

DATA SCIENCE AND MACHINE LEARNING

MODULE – 3 MICROSOFT POWER BI

CAPSTONE PROJECT

PROJECT TITLE: BANK LOAN PERFORMANCE ANALYSIS

MENTOR:
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BY
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(TN DSML APR 2024)
[23-07-2024 - Tuesday]

Acknowledgements

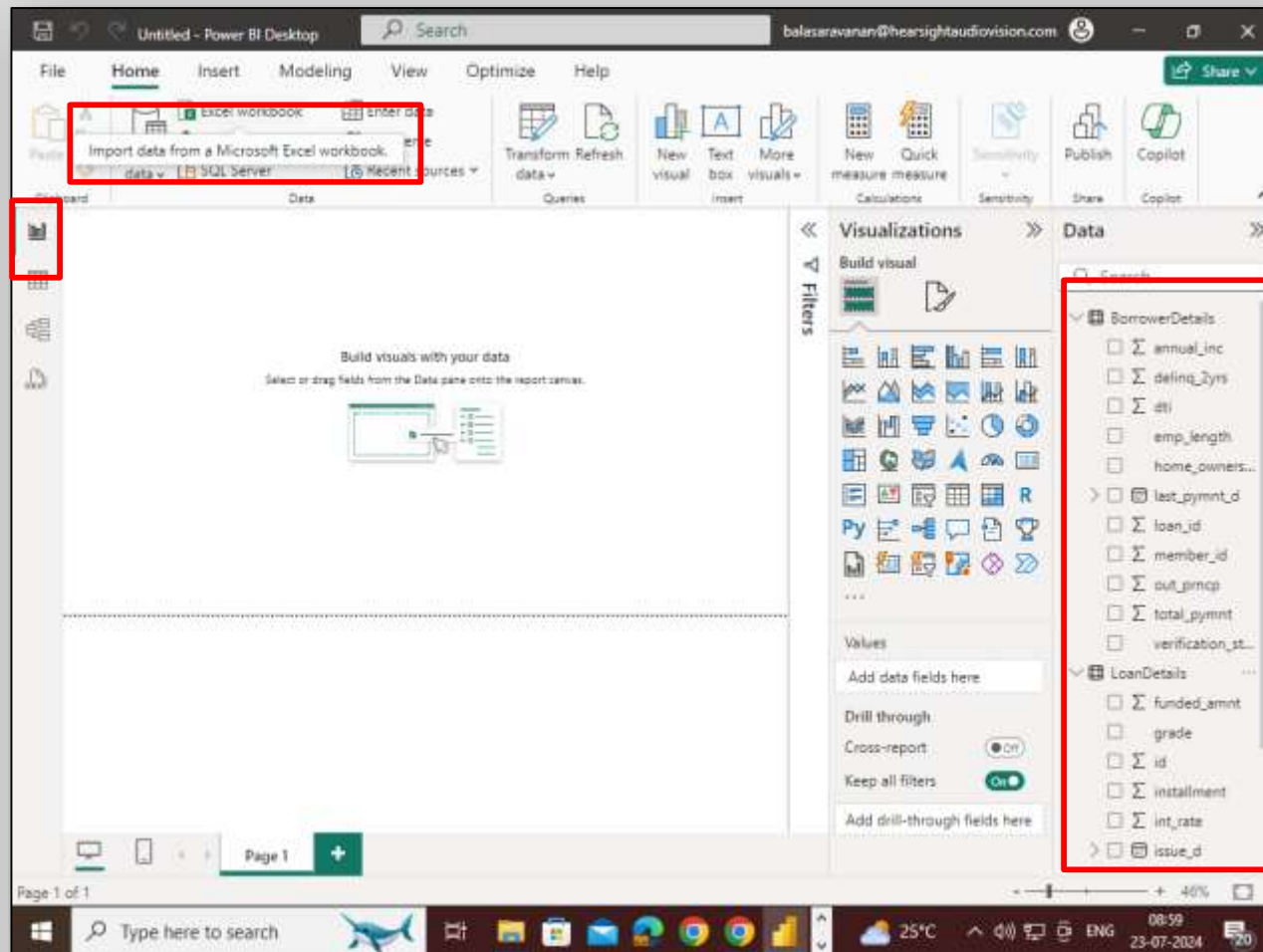
I would like to express my heartfelt gratitude to my mentor, Archana S, for her invaluable guidance and unwavering support throughout this project. Her insightful feedback and encouragement have been instrumental in shaping my research and helping me achieve my goals. I am deeply appreciative of her dedication and commitment to my academic growth. Thank you, madam, for being an exceptional mentor and a source of inspiration.

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1) Importing Data

Import the "LoanDetails" and "BorrowerDetails" sheets from the "bank loan.xlsx" file into Power BI.



2) Transformation Using Power Query

A. Data Cleaning.

B. Data Transformation.

2.A) Data Cleaning

I. Handling Missing Values and Duplicates.

II. Dealing with Inconsistencies.

2.A I) Replace missing values (null) in the 'emp_length' column of the “BorrowerDetails” table with '0 year'.

The screenshot displays the Microsoft Power BI Desktop interface. The main window shows a data table with columns: loan_id, emp_length, and home_ownership. The 'emp_length' column is highlighted with a red box. The 'BorrowerDetails' table is selected in the Queries pane on the left, also highlighted with a red box. The 'Query Settings' pane on the right shows the 'APPLIED STEPS' section, where the step 'Replaced Value null with 0 year' is highlighted with a red box. The 'PROPERTIES' section shows the table name 'BorrowerDetails'.

loan_id	emp_length	home_ownership
2077502	10+ years	ENT
2077430	< 1 year	ENT
2077175	10+ years	ENT
2076865	10+ years	ENT
2075358	1 year	ENT
2075285	3 years	ENT
2069635	8 years	ENT
2072055	9 years	ENT
2071795	4 years	OWN
2071570	< 1 year	ENT
2070078	5 years	OWN
2069908	10+ years	OWN
2064687	< 1 year	ENT
2069868	3 years	ENT
2069057	3 years	ENT
2069758	< 1 year	ENT
2065775	4 years	ENT
2069972	10+ years	MORTGAGE
2062474	1 year	MORTGAGE
2069742	6 years	ENT
2069740	3 years	ENT
2039155	10+ years	ENT
2069710	10+ years	OWN

2.A I) Remove rows with missing values in the 'last_pymnt_d' and 'delinq_2yrs' columns.

