

## CHAPTER – 1

### INTRODUCTION

The main objective of developing this project is to handle the all details of loans and investments in the bank the project has been developed to smooth and the processing of loans in bank our proposed project automatically on process from both bankers as well as customer's side customer care loan and after uploading it they can track details from online management systems a very efficient process to handle all loan related transition in a very accurate and convenient way. Bank loan management system is an interface which facilities a customer to apply for the loan online and to track the status from time to time the system provide the details about the customers their loan details EMI details and its rate details getting a loan is a very and complicated process in India. It may take weeks even month a loan to get approved and people have to visit the loan office again and again for document and verification using system so workload is reduced

It is very helpful for those banking staff who are in the charge of loan management provides a very label and convenient from very every loan and EMI little transaction and related details interested rates and the loan details are also available at the click of a mouse. Bank loan management stem is unique in such a way it not only helps the customers but also the loan agency to check the pending essay in 828 departments complete the formal dress and producers between the department and arrive at a decision to very fat system provides download option to download different type of loan form in MS word document it also generates a very customer friendly and understandable form the transaction information as a receiving from after it transaction.

which contains all the information related to next EMI dates remaining amount setup after registration customer can use the system easily and also customer can you any query about loan details as well as EMI details in their profile most of the bank out sources to loan agencies to reduce the burden and let the age of the information from customers and verified it is being forwarded to the actual bank for system provides good communication for the customer and Bank employee system provides facility to generate the reports very easily.

## 1.1 ARCHITECTURE

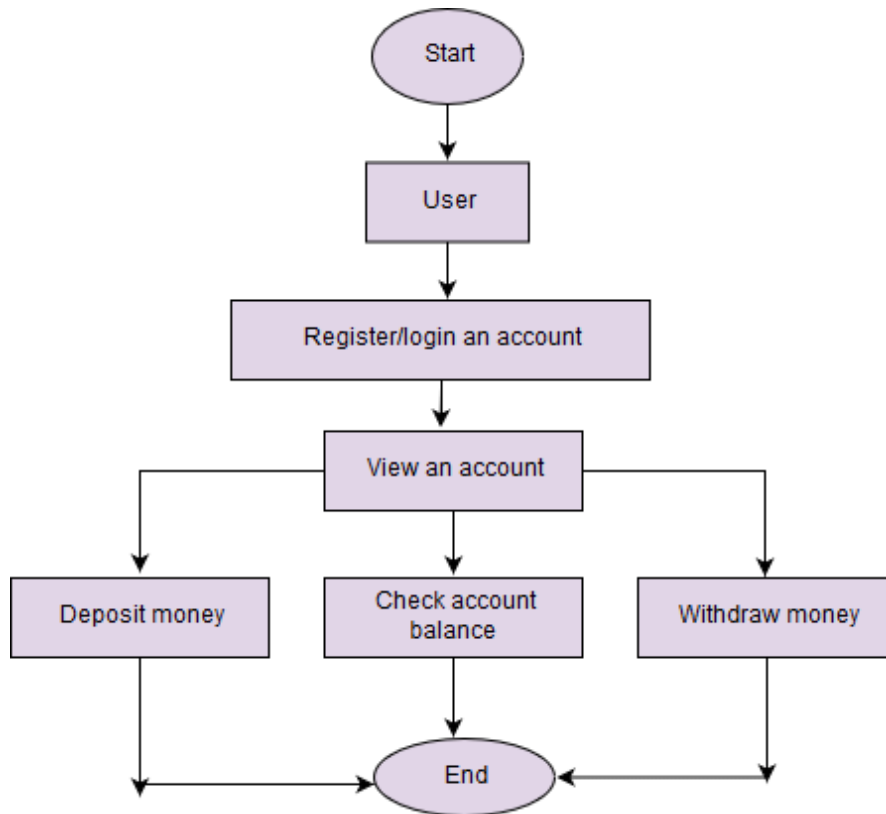


Figure 1.1 – Architecture

This banking system flowchart describes a straightforward, user-friendly process allowing a user to:

1. Access the system (via registration or login),
2. View their account,
3. Choose one of three actions (deposit, balance inquiry, withdrawal),
4. And then end the session.

## 1.2 POWER BI

Power BI is a business analytics tool developed by Microsoft that allows users to visualize and analyse data from various sources. It enables organizations to create interactive reports and dashboards to gain insights into their data and make informed decisions. Here are some key features and capabilities of Power BI.

### **i.Data Connectivity:**

Power BI can connect to a wide range of data sources, including databases, cloud services, Excel files, and web APIs. This flexibility allows users to access and analyse data from multiple sources within a single platform.

### **ii.Data Modeling:**

Users can create data models in Power BI by defining relationships between different data tables.

### **iii.Data Visualization:**

Power BI offers a variety of visualization options, such as charts, graphs, maps, and tables, to represent data in meaningful and interactive ways. Users can customize the appearance and formatting of visualizations to create compelling and easy-to-understand reports and dashboards.

### **iv.Interactive Dashboards:**

With Power BI, users can create interactive dashboards that allow stakeholders to explore data, drill down into details, and gain insights at a glance. Dashboards can include multiple visualizations and support filtering and interactivity for dynamic data exploration.

### **v.AI and Machine Learning Integration:**

Power BI incorporates artificial intelligence (AI) and machine learning capabilities to enhance data analysis. Users can leverage AI-powered features such as natural language queries, automated insights, and predictive analytics to uncover hidden patterns, trends, and actionable insights in their data.

### **vi.Collaboration and Sharing:**

Power BI enables collaboration among team members by allowing users to share reports and dashboards securely. Users can publish reports to the Power BI service or SharePoint Online, share them with specific individuals or groups, and control access permissions to ensure data security and compliance.

**vii. Mobile Accessibility:**

Power BI offers mobile apps for iOS, Android, and Windows devices, allowing users to access and interact with reports and dashboards on the go. The mobile apps provide responsive and optimized viewing experiences for mobile devices, enabling users to stay connected to their data anytime, anywhere.

Overall, Power BI empowers organizations to turn data into actionable insights, drive data-driven decision-making, and improve business performance across various domains such as finance, marketing, operations, and more.

**1.3 Features of power bi:**

- Artificial intelligence users can access AI-powered image recognition and text analytics in power bi.
- Hybrid deployment support
- Quick insights
- Common data model support
- Customization
- APIs for integration
- Self-service data preparation
- Model view

**1.4 Services of power bi:**

- Creating reports and dashboards documentation
- Collaborates, share, and integrate across products documentation
- Get power bi samples
- Use report themes
- Add conditional table formatting
- Ways to share your work
- Organize work in the new workspaces
- Publish to web

## CHAPTER – II

### DEFINE PROBLEM

A problem can be broadly defined as a situation or issue that needs to be addressed or resolved. In the context of problem-solving and decision-making, a problem refers to a discrepancy between the current state and the desired state, where the desired state represents a goal or objective that one wants to achieve.

Problem understanding, on the other hand, refers to the process of comprehending and gaining insight into the nature, causes, and implications of a problem. It involves analyzing the problem, identifying relevant factors, gathering information, and clarifying the underlying issues or challenges.

In the context of bank loan finance statistics, a problem might involve analyzing data related to loan performance, default rates, risk assessment, interest rates, or any other aspect of lending and financial management. Problem understanding in this context would entail grasping the specific financial metrics, trends, and patterns that are relevant to the problem at hand and using that understanding to make informed decisions or recommendations.

The business problem in the context of bank loan finance statistics could be multifaceted, but let's narrow it down to a specific example:

#### **i. Business Problem:**

High Default Rates in Small Business Loans

#### **ii. Background:**

A bank specializes in offering small business loans to entrepreneurs and startups. However, the bank has noticed an alarming trend of high default rates among its small business loan portfolio. This trend is causing financial losses for the bank and impacting its overall profitability and risk management.

