

Real-time Analytics

Assignment 1

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**About**

There is a City Central Bank that operates in 20 states, focusing on small loans and deposits. Branches oversee lending through credit officers and representatives. Challenges include tracking customer interactions, loan approvals, collections, and deposit mobilization. Branch managers need daily updates on customer meetings, loan statuses, collections, and weekly deposits. Regional managers require accurate daily updates on branch performance and risk profiles. Zonal heads oversee overall performance, ensuring compliance and providing strategic guidance.

Zonal Head

Regional Manager

Branch Manager

Credit officer

Customer representative

Customer

There are different stakeholders and they have some challenges they are as follows:

**Challenges Faced by Branch Manager:**

* Monitoring Customer Interactions: Ensuring credit representatives meet a sufficient number of customers daily to assess their creditworthiness and loan requirements.
* Tracking Loan Approval Process: Understanding the stage of each customer's loan application and how quickly credit officers can approve loans.
* Assessing Customer Quality: Evaluating the quality of customers applying for loans and the time spent at each phase of the application process.
* Managing Collections: Monitoring daily collections activities, preferably twice a day, to ensure timely payments and follow-ups with delinquent customers.
* Tracking Deposit Collection and Renewals: Knowing the amount of deposits collected weekly and the number of deposits maturing in the next 5 days to facilitate follow-ups with customers for renewals.

**Challenges Faced by Regional Manager:**

* Monitoring Daily Operations: Ensuring accurate updates on daily disbursements, collections, and deposit mobilizations across branches.
* Analyzing Branch Performance: Tracking the number of new customers acquired, collection rates, and deposit growth for each branch.
* Deriving Risk Profiles: Assessing the risk profile of each branch based on defaults and customer risk profiles to mitigate risks effectively.
* Identifying Key Performance Indicators (KPIs Establishing KPIs that indicate branch health and require intervention if not met, ensuring overall branch performance aligns with organizational goals.

**Challenges Faced by Zonal head**

* Oversight of Multiple Branches: Managing and coordinating operations, performance, and challenges across multiple branches within the designated zone.
* Ensuring Consistency: Maintaining consistency in policies, procedures, and service standards across all branches within the zone.
* Monitoring Regional Managers: Supervising and providing support to regional managers in their respective areas, ensuring alignment with organizational goals and standards.
* Risk Management: Identifying and mitigating risks at the zonal level, such as regional economic fluctuations, regulatory changes, and compliance issues.

**Entities**

Customer

Customer\_transaction

Unit

Designation

Employee

Supervisor

Customer Interaction

Loan Application

|  |
| --- |
| Customer |
| CustomerID |
| FirstName |
| LastName |
| Contactinfo |
| Address |
| CreditRating |
| UnitId |

|  |
| --- |
| Unit |
| UnitName |
| Unit type |
| ParentId |

|  |
| --- |
| Designation |
| Designationid |
| DesignationName |

|  |
| --- |
| Employee |
| Empname |
| Unitid |
| Designation id |
| Unitid |
| Contact info |
| SupervisorID |

|  |
| --- |
| Supervisor |
| SupervisorID |
| SupervisorName |

|  |
| --- |
| CustomerTransaction |
| TransactionID |
| CustomerID |
| TransactionDate |
| Amount |
| TransactionType |
| UnitId |
| EmployeeId |
| Loanid |

|  |
| --- |
| Loan Application |
| Loanapplicationid |
| Customerid |
| Unitid |
| ApplicationDate |
| ApprovalDate |
| LoanAmont |
| Employeeid |

|  |
| --- |
| CustomerInteraction |
| Interactionid |
| CustomerId |
| InteractionDate |
| UnitId |
| employeeId |
| InteractionType |
| InteractionDetails |

The challenges faced by the stakeholder

**Monitoring customer interaction**

Real=# SELECT

interactiondate,

COUNT(DISTINCT customerid) AS total\_customers\_met,

interactiontype,

interactiondetails

FROM

customerinteraction

WHERE

interactiondate BETWEEN '2024-03-01' AND '2024-03-20'

AND interactiontype = 'Call'

GROUP BY

interactiondate, interactiontype, interactiondetails;

interactiondate | total\_customers\_met | interactiontype | interactiondetails

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2024-03-01 | 1 | Call | Discussed loan options