The screenshot displays the Power BI Desktop interface for a project named 'Capstone Project Bank Loan Analysis'. The main view shows a table named 'BorrowerDetails' with the following columns: 'id', 'delinq_2yrs', 'last_pymnt_d', and 'total_pymnt'. The table contains 24 rows of data. The 'delinq_2yrs' column has values ranging from 0 to 2, and the 'last_pymnt_d' column has dates ranging from 01-01-2013 to 01-09-2020. The 'total_pymnt' column has values ranging from 1008 to 11902.561.

The 'Query Settings' pane on the right shows the 'APPLIED STEPS' list, which includes the following steps:

- Source
- Navigation
- Promoted Headers
- Changed Type
- Replaced Value null with 0 year
- Filtered Rows remove null
- Filtered Rows remove empty
- Filtered Rows remove null

2.A I) Remove duplicate rows in the 'id' column of the "LoanDetails" table.

The screenshot displays the Microsoft Power BI Desktop interface. The main view shows a table named 'LoanDetails' with the following columns: 'id', 'loan_amt', 'funded_amt', and 'term'. The table contains 999 rows of data. A red box highlights the 'LoanDetails' table in the left-hand pane. Another red box highlights the 'id' column header. A third red box highlights the 'Removed Duplicates rows id' step in the 'APPLIED STEPS' pane on the right. The 'Query Settings' pane on the right shows the 'Name' as 'LoanDetails' and the 'APPLIED STEPS' as 'Source', 'Navigation', 'Promoted Headers', and 'Removed Duplicates rows id'. The status bar at the bottom indicates '11 COLUMNS, 999+ ROWS' and 'Column profiling based on top 1000 rows'.

id	loan_amt	funded_amt	term
1077501	5000	4975	36 mon
1077430	2500	2500	60 mon
1077175	2400	2400	36 mon
1076863	10000	10000	36 mon
1075358	3000	3000	60 mon
1075269	5000	5000	36 mon
1069639	7000	7000	60 mon
1072053	3000	3000	36 mon
1072795	5600	5600	60 mon
1072570	5375	5350	60 mon
1070078	6500	6500	60 mon
1069908	12000	12000	36 mon
1064687	9000	9000	36 mon
1069866	3000	3000	36 mon
1069057	10000	10000	36 mon
1069759	1000	1000	36 mon
1065775	10000	10000	36 mon
1069971	3600	3600	36 mon
1062474	6000	6000	36 mon
1069742	9200	9200	36 mon
1069740	20250	19142.16108	60 mon
1069153	21000	21000	36 mon
1069710	10000	10000	36 mon

2.A II) Ensure words in the 'purpose' column are separated by spaces instead of underscores (e.g., "credit card" instead of "credit_card").

The screenshot displays the Microsoft Power BI Desktop interface. The main window shows a table with columns: **issue_d**, **loan_status**, and **purpose**. The **purpose** column contains various loan purposes, some with underscores (e.g., "credit_card", "debt_consolidation"). The **Query Settings** pane on the right shows the **PROPERTIES** section with the **Name** set to "LoanDetails". The **APPLIED STEPS** section shows a list of steps, including "Replaced Value by space", which is highlighted. Below this step, a preview shows the result: "Replaced Value by space".

issue_d	loan_status	purpose
01-12-2018	Fully Paid	credit card
01-12-2018	Charged Off	car
01-12-2018	Fully Paid	small business
01-12-2018	Fully Paid	other
01-12-2018	Current	other
01-12-2018	Fully Paid	wedding
01-12-2018	Current	debt consolidation
01-12-2018	Fully Paid	car
01-12-2018	Charged Off	small business
01-12-2018	Charged Off	other
01-12-2018	Fully Paid	debt consolidation
01-12-2018	Fully Paid	debt consolidation
01-12-2018	Charged Off	debt consolidation
01-12-2018	Fully Paid	credit card
01-12-2018	Charged Off	other
01-12-2018	Fully Paid	debt consolidation
01-12-2018	Fully Paid	home improvement
01-12-2018	Fully Paid	major purchase
01-12-2018	Fully Paid	medical
01-12-2018	Fully Paid	debt consolidation
01-12-2018	Fully Paid	debt consolidation
01-12-2018	Charged Off	debt consolidation
01-12-2018	Fully Paid	credit card

2.A II) Format the 'purpose' and 'home_ownership' columns to proper case.

Power BI Desktop - Capstone Project Bank Loan Analysis

Queries (2) | = Table.TransformColumns(#"Replaced Value by space",{

LoanDetails

issue_id	loan_status	purpose
01-12-2008	Fully Paid	Credit Card
01-12-2008	Charged Off	Car
01-12-2008	Fully Paid	Small Business
01-12-2008	Fully Paid	Other
01-12-2008	Current	Other
01-12-2008	Fully Paid	Wedding
01-12-2008	Current	Debt Consolidation
01-12-2008	Fully Paid	Car
01-12-2008	Charged Off	Small Business
01-12-2008	Charged Off	Other
01-12-2008	Fully Paid	Debt Consolidation
01-12-2008	Fully Paid	Debt Consolidation
01-12-2008	Charged Off	Debt Consolidation
01-12-2008	Fully Paid	Credit Card
01-12-2008	Charged Off	Other
01-12-2008	Fully Paid	Debt Consolidation
01-12-2008	Fully Paid	Home Improvement
01-12-2008	Fully Paid	Major Purchase
01-12-2008	Fully Paid	Medical
01-12-2008	Fully Paid	Debt Consolidation
01-12-2008	Fully Paid	Debt Consolidation
01-12-2008	Charged Off	Debt Consolidation
01-12-2008	Fully Paid	Credit Card

PROPERTIES

Name: LoanDetails

APPLIED STEPS

Source, Navigation, Promoted Headers, Changed Type, Removed Duplicates rows id, Replaced Value by space, **Capitalized Each Word**

