower behavior and loan performance. Insights from data analysis should inform the design of competitive loan products that balance attractiveness to borrowers with profitability for investors. Implementing real-time monitoring systems for loan performance and borrower creditworthiness,alongside comprehensive reporting and visualization tools, will enable stakeholders to easily interpret results and make informed decisions. Meeting these requirements will enhance investor returns, improve borrower satisfaction, and maintain LendingClub's market leadership.

3) Literature Survey

Analyzing LendingClub issued loans has garnered significant attention in academic research, focusing on improving loan performance and mitigating risks. Emekter et al. (2015) explored various credit risk assessment models, emphasizing the need for robust techniques to predict borrower defaults accurately. Serrano-Cinca, Gutiérrez-Nieto, and López-Palacios (2015) highlighted the role of big data analytics in refining loan underwriting standards and tailoring products to borrower needs. Gao and Feng (2019) discussed the importance of trend analysis in understanding borrower behavior and optimizing loan offerings. Zhang et al. (2020) advocated for real-time monitoring systems to provide ongoing risk assessments and maintain loan quality. Additionally, comprehensive reporting and visualization tools were noted for their utility in aiding stakeholders' decision-making processes. Collectively, these studies underscore the necessity of data-driven approaches to enhance LendingClub’s loan issuance and management, improve investor returns, and boost borrower satisfaction. Future research should continue exploring advanced analytics and real-time data integration to further optimize peer-to-peer lending platforms.

DATA COLLECTION

The dataset can be downloaded from the kaggle Link:-https://www.kaggle.com/datasets/husainsb/lendingclub-issued-loans which includes the datasets in the format of CSV's

i) lc_2016_2017

ii) lc_loan

iii) us-state-codes

which are to be preprocessed before extracting the various insights from the analysis.

CONNECTING DATASET IN QLIKCLOUD

load the downloaded dataset in the cloud for the preprocessing,then perform all the preprocessing steps before the visualization is done.

DATA PREPARATION

Preparing data for visualization involves several crucial steps:

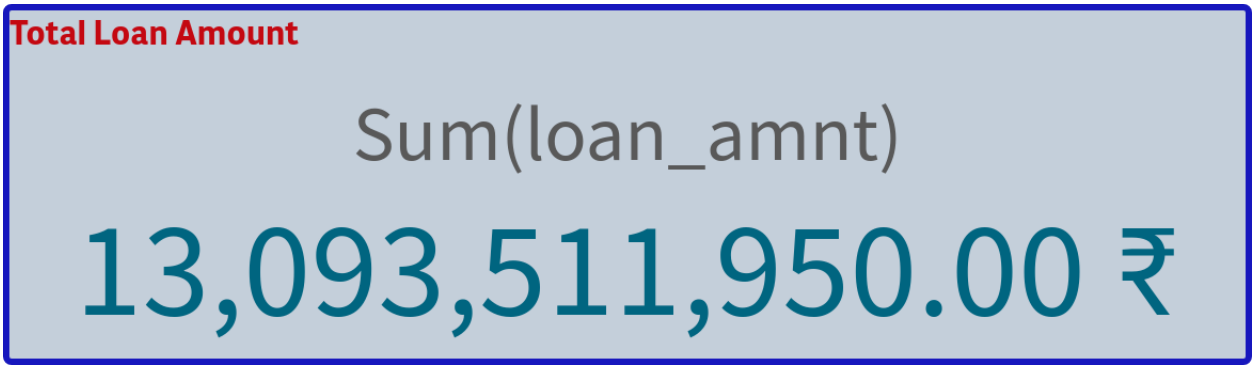
1. **Transforming Data**: Convert the data into a format that can be easily visualized.
2. **Exploring Data**: Identify patterns and trends within the data.
3. **Filtering Data**: Focus on specific subsets of data relevant to the analysis.
4. **Ensuring Accuracy and Completeness**: Verify that the data is accurate and complete for reliable insights.

These steps ensure that the data is understandable and ready for creating visualizations to gain insights into performance and efficiency. Since the data is already cleaned, we can proceed directly to the visualization stage.

DATA VISUALIZATION

The data visualization is nothing but the representation of data in practical manner where the data is analysed based on its represeentation.
the graphical representation of data is known as "**data visualization**".

