



Customer Spending Analysis – Credit Card Pilot Study

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Problem Statement

- Mitron Bank aims to launch new credit cards to attract more customers.
- Need data-driven insights to tailor offerings to customer preferences.
- Require understanding of:
 - ✓ Who spends the most?
 - ✓ What do they spend on?
 - ✓ Which payment methods are preferred?
 - ✓ Seasonal/monthly spend patterns.
- Pilot project insights will determine feasibility of full rollout.

Expected Outcome

- ✓ Understand online spending habits of 4,000 customers across 5 cities.
- ✓ Identify target customer segments for new credit card offerings.
- ✓ Highlight top spending categories, payment preferences, and income segments.
- ✓ Provide actionable recommendations for credit card feature design.
- ✓ Build interactive dashboards for decision-making.

Business Context

- **Client:** Mitron Bank (Hyderabad-based).
- **Goal:** Expand services and increase market share via credit card portfolio.
- **Challenge:** Matching credit card benefits to spending patterns & market demand.
- **Approach:** Use sample dataset to simulate and analyze spending behavior.

Technology Stack Used

- **SQL** – DATA EXTRACTION, CLEANING, INTEGRATION, KPI CALCULATIONS
- **EXCEL** – EXPLORATORY DATA ANALYSIS, PIVOTS, DASHBOARDS, CHARTING
- **POWERPOINT** – BUSINESS PRESENTATION, DASHBOARDS, KEY INSIGHTS COMMUNICATION

TABLE OVERVIEW (1 / 2)

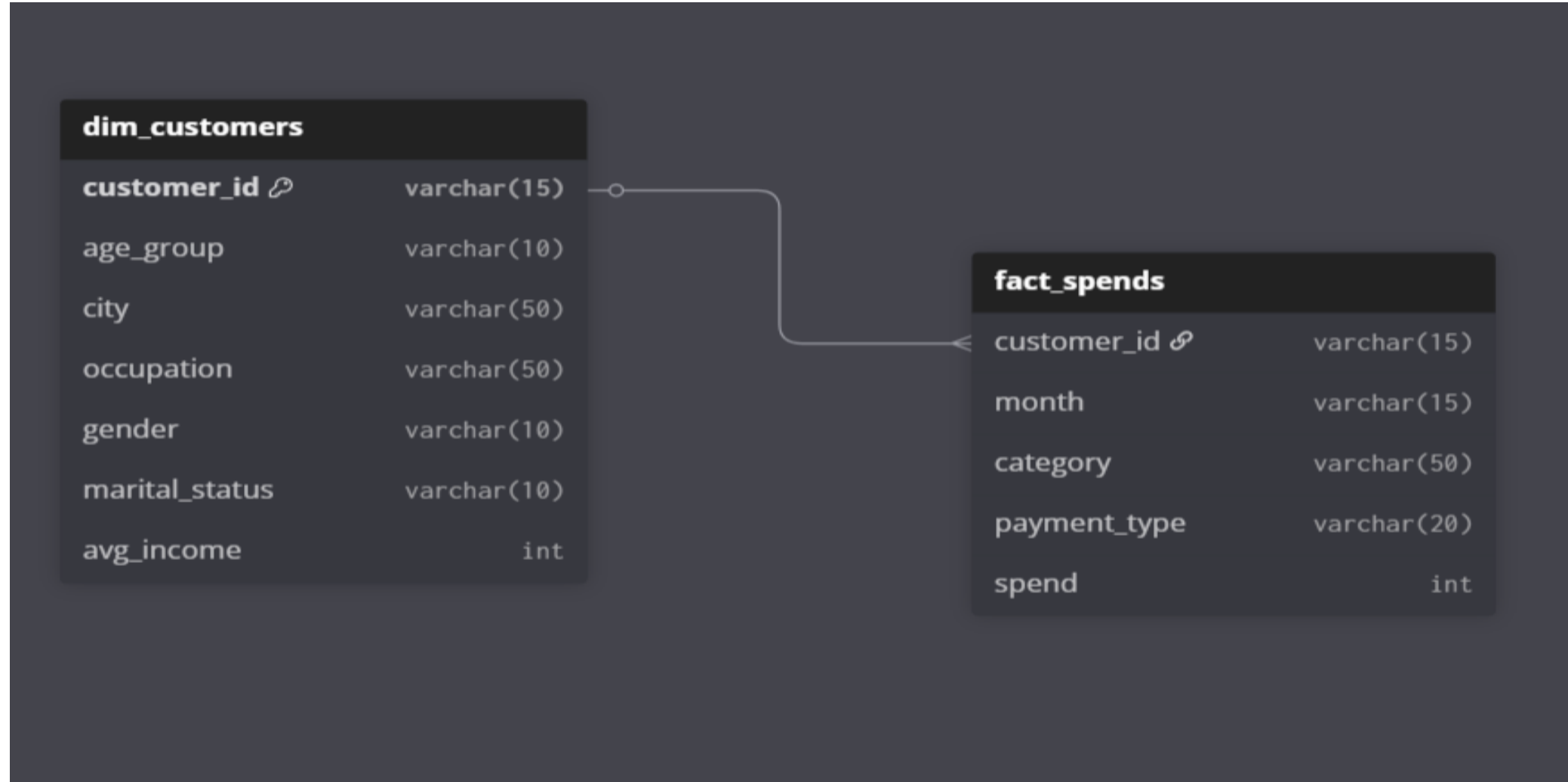
➤ **dim_customers** – Customer demographics (ID, gender, age group, marital status, city, occupation, income).

TABLE NAME	SUMMARY	NO.OF ROWS	NO.OF COLUMNS	PRIMARY KEY	FOREIGN KEY	FIELD NAME AND DESCRIPTION
dim_customers	Customer Information Details	4000	07	Customer_id	NA	<ul style="list-style-type: none">• Custid (Varchar) ID of the Customer• city (nvarchar) City belonging to the customer.• Age group(Varchar)-age group of the customers• Gender (varchar) .• Marital status(varchar)• Occupation(Varchar)• Income(int)

TABLE OVERVIEW (2 / 2)

TABLE NAME	SUMMARY	NO.OF ROWS	NO.OF COLUMNS	PRIMARY KEY	FOREIGN KEY	FIELD NAME AND DESCRIPTION
Fact_spend	Column Description for fact_spends	864000	05	NA	Customer_id	<ul style="list-style-type: none">customer_id (varchar) -id of the customermonth (varchar) : month in which the spending was recorded.category(varchar): category of spending.payment_type: type of payment used by the customerspends: total amount spent by the customer in the specified month, category and payment_type.

ENTITY RELATIONSHIP DIAGRAM



CONCLUSTIONS FROM ER DIAGRAM

- **Clear Relationship Structure** – The diagram establishes a **one-to-many** relationship between dim_customers and fact_spends using the customer_id key.
- **Data Organization** – Dimension table (dim_customers) stores customer attributes, while fact table (fact_spends) stores transactional spend data for analysis.
- **Optimized Data Types** – Appropriate use of VARCHAR for categorical/text fields and INT for numeric fields ensures efficient storage and querying.
- **Analytical Readiness** – The design supports customer segmentation, monthly spending analysis, and category-wise insights for business intelligence reporting.