11 COLUMNS, 999+ ROWS | Column profiling based on top 1000 rows. | PREVIEW DOWNLOADED ON MONDAY 09-12 23-07-2024

Power BI Desktop - Capstone Project Bank Loan Analysis

Queries (2) | = Table.TransformColumns(#"Filtered Rows remove empty",{

BorrowerDetails

loan_id	emp_length	home_ownership
599	10+ years	Rent
167	< 1 year	Rent
524	10+ years	Rent
178	10+ years	Rent
748	1 year	Rent
441	3 years	Rent
742	8 years	Rent
686	9 years	Rent
957	4 years	Own
722	< 1 year	Rent
201	5 years	Own
908	10+ years	Own
717	< 1 year	Rent
956	3 years	Rent
509	3 years	Rent
871	< 1 year	Rent
1699	4 years	Rent
884	10+ years	Mortgage
538	1 year	Mortgage
855	6 years	Rent
648	3 years	Rent
1083	10+ years	Rent
821	10+ years	Own

PROPERTIES

Name: BorrowerDetails

APPLIED STEPS

Source, Navigation, Promoted Headers, Changed Type, Replaced Value null with 0 year, Filtered Rows remove null, **Capitalized Each Word**

11 COLUMNS, 999+ ROWS | Column profiling based on top 1000 rows. | PREVIEW DOWNLOADED ON MONDAY 09-14 23-07-2024

2.B) Data Transformation

I. Column Transformation.

II. Column Renaming.

III. Creating New Columns.

IV. Column Dropping.

2.B I) Change the data type of the 'total_pymnt' column to 'Fixed decimal number'.

The screenshot displays the Microsoft Power BI Desktop interface. The main window shows a data table with columns: 'last_pymnt_dt', 'total_pymnt', and 'out_prncp'. The 'total_pymnt' column is highlighted with a red box. The 'Query Settings' pane on the right shows the 'APPLIED STEPS' list, where the step 'Changed Type fixed decimal number' is highlighted with a red box. The 'PROPERTIES' pane shows the query name 'BorrowerDetails'.

	last_pymnt_dt	total_pymnt	out_prncp
1	0	5,861.07	
2	0	1,008.71	
3	0	3,003.65	
4	0	12,226.30	
5	0	3,242.17	764
6	0	5,631.38	
7	0	8,136.84	1889
8	0	3,938.14	
9	0	646.02	
10	0	1,476.19	
11	0	7,677.52	
12	0	13,943.08	
13	0	2,270.70	
14	0	3,478.98	
15	0	7,471.99	
16	0	1,270.17	
17	0	12,519.26	
18	0	3,785.02	
19	2	7,164.50	
20	0	9,459.95	
21	0	27,663.04	
22	0	14,025.40	
23	0	11,902.56	
24			

2.B I) Round off the numbers in the 'funded_amnt' column to 2 decimal places.

The screenshot displays the Microsoft Power BI Desktop interface. The main view shows a table named 'LoanDetails' with columns: 'id', 'loan_amnt', 'funded_amnt', and 'term'. The 'funded_amnt' column is highlighted with a red box. The 'Query Settings' pane on the right shows the 'APPLIED STEPS' list, which includes 'Rounded Off 2 decimal places' as the final step, also highlighted with a red box. The 'PROPERTIES' pane shows the table name 'LoanDetails'.

id	loan_amnt	funded_amnt	term
1	1077501	5000	6 mon
2	1077430	2500	0 mon
3	1077175	2400	6 mon
4	1076863	10000	6 mon
5	1075358	3000	0 mon
6	1075269	5000	6 mon
7	1069639	7000	0 mon
8	1072053	3000	6 mon
9	1071795	5600	0 mon
10	1072570	5350	0 mon
11	1070078	6500	0 mon
12	1069908	12000	6 mon
13	1064687	9000	6 mon
14	1069866	3000	6 mon
15	1069057	10000	6 mon
16	1069759	1000	6 mon
17	1065775	10000	6 mon
18	1069971	3600	6 mon
19	1062474	6000	6 mon
20	1069742	9200	6 mon
21	1069740	20250	0 mon
22	1039154	21000	6 mon
23	1068710	10000	6 mon

2.B II) Rename the column 'issue_d' to 'issue_date'.

The screenshot displays the Microsoft Power BI Desktop interface for a project titled 'Capstone Project Bank Loan Analysis'. The main view shows a data table with columns: 'sub_grade', 'issue_date', and 'loan_status'. The 'issue_date' column is highlighted with a red box. The 'Query Settings' pane on the right shows the 'APPLIED STEPS' list, where the step 'Renamed Columns issue_date' is highlighted with a red box. The 'PROPERTIES' pane shows the table name 'LoanDetails'.

	sub_grade	issue_date	loan_status
1	B2	01-12-2018	fully Paid
2	C4	01-12-2018	charged Off
3	C5	01-12-2018	fully Paid
4	C1	01-12-2018	fully Paid
5	B5	01-12-2018	current
6	A4	01-12-2018	fully Paid
7	C5	01-12-2018	current
8	E1	01-12-2018	fully Paid
9	F2	01-12-2018	charged Off
10	B5	01-12-2018	charged Off
11	C3	01-12-2018	fully Paid
12	B5	01-12-2018	fully Paid
13	C1	01-12-2018	charged Off
14	B1	01-12-2018	fully Paid
15	B2	01-12-2018	charged Off
16	D1	01-12-2018	fully Paid
17	C4	01-12-2018	fully Paid
18	A1	01-12-2018	fully Paid
19	B3	01-12-2018	fully Paid
20	A1	01-12-2018	fully Paid
21	C4	01-12-2018	fully Paid
22	B4	01-12-2018	charged Off
23	B3	01-12-2018	fully Paid

2.B II) Rename the column 'last_pymnt_d' to 'last_pymnt_date'.