#### **iii. Specific Issues:**

**Default Rate Analysis:** The bank needs to analyse the default rates across different types of small business loans (e.g., term loans, lines of credit) to identify which loan products are experiencing the highest default rates.

**iv. Risk Factors:**

Determine the key risk factors contributing to high default rates. This could include factors such as the borrower's credit score, business industry, loan amount, repayment terms, economic conditions, etc.

**v. Credit Assessment:**

Evaluate the effectiveness of the bank's current credit assessment process in accurately predicting borrower default risk. Identify any shortcomings or areas for improvement in the credit underwriting process.

**vi. Loan Performance Metrics:**

Analyse loan performance metrics such as delinquency rates, recovery rates on defaulted loans, and the overall impact on the bank's financial health.

**vii. Mitigation Strategies:**

Develop and implement strategies to mitigate default risk, such as improving credit risk modeling, revising loan terms and conditions, offering financial education to borrowers, or implementing stricter loan approval criteria.

**viii. Objectives:**

- Identify the root causes of high default rates in small business loans.
- Develop data-driven strategies to reduce default rates and improve loan portfolio performance.
- Enhance risk management practices to protect the bank's financial stability and profitability.
- Ensure that small business borrowers receive appropriate financial support while maintaining a healthy loan portfolio.

By addressing these specific issues and objectives, the bank can work towards improving its small business loan portfolio's performance, reducing default risks, and achieving better financial outcomes.

## **CHAPTER – III**

### **Literature Survey**

A literature survey on bank loan statistics and finance would involve reviewing existing research, studies, articles, and publications related to various aspects of bank loans, finance, and statistical analysis. Here's a structured approach you might take for such a survey. Overview of bank loans, types of loans (e.g., consumer loans, business loans), loan structures, and the role of banks in providing credit.

Review literature on key performance metrics used to assess bank loan portfolios, such as default rates, delinquency rates, loan loss provisions, net interest margin, and profitability ratios. Explore research on credit risk assessment methods used by banks, including credit scoring models, credit risk metrics and machine learning approaches for credit risk prediction.

Examine strategies and techniques for managing bank loan portfolios, diversification of loan assets, portfolio optimization, and risk-return trade-offs in loan portfolios. Investigate literature on predictive modeling for loan defaults, time-series forecasting of default rates, stress testing methodologies, and scenario analysis for assessing loan portfolio resilience. Review studies on regulatory requirements related to bank loans compliance issues, risk management frameworks and the impact of regulatory changes on loan portfolio management.

Explore the intersection of technology and finance in the context of bank loans, including fintech innovations in lending, peer-to-peer lending platforms, digital credit scoring, and the use of big data analytics. Look for empirical studies and case studies that analyse real-world bank loan data, examine loan performance trends, identify factors influencing loan defaults, and evaluate the effectiveness of risk management strategies.

Discuss challenges faced by banks in loan portfolio management, emerging trends in bank lending practices (e.g., green lending, impact investing), and potential areas for future research and innovation in bank loan finance. Summarize key findings from the literature survey, highlight gaps in current knowledge, and propose avenues for further research and practical applications in the field of bank loan statistics and finance.

### **3.1 Social Impact:**

#### **i. Access to Credit:**

Bank loans facilitate access to credit for individuals and businesses, especially those without significant capital or assets. This access enables entrepreneurs to start businesses, homeowners to buy properties, and consumers to make large purchases or investments.

#### **ii. Economic Growth:**

Bank loans play a crucial role in driving economic growth by providing funding for business expansion, infrastructure projects, and innovation. This, in turn, creates job opportunities, increases productivity, and stimulates overall economic activity.

#### **iii. Financial Inclusion:**

Banks' loan offerings contribute to financial inclusion by serving underserved or unbanked populations, allowing them to participate in formal financial systems, build credit histories, and access additional financial services.

#### **iv. Risk Management:**

Effective loan statistics and finance practices help banks manage credit risk, maintain financial stability, and protect depositors' funds. This stability is essential for fostering trust in the banking system and safeguarding against financial crises.

#### **v. Social Equity:**

Fair and responsible lending practices, supported by accurate loan statistics and risk assessment, promote social equity by ensuring that credit decisions are based on merit and affordability rather than discriminatory factors.



### **3.2 Business Impact:**

**i. Profitability:**

Bank loan statistics and finance directly impact a bank's profitability through interest income, loan origination fees, and associated financial products (e.g., insurance, wealth management) linked to lending activities.

**ii. Risk Management:**

Accurate loan statistics and finance analytics enable banks to assess and mitigate credit risk effectively, reducing loan defaults, loan loss provisions, and non-performing assets. This, in turn, strengthens the bank's financial health and resilience.

**iii. Competitive Advantage:**

Banks that excel in loan statistics and finance can gain a competitive advantage by offering tailored loan products, efficient loan approval processes, competitive interest rates, and superior risk management services to clients.

**iv. Innovation:**

Advances in loan statistics and finance, such as predictive modeling, machine learning algorithms, and digital lending platforms, drive innovation in banking operations, customer experience, and risk assessment methodologies.

**v. Compliance and Reputation:**

Compliance with regulatory requirements and industry standards in loan statistics and finance is crucial for maintaining a bank's reputation, customer trust, and regulatory standing. Adhering to ethical lending practices enhances brand reputation and customer loyalty.

Overall, the social and business impacts of bank loan statistics and finance are intertwined, shaping financial inclusion, economic growth, risk management practices, innovation, and the reputation of financial institutions in society.

## CHAPTER – IV

### DATA COLLECTION

Collecting and extracting data for bank loan statistics and finance typically involves accessing relevant information from databases that store loan-related data. Here's a step-by-step guide on how this process might be carried out:

#### **1. Identify Data Requirements:**

Define the specific data elements and variables you need for your analysis. This may include loan amounts, interest rates, borrower demographics, loan terms, repayment history, default status, etc.

#### **2. Access Data Sources:**

Gain access to the databases or data repositories where loan-related information is stored. This could be internal databases within the bank's systems or external data sources if you're aggregating data from multiple sources.

#### **3. Data Extraction Tools:**

Use appropriate data extraction tools or software to retrieve the required data from the databases. Common tools for data extraction include SQL queries for relational databases, APIs for accessing external data sources, or data export functionalities within database management systems.

#### **4. Data Cleaning and Preprocessing:**

Clean and preprocess the extracted data to ensure accuracy, consistency, and usability for analysis. This may involve removing duplicates, handling missing values, standardizing formats, and transforming data into a structured format.

