

Data Analysis:

Business Intelligence and Data Visualization using Power BI

Presentation

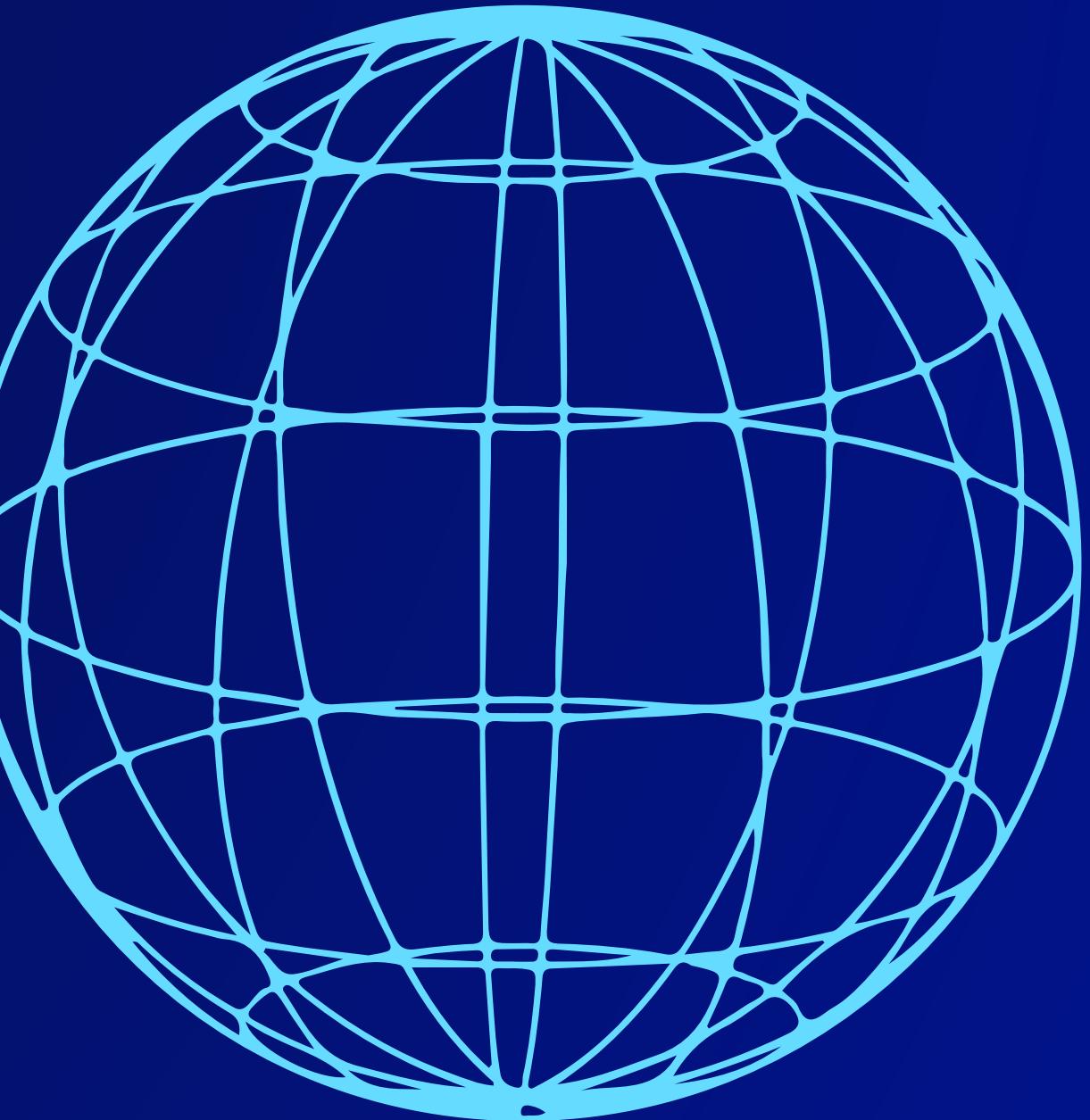


What is Business Intelligence (BI)?

Business Intelligence (BI) refers to the process of collecting, analyzing, and visualizing data to help organizations make data-driven decisions. It involves tools, technologies, and strategies that transform raw data into meaningful insights.