Null , Duplicate Check

- A comprehensive data quality assessment was performed on dim_customers and fact_spends tables to ensure integrity and readiness for analysis. The checks included:
 - ✓ **Null Value Check:** Verified that no mandatory fields contain null values in either table.
 - ✓ **Duplicate Check:** Confirmed no duplicate customer_id records in dim_customers and no conflicting duplicate transaction keys in fact_spends.
 - .
- **Key Finding:** Each customer_id appears exactly **216 times** in fact_spends
- **Conclusion:** No data quality issues detected; dataset is consistent and ready for further analysis and reporting.

Formatting Discrepancy

- Location naming convention differs between metadata (“Delhi-NCR”) and table values (“Delhi NCR”); recommend standardizing the format for consistency.

customer_id	age_group	city	occupation	gender	marital_status	avg_income
ATQCUS0041	21-24	Delhi NCR	Salaried IT Employees	Male	Married	47439
ATQCUS0042	21-24	Delhi NCR	Salaried IT Employees	Male	Married	49981
ATQCUS0043	21-24	Delhi NCR	Salaried IT Employees	Male	Married	45573
ATQCUS0044	21-24	Delhi NCR	Salaried IT Employees	Male	Married	50557
ATQCUS0045	21-24	Delhi NCR	Salaried IT Employees	Male	Married	51033

DISCREPANCY CHECK

- **3994 customers** have monthly spend **greater than their reported income**, indicating a behavioral-financial mismatch

customer_id	month	total_monthly_spend	avg_income
ATQCUS0133	September	68816	63550
ATQCUS0135	September	71155	63042
ATQCUS3652	September	64956	64029
ATQCUS0337	September	61991	60110
ATQCUS1053	September	43120	38631

DATA CLEANING SUGGESTION

- Purpose: Show **what could be done in future** or **what formatting issues to fix**, even if the data is already clean.
- Example for your case:
 - ✓ Standardize location names (“Delhi NCR” → “Delhi-NCR”).
 - ✓ Review customers with spend > income for possible anomalies.
 - ✓ Ensure month names follow a standard format (“May”, “June”...).
 - ✓ Keep categorical values consistent for payment type and category.

KPI'S (Key Performance Indicators)

- **Average Spend-to-Income Ratio =**

$$\text{Total spend} * 100 / \text{Total income}$$

- **Digital Adoption Rate =**

$$(\text{Total Transactions via UPI} + \text{Net Banking} / \text{Total transaction}) * 100$$

- **High-Value Customer Share =**

$$(\text{Total Customers with Spend} > \text{Avg Income} / \text{Total customer}) * 100$$

KRIs (Key Risk Indicators)

➤ **High Spend-to-Income Ratio** = $(\text{Total Spend} \div \text{Income}) > 1$

➤ **Category Dependency Risk** =

$$(\text{Spend in Top Category} / \text{Total spend}) \times 100$$

➤ **Credit Card Dependency Risk** =

$$(\text{Credit Card Spend} / \text{Total spend}) \times 100$$

KRAs (Key Result Areas)

- **Product–Market Fit Index =**

$(\text{Customers with Category Match to Card Benefits} / \text{Total customers}) \times 100$

- **Operational Efficiency (Data) =**

$(\text{Cleaned Records} / \text{Total records}) \times 100$

- **Customer Satisfaction Proxy (Financial Comfort) =**

$100 - (\text{Total Customers Overspending Customers} / \text{Total customers}) \times 100$

DASHBOARD LAYOUT



LOGO

Customer Demographics

(who are our customers)

HOME



SLICER

City

**TOTAL
CUSTOMER**

**Average
Income**

**% Married
Customers**

**Top City by
Customers**

**Customers
by gender**

(Pie chart)

**Customers by
occupation**

(Bar chart)

**Customer Count
Trend over Months**

(Line Chart)

**Customers by
Age Group**

(Column chart)



LOGO

Spending Overview

(How much and where do they spend?)

HOME



Slicer

Month

**Total
Spends**

**Average Spend
per Customer**

**Top Spending
City**

**Top Payment
Type**

Pie Chart →

**Spends by
Payment
Type**

Bar Chart →

Spends by City

Column Chart →

**Spends by
Month**

Line Chart →

**Monthly Spend
Trend**



LOGO

Category Insights

(What do they spend on?)

HOME



Slicer

Category

**Top Spending
Category**

**% of Top
Category in
Total Spend**

**Number of
Categories
Purchased**

**Average Spend
per Category**

Pie Chart →

**Spends by
Category**

Bar Chart →

**Top 5 Categories
by Spend**

Column Chart →

**Average Spend
per Category**

Line Chart →

**Category Spend
Trend over Months**

← LOGO

Payment & Income Analysis

HOME

Slicer

Age Group

Highest Income Group

Spends by Highest Income Group

Average Spend by Payment Type

% Online Payments

Pie Chart →

Payment Type Share of Total Spend

Bar Chart →

Average Spend by Income Group

Column Chart →

Spends by Payment Type

Line Chart →

Income vs Spend Trend

EXPLORATORY DATA ANALYSIS

FINAL TABLES



dim_Customer_360

4000 rows



Fact_spends_360

24000 rows

Why fact_spends_360 has 24,000 rows ?

- Raw fact table had **864K transactions**.
- After summarization into fact_spends_360, we reduced it to **24K monthly spend profiles**.
- This makes analysis and dashboarding much faster while still capturing **all spending patterns**.
- → Essentially, we moved from **transaction-level** detail to **customer-month level** insights.

Descriptive vs Diagnostic Analysis

Analyse Type	Purpose	Calculation logic
Descriptive Analysis	<ul style="list-style-type: none">• To summarize raw data into simple patterns and trends. Helps business understand overall customer & spending behavior.	<ul style="list-style-type: none">• Count customers by city, gender, age group.• Average & total income per segment.• Total spends per month, per category.• Payment type share (Credit/Debit/UPI/Net Banking).
Diagnostic Analysis	<ul style="list-style-type: none">• To dig deeper into reasons behind trends. Identifies drivers and anomalies in spending behavior.	<ul style="list-style-type: none">• Compare spend vs income ratio (overspending customers).• Segment spend by occupation, city, marital status.• Identify high-spend categories (e.g., travel spikes in October).• Payment preference differences across age groups.

Key Insights	Provide actionable recommendations for Mitron Bank.	<ul style="list-style-type: none">• IT employees in Bengaluru spend more on travel → travel reward card opportunity.• Married customers spend more on groceries → family card benefits.• Overspenders (spend > income) → higher credit risk segmen
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High-Metric Analysis from dim_customer_360

KPI	SQL
Total Customers	<code>select count(Distinct customer_id) From customer_360;</code>
Avg Spend per Customer	<code>select Avg(total_spend) From customer_360;</code>
Max Spend by a Customer	<code>select Max(total_spend) From customer_360;</code>
Avg Income per Customer	<code>select Avg(avg_income) From customer_360;</code>
% Overspending Customers (Spend > Income)	<code>select count then use filter total_spend > avg_income From customer_360;</code>
Credit Card Spend Share (%)	<code>select (sum(spend_credit_card)*100.0 / SUM(total_spend)) From customer_360;</code>

HIGH METRIC ANALYSIS

Total Customers	4000
Max Spend by a Customer	170545
Avg income per customer	51657
Avg spend by customer	132724
% Overspending Customers (Spend > Income)	3994
Credit card spend share	40.74