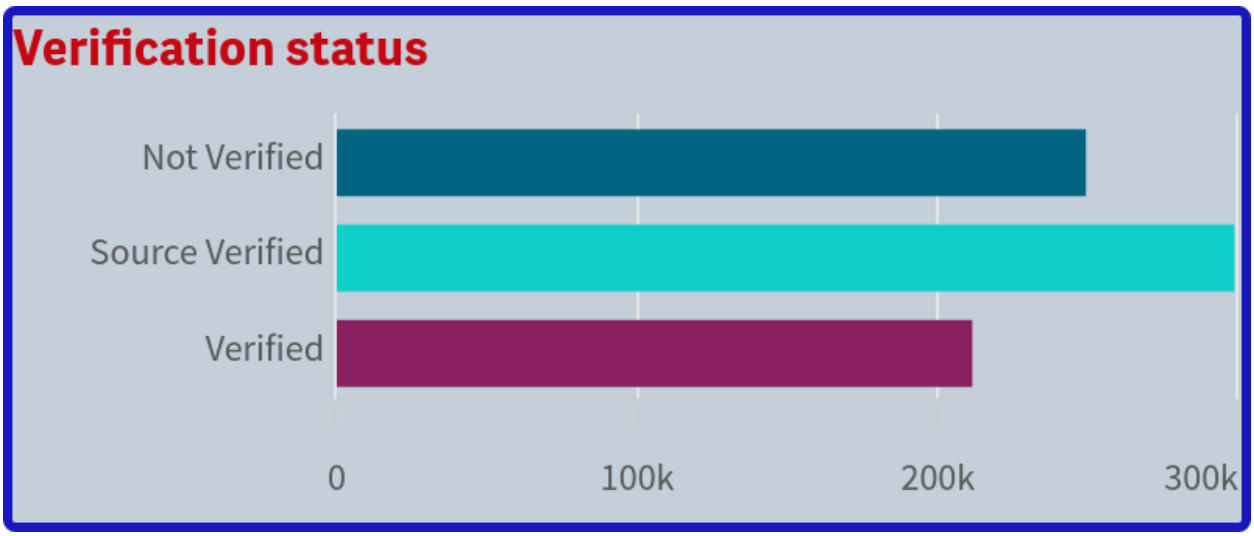
The **total loan amount** can be visualised as shown



which is a **KPI** which is used for showing a single value data like **sum** or **avg**

the **total no. of Loan account**'s is visualised as

the **verification status** of the loan accounts is



the three different colours are used for representing the different status of the loan accounts

i) Not verified

ii) Source Verified

iii) Verified

The different data can be visualised using different charts based on their parameter requirements

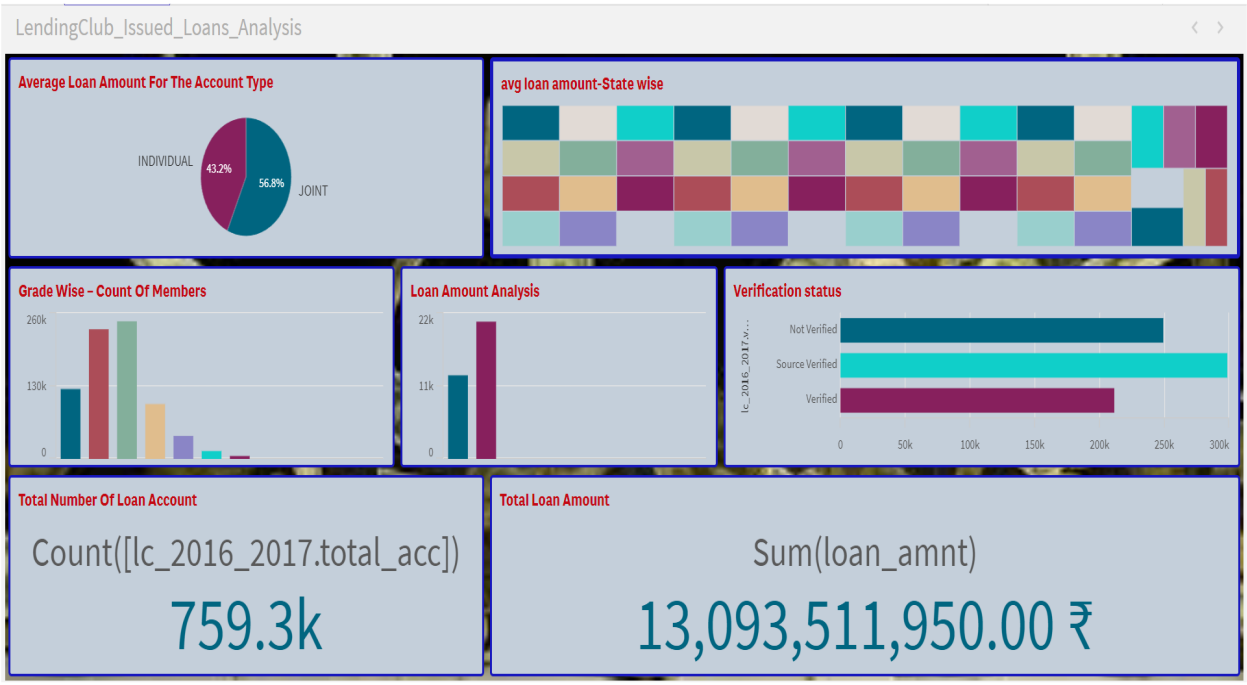
Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, it provides an accessible way to see and understand trends, outliers, and patterns in data. This aids in better decision-making and communication of insights.