The screenshot displays the Microsoft Power BI Desktop interface for a project named 'Capstone Project Bank Loan Analysis'. The 'Table' view is active, showing a data table with columns: 'last_pymnt_date', 'total_pymnt', and 'out_pmc'. The 'last_pymnt_date' column is highlighted in the column header row. The 'Query Settings' pane on the right shows the 'APPLIED STEPS' list, where the step 'Renamed Columns last_pymnt_d' is selected, and the new column name 'last_pymnt_date' is entered in the text box below it.

	last_pymnt_date	total_pymnt	out_pmc
1	01-01-2015	5,861.07	
2	01-04-2020	1,008.71	
3	01-06-2021	3,003.65	
4	01-01-2015	12,226.30	
5	01-01-2016	3,242.17	764
6	01-01-2015	5,631.38	
7	01-01-2016	8,136.84	1889
8	01-01-2015	3,938.14	
9	01-04-2019	646.02	
10	01-11-2019	1,476.19	
11	01-06-2020	7,677.52	
12	01-09-2020	23,943.08	
13	01-07-2019	2,270.70	
14	01-01-2015	3,478.98	
15	01-10-2020	7,471.99	
16	01-01-2015	1,270.17	
17	01-01-2015	12,519.26	
18	01-05-2020	3,785.02	
19	01-02-2015	7,164.50	
20	01-07-2019	9,459.96	
21	01-08-2015	27,663.04	
22	01-09-2020	14,025.40	
23	01-01-2015	11,902.56	

2.B III) Create a new custom column named 'total_amount_paid' to calculate the total amount paid by each borrower by subtracting 'out_prncp' from 'total_pymnt'.

total_amount_paid = [total_pymnt] - [out_prncp]

The screenshot shows the Power BI Desktop interface with the 'Add Column' tab selected. The 'Custom Column' dialog box is open, showing the formula `[total_pymnt] - [out_prncp]` and a list of available columns. The 'BorrowerDetails' table is selected in the 'Name' field. The 'Applied Steps' list shows 'Renamed Columns last_pymnt...' and 'Added Custom total_amount...'.

LoanDetails	1	01-2015	5,861.07	0	5,861.07
	2	04-2020	1,008.71	0	1,008.71

The screenshot shows the Power BI Desktop interface with the 'Transform' tab selected. The 'Applied Steps' list shows 'Source', 'Navigation', 'Promoted Headers', 'Changed Type', 'Replaced Value null with 0 year', 'Filtered Rows remove null', 'Filtered Rows remove empty', 'Capitalized Each Word', 'Changed Type fixed decimal', 'Renamed Columns last_pymnt...', and 'Added Custom total_amount...'. The 'Custom Column' dialog box is also visible, showing the formula `[total_pymnt] - [out_prncp]`.

LoanDetails	1	01-2015	5,861.07	0	5,861.07
	2	04-2020	1,008.71	0	1,008.71
	3	06-2021	3,001.65	0	3,001.65
	4	01-2015	12,226.30	0	12,226.30
	5	01-2016	2,475.27	76.9	2,475.27
	6	01-2015	5,631.38	0	5,631.38
	7	01-2016	8,136.94	1089.25	6,247.69
	8	01-2015	3,938.14	0	3,938.14
	9	04-2019	646.02	0	646.02
	10	11-2019	1,476.19	0	1,476.19
	11	06-2020	7,677.52	0	7,677.52
	12	09-2020	13,949.08	0	13,949.08
	13	07-2019	2,270.70	0	2,270.70
	14	01-2015	3,478.98	0	3,478.98
	15	10-2020	7,471.99	0	7,471.99
	16	01-2015	1,270.17	0	1,270.17
	17	01-2015	12,519.26	0	12,519.26
	18	05-2020	2,785.02	0	2,785.02
	19	01-2015	7,164.50	0	7,164.50
	20	07-2019	9,459.96	0	9,459.96
	21	08-2015	27,663.94	0	27,663.94
	22	09-2020	14,025.40	0	14,025.40
	23	01-2015	11,902.56	0	11,902.56

2.B III) Add a new conditional column named 'delinquency_status' to identify if the borrower has any delinquencies. If the number of delinquencies in 'delinq_2yrs' is greater than 0, the status should be "Delinquent", otherwise "Not Delinquent".

The screenshot shows the Power BI Desktop interface with the 'Add Conditional Column' dialog box open. The dialog box is titled 'Add Conditional Column' and contains the following fields:

- New column name:** delinquency_status
- Column Name:** delinq_2yrs
- Operator:** is greater than
- Value:** 0
- Output:** Delinquent

Below the main configuration, there is an 'Add Clause' button and an 'Else' section with the value 'Not Delinquent'. The 'OK' and 'Cancel' buttons are at the bottom right of the dialog box.

In the background, a data table is visible with the following columns: Index, Amount, Delinq_2yrs, and Delinquency_Status. The table shows 24 rows of data. The 'Delinquency_Status' column is highlighted in red, and the 'Delinq_2yrs' column is also highlighted in red. The 'Delinquency_Status' column contains the values 'Not Delinquent' and 'Delinquent'.

Index	Amount	Delinq_2yrs	Delinquency_Status
15	7,471.99	0	Not Delinquent
16	1,270.17	0	Not Delinquent
17	12,519.26	0	Not Delinquent
18	3,785.02	0	Not Delinquent
19	7,164.50	0	Delinquent
20	9,459.96	0	Not Delinquent
21	27,663.04	0	Not Delinquent
22	14,025.40	0	Not Delinquent
23	11,902.56	0	Not Delinquent
24			

2.B IV) Remove the 'sub_grade' column as that does not significantly contribute to the analysis.