High-Metrics from fact_spends_360

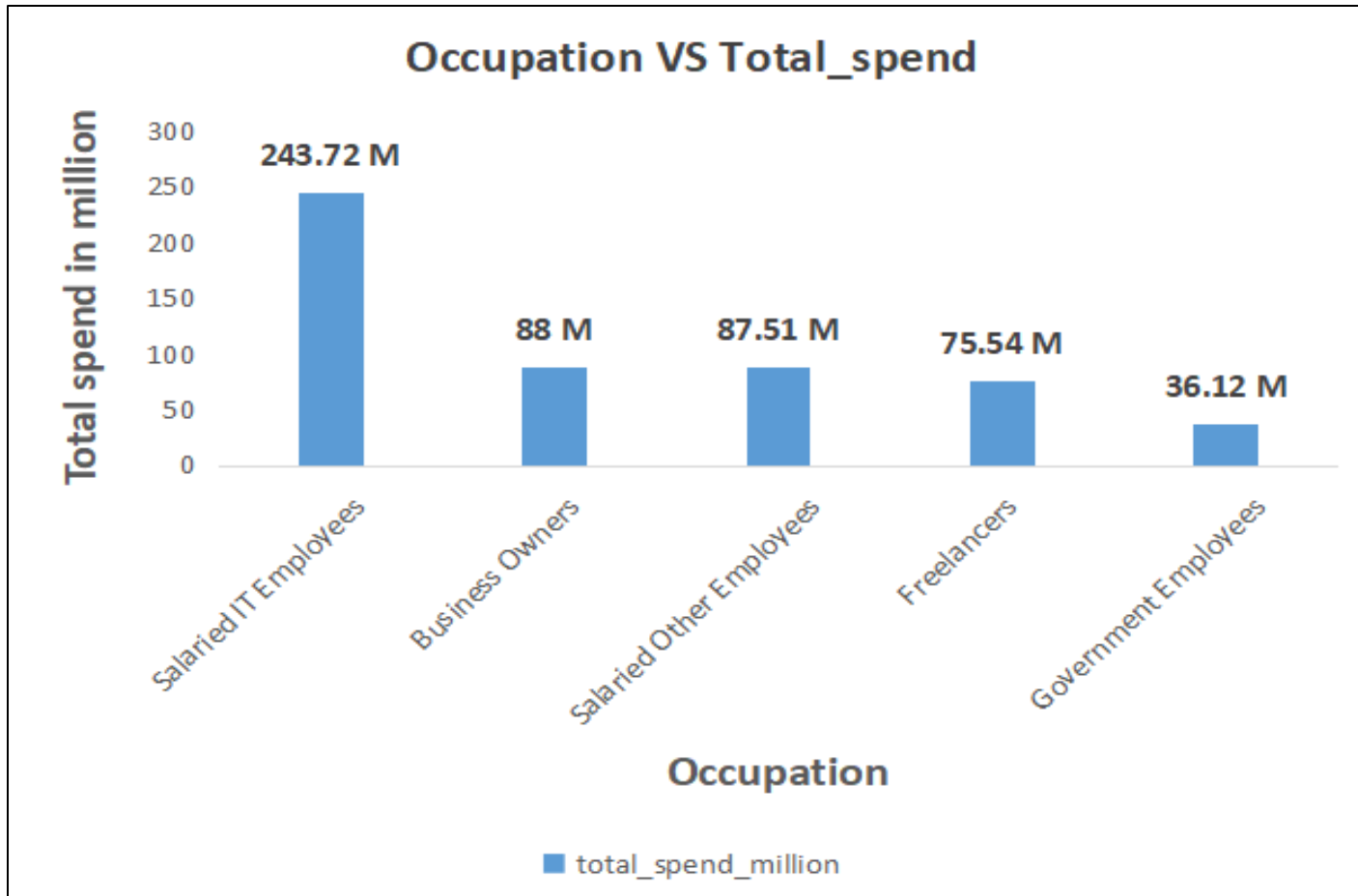
KPI	SQL
Total Transactions	Select Sum(total_transactions) From fact_spends_360;
Avg Monthly Spend per Customer	Select Avg(total_spend) From fact_spends_360;
Peak Month (Highest Spend)	Select Top 1 month, Sum(total_spend) as total From fact_spends_360 Group by month Order by total DESC;
Top Category (by spend)	Select Top 1 'Apparel' as category, Sum (spend_apparel) as total From fact_spends_360 Union all select 'Travel', Sum(spend_travel) ... Order by total Descs;
Most Used Payment Method	Select Top 1 'Credit Card' as method, Sum(spend_credit_card) as total From fact_spends_360 Union all Select 'UPI', Sum(spend_upi) ... Order by total Desc;
Avg Spend per Transaction	Select Avg(avg_transaction_spend) From fact_spends_360;
Max Monthly Spend by a Customer	Select Max(total_spend) From fact_spends_360;

Total Transactions	864000
Avg monthly spend by customer	22120
Peak Month (Highest Spend)	June (79318104)
Top category by spend	Bills(104912768)
Most Used Payment Method	Credit card(216308873)
Avg Spend per Transaction	613
Max Monthly Spend by a Customer	80812