2024-03-12 | 1 | Call | Confirmed application details

2024-03-18 | 1 | Call | Followed up on documentation

**Assesing Customer Quality**

Real=# SELECT

c.customerid,

c.firstname,

c.lastname,

la.applicationdate,

la.approvaldate,

(la.approvaldate - la.applicationdate) AS processing\_time\_days

FROM

customer c

INNER JOIN

loanapplication la ON c.customerid = la.customerid;

customerid | firstname | lastname | applicationdate | approvaldate | processing\_time\_days

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3 | Michael | Johnson | 2024-03-10 | 2024-03-15 | 5

4 | Emily | Brown | 2024-03-12 | 2024-03-18 | 6

5 | David | Wilson | 2024-03-15 | 2024-03-20 | 5

6 | Sarah | Taylor | 2024-03-18 | 2024-03-22 | 4

7 | James | Martinez | 2024-03-20 | 2024-03-25 | 5

8 | Olivia | Garcia | 2024-03-22 | 2024-03-28 | 6

9 | Daniel | Rodriguez | 2024-03-25 | 2024-03-30 | 5

10 | Emma | Hernandez | 2024-03-28 | 2024-04-01 | 4

1 | John | Doe | 2024-03-01 | |

2 | Jane | Smith | 2024-03-05 | |

(10 rows)

**Managing Collection:**

Real=# SELECT

interactiondate,

COUNT(DISTINCT customerid) AS total\_customers\_contacted,

SUM(CASE WHEN interactiontype = 'Call' THEN 1 ELSE 0 END) AS total\_calls,

SUM(CASE WHEN interactiontype = 'Visit' THEN 1 ELSE 0 END) AS total\_visits

FROM

customerinteraction

WHERE

interactiondate BETWEEN '2024-03-01' AND '2024-03-20'

GROUP BY

interactiondate;

interactiondate | total\_customers\_contacted | total\_calls | total\_visits

-----------------+---------------------------+-------------+--------------

2024-03-01 | 1 | 1 | 0

2024-03-05 | 1 | 0 | 1

2024-03-10 | 1 | 0 | 0

2024-03-12 | 1 | 1 | 0

2024-03-15 | 1 | 0 | 1

2024-03-18 | 1 | 1 | 0

2024-03-20 | 1 | 0 | 1

**Tracking Deposit collection and Renewal**

Real=# SELECT

DATE\_TRUNC('week', transactiondate) AS week\_start\_date,

SUM(amount) AS total\_deposits\_collected,

COUNT(DISTINCT customerid) AS total\_customers,

SUM(CASE WHEN DATE(transactiondate) BETWEEN CURRENT\_DATE AND CURRENT\_DATE + INTERVAL '5 days' THEN amount ELSE 0 END) AS deposits\_maturing\_in\_5\_days

FROM

customertransaction

WHERE

transactiontype = 'Deposit'

AND DATE(transactiondate) BETWEEN '2024-03-01' AND '2024-03-20'

GROUP BY

DATE\_TRUNC('week', transactiondate)

ORDER BY

week\_start\_date DESC;

week\_start\_date | total\_deposits\_collected | total\_customers | deposits\_maturing\_in\_5\_days

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2024-03-18 00:00:00+05:30 | 4000.00 | 1 | 0

2024-03-11 00:00:00+05:30 | 3000.00 | 1 | 0

2024-03-04 00:00:00+05:30 | 2000.00 | 1 | 0

2024-02-26 00:00:00+05:30 | 1000.00 | 1 | 0

(4 rows)

**Branch performance**

Real=# SELECT

unit.unitname AS branch\_name,

COUNT(DISTINCT loanapplication.customerid) AS total\_customers,

AVG(loanapplication.loanamount) AS average\_loan\_amount,

AVG(customer.creditrating) AS average\_customer\_credit\_rating

FROM

unit

LEFT JOIN

loanapplication ON unit.unitid = loanapplication.unitid

LEFT JOIN

customer ON loanapplication.customerid = customer.customerid

GROUP BY

unit.unitname;

branch\_name | total\_customers | average\_loan\_amount | average\_customer\_credit\_rating

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Branch Manager | 2 | 9500.0000000000000000 | 6.5000000000000000

Customer | 0 | |

Customer Officer | 2 | 11500.0000000000000000 | 5.5000000000000000

Customer Representative | 2 | 13500.0000000000000000 | 3.5000000000000000

Regional Manager | 2 | 7500.0000000000000000 | 3.0000000000000000

Zonal | 2 | 0.00000000000000000000 | 6.0000000000000000

**Identifying kpi**

Real=# SELECT

unit.unitname AS branch\_name,

COUNT(DISTINCT CASE WHEN la.application\_status = 'Declined' THEN la.customerid END) AS declined\_customers,