REMOVED "sub_grade"

Table: RemoveColumns(#"Renamed Columns issue_date",

1.2	installment	AP grade	issue_date	loan_t
1	162.8	B	01-12-2018	ully Pt
2	59.8	C	01-12-2018	harge
3	84.3	C	01-12-2018	ully Pt
4	359.3	C	01-12-2018	ully Pt
5	67.7	B	01-12-2018	urrent
6	156.4	A	01-12-2018	ully Pt
7	170.0	C	01-12-2018	urrent
8	109.4	E	01-12-2018	ully Pt
9	152.9	F	01-12-2018	harge
10	121.4	B	01-12-2018	harge
11	153.4	C	01-12-2018	ully Pt
12	402.5	B	01-12-2018	ully Pt
13	305.3	C	01-12-2018	harge
14	96.6	B	01-12-2018	ully Pt
15	525.7	B	01-12-2018	harge
16	35.3	D	01-12-2018	ully Pt
17	347.9	C	01-12-2018	ully Pt
18	109.5	A	01-12-2018	ully Pt
19	198.4	B	01-12-2018	ully Pt
20	280.0	A	01-12-2018	ully Pt
21	484.6	C	01-12-2018	ully Pt
22	701.7	B	01-12-2018	harge
23	530.7	B	01-12-2018	ully Pt

10 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED ON MONDAY

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3) Data Modeling

Identify the common column between both the tables and establish relationships between the two tables. Ensure the cross-filter direction is set to "Both". This step is crucial for enabling cross-table analysis and ensuring data integrity within the dataset.

New relationship

Select tables and columns that are related.

From table: BorrowerDetails

id	first_name	last_name	last_pymnt_dt	loan_id	member_id	out_group	total_amount	verification_status
ge	01	November	2021	10646932	1298884	0	23996.84	Verified
ge	01	June	2021	1063509	1296075	0	22756.2027	Verified
ge	01	February	2021	1033589	1263136	0	20596.87	Verified

To table: LoanDetails

funded_amnt	grade	id	installment	int_rate	issue_date	loan_amnt
10000	6	33341471	334.49	12.49	01 October 2021	10000
10000	6	33373884	334.49	12.49	01 October 2021	10000
10000	6	33161072	334.49	12.49	01 October 2021	10000

Cardinality: Many to one (*:1)

Cross-filter direction: Both

☒ Make this relationship active

☒ Apply security filter in both directions

☐ Assume referential integrity

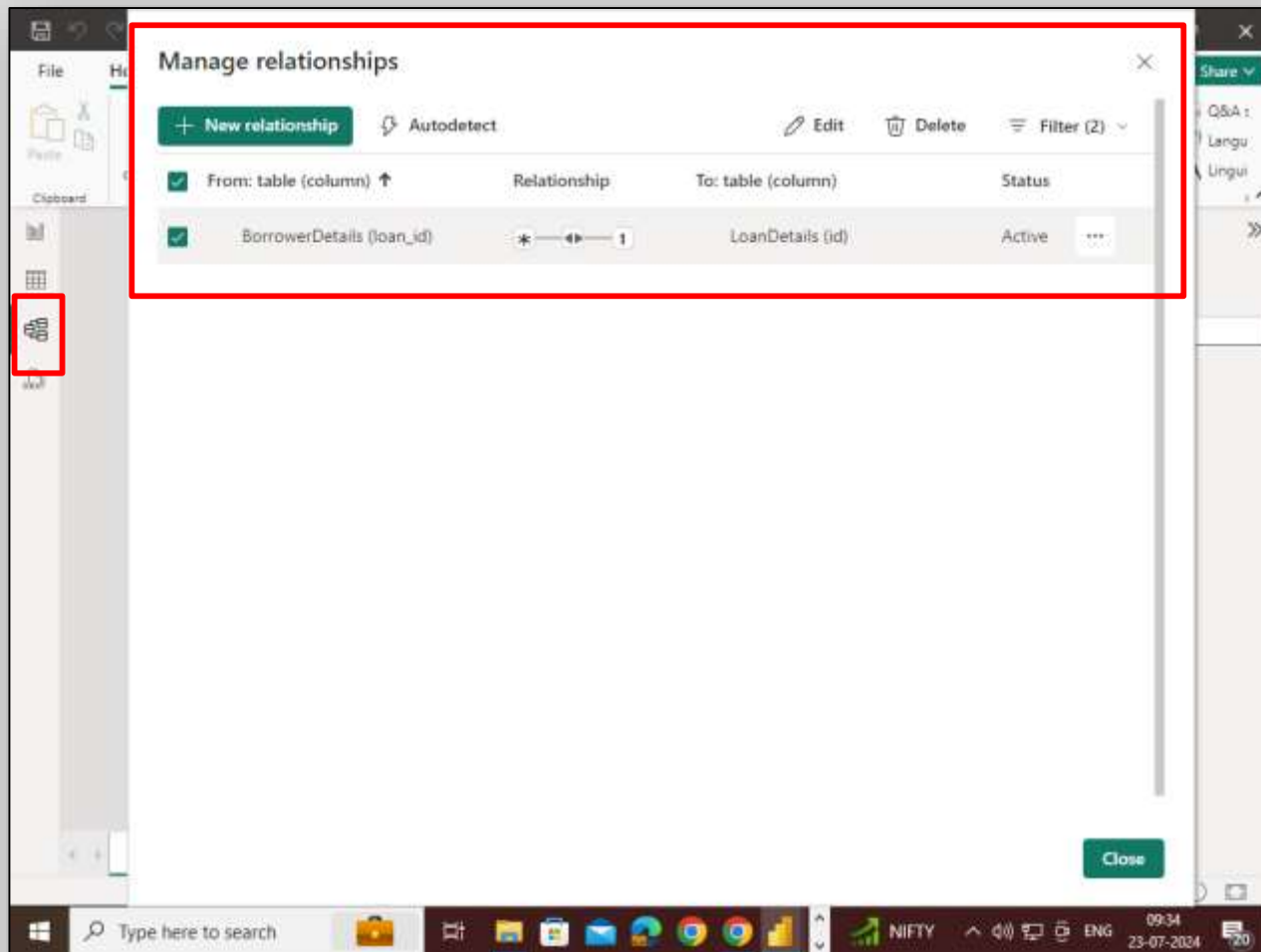
Save Cancel

Data

Tables: BorrowerDetails, LoanDetails

Relationship: BorrowerDetails (loan_id) to LoanDetails (id) with cardinality *:1

3) Data Modeling – Manage Relationships



4) Creating Measures and Calculated Columns using DAX

A. Calculated Columns.

B. Measures.

4.A) Create a new calculated column named 'remaining_installments' using DAX in the "BorrowerDetails" table to calculate the number of remaining installments by dividing the remaining principal amount ('out_prncp') by the monthly installment amount ('installment') and round up the result using the CEILING() function to account for any partial payments.