KEY INSIGHTS

KEY INSIGHTS

- Helps Mitron Bank create cards for IT employees, business owners, etc

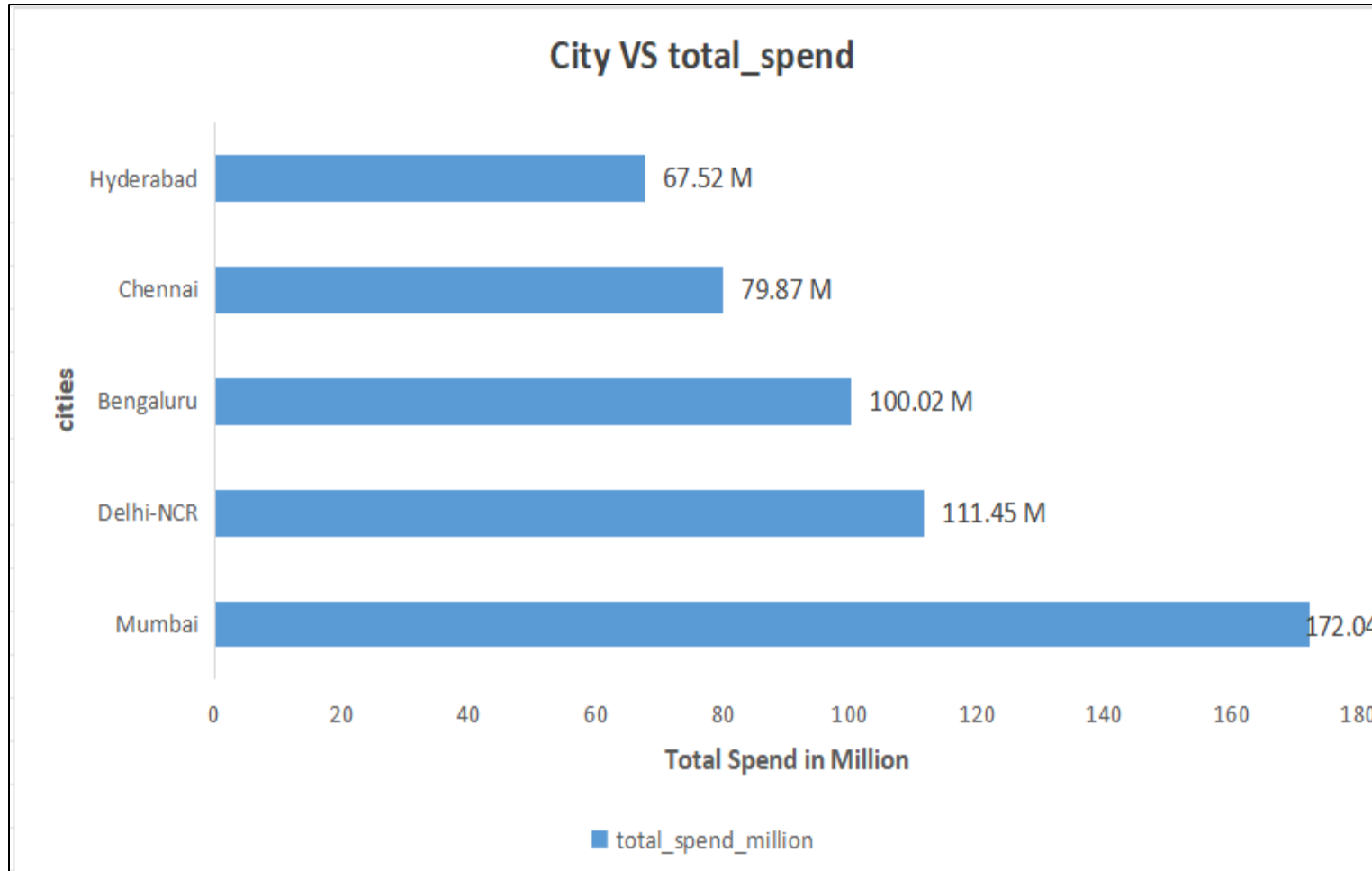


- ✓ Salaried IT employees are the highest spenders across cities.
- ✓ Government employees show stable, moderate spending.
- ✓ Occupation-specific cards (e.g., IT perks, Gov't cashback) can drive loyalty.

Business Recommendations

- ✓ Develop **profession-specific cards** (IT lifestyle perks, government discounts, freelancer fee waivers).
- ✓ Partner with **corporates** for co-branded salary-based credit cards.
- ✓ Introduce **flexible EMI & cashback features** for business owners and freelancers.

KEY INSIGHTS

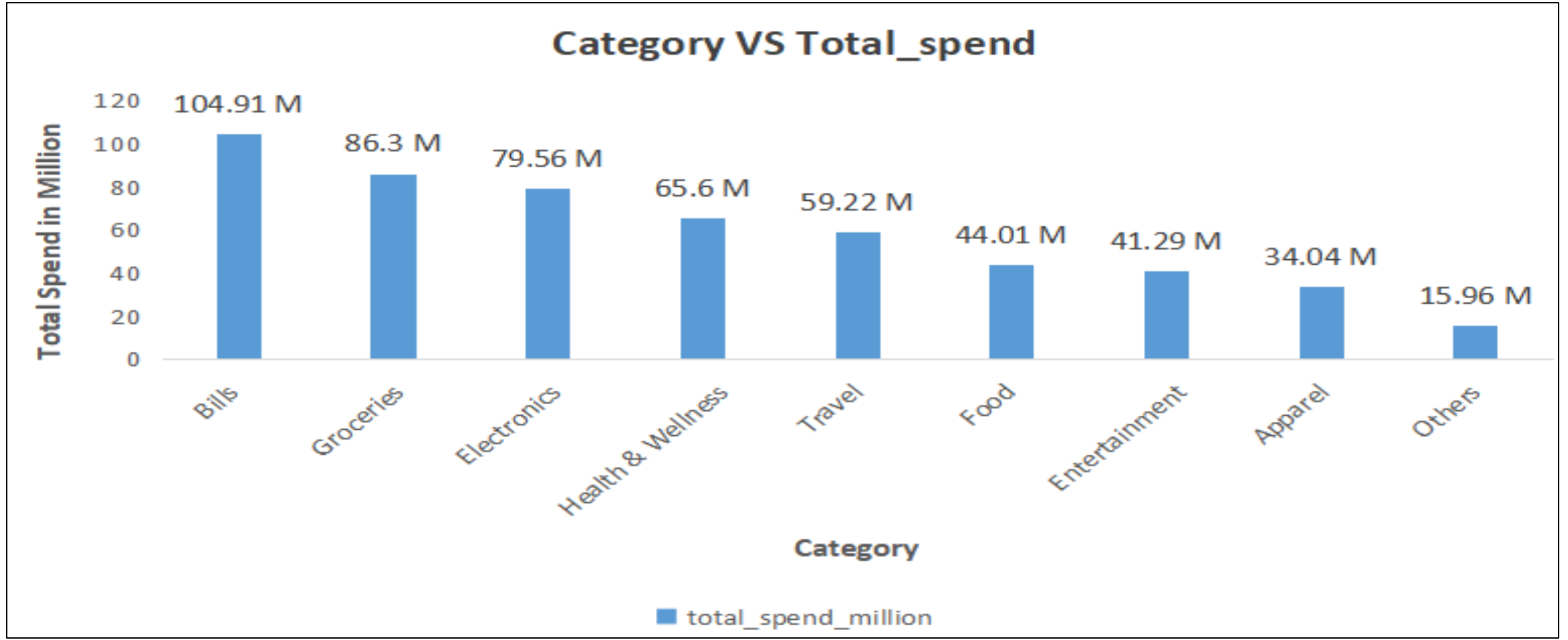


- ✓ Mumbai and Delhi-NCR together contribute the highest overall spend.
- ✓ Indicates strong adoption of digital payments in metro cities.
- ✓ Priority regions for launching new credit card schemes.

Business Recommendations

- ✓ **Pilot launch** cards in top-spending cities before nationwide rollout.
- ✓ Run **localized campaigns** in metros to boost awareness and adoption.
- ✓ Tailor city-specific perks (e.g., metro travel rewards in Delhi, tech shopping rewards in Mumbai).