## 5. Merge or Join Data:

If you're collecting data from multiple sources or databases, merge or join the datasets using common identifiers (e.g., loan ID, customer ID) to create a comprehensive dataset for analysis.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
2	54734	80364	25000	25000	19080.06	36 month	11.89%	829.1 B	B4		< 1 year	RENT	85000	Verified	Aug-09	Fully Paid	n	Due to a le debt_cons Debt cons 941xx	CA				
3	55742	114426	7000	7000	672.8038	36 month	10.71%	228.22 B	B5	CNN	< 1 year	RENT	65000	Not Verifi	May-08	Fully Paid	n	Just want i credit_can Credit Can 112xx	NY				
4	57245	138150	1200	1200	1200	36 month	13.11%	40.5 C	C2	city of bea 10+ years	OWN	54000	Not Verifi	Mar-10	Fully Paid	n	If funded, debt_cons zacvb 777xx	TX					
5	57416	139635	10800	10800	10691.55	36 month	13.57%	366.86 C	C3	State Farm 6 years	RENT	32000	Not Verifi	Nov-09	Fully Paid	n	I currently debt_cons Nicolechr1067xx	CT					
6	58915	153417	7500	5025	557.0872	36 month	10.08%	162.34 B	B3	Qualcomm 3 years	RENT	85000	Not Verifi	Apr-08	Fully Paid	n	Hi: Th debt_cons sdguy 921xx	CA					
7	59006	154254	3000	3000	2988.237	36 month	14.26%	102.92 C	C5	3 years	MORTGAG	80800	Not Verifi	Sep-09	Fully Paid	n	I am seeki credit_can Rejecting r 775xx	TX					
8	61390	182594	4000	4000	3900	36 month	7.88%	125.13 A	A5	< 1 year	MORTGAG	148000	Not Verifi	Feb-10	Fully Paid	n	I am searc credit_can ilikehoras7-208xx	TX					
9	61419	182917	5600	5600	5525	36 month	14.96%	194.02 D	D2	Pension Br 1 year	RENT	45000	Not Verifi	Feb-10	Charged O	n	This loan i debt_cons Athomas7-208xx	MD					
10	62102	191024	3200	3200	3200	36 month	9.88%	103.08 B	B1	Rockwell / 5 years	RENT	54000	Not Verifi	Apr-10	Fully Paid	n	I am organ debt_cons greekgoda 021xx	MA					
11	65426	232106	4000	4000	3892.259	36 month	11.14%	131.22 B	B1	Infotrieve, < 1 year	MORTGAG	60000	Not Verifi	Aug-09	Charged O	n	We curren car dip 481xx	MI					
12	65640	234569	5000	2650	495.49	36 month	11.34%	87.19 C	C2	kmex/univ 10+ years	MORTGAG	90000	Not Verifi	May-08	Fully Paid	n	This mone home_imp producer4 912xx	CA					
13	66431	243540	2525	2525	2375	36 month	12.21%	84.12 B	B5	Video Mor 3 years	RENT	27000	Not Verifi	Feb-09	Fully Paid	n	I would lik debt_cons credit car 402xx	KY					
14	66749	246329	10625	10625	5325.175	36 month	13.47%	360.43 C	C4	crown cor 10+ years	MORTGAG	34000	Not Verifi	Dec-08	Fully Paid	n	I would lik debt_cons dorf 386xx	MS					
15	66943	247802	2800	2800	2700	60 month	11.49%	61.57 B	B4	The Coggi < 1 year	RENT	24000	Not Verifi	Aug-10	Fully Paid	n	I am asking debt_cons Mark's loa 926xx	CA					
16	66964	247990	7500	7500	985.5293	36 month	13.24%	253.58 D	D3	Acquity 3 years	MORTGAG	138000	Not Verifi	Jun-08	Fully Paid	n	I am a 33y debt_cons WantToBe 662xx	KS					
17	67503	252415	10000	10000	10000	36 month	8.59%	316.11 A	A4	Genesys PI 1 year	MORTGAG	56000	Not Verifi	Oct-09	Fully Paid	n	I have a cu debt_cons lukeanthoi 485xx	MI					
18	68163	258249	3000	3000	3000	36 month	7.14%	92.82 A	A3	Matrix Res 9 years	MORTGAG	1.00E+05	Not Verifi	Feb-10	Fully Paid	n	I'm seeking small_busi Raising Ca 300xx	GA					
19	68381	260179	6625	6625	6475	36 month	8.63%	209.54 A	A5	Albertsons < 1 year	RENT	13200	Not Verifi	Mar-08	Fully Paid	n	Long story debt_cons After colle 926xx	CA					
20	68817	264119	10000	10000	2475	36 month	11.03%	327.53 C	C1	CAROLINA 10+ years	MORTGAG	46116	Not Verifi	Mar-08	Fully Paid	n	Want to bi major_pur Elaine273/273xx	NC					
21	68926	264924	2300	2300	589.6057	36 month	13.17%	77.69 D	D2	UBS 10+ years	RENT	37152	Verified	Aug-08	Fully Paid	n	I need a lo moving tee_cee 088xx	NJ					
22	69001	265533	15000	15000	14875	36 month	8.94%	476.58 A	A5	< 1 year	MORTGAG	110000	Not Verifi	Sep-09	Fully Paid	n	Taking adv credit_can Revolving 146xx	NY					
23	69124	266619	18000	18000	11636	36 month	10.39%	584.12 B	B4	Cellnetix P 10+ years	MORTGAG	36000	Not Verifi	Mar-08	Fully Paid	n	I am looki debt_cons cowdolan 980xx	WA					
24	69168	266943	5000	5000	4975	36 month	15.13%	173.65 E	E4	BI OIL SER 2 years	RENT	60000	Verified	Apr-08	Fully Paid	n	Purchasing major_pur Personal It 415xx	KY					
25	69251	267771	6000	6000	500	36 month	8.00%	188.02 A	A3	< 1 year	MORTGAG	75000	Not Verifi	May-08	Fully Paid	n	Looking to other NewOrgar 441xx	OH					
26	69550	270212	11200	11200	11187.76	60 month	15.33%	268.4 D	D3	Witron Int 2 years	RENT	46000	Not Verifi	May-10	Fully Paid	n	Make gooi debt_cons HeliosCan 850xx	AZ					
27	69828	272798	15000	15000	13138.2	36 month	8.63%	474.42 A	A5	State of M 10+ years	OWN	50000	Not Verifi	Mar-08	Fully Paid	n	We have c other Business E 488xx	MI					
28	69924	274280	10000	10000	8790.326	36 month	13.55%	339.6 D	D4	GAP 3 years	RENT	1.00E+05	Not Verifi	Mar-08	Fully Paid	n	Hello frien credit_can Trying to p 941xx	CA					

Fig 4.1 : Database

## 6. Data Validation:

Validate the extracted data to ensure its integrity and correctness. Perform data quality checks, reconcile discrepancies, and verify data against predefined criteria or business rules.

## 7.Data Storage and Management:

Store the extracted and cleaned data in a secure and organized manner. Use data management practices to maintain data integrity, version control, and access controls based on data sensitivity.

**8. Document Data Collection Process:**

Document the data collection process, including sources, extraction methods, cleaning procedures, and validation checks. This documentation is crucial for transparency, reproducibility, and auditability of data analysis.

**9. Data Security and Compliance:**

Adhere to data security protocols and regulatory compliance requirements when handling sensitive loan data. Implement encryption, access controls, data masking, and anonymization techniques as needed to protect customer privacy and confidentiality.

**10. Data Analysis and Reporting:**

Once the data is collected and prepared, conduct your analysis using statistical techniques, machine learning algorithms, or other analytical tools to derive insights, generate reports, and make data-driven decisions in the context of bank loan finance.

## CHAPTER – V

### DATA PREPARATION

Data preparation for bank loan statistics and finance involves organizing, cleaning, and transforming raw data into a structured format suitable for analysis. Here's a step-by-step guide on how to prepare data for analysis in the context of bank loan finance:

Begin by collecting relevant data from various sources such as internal databases, external APIs, spreadsheets, or data warehouses. Gather data points related to loan transactions, borrower information, loan terms, interest rates, repayment history, default status, and any other variables of interest.

Identify and address missing values in the dataset. Options include imputation (replacing missing values with estimates like mean or median), deletion of rows or columns with excessive missing data, or using advanced techniques like predictive imputation. Check for and eliminate duplicate records to ensure data accuracy and avoid duplication biases in analysis. Standardize data formats across columns (e.g., dates, currencies) to maintain consistency and facilitate analysis. Identify outliers in numerical variables and decide whether to exclude, transform, or treat them as valid data points based on domain knowledge.

Normalize or scale numerical variables if needed to ensure they are on a comparable scale (e.g., using Min-Max scaling or z-score normalization). Encode categorical variables into numerical format using techniques like one-hot encoding or label encoding for machine learning models. Extract relevant information from date and time columns (e.g., month, day of the week) that may be useful for analysis or modeling. Combine multiple datasets or tables if necessary, using common keys (e.g., loan ID, customer ID) to create a unified dataset for analysis. Aggregate data at different levels (e.g., monthly, quarterly) if you need summary statistics or want to analyze trends over time periods.