COUNT(DISTINCT CASE WHEN la.application\_status = 'Pending' THEN la.customerid END) AS pending\_customers,

COUNT(DISTINCT CASE WHEN la.application\_status = 'Approved' THEN la.customerid END) AS approved\_customers

FROM

loanapplication la

LEFT JOIN

customer c ON la.customerid = c.customerid

LEFT JOIN

unit ON la.unitid = unit.unitid

GROUP BY

unit.unitname;

branch\_name | declined\_customers | pending\_customers | approved\_customers

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Branch Manager | 0 | 0 | 2

Customer Officer | 0 | 0 | 2

Customer Representative | 0 | 0 | 2

Regional Manager | 0 | 0 | 2

Zonal | 1 | 1 | 0

(5 rows)

**Risk profile**

Real=# SELECT

unit.unitname AS branch\_name,

COUNT(DISTINCT CASE WHEN la.application\_status = 'Default' THEN la.customerid END) AS defaulted\_customers,

AVG(c.creditrating) AS avg\_credit\_rating

FROM

loanapplication la

LEFT JOIN

customer c ON la.customerid = c.customerid

LEFT JOIN

unit ON la.unitid = unit.unitid

GROUP BY

unit.unitname;

branch\_name | defaulted\_customers | avg\_credit\_rating

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Branch Manager | 0 | 6.5000000000000000

Customer Officer | 0 | 5.5000000000000000

Customer Representative | 0 | 3.5000000000000000

Regional Manager | 0 | 3.0000000000000000

Zonal | 0 | 6.0000000000000000

(5 rows)

al=# SELECT COUNT(DISTINCT unitid) AS total\_branches FROM unit;

total\_branches

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6

(1 row)

Real=# SELECT COUNT(DISTINCT interactiondate) AS total\_interaction\_days FROM customerinteraction WHERE interactiondate BETWEEN '2024-03-01' AND '2024-03-20';

total\_interaction\_days

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* **Kpi for the Each Challenges:**

Total Customers Met: This KPI measures the total number of unique customers interacted with during the specified period.

Total Interactions: This measures the total number of interactions conducted with customers, categorized by interaction type and details.

Average Interaction per Day: This KPI calculates the average number of interactions conducted per day to assess the frequency of customer engagement.

**For assessing customer quality, the KPI is:**

Processing Time for Loan Applications: This KPI measures the average time taken from the submission of a loan application to its approval, indicating efficiency in processing applications.

**For managing collection, the KPIs is:**

Total Customers Contacted: Measures the total number of unique customers contacted during the specified period.

Total Calls and Visits: These KPIs track the number of calls made and visits conducted to customers for collection purposes.

**For tracking deposit collection and renewal, the KPIs is**:

Total Deposits Collected: Measures the total amount of deposits collected during the specified period.

Total Customers Deposited: Counts the total number of unique customers who made deposits.

Deposits Maturing in 5 Days: Tracks the sum of deposits due to maturity within the next five days, providing insight into upcoming cash inflows.

**For assessing branch performance, the KPIs is**:

Total Customers Served: Measures the total number of unique customers served by each branch.

Average Loan Amount: Calculates the average loan amount disbursed by each branch, indicating its lending activity.

Average Customer Credit Rating: Measures the average credit rating of customers served by each branch, reflecting the branch's clientele quality.

**For identifying KPIs related to loan applications,:**

Declined Customers: Counts the number of customers whose loan applications were declined, indicating potential issues with creditworthiness assessment or risk management.

Pending Customers: Measures the number of customers whose applications are pending approval, reflecting the efficiency of the approval process.

Approved Customers: Tracks the number of customers whose loan applications were approved, indicating successful business outcomes.

**For assessing risk profiles:**

Defaulted Customers: Counts the number of customers who defaulted on their loans, indicating the branch's risk exposure.

Average Credit Rating: Measures the average credit rating of customers associated with defaulted loans, providing insight into the creditworthiness of defaulting customers.

Overall, the KPI for the Problem statement isthe **Customer Satisfaction Score (CSAT**): This KPI measures the satisfaction level of customers based on their interactions, loan processing experience, collection process, and overall relationship with the Bank.