remaining_installments = CEILING(BorrowerDetails[out_prncp] / RELATED(LoanDetails[installment]), 1) - Calculated Column

The screenshot shows the Power BI Desktop interface with the 'BorrowerDetails' table selected. The 'Column tools' ribbon is active, and the DAX formula for the new calculated column is entered in the formula bar. The resulting data table is displayed below the formula bar, showing the calculated values for 'remaining_installments'.

last_pymnt_date	total_pymnt	out_prncp	total_amount_paid	delinquency_status	remaining_installments
01 November 2020	23996.94	0	23996.94	Not Delinquent	0
01 June 2021	22756.2027	0	22756.2027	Not Delinquent	0
01 February 2015	20596.97	0	20596.97	Not Delinquent	0
01 June 2020	16632.6	0	16632.6	Not Delinquent	0
01 June 2021	21630.52	0	21630.52	Not Delinquent	0
01 January 2019	4587.44	0	4587.44	Not Delinquent	0
01 March 2019	8314.15	0	8314.15	Not Delinquent	0
01 June 2021	13303.6626	0	13303.6626	Not Delinquent	0
01 May 2019	15848.53	0	15848.53	Not Delinquent	0
01 October 2018	20191.73	0	20191.73	Not Delinquent	0
01 January 2020	7471.48	0	7471.48	Not Delinquent	0
01 July 2021	21624.7793	0	21624.7793	Not Delinquent	0
01 February 2021	41662.89	0	41662.89	Not Delinquent	0
01 February 2021	11630.13	0	11630.13	Not Delinquent	0
01 January 2020	6815.21	0	6815.21	Not Delinquent	0
01 August 2019	10436.19	0	10436.19	Not Delinquent	0
01 July 2018	219.11	0	219.11	Not Delinquent	0
01 June 2021	7609.7545	0	7609.7545	Not Delinquent	0
01 August 2020	22944.69	0	22944.69	Not Delinquent	0
01 February 2020	27552.36	0	27552.36	Not Delinquent	0
01 February 2019	8731.4	0	8731.4	Not Delinquent	0
01 November 2021	35494.4771	0	35494.4771	Not Delinquent	0

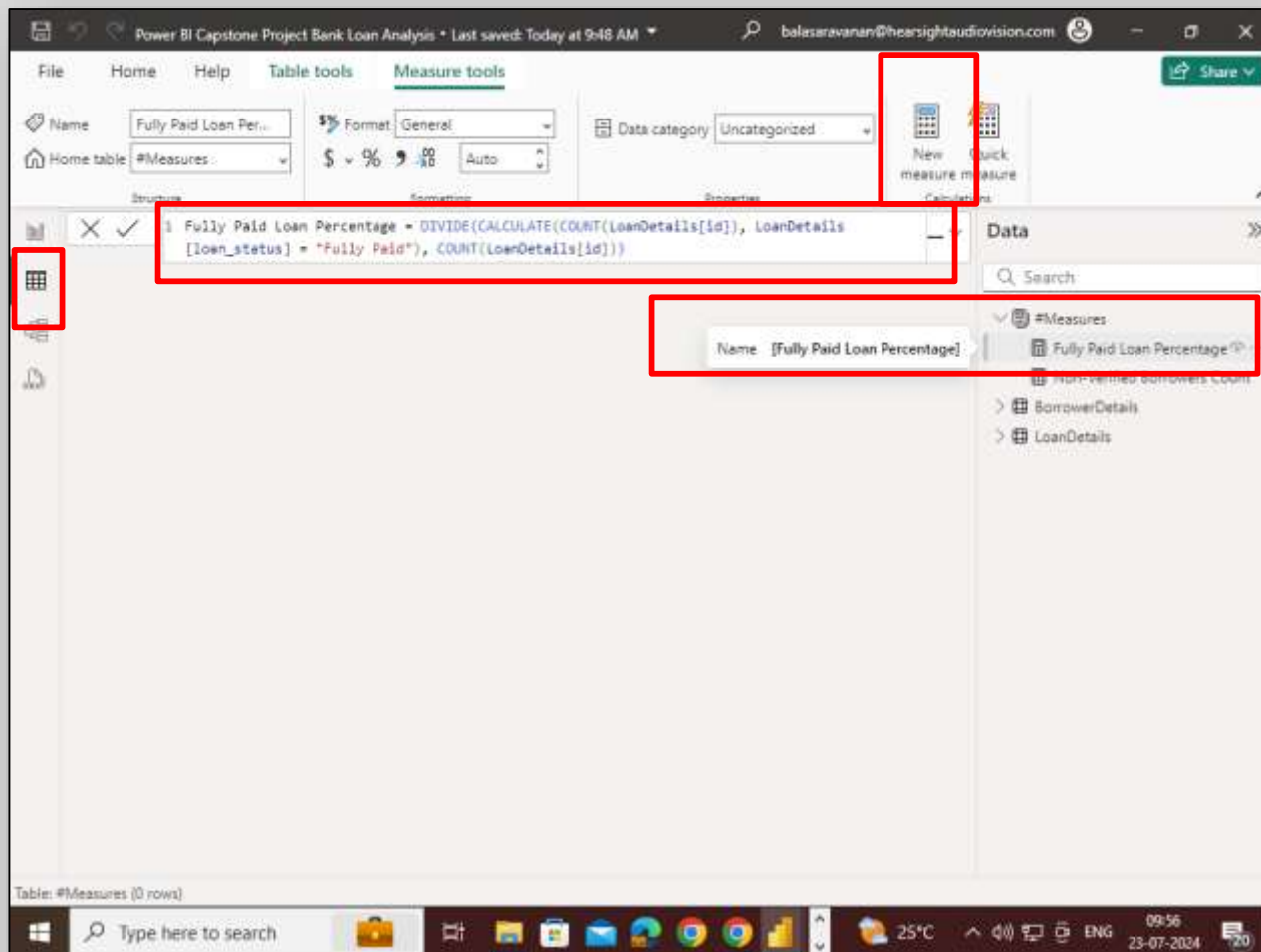
4.B I) Create a measure named 'Non-Verified Borrowers Count' using DAX to count the number of loans that have been 'Not Verified'.