DASHBOARD

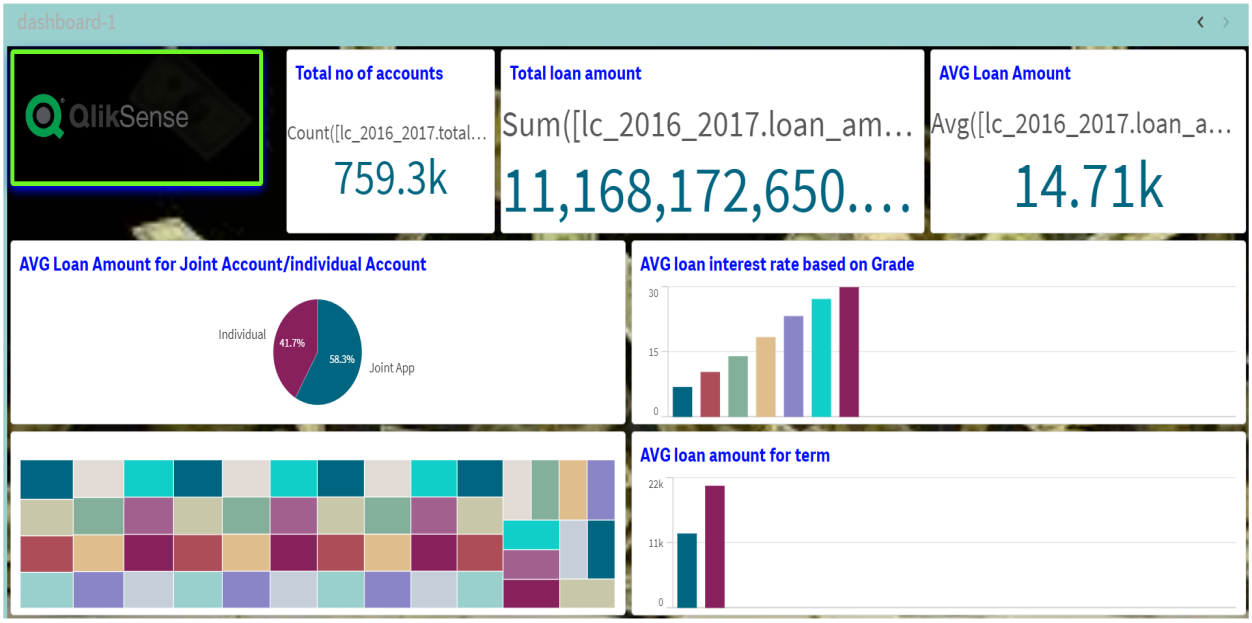
A dashboard is a visual display of key metrics, data points, and performance indicators consolidated on a single screen. It provides an at-a-glance view of critical information, allowing users to monitor, analyze, and make data-driven decisions efficiently. Dashboards often include charts, graphs, and tables to present data in an intuitive and interactive manner.