Business Intelligence (BI) Process

- 1 Data Collection 
- 2 Data Integration & Storage 
- 3 Data Cleaning & Transformation 
- 4 Data Analysis & Modeling 
- 5 Data Visualization & Reporting 
- 6 Decision-Making & Strategy 



Key Components of BI



- 📌 1. Data Sources
- 📌 2. Data Transformation (ETL/ELT)
- 📌 3. Data Warehousing
- 📌 4. Data Analysis
- 📌 5. Data Visualization
- 📌 6. BI Dashboards & Reporting



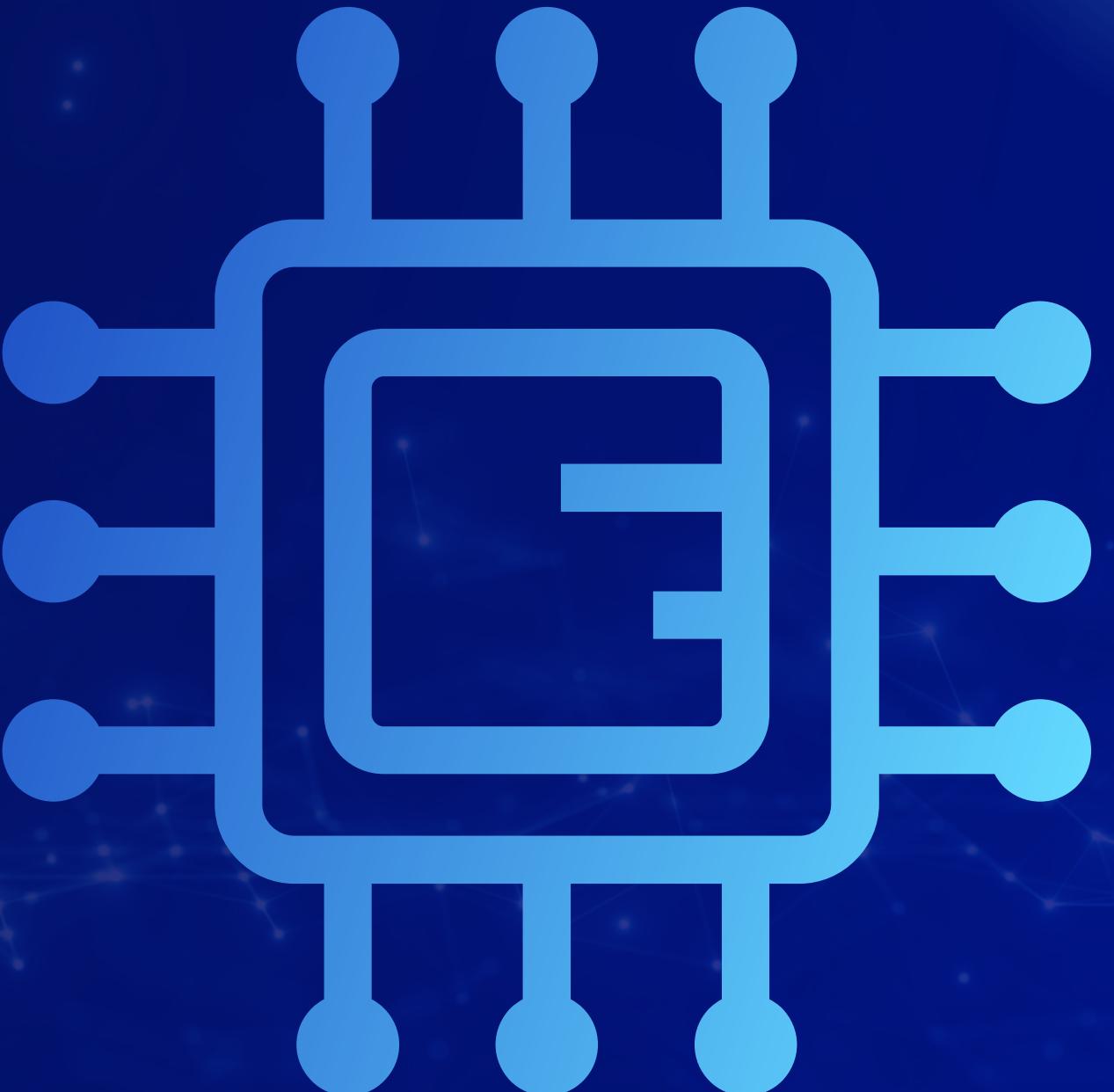
What is Data Analysis?

Data analysis involves examining raw data to find trends, patterns, and correlations. It helps businesses and researchers make data-driven decisions, optimize processes, and predict future trends.



Types of Data Analysis

There are four main types of data analysis: descriptive (what happened), diagnostic (why it happened), predictive (what will happen), and prescriptive (what should be done). Each type serves a unique purpose and offers different insights.





The Data Analysis Process

The data analysis process includes defining objectives, collecting data, cleaning data, analyzing and interpreting results, and communicating findings. Following a structured process ensures accuracy and relevancy in insights.



Data Collection and Preparation

Data collection involves gathering relevant data from various sources, such as surveys, databases, or sensors. Data preparation includes cleaning, transforming, and organizing data to ensure it's accurate and usable for analysis.



How They Work Together?

Data Analysis Feeds into BI:

- Analysts clean and explore data → BI tools visualize insights.
- Advanced analysis (predictive modeling, machine learning) → BI dashboards display results.
- Data-driven storytelling → BI tools make insights accessible to decision-makers.