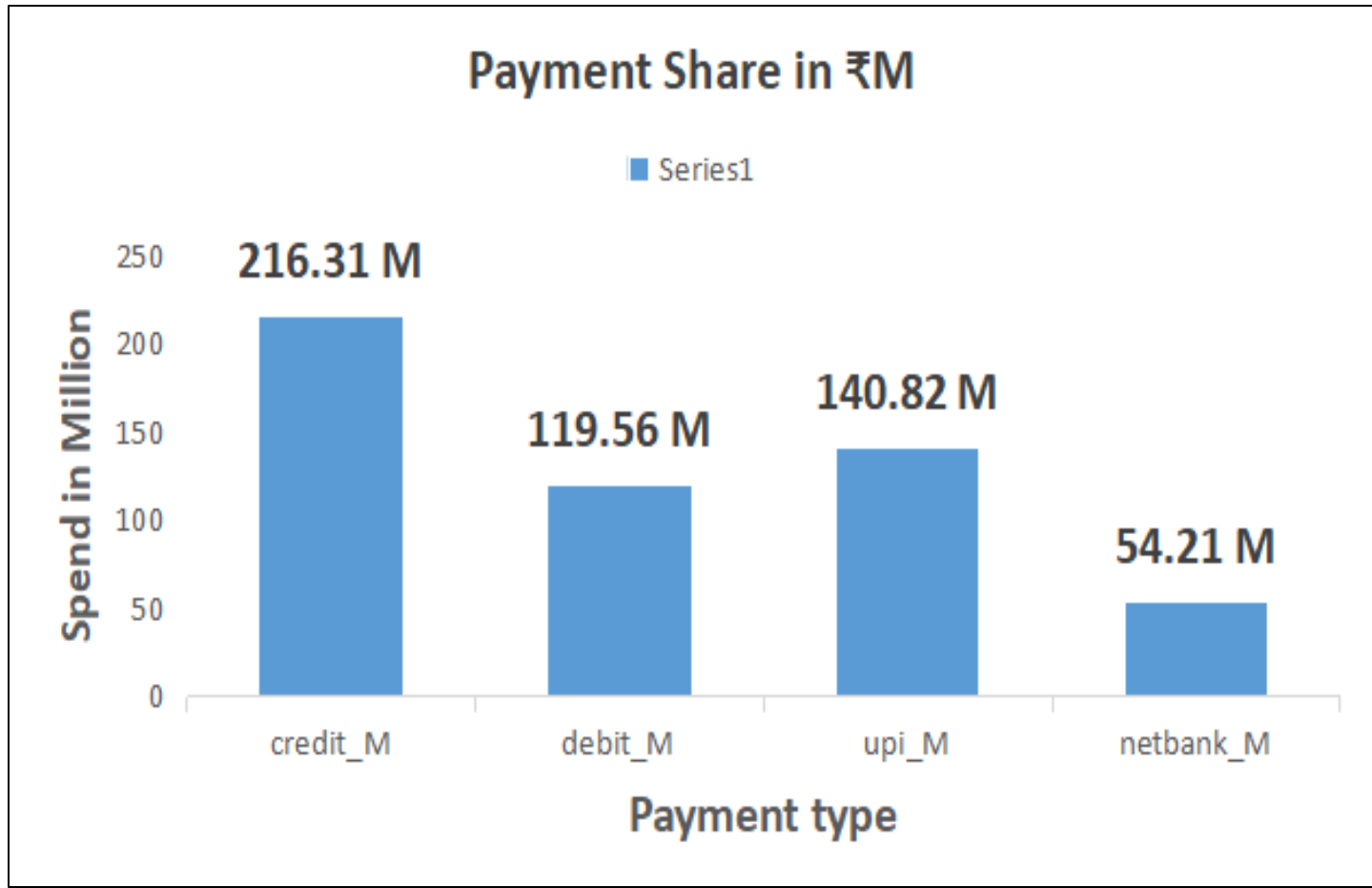
KEY INSIGHTS



Business Recommendations

- ✓ Provide **cashback on essentials** (bills, groceries).
- ✓ Offer **electronics EMI & warranty extension benefits**.
- ✓ Add **bonus rewards** on entertainment & travel for engagement.

KEY INSIGHTS



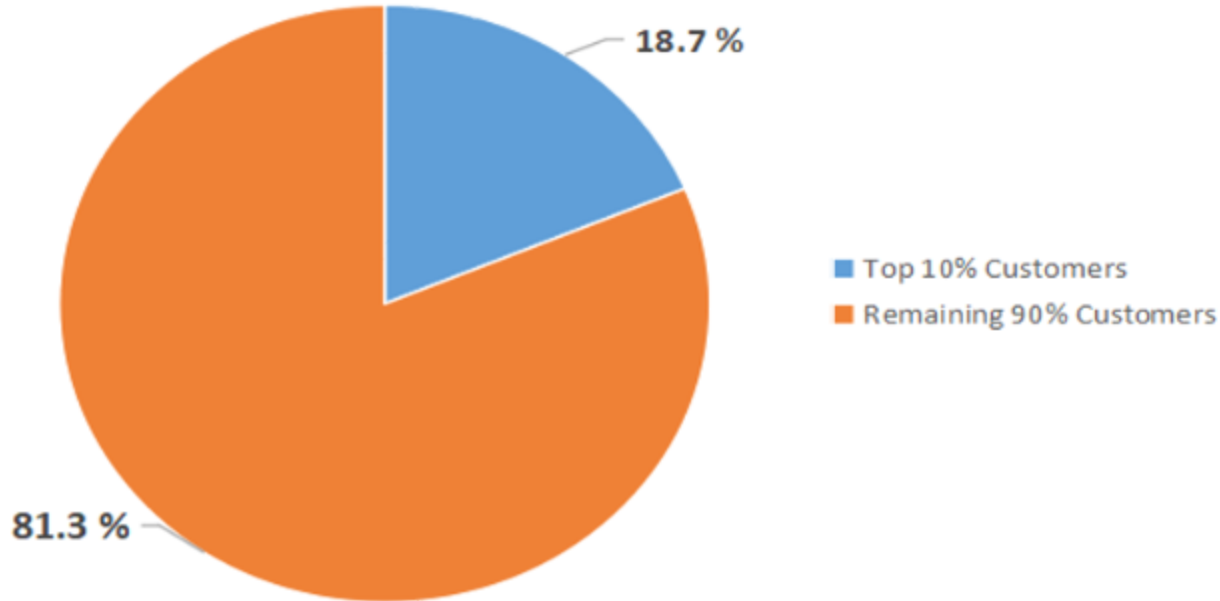
- ✓ **Credit Cards dominate (~41%)** of total spend, showing reliance on credit.
- ✓ UPI usage is rising in younger groups → indicates digital adoption.
- ✓ Debit Card and Net Banking are less popular → opportunity to shift users to credit.

Business Recommendations

- ✓ Promote **UPI-linked credit cards** with cashback/rewards on digital spends.
- ✓ Encourage **credit card EMI offers** to maintain usage over UPI.
- ✓ Offer **instant discounts** for Debit Card/Net Banking to retain customers in traditional channels.

KEY INSIGHTS

Contribution (%)



Top 10% Spend

99.6 million INR

- This is only **18.75% of the total spending** (all customers).