Non-Verified Borrowers Count = CALCULATE(COUNT(BorrowerDetails[loan_id]), FILTER(BorrowerDetails, BorrowerDetails[verification_status] = "Not Verified"))

The screenshot displays the Power BI Desktop interface for a project titled 'Power BI Capstone Project Bank Loan Analysis'. The 'Measure tools' ribbon is active. In the 'Name' field, the measure is named 'Non-Verified Borrowers Count'. The 'Format' dropdown is set to 'Whole number'. The 'Data category' is 'Uncategorized'. The DAX formula is entered in the formula bar: `Non-Verified Borrowers Count = CALCULATE(COUNT(BorrowerDetails[loan_id]), FILTER(BorrowerDetails, BorrowerDetails[verification_status] = "Not Verified"))`. The 'Data' pane on the right shows the measure listed under the '#Measures' folder. The 'Table: #Measures (0 rows)' is shown at the bottom left. The Windows taskbar at the bottom indicates the system time is 09:55 on 23-07-2024.

4.B II) Create a measure named 'Fully Paid Loan Percentage' to calculate the percentage of fully paid loans. Divide the number of loans with a "Fully Paid" loan status by the total number of loans and then format this measure as Percentage.

Fully Paid Loan Percentage = DIVIDE(CALCULATE(COUNT('LoanDetails'[id]), 'LoanDetails'[loan_status] = "Fully Paid"), COUNT('LoanDetails'[id]))