BI Simplifies Data Analysis for Business Users:

- BI tools automate reporting → Saves analysts' time.
- Business users can interact with dashboards → No coding required.
- Insights are presented visually → Easier to understand.

Key Tools and Techniques in Data Analysis

- Common data analysis tools include Excel, SQL, Python, R, and visualization software like Tableau. Techniques like regression, clustering, and machine learning models help analysts extract insights from complex datasets.

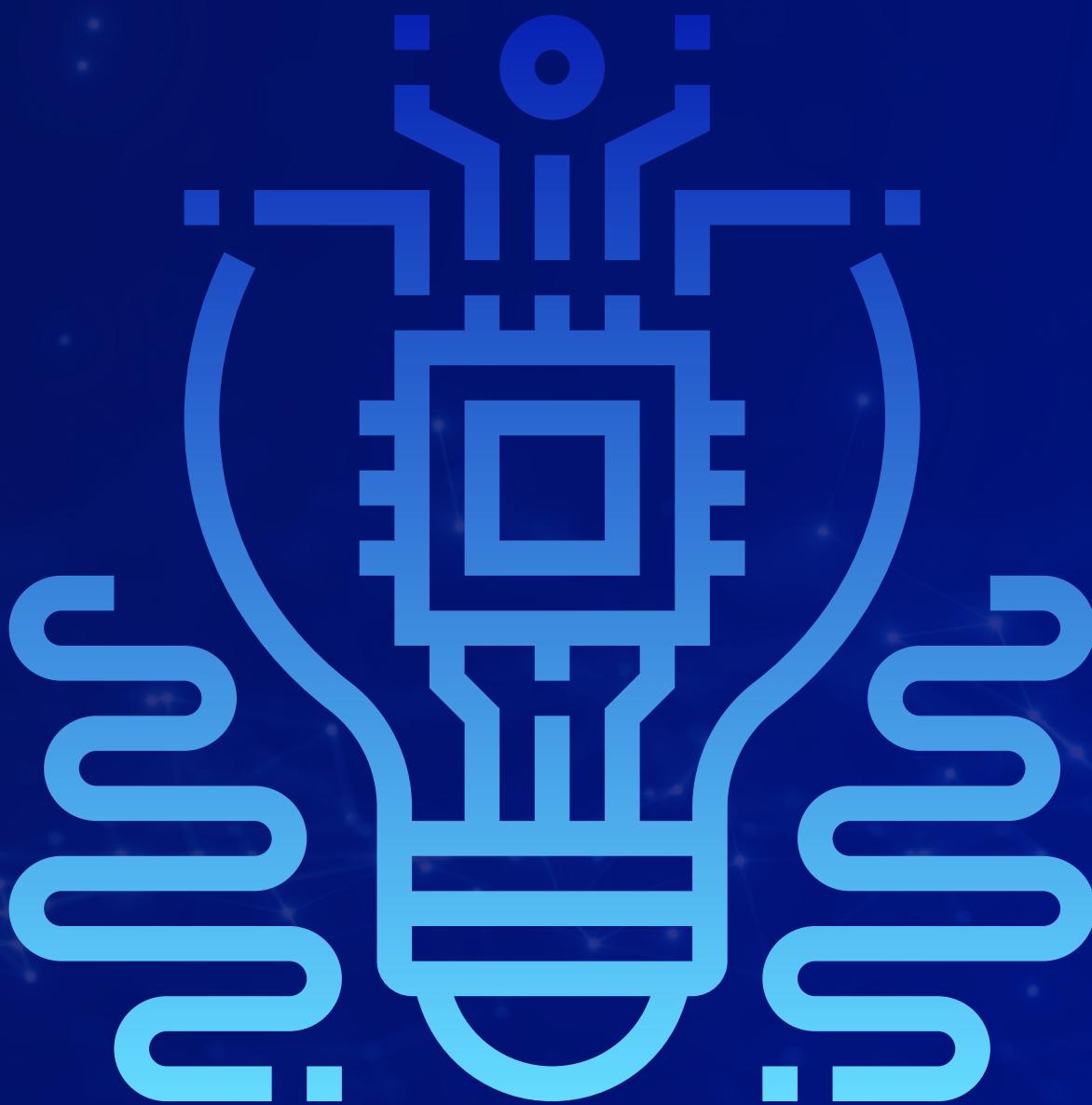
Key Tools and Techniques in Business Intelligence

- Microsoft Power BI – User-friendly dashboards, integrates with Microsoft products.
- Tableau – Advanced visualizations and interactive analytics.
- Google Data Studio – Free and cloud-based for Google data sources.
- Looker – Used for deep analytics and SQL-based queries.
- Qlik Sense – AI-driven insights and self-service BI.