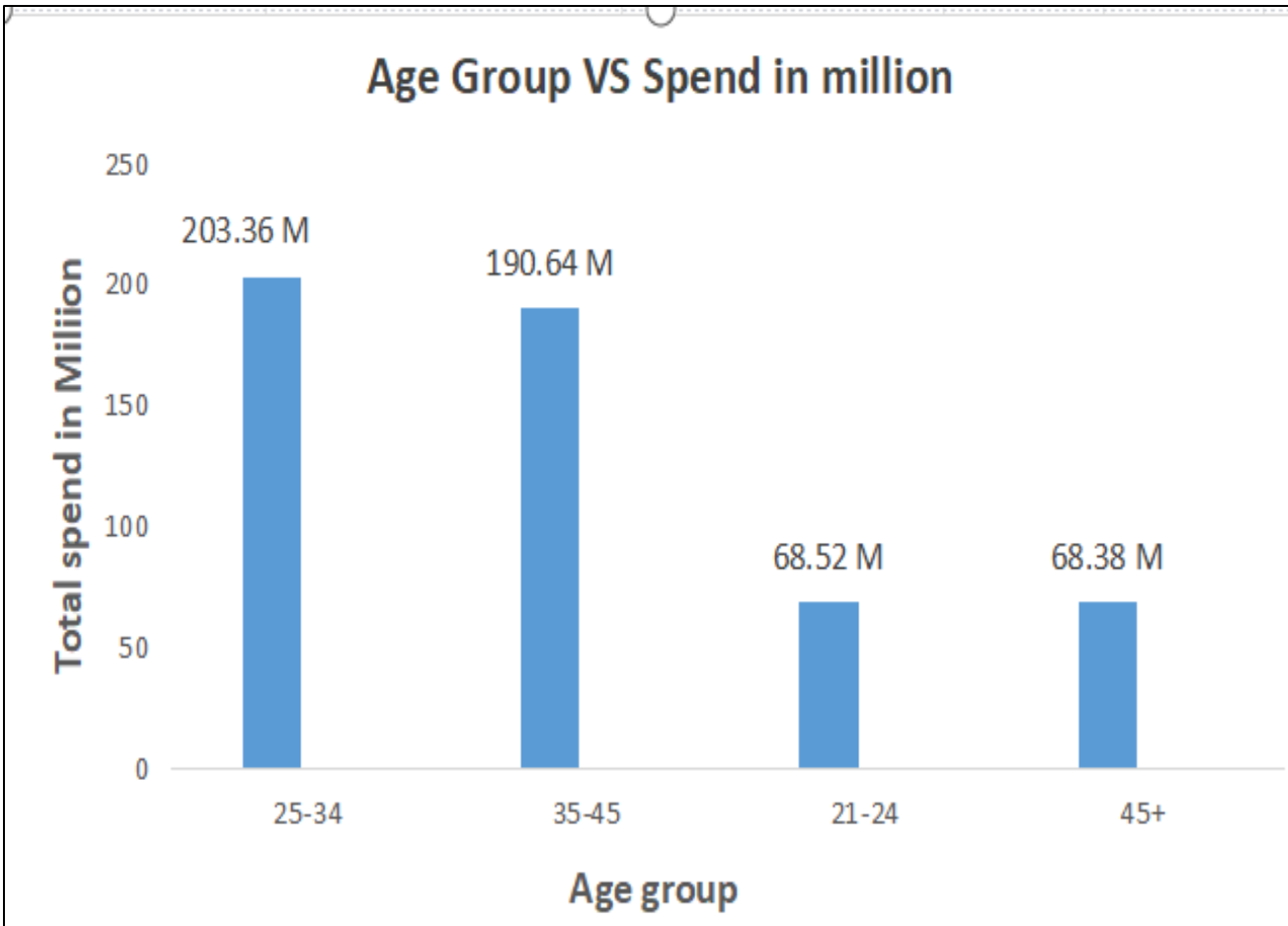
- Unlike typical markets where the top 10% contribute 40–50% of total spend, Mitron Bank's dataset shows top 10% contribute only 18.7%. This indicates spending is more evenly distributed across customers, meaning credit card offers should be broad-based rather than only premium-focused.

Business Recommendations

- ✓ Focus on **mass-market cards** instead of premium-only.
- ✓ Offer **tiered reward systems** (basic → gold → platinum).
- ✓ Run **loyalty programs** that encourage medium-spenders to grow into high-spenders.

KEY INSIGHTS

- Target specific age segments with tailored cards.



- ✓ Customers aged **25–34** lead with the highest spend (**₹203.36M**), followed by **35–45** with **₹190.64M**.
- ✓ Younger customers (**21–24**) and older (**45+**) spend significantly less (~₹68M each).
- ✓ Indicates that the **prime working-age group (25–45)** is the **core target segment** for Mitron Bank's new credit cards.

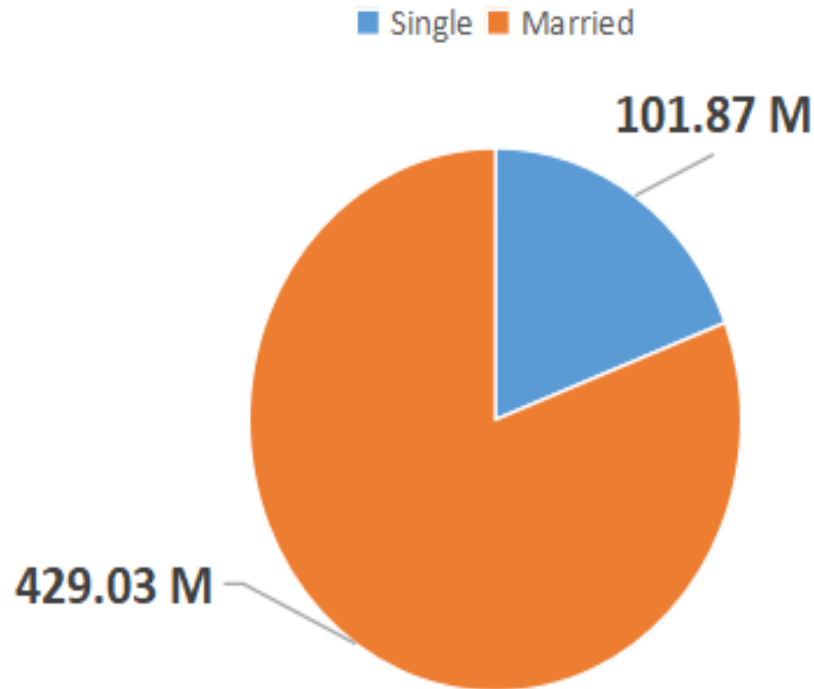
Business Recommendations

- ✓ Design **lifestyle cards** for 25–34 (entertainment, travel, dining rewards).
- ✓ Launch **family-oriented cards** for 35–45 (groceries, health, bill payments).
- ✓ Provide **entry-level/student cards** for 21–24 to build early loyalty.

KEY INSIGHTS

- Married customers may prefer family-oriented benefits.