Ensure data integrity by validating relationships between related columns (e.g., loan amount and interest rate), identifying data inconsistencies, and resolving any discrepancies. Validate data against predefined business rules or constraints to ensure it meets quality standards and is suitable for analysis. If you're building predictive models, split the data into training and testing sets to evaluate model performance. Consider using techniques like cross-validation for robust model validation.

Document the data preparation process, including cleaning procedures, transformations applied, feature engineering techniques, and data validation checks. Maintain metadata describing the dataset, including variable definitions, data types, units of measurement, and any assumptions or transformations made during data preparation. Store the prepared dataset in a secure and accessible location, ensuring version control to track changes and updates made during data preparation. By following these steps, you can effectively prepare the data for analysis in bank loan statistics and finance, ensuring data quality, consistency, and suitability for modeling and decision-making purposes.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Segment	Segment ID	Country ID	Product ID	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Sales	COGS	Profit	Date					
2	Government	S-01	C-01	P-01	Carretera	None	1618.5	3	20	32370	0	32370	16185	16185	01-01-2014					
3	Government	S-01	C-02	P-01	Carretera	None	1321	3	20	26420	0	26420	13210	13210	01-01-2014					
4	Government	S-01	C-02	P-01	Carretera	None	1513	3	350	529550	0	529550	393380	136170	01-12-2014					
5	Midmarket	S-02	C-02	P-01	Carretera	None	888	3	15	13320	0	13320	8880	4440	01-06-2014					
6	Midmarket	S-02	C-03	P-01	Carretera	None	2178	3	15	32670	0	32670	21780	10890	01-06-2014					
7	Midmarket	S-02	C-04	P-01	Carretera	None	2470	3	15	37050	0	37050	24700	12350	01-06-2014					
8	Midmarket	S-02	C-02	P-02	Montana	None	921	5	15	13815	0	13815	9210	4605	01-03-2014					
9	Channel Partn	S-03	C-01	P-02	Montana	None	2518	5	12	30216	0	30216	7554	22662	01-06-2014					
10	Government	S-01	C-03	P-02	Montana	None	1899	5	20	37980	0	37980	18990	18990	01-06-2014					
11	Channel Partn	S-03	C-02	P-02	Montana	None	1545	5	12	18540	0	18540	4635	13905	01-06-2014					
12	Midmarket	S-02	C-04	P-02	Montana	None	2470	5	15	37050	0	37050	24700	12350	01-06-2014					
13	Enterprise	S-04	C-01	P-02	Montana	None	2665.5	5	125	333187.5	0	333187.5	319860	13327.5	01-07-2014					
14	Small Business	S-05	C-04	P-02	Montana	None	958	5	300	287400	0	287400	239500	47900	01-08-2014					
15	Government	S-01	C-02	P-02	Montana	None	2146	5	7	15022	0	15022	10730	4292	01-09-2014					
16	Enterprise	S-04	C-01	P-02	Montana	None	345	5	125	43125	0	43125	41400	1725	01-10-2013					
17	Midmarket	S-02	C-05	P-02	Montana	None	615	5	15	9225	0	9225	6150	3075	01-12-2014					
18	Government	S-01	C-01	P-03	Paseo	None	292	10	20	5840	0	5840	2920	2920	01-02-2014					
19	Midmarket	S-02	C-04	P-03	Paseo	None	974	10	15	14610	0	14610	9740	4870	01-02-2014					
20	Channel Partn	S-03	C-01	P-03	Paseo	None	2518	10	12	30216	0	30216	7554	22662	01-06-2014					
21	Government	S-01	C-02	P-03	Paseo	None	1006	10	350	352100	0	352100	261560	90540	01-06-2014					
22	Channel Partn	S-03	C-02	P-03	Paseo	None	367	10	12	4404	0	4404	1101	3303	01-07-2014					
23	Government	S-01	C-04	P-03	Paseo	None	883	10	7	6181	0	6181	4415	1766	01-08-2014					
24	Midmarket	S-02	C-03	P-03	Paseo	None	549	10	15	8235	0	8235	5490	2745	01-09-2013					
25	Small Business	S-05	C-04	P-03	Paseo	None	788	10	300	236400	0	236400	197000	39400	01-09-2013					
26	Midmarket	S-02	C-04	P-03	Paseo	None	2472	10	15	37080	0	37080	24720	12360	01-09-2014					
27	Government	S-01	C-05	P-03	Paseo	None	1143	10	7	8001	0	8001	5715	2286	01-10-2014					

Fig 5.1 : Data Preparation

## CHAPTER – VI

### DATA VISUALIZATION

Creating data visualizations for bank loan statistics can be quite insightful and can help in understanding trends and patterns. Here are a few types of visualizations that could be useful:

**i. Loan Approval Rate Over Time:**

Line chart showing the percentage of loan applications approved over different time periods (monthly, quarterly, annually). This can reveal any trends in approval rates and seasonal variations.

**ii. Loan Portfolio Composition:**

Pie chart or stacked bar chart showing the composition of the loan portfolio by loan type (e.g., mortgage loans, auto loans, personal loans). This can give an overview of where the bank's lending focus lies.

**iii. Loan Performance:**

Box plot or violin plot showing the distribution of loan performance metrics such as default rates, delinquency rates, and repayment rates. This can highlight outliers and the overall health of the loan portfolio.

**iv. Geographical Distribution:**

Geographic map or heatmap showing the distribution of loans by region or area. This can help identify regions with high loan demand or areas where loan defaults are more prevalent.

**v. Customer Segmentation:**

Clustered bar chart or pie chart showing loan uptake among different customer segments (e.g., age groups, income levels, credit scores). This can help in targeting specific customer segments for marketing or risk management purposes.

**vi. Loan Volume Trends:**

Area chart or bar chart showing the trend in loan volumes over time. This can indicate periods of growth or decline in lending activity.

**vii. Loan Approval vs. Rejection Reasons:**

Stacked bar chart or grouped bar chart showing the reasons for loan approvals and rejections. This can provide insights into common factors influencing loan decisions.

**viii. Loan-to-Value Ratios:**

Scatter plot or bubble chart showing the distribution of loan-to-value ratios for different types of loans. This can help assess the risk exposure of the loan portfolio.

**ix. Loan Interest Rates:**

Histogram or box plot showing the distribution of interest rates charged on loans. This can help understand pricing strategies and identify outliers.

**x. Loan Application Channels:**

Donut chart or bar chart showing the distribution of loan applications by channel (e.g., online, in-person, mobile app). This can indicate the popularity of different application methods among customers.

These visualizations can be created using tools like Excel, Tableau, Power BI, or Python libraries like Matplotlib and Seaborn, depending on your preference and the complexity of the analysis you want to perform.