Data Visualization

Data visualization translates data into visual formats like charts and graphs, making it easier to understand trends and patterns. Effective visualization aids in decision-making and helps audiences quickly grasp insights.





Project Objective

To develop a comprehensive credit card weekly dashboard that provides real-time insights into key performance metrics and trends, enabling stakeholders to monitor and analyze credit card operations effectively.





POWER BI DASHBOARD

Credit Card Transaction Report

Revenue: 57M | Interest: 7.98M | Amount: 46M | Count: 667K

week_start_date: All | F | M

Card Category: Gold | Silver | Blue | Platinum

Risk Level: Low | Med | High

card_category	Sum of Revenue	Sum of total_trans_amt	Sum of interest_earned
Blue	47188612	37840749	6,614,172.62
Silver	5659109	4647596	821,922.98
Gold	2533682	2091362	384,755.16
Platinum	1135608	953314	161,629.05
Total	56517011	45533021	7,982,479.81

Revenue by Education Level

Education Level	Revenue
Graduate	23M
High School	11M
Unknown	9M
Uneducated	8M
Post-Graduate	3M
Doctorate	2M

QTR Revenue and total_trans_ct by qtr

Quarter	Revenue	total_trans_ct
Q1	14M	163K
Q2	14M	164K
Q3	14M	167K
Q4	14M	173K

Revenue by exp_type

exp_type	Revenue
Bills	14M
Entertainment	10M
Fuel	10M
Grocery	9M
Food	8M
Travel	6M

Revenue by Job

Job	Revenue
Businessman	18M
White-collar	10M
Self-employed	9M
Govt	8M
Blue-collar	7M
Retirees	5M

Revenue by Card Category

Card Category	Revenue
Blue	47M
Silver	6M
Gold	3M
Platinum	1M

Revenue by Use Chip

Use Chip	Revenue
Swipe	36M
Chip	17M
Online	4M



POWER BI DASHBOARD

Credit Card Customer Report

Revenue **57M** Interest **7.98M** Income **588M** CSS **3.19**

M 31M F 26M week_start_date All

Gold Silver Blue Plat... Q4 Q2 Q3 Q1

Chip Online Swipe

Revenue by Week

Jan 2023 Apr 2023 Jul 2023 Oct 2023

Revenue by Age Group

Age Group	Revenue (M)
20-30	4M
30-40	6M
40-50	11M
50-60	14M
60+	9M

Revenue by Customer Job

customer_job	Sum of Revenue	Sum of income	Sum of interest_earned
Businessman	17697472	190350431	2,584,604.01
White-collar	10283124	105618475	1,464,690.92
Govt	8335534	90834727	1,182,230.84
Selfemployed	8542826	77659931	1,141,510.40
Blue-collar	7040606	73516911	967,751.42
Retirees	4617448	49619308	641,692.22
Total	56517011	587599783	7,982,479.81

Revenue by Top 5 States

State	Revenue (M)
TX	6M
NY	7M
CA	6M
FL	4M
NJ	3M

Revenue by Income Group

Income Group	Revenue (M)
High	7M
Med	23M
Low	8M
Low	8M
Low	10M

Revenue by Dependent Count

Dependent Count	Revenue (M)
0	2M
1	5M
2	7M
3	9M
4	4M

Revenue by Marital Status

Marital Status	Revenue (M)
Married	12M
Married	15M
Single	10M
Single	12M
Unknown	2M

Revenue by Education Level

Education Level	Revenue (M)
Graduate	10M
Graduate	13M
High School	5M
High School	6M
Unknown	5M
Uneducated	5M
Post-Graduate	5M
Doctorate	5M



Project Insights

WoW change

- Revenue increased by x%,
- Total Transaction Amt & Count increased by xx% & xx%
- Customer count increased by xx%

Overview YTD:

- Overall revenue is 57M
- Total interest is 8M
- Total transaction amount is 46M
- Male customers are contributing more in revenue 31M, female 26M
- Blue & Silver credit card are contributing to 93% of overall transactions
- TX, NY & CA is contributing to 68% Overall Activation rate is 57.5%
- Overall Delinquent rate is 6.06%



Final BI Insights & Recommendations

- ✓ Revenue growth is strong → Focus on maintaining momentum by identifying top-performing segments.
- ✓ Male customers & specific credit cards are driving transactions → Expand promotions targeting female customers and other card types.
- ✓ High-value states (TX, NY, CA) dominate transactions → Strengthen market presence in these regions.
- ✓ Customer activation rate needs improvement → Develop strategies to re-engage inactive customers.
- ✓ Delinquency rate is at 6.06% → Strengthen risk assessment & payment collection strategies.



Final Thought:

BI = Data + Analytics + Decision-Making
Business Intelligence is essential for companies to stay competitive, optimize operations, and improve customer satisfaction.

Thank You!

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