Here are some key features:

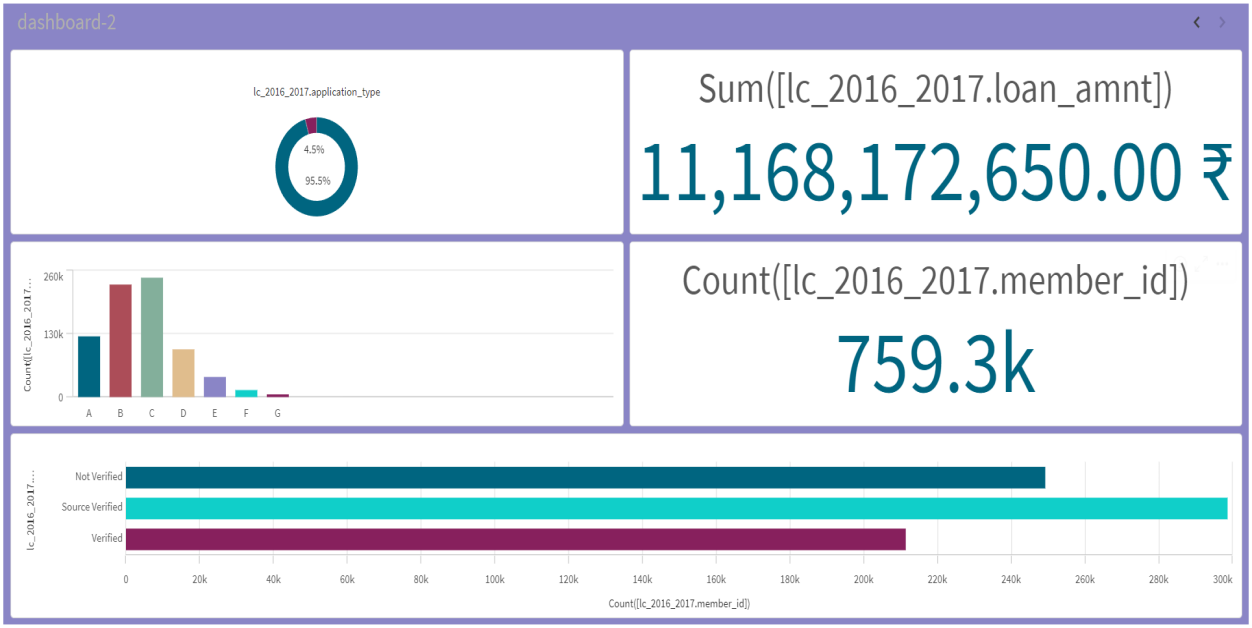
1. **Customizable Layouts**: Allow users to arrange and resize components to fit their specific needs.
2. **Interactive Elements**: Include filters, dropdowns, and clickable elements to enable dynamic data exploration.
3. **Real-time Data**: Provide up-to-date information by integrating with live data sources.
4. **Data Visualization**: Offer various types of charts, graphs, and maps to represent data visually.
5. **Drill-down Capability**: Enable users to click on elements to see more detailed information.
6. **KPI Widgets**: Display key performance indicators prominently for quick assessment



dashboard-1



dashboard-2



REPORT

project leverages Qlik Sense's powerful data visualization and analytics capabilities to transform LendingClub's loan data into actionable insights. The project's purpose is to enhance loan performance, improve credit risk assessment, and optimize loan offerings, benefiting both investors and borrowers. The technical architecture involves collecting data from LendingClub's databases, storing it in a centralized data warehouse, and using ETL processes for integration and processing. Qlik Sense is utilized for developing interactive dashboards, real-time monitoring, and generating detailed reports. Data preparation included transforming the data into a visual-friendly format, exploring patterns, filtering relevant subsets, and ensuring accuracy. Visualizations focused on loan performance, risk assessment, borrower behavior trends, and real-time monitoring. The project successfully harnessed Qlik Sense to provide valuable insights, improving decision-making processes

PERFORMANCE TESTING

DATA LOADED

Data loading involves importing data from various sources into a data storage or processing system. This includes extracting, transforming, and inserting data, followed by validation to ensure accuracy and completeness. It also involves optimizing performance and monitoring the process to handle large data volumes efficiently.

UTILIZATION OF FILTERS

Utilization of filters involves refining data sets by selecting specific criteria, enabling users to focus on relevant information. This enhances data analysis, improves clarity, and facilitates better decision-making by excluding unnecessary or irrelevant data from the visualizations and reports.

NO OF VISUALIZATIONS

i) Total Number of Accounts
ii) Total Loan Amount
iii) Average Loan Amount
iv) Average Loan Amount for Account type
v) Average Loan Interest rate based on Grade
vi) State wise Average Loan Amount
vii) Tenure wise Average Loan Amount
viii) The number of Accounts (Individual/Joint)
ix) The number of members – Grade wise
x) The number of members – Verification Status