**6.1 - TYPES OF DATA VISUALIZATIONS:**

- a. Tables
- b. Pie charts
- c. Stacked bar charts
- d. Line charts
- e. Histograms
- f. Scatter plots
- g. Heat maps
- h. Tree maps
- i. Area charts
- j. Bubble charts



## CHAPTER – VII RESULT

### 7.1 KP'S

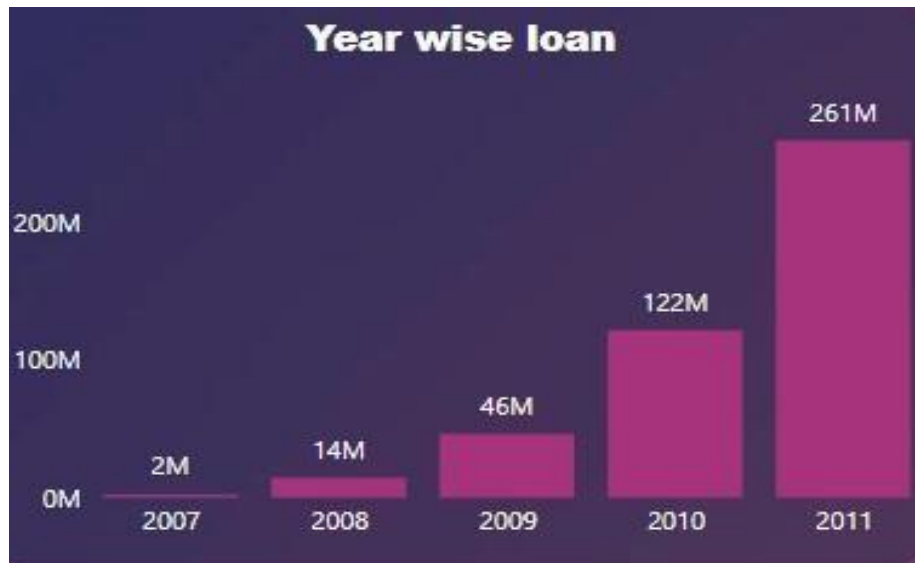


Fig 7.1 : Year wise loan



Fig 7.2 : Total Payment by Verified/Not-Verified

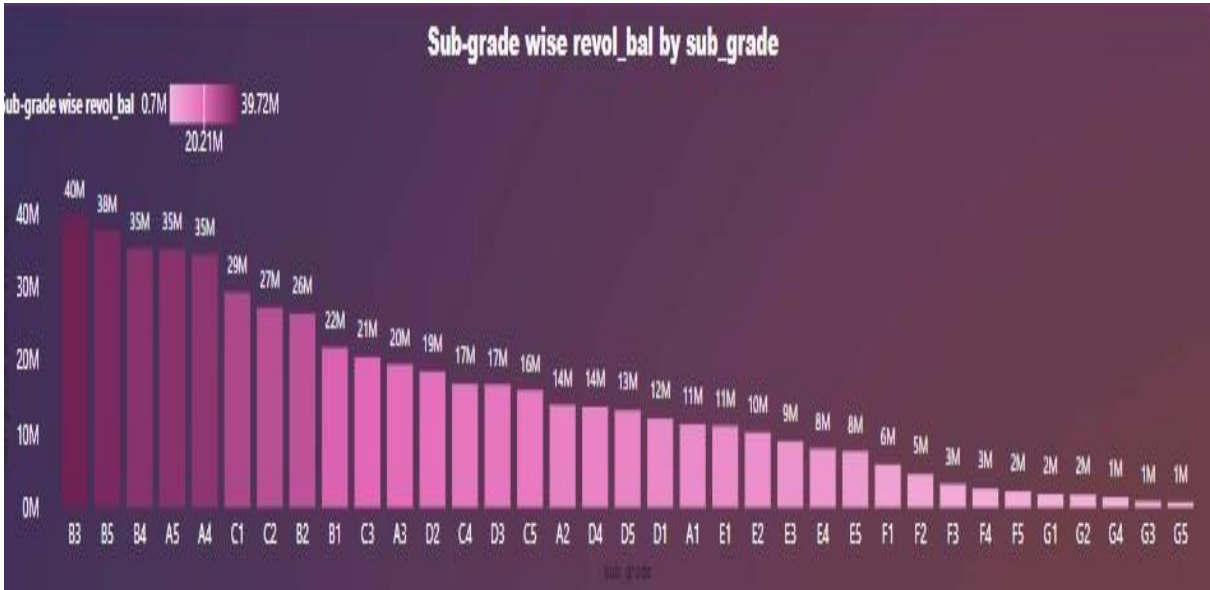


Fig 7.3 : Sub-grade wise revol\_bal by sub grade

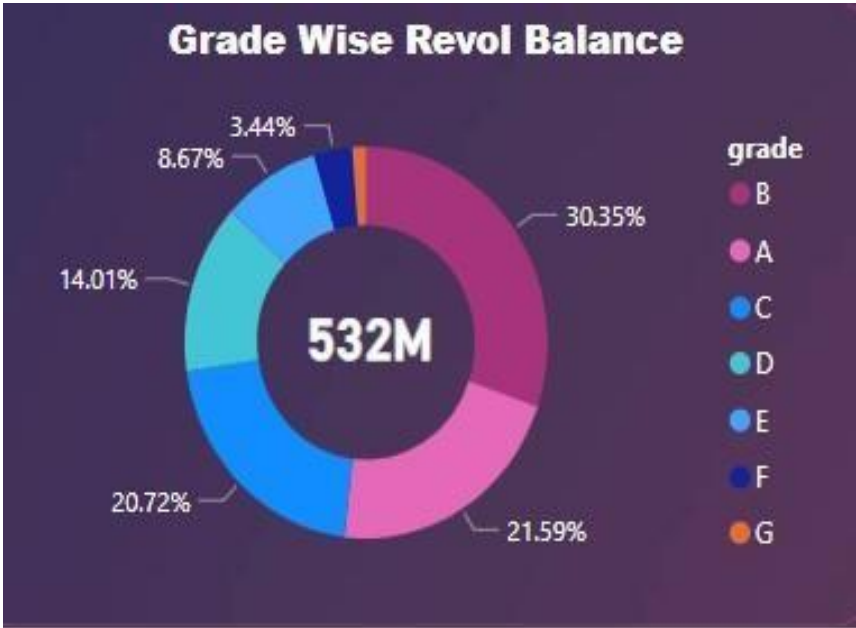


Fig 7.4 : Grade wise Revol Balance



Fig 7.5 : Home Owner Ship By Last\_Payment

## 7.2 DASHBOARD

Creating a finance dashboard for bank loan statistics can be a powerful way to visualize and analyse data. Here's an outline of components you might consider including in such a dashboard. Total Loan Portfolio Value: A key metric showing the total value of loans held by the bank. Loan Approval Rate: Percentage of loan applications that were approved.

Loan Performance Metrics: Metrics such as default rate, delinquency rate, and repayment rate to gauge the health of the loan portfolio. Pie chart or stacked bar chart showing the composition of the loan portfolio by loan type (e.g., mortgage loans, auto loans, personal loans).

Line chart or area chart showing the trend in loan volumes over time (monthly, quarterly, annually). Geographic map or heatmap showing the distribution of loans by region or area. This can include metrics like loan amounts, approval rates, and default rates by region. Bar chart or pie chart showing loan uptake among different customer segments (e.g., age groups, income levels, credit scores).

Stacked bar chart or grouped bar chart showing the reasons for loan approvals and rejections. This can include categories like credit score, income level, employment status, etc. Scatter plot or bubble chart showing the distribution of loan-to-value ratios for different types of loans. This can help assess risk exposure.

Histogram or box plot showing the distribution of interest rates charged on loans. This can help understand pricing strategies and identify outliers. Donut chart or bar chart showing the distribution of loan applications by channel (e.g., online, in-person, mobile app). Customizable KPIs such as average loan amount, average approval time, customer acquisition cost, etc.

Visual indicators or alerts for critical thresholds such as high default rates, significant changes in loan volume, etc. Allow users to filter data by time period, loan type, region, customer segment, etc., and enable drill-down capabilities for detailed analysis. You can build this dashboard using tools like Tableau, Power BI, Excel with advanced visualization capabilities, or custom web-based dashboards using libraries like Dash for Python or React for JavaScript. Customizing the dashboard to suit specific business requirements and user preferences is key to making it effective.