Marital_status VS total_spend

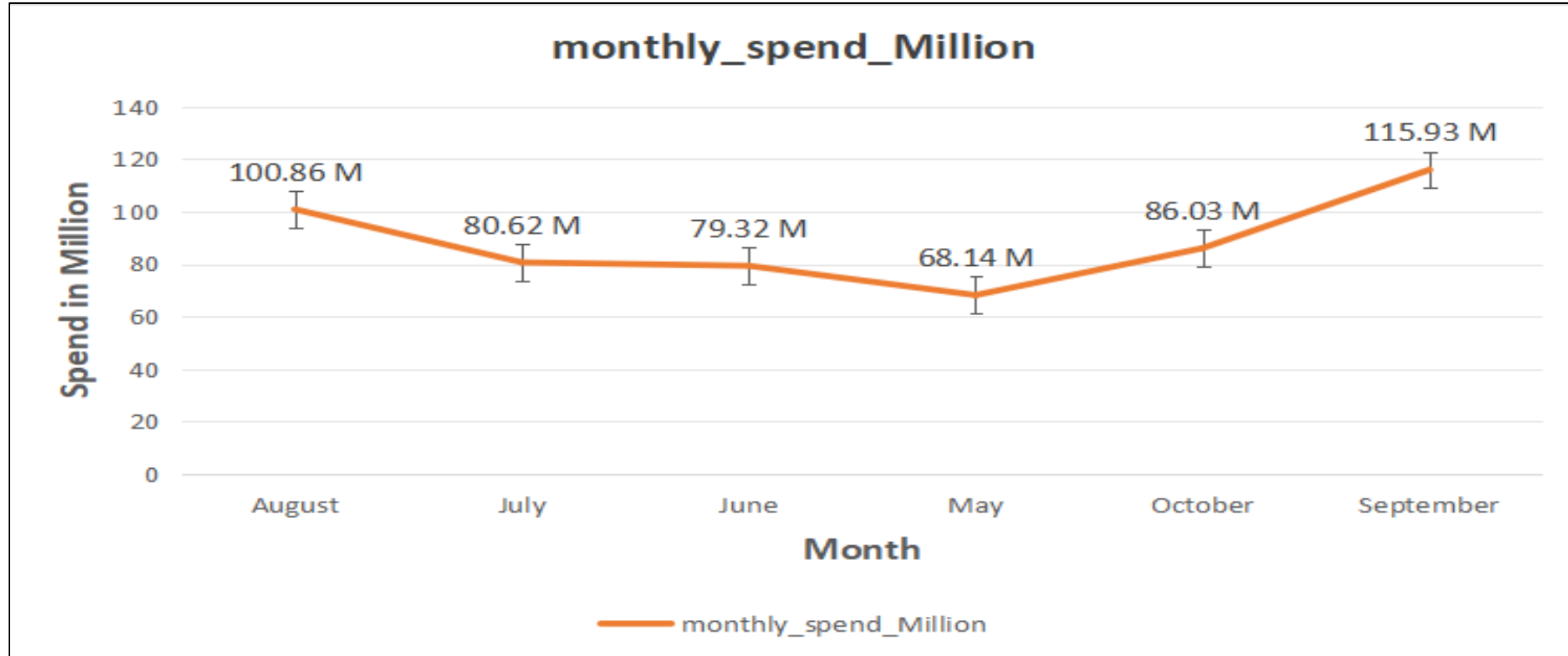


- ✓ **Married customers** consistently spend more than single customers.
- ✓ Groceries and Family-oriented categories (Bills, Health) dominate married spending.

Business Recommendations

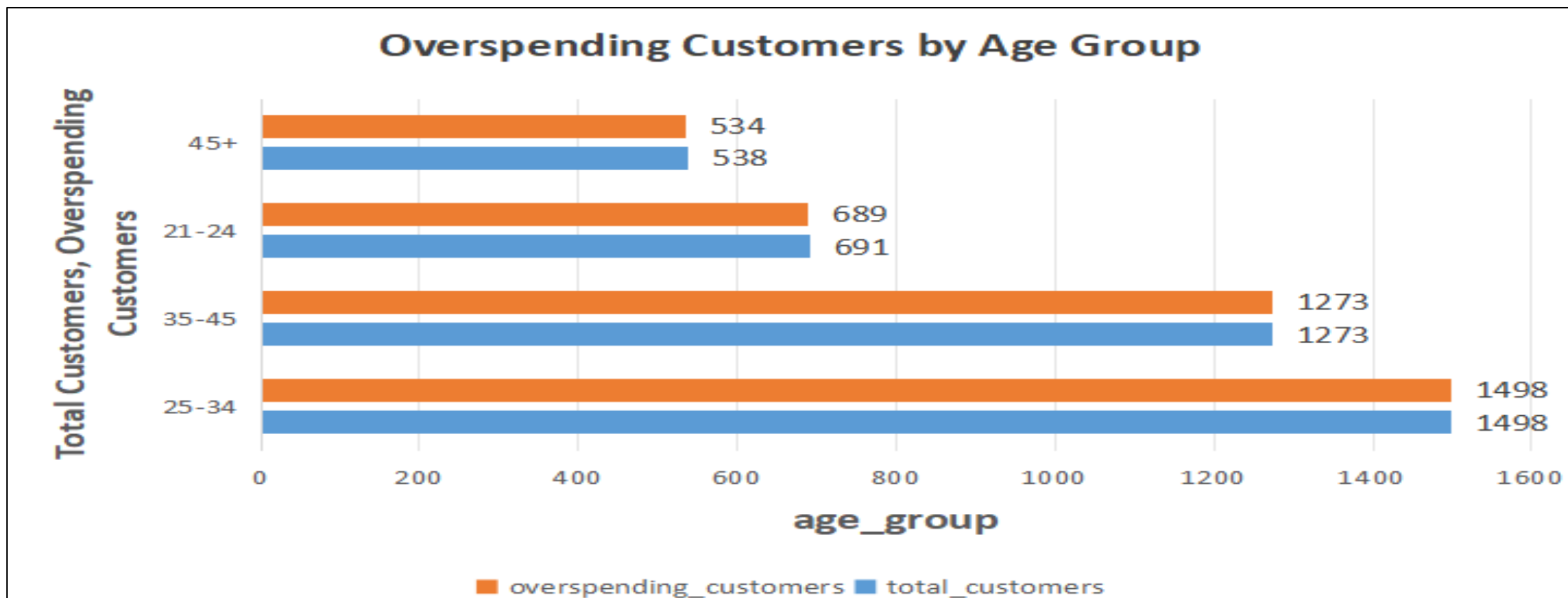
- ✓ Create **family benefit cards** (groceries, healthcare, utilities).
- ✓ Launch **youth lifestyle cards** (entertainment, food delivery, travel).
- ✓ Provide **dual benefit cards** where users can switch between “Family mode” and “Leisure mode”.

KEY INSIGHTS

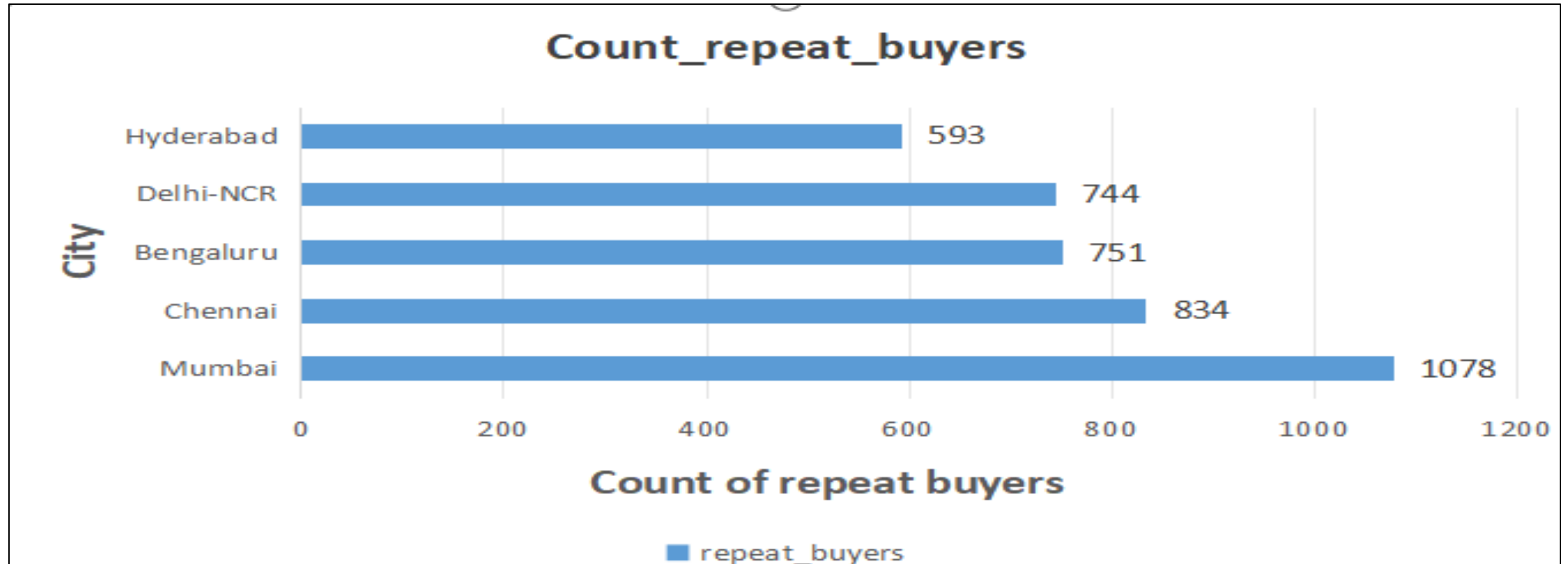


- After a consistent decline from August to May, spending rebounded sharply in September (₹115.93M), indicating a possible seasonal or strategic shift in expenditure.