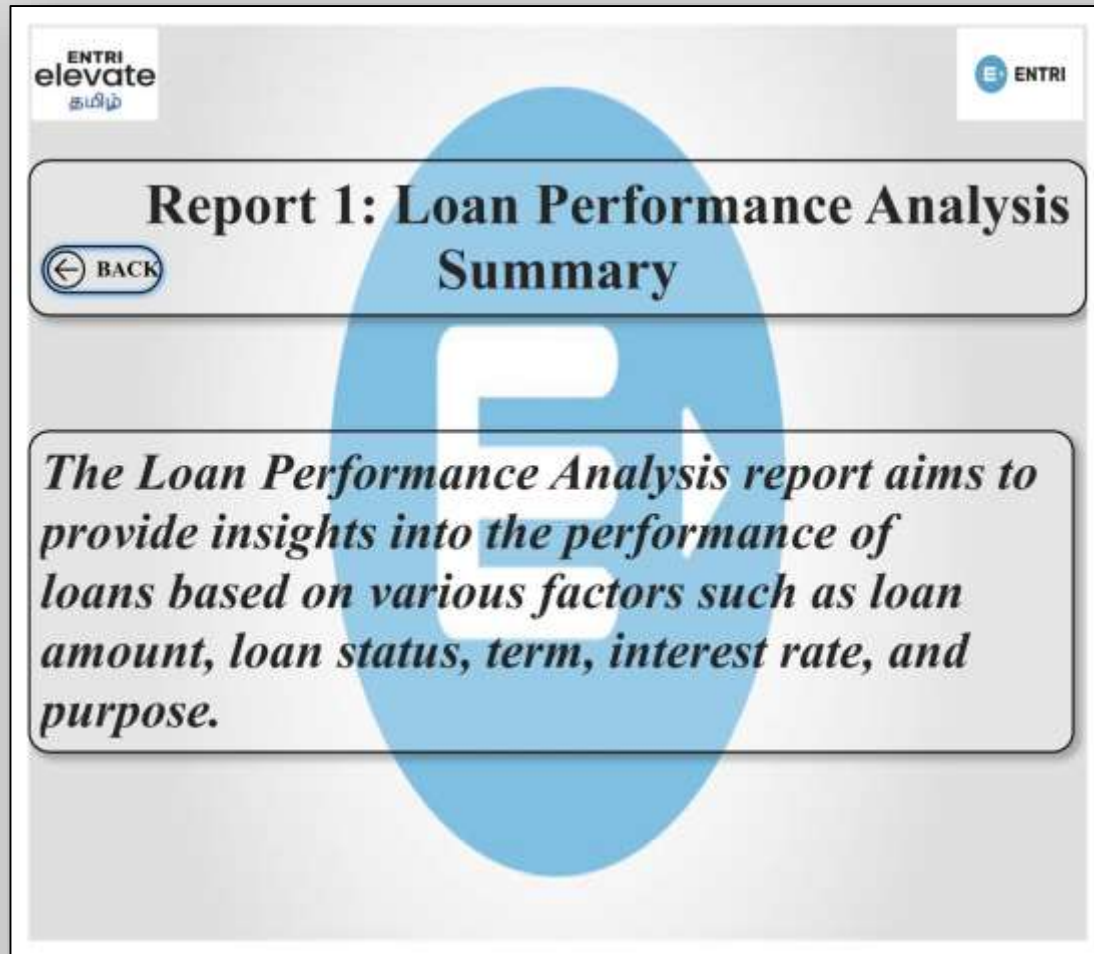


5) Creating Comprehensive Reports

A. Report 1: *Loan Performance Analysis.*

B. Report 2: *Borrower Profile Analysis.*

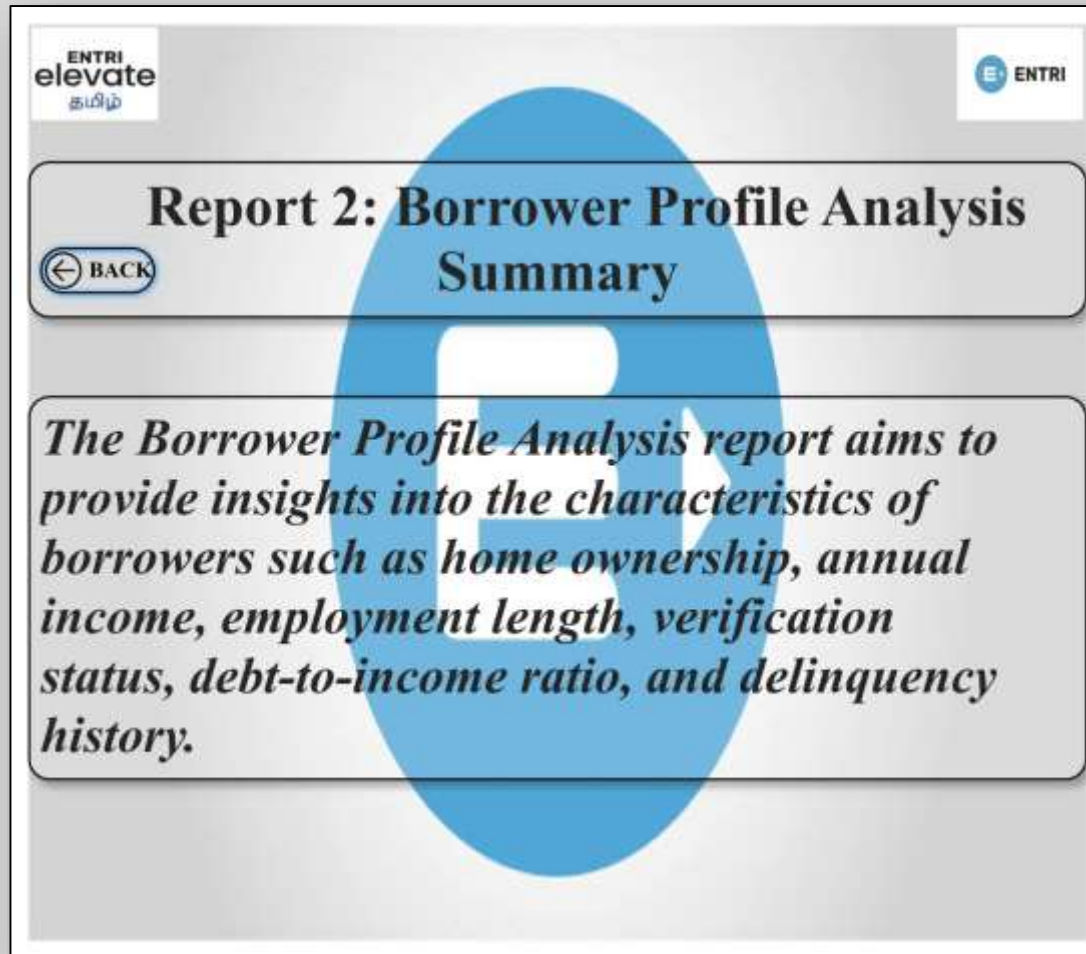
5.A) Report 1: Loan Performance Analysis



5.A) Report 1: Loan Performance Analysis



Report 2: Borrower Profile Analysis



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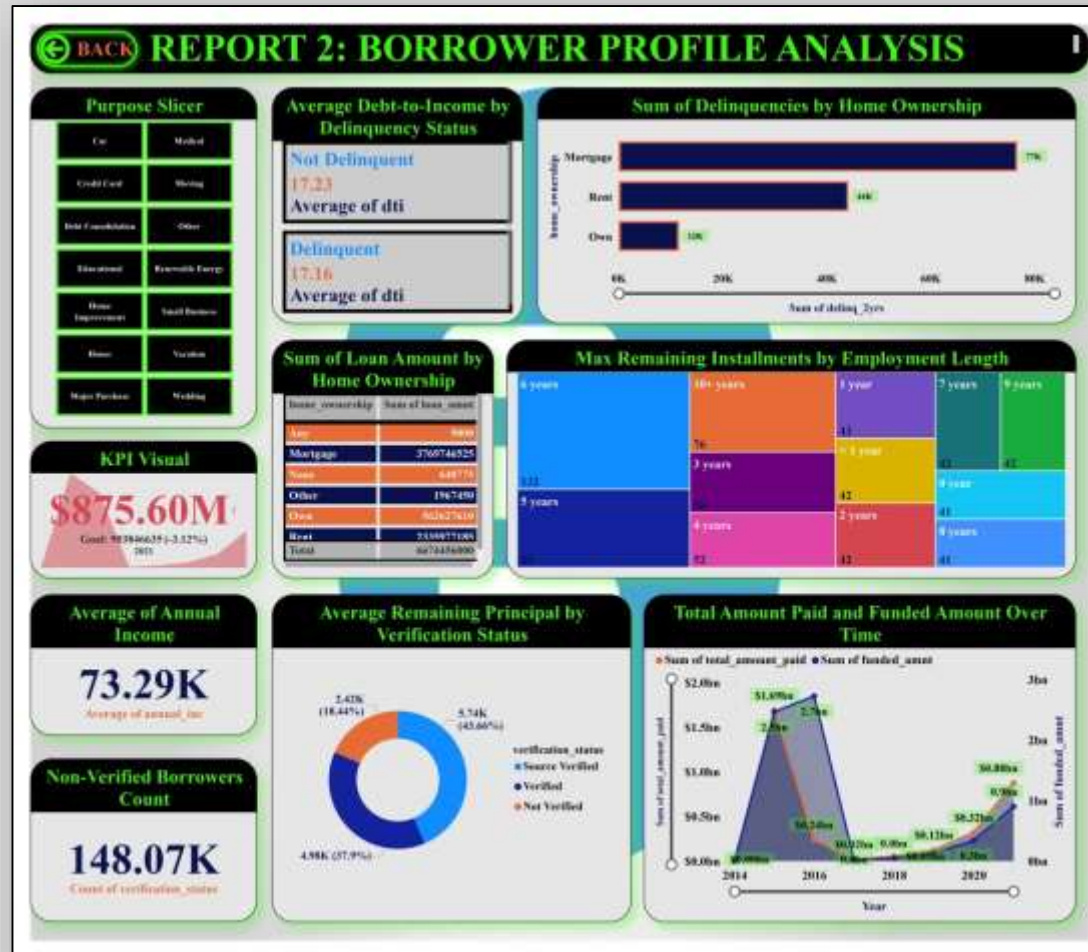
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Report 2: Borrower Profile Analysis Summary

← BACK

The Borrower Profile Analysis report aims to provide insights into the characteristics of borrowers such as home ownership, annual income, employment length, verification status, debt-to-income ratio, and delinquency history.

Report 2: Borrower Profile Analysis





THANK YOU