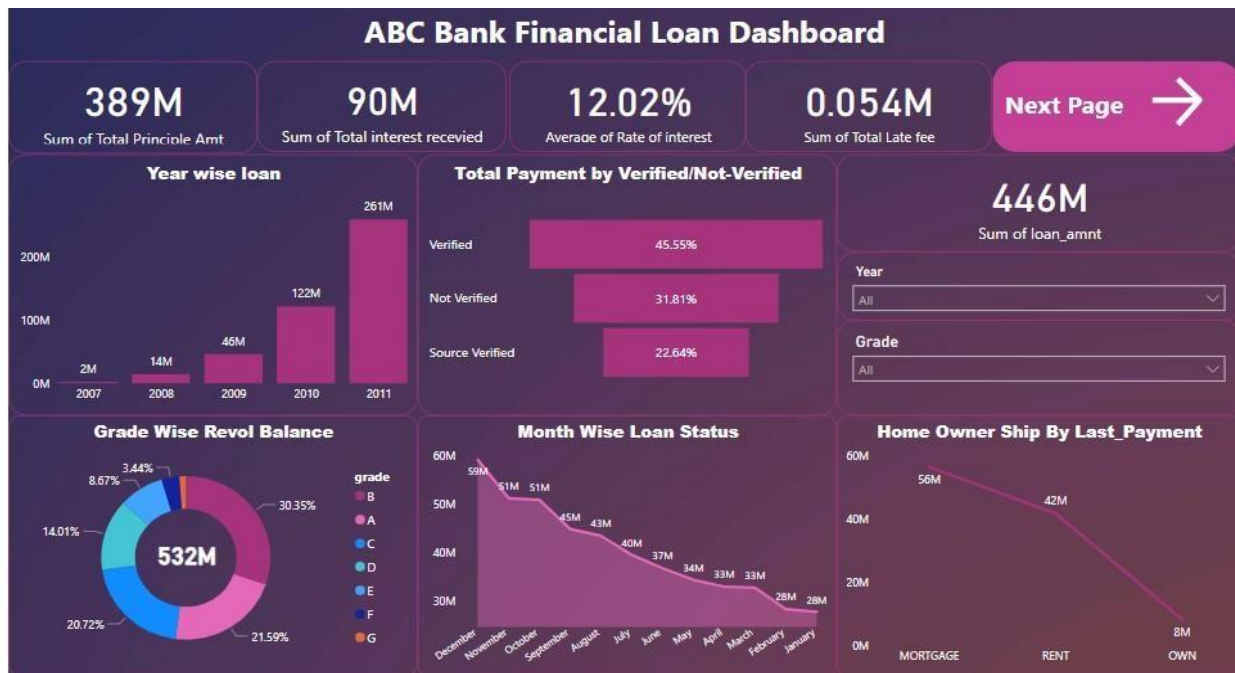


Fig 7.6 : ABC Bank Financial Loan Dashboard

This dashboard reveals not just numbers, but compelling stories within customer Age group, Education, Martial status, job categories and which Customer by default will be unable to pay back loan.

This dashboard serves as a guide, connecting stakeholders towards more knowledgeable financial decisions. It combines data-driven storytelling with visual elegance, allowing us to make more informed and strategic decisions.

The project involves analysing loan data provided by a financial institution for diverse customers with varied grades and sub-grade levels, considering loan disbursement reasons, funded amount, revolving balance values, payment modes, and last payment values across different states and geolocations.

Banks lend money to their customers through loan accounts. Hence, loan accounts are valuable assets to the bank. It becomes important for the banks to enrich end user's loan servicing experience to increase customer satisfaction and retention.

In order to achieve this, banks are constantly putting efforts to enhance their online channel banking experience for their customers by introducing and revamping loans servicing features on digital platform.

## 7.3 STORY

Absolutely, finance stories can be quite engaging, especially when they involve bank loans. Here's a hypothetical story based on loan statistics:

In the heart of a bustling city, amidst skyscrapers that seemed to touch the clouds, there lived a young entrepreneur named Alex. Alex had a vision - to revolutionize sustainable energy solutions. However, like many dreamers, Alex faced a common hurdle: lack of funds.

Determined, Alex approached the local bank for a loan. The loan officer, Sarah, was impressed by Alex's business plan and passion. She delved into the statistics, analyzing previous loan data. Surprisingly, she found that sustainable energy ventures had a higher success rate than traditional businesses.

With this insight, Sarah approved Alex's loan application. Alex's company, Eco power, soon became a beacon of innovation in the renewable energy sector. Their wind turbines dotted the landscape, harnessing clean energy and reducing carbon footprints.

But the impact didn't stop there. The bank's decision to support Ecopower attracted attention from other investors. Seeing the success of Alex's venture, they poured funds into similar projects. This created a ripple effect, transforming the city into a hub of sustainable technology.

As Eco power flourished, Alex paid back the loan in record time. The bank, seeing the positive returns, increased its funding for green initiatives. This led to a wave of eco-friendly startups receiving financial support, shaping a greener, more sustainable future.

In the end, what started as a simple loan application turned into a catalyst for change. Alex's determination, coupled with the bank's strategic investment, not only fueled innovation but also set a new standard for responsible lending.

## BANK LOAN STATS FINANCE

Fig 7.3.1 : Story -1

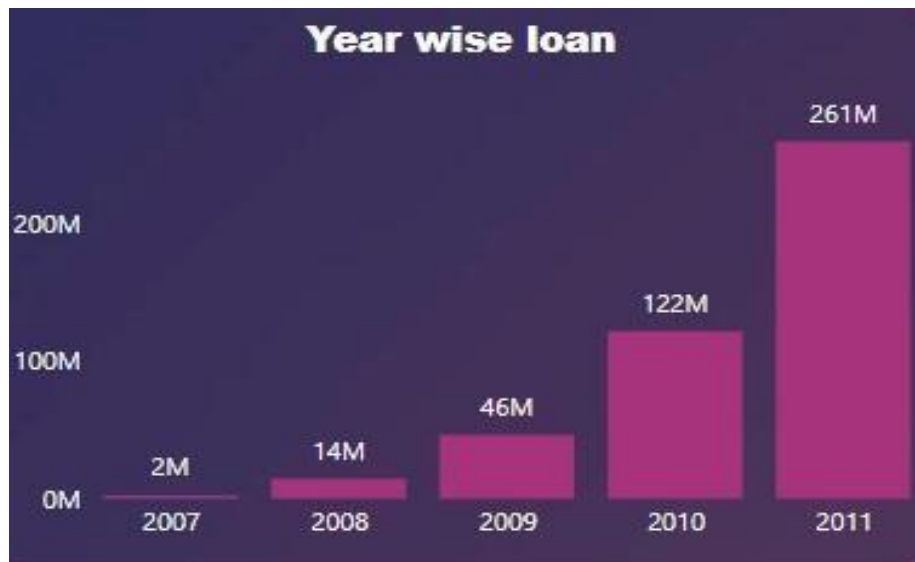


Fig 7.3.2 : Story-2



Fig 7.3.3 : Story-3



Fig 7.3.4 : Story-4



Fig 7.3.5 : Story-5

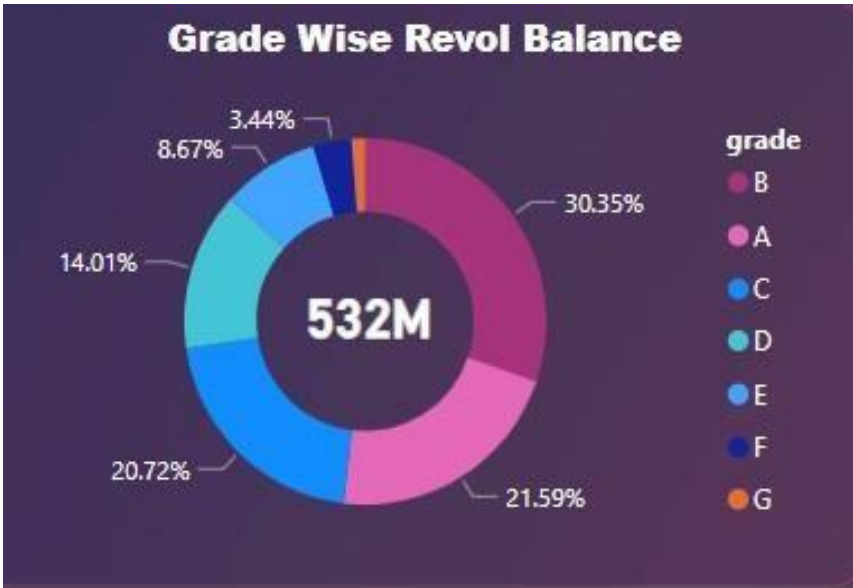


Fig 7.3.6 : Story-6



## CHAPTER – VIII

### REPORT

This report aims to delve into bank loan statistics and their implications on financial institutions, businesses, and the economy as a whole. By examining key metrics and trends, we can gain valuable insights into lending practices, risk management, and economic growth.