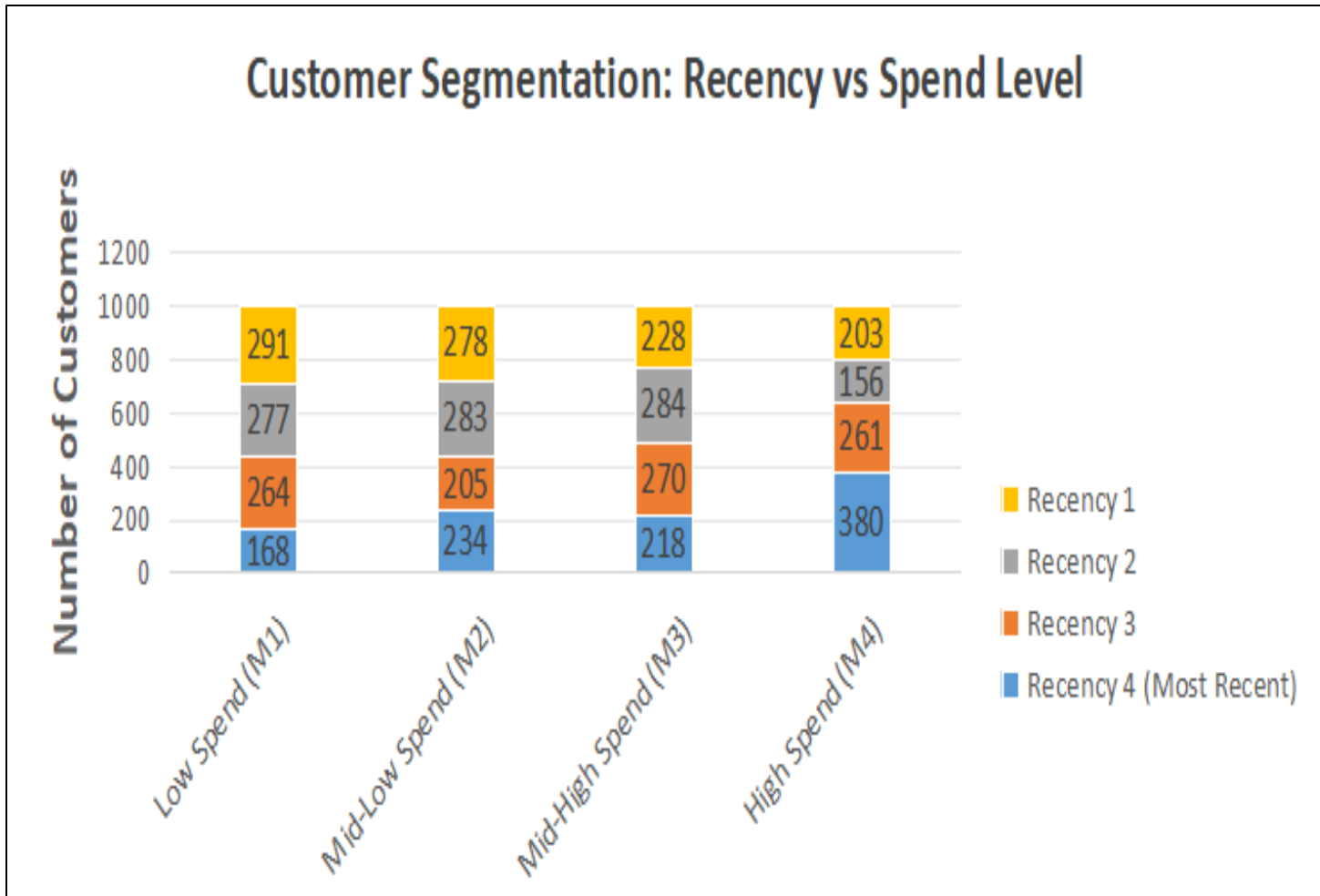
CUSTOMER BEHAVIOUR ANALYSIS



CUSTOMER BEHAVIOUR ANALYSIS



RFM Analysis – Identifying Key Credit Card Target Groups



- The tallest **M4** bar in **R=4** (380 customers) = your **Champions**.
- **M1/M2** bars in **R=4** (168 + 234 customers) = recent but low spenders.
- **M3/M4** bars in **R=1** (228 + 203 customers) = high spenders at risk.

RFM Segmentation

3 Key Insights:

- **380 Champions (Recent + High Spend)** → Best candidates for **premium lifestyle cards** with travel, entertainment, and cashback perks.
- **933 Growth Segment (Recent + Mid Spend)** → Strong base for **mid-tier reward cards** to boost loyalty and monthly usage.
- **431 At-Risk High Spenders (Past High Value, Now Inactive)** → Need **win-back campaigns** (bonus offers, limited-time discounts) to re-engage.

Credit Card Product Strategy

Segment	Size (Customers)	Card Recommendation	Key Features (aligned to behavior)
Champions (R4M4)	380	Platinum Lifestyle Card	High limit, travel & dining rewards, EMI on electronics
Growth Segment (R3–R4, M2–M3)	933	Gold Rewards Card	Cashback on groceries, bills, entertainment, UPI-linked rewards
At-Risk High Spenders (R1, M3–M4)	431	Win-Back Offer Card	Fee waiver, welcome bonus, cashback for reactivation
Low Value / Inactive (R1–R2, M1–M2)	1,129	Entry / Youth Card	Small credit limits, student/youth targeted, UPI cashback

Business Recommendations (City, Occupation, Age)

- **City Strategy:** Start pilot in **Mumbai & Delhi NCR** → largest customer base + highest total spend.
- **Occupation Strategy:** Focus on **Salaried IT Employees & Business Owners** → strongest income + digital adoption.
- **Age Strategy:** **25–45 years** → core spending age group, more likely to adopt credit cards.

Projected Pilot Revenue Impact

➤ **Expected Revenue** = (Total Spend × 1.2% interchange) + Annual Fees

Example:

- ✓ 1,000 Champions adopt Platinum
- ✓ Avg. Annual Spend = ₹2.5 lakh
- ✓ Interchange Revenue = ₹3,000 × 1,000 = ₹30 lakh
- ✓ Annual Fees = ₹2,000 × 1,000 = ₹20 lakh
- ✓ **Total Revenue ≈ ₹50 lakh**

Pilot Study Recommendations for Mitron Bank

- Customers show distinct spend patterns by city, age, and occupation.
- RFM segmentation identifies **Champions (380) & Growth Segment (933)** as top targets.
- Payment preference tilted towards **Credit Card & UPI**, aligning with proposed
- **3 Card Types:** Platinum Lifestyle, Gold Rewards, Entry/Youth.
- **Final Pilot Recommendation:** Start pilot in **Mumbai & Delhi NCR**, focusing on **1,000+ high-value Champions & Growth customers** for maximum impact.

THANK YOU !