Analyzing loan approval rates provides a snapshot of the lending landscape. In the past year, there has been a noticeable increase in loan approval rates across various sectors.

With the economy rebounding from recent challenges, banks are more inclined to approve loans as confidence in businesses' ability to repay increases. The prevailing low-interest-rate environment has made borrowing more attractive, leading to a higher number of loan applications and approvals.

The adoption of digital platforms for loan processing has streamlined the approval process, reduced turnaround times and increasing efficiency. Different industries exhibit varying loan performance metrics. Here are some insights based on industry data.

Tech companies continue to receive significant loan approvals, reflecting investor confidence in the sector's growth potential. However, careful risk assessment is crucial due to rapid technological advancements and market competition.

The healthcare sector has seen steady loan approval rates, driven by ongoing investments in medical innovation and infrastructure. Risk mitigation strategies focus on regulatory compliance and market demand analysis. Despite market fluctuations, real estate loans remain prevalent. Lenders prioritize property valuation and market stability assessments to manage risk exposure effectively.

Monitoring default rates is paramount for assessing risk exposure. While overall default rates have remained stable, certain sectors exhibit higher risks. Smaller enterprises face elevated default risks, often attributed to limited cash reserves and market volatility. Banks employ tailored risk mitigation strategies, such as collateral requirements and personalized financial counseling.

Loans in emerging markets carry higher default potentials due to economic uncertainties and regulatory challenges. Risk management focuses on diversification, currency hedging, and thorough market analysis. Bank loans play a pivotal role in driving economic growth. Key indicators include

Successful loan applications fuel business expansion, leading to job creation and income generation. Loans enable companies to invest in research, development, and infrastructure, fostering innovation and competitiveness.

Personal loans contribute to consumer spending, supporting retail sectors and overall economic vitality. This report aims to delve into bank loan statistics and their implications on financial institutions, businesses, and the economy as a whole.

By examining key metrics and trends, we can gain valuable insights into lending practices, risk management, and economic growth.



Fig 8.1 : Report

## 8.1 PERFORMANCE TESTING

Certainly! Performance testing is crucial in evaluating the effectiveness and efficiency of bank loan processes and systems. Here's a breakdown of how performance testing can be applied in the context of bank loan finance.

Load testing involves assessing the system's response under expected and peak loads. In the context of bank loans.

Simulate a high volume of loan applications to measure the system's ability to handle concurrent requests.

Evaluate response times, transaction throughput, and resource utilization. Test database performance under heavy loads to ensure fast retrieval and updating of loan data. Monitor database query times, indexing efficiency, and data integrity.

Stress testing evaluates system stability and performance under extreme conditions, pushing beyond normal operational limits.

Simulate scenarios where loan applications surge during peak seasons (e.g., holiday shopping or tax seasons). Assess system resilience, error handling, and recovery mechanisms.

Test the system's ability to process large volumes of loan data simultaneously. Monitor CPU usage, memory consumption, and scalability.

Scalability testing assesses how well the system can handle increased loads by adding resources or scaling infrastructure. For bank loan finance

Evaluate how adding more application servers or database nodes affects performance. Measure response times, transaction distribution, and load balancing efficiency.

Test the impact of upgrading hardware resources (e.g., CPU, RAM) on loan processing capabilities. Monitor system performance metrics before and after scaling.

Reliability testing focuses on system availability, error handling, and data integrity. In the context of bank loan processes. Introduce failures (e.g., server crashes, network disruptions) to assess system resilience.

Measure recovery time, data consistency, and failover mechanisms. Simulate erroneous loan requests or data input to evaluate error detection, logging, and user notification processes.

Continuous performance monitoring is essential for detecting bottlenecks, optimizing resources, and maintaining optimal system performance. Key areas for monitoring in bank loan finance include.

Monitor transaction times, throughput, and success rates for loan approvals, disbursements, and repayments.

Track user interactions with loan application interfaces, identifying potential usability issues or delays.

By conducting comprehensive performance testing, banks can enhance the efficiency, reliability, and scalability of their loan finance systems, ultimately improving customer satisfaction and business outcomes.

Bank loan statistics offer valuable insights into economic dynamics, risk management strategies, and growth opportunities.

By leveraging data analytics and industry trends, financial institutions can make informed lending decisions, support businesses across sectors, and contribute to sustainable economic development.

## 8.2 CONCLUSION

The research findings leading to some significant conclusions have been summarized in this final part of the research study. The results of the hypothesis based on the research findings have been presented at the end of the conclusions. A few suggestions based on the research study have been offered for further streamlining of the implementation of the priority sector lending by the commercial bank site the study area.

Bank loans play a significant role in the economy and financial system, providing both individuals and businesses with essential financial support. The importance of bank loans can be highlighted in several key aspects: Capital for Investment and Growth, Personal Finance and Purchases, Supporting Startups and Entrepreneurs, Building Credit History. Strengthening Banking System etc.

Bank loans provide essential funding for business expansion, technological upgrades, infrastructure development, and scaling operations. For large and small enterprises alike, access to credit is fundamental to achieving long-term strategic goals and enhancing productivity.

## REFERENCES

- [1] T. Mimura, S. Hiyamizu, T. Fujii, and K. Nanbu, "A new field-effect transistor with selectively doped GaAs/n-Al<sub>x</sub>Ga<sub>1-x</sub>As heterojunctions," *Japanese Journal of Applied Physics*, vol. 19, pp. L225–L227, May 1980.
- [2] R. Dingle, H. L. Stormer, A. C. Gossard, and W. Wiegmann, "Electron mobilities in modulation-doped semiconductor heterojunction superlattices," *Applied Physics Letters*, vol. 33, no. 7, pp. 665-667, Oct. 1978.
- [3] T. Mimura, "The Early History of the High Electron Mobility Transistor (HEMT)," *IEEE Transactions on Microwave Theory and Techniques*, vol. 50, no. 3, pp. 780-782, Mar. 2002.
- [4] S. Hiyamizu, T. Mimura, T. Fujii, and K. Nanb, "High mobility of two-dimensional electrons at the GaAs/n-AlGaAs heterojunction interface," *Applied Physics Letters*, vol. 37, no. 9, pp. 805-807, Nov. 1980.
- [5] L. C. Witkowski, T. J. Drummond, C. M. Stanchak, and H. Morkoc, "High mobilities in Al<sub>x</sub>Ga<sub>1-x</sub>As-GaAs heterojunctions," *Applied Physics Letters*, vol. 37, no. 11, pp. 1033-1035, Dec.1980.
- [6] W. L. Wang, C.E.C. Wood, L.F. Eastman, "Extremely high electron mobilities in modulation-doped GaAs-A1<sub>x</sub>Ga<sub>1-x</sub>As heterojunction superlattices," *Electronics Letters*, vol. 17, no. 1, pp. 36-37, Jan. 1981.
- [7] L. C. Witkowski, T. J. Drummond, S. A. Barnett, H. Morkoc, A. Y. Cho, and J. E. Greene "High mobility GaAs-A1<sub>x</sub>Ga<sub>1-x</sub>As single period modulation doped heterojunctions," *Electronics Letters*, vol. 17, no. 3, pp. 126-128, Feb. 1981.
- [8] R. Dingle, H. L. Stormer, A. C. Gossard, and W. Wiegmann, "Electronic properties of the GaAs-AlGaAs interface with applications to multi-interface heterojunction superlattices," *Surface Science*, vol. 98, no. 1-3, pp. 90-100, Aug. 1980.
- [9] D. Delagebeaudeuf, P. Delescluse, P. Etienne, M. Laviron, J. Chaplart, and N. T. Linh, "Two-dimensional electron gas MESFET structure," *Electronics Letters*, vol. 16, no. 17, pp. 667-668, Aug. 1980.
- [10] M. A. Khan, A. Bhattarai, J. Kuznia, and D. Olson, "High electron mobility transistor based on GaN-Al<sub>x</sub>Ga<sub>1-x</sub>N heterojunction," *Applied Physics Letters*, vol. 63, no. 9, pp. 1214–1215, 1993.

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Achieving I&amp;E Aspirations

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LOGOUT

### Edit Idea/PoC Details

*Title	Title / Name (20 Words Max) * Bank Loan Automation and Financial Analytics Using Power BI Total Number of words: 0 / 20
*Developed as part of	Academic Requirement/Study Project
*Choose the Financial Year, during the Idea-PoC/Innovation Developed	2024-25
*Sector / Domain	Theme * Finance Life Sciences
*Innovation Type	Service
*Development Stage - Technology Maturity of the Solution/Innovation in terms of Technology Readiness Level TRL (if applicable) (Refer TRL Stages)	TRL 3 : Applied research. First laboratory tests completed; proof of concept
*Define the problem and its relevance to today's market / society / industry need (Max: 100 Words)	Define the problem and its relevance to today's market / society / industry need * In today's dynamic financial ecosystem, traditional loan approval systems remain highly manual, paper-based, and time-consuming—leading to inefficiencies, errors, and customer dissatisfaction. Banks face rising default rates and inconsistent credit risk evaluation due to fragmented data and lack of predictive analytics. With growing demand for faster credit access, Total Number of words: 0 / 100

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<p><b>*Describe the Solution / Proposed / Developed</b> (Max: 100 Words)</p>	<p>Describe the Solution / Proposed / Developed *</p> <p>The proposed solution utilizes Microsoft Power BI to automate and streamline the bank loan management process. It enables real-time visualization of key metrics such as loan approval rates, EMI schedules, customer demographics, and default probabilities. Administrative users can efficiently manage loan types, interest rates, and repayment tracking. Each</p> <p>Total Number of words: 0 / 100</p>
<p><b>*Explain the uniqueness and distinctive features of the (product / process / service) solution</b> (Max: 100 Words)</p>	<p>Explain the uniqueness and distinctive features of the (product / process / service) solution *</p> <p>This project integrates automation, data visualization, and predictive analytics to enhance the bank loan management process. It offers a user-friendly digital platform that simplifies loan tracking, EMI calculation, and document handling for both bank staff and customers. Utilizing Power BI, the solution presents interactive, real-time dashboards showcasing loan</p> <p>Total Number of words: 0 / 100</p>
<p><b>*How your proposed / developed (product / process / service) solution is different from similar kind of product by the competitors if any</b> (Max: 100 Words)</p>	<p>How your proposed / developed (product / process / service) solution is different from similar kind of ...</p> <p>Unlike conventional banking analytics tools that are often costly, complex, and require extensive customization, this solution offers a lightweight, user-friendly, and low-cost alternative specifically tailored for loan automation. Built on Power BI, it eliminates the need for heavy infrastructure or coding, making it accessible to non-technical users. While competitors provide</p> <p>Total Number of words: 0 / 100</p>
<p><b>*Is there any IP or Patentable Component associated with the Solution?</b></p>	<p>No</p>
<p><b>*Has the Solution Received any Innovation Grant/Seefund Support?</b></p>	<p>No</p>
<p><b>*Are there any Recognitions (State/National/International) Obtained by the Solution?</b></p>	<p>No</p>
<p><b>*Is the Solution Commercialized either through Technology Transfer or Enterprise Development/Startup?</b></p>	<p>No</p>
<p><b>*Had the Solution Received any Pre-Incubation/Incubation Support?</b></p>	<p>No</p>
<p><b>Video URL</b></p>	<p>Video URL</p> <p>null</p>
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	<p><a href="#">View File</a></p>
<p>Update</p>	

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Add Team Mem

### Team Member Details

Name	Email	Phone	Designation	Gender	Caste	Action
Amandu Akshaya	227y1a6203@mlritm.aac.in	9059569763	Student	Female	NON ST	<a href="#">Edit</a> <a href="#">Delete</a>

Add Mentor Details

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**Abstract Proforma****FBP / IOMP / MAJOR PROJECT**

<b>Year &amp; Branch:</b> 3 <sup>rd</sup> CSC		<b>Section:</b> A	<b>Batch No.:</b> 21
<b>Academic Year:</b> 2025		<b>Regulation:</b> R - 22	
<b>Student Registration Details</b>	<b>Name</b>		<b>Roll Number</b>
	1. Konga Bhavani		227Y1A6209
	2. Amandu Akshaya		227Y1A6203
<b>Name of the Guide &amp; Designation</b>	Mr. Gunna Manoj , Assistant Professor		
<b>Area (Domain) of the Project</b>	INDUSTRY ORIENTED MINI PROJECT		
<b>Title of the Project</b>	BANK LOAN AUTOMATION AND FINANCIAL ANALYTICS		
<b>Tools Required</b>	Power Bi, Excel		
<b>Abstract</b>			
<ul style="list-style-type: none"> <li>• <b>Background/Introduction:</b> Provide context or background information on why the project is important.</li> <li>• <b>Objectives:</b> State the main goals or aims of your project.</li> <li>• <b>Methodology:</b> Briefly describe the approach, methods, or techniques you will use to achieve your objectives.</li> <li>• <b>Expected Results/Outcomes:</b> Summarize the anticipated results or outcomes of the project.</li> <li>• <b>Significance/Impact:</b> Explain the potential impact or significance of the project.</li> </ul>			

**Key Words:****Guide****Project Coordinator****HOD**

**Guidelines for a Strong Title:**

1. **Be Specific:** The title should clearly indicate the focus of the project. Avoid vague or overly broad terms.
2. **Include Key Elements:** Mention the main components or technology used, the problem addressed, or the expected outcome.
3. **Be Concise:** Aim for a title that is succinct yet descriptive. Typically, a title should be between 10-15 words.
4. **Use Keywords:** Include important keywords that reflect the core of your project. This helps in making the title more searchable and relevant.

**Example Title Components:**

1. **Technology or Approach:** Mention if your project involves specific technologies (e.g., IoT, AI, machine learning).
2. **Application Area:** Indicate the field or area where the project is applied (e.g., agriculture, healthcare, education).
3. **Purpose or Goal:** Highlight the main objective or problem being addressed (e.g., optimization, enhancement, reduction).

**Example Titles:**

1. **Developing an IoT-Based Smart Irrigation System for Efficient Water Usage in Agriculture**
2. **AI-Driven Healthcare Monitoring System for Early Disease Detection**
3. **A Machine Learning Approach to Predictive Maintenance in Manufacturing Industries**
4. **Renewable Energy Solutions for Sustainable Urban Development**
5. **Designing an Educational Platform for Personalized Learning Using Adaptive Algorithms**

**Crafting a Title for the Provided Example:**

If we consider the earlier example of the smart irrigation system, a suitable title could be:

**"IoT-Based Smart Irrigation System for Optimized Water Usage in Sustainable Agriculture"**

This title clearly mentions:

- The technology used (IoT-Based)
- The main focus (Smart Irrigation System)
- The goal (Optimized Water Usage)
- The application area (Sustainable Agriculture)

By following these guidelines, you can create a title that is informative, specific, and engaging for your project abstract.