Approach

Process:

1. Focused on analyzing clients' spending behaviors based on the datasets provided
2. Decided to launch a new credit card product aiming to increase overall revenue
3. Constructed a table of clients' balances and their average monthly spend behaviors per category
4. Identified and described 9 segments of clients who potentially is interested in getting a credit card
5. Based on each segment's unique characteristics and the potential revenue per segment, decided to launch a new Cash Back Visa Card tailored to one specific segment
6. Identified a few possible challenges/risks associated with this specific segment

Assumptions:

- Transactions with amounts of "0" are not valid transactions
- Any column with constant values or over 70% missing values is ignored
- Completely duplicated transactions will only be counted once
- The 232 days of transaction data provided is a true representation of the real-world dataset
- Due to shortage of data, client spending behaviors are assumed to follow no seasonality trends
- All "transfer" transactions are ignored due to lack of information on their origins or destinations
- Clients without any recorded spending history are assumed to be credit card holders who are not interested in this newly launched product, and vise versa

Executive Summary

Product Launch: TD Cash Back Platinum Visa Card

Key Findings from the Analysis:

- Identified 8 unique client segments based on spending behavior, account, and customer information
- Created a metric to measure the potential profitability of every segment, Mid. Income Heavy Utility User stood out amongst others, whom had:
    - The highest Potential Interchange Fees Per Month* ($12) over all segments payable by credit cards
    - A combined account balance of over $30,000
    - No transaction from or to their savings accounts over the entire 232-day duration
    - The largest proportion(23%) over all segments who likely do not yet hold a credit card
    - An average age of 54 and an average annual income of under $10,000
    - Recurring utilities and bills contributing towards 96% of all its monthly expenses

TD Cash Back Platinum Visa Card is perfectly tailored for this segment's characteristics:

- ✓ Waive $120 annual fee if user maintains a combined account balance of at least $20,000
- ✓ Earn 2% in Cash Back Dollars on regularly recurring bill payments
- ✓ No annual household income requirements

Presentation of Findings (Question 1)

Merchant Category New Product: TD Cash Back Platinum Visa Card

Rationale:

- This product is a great source of revenue in these streams
  - Annual fees or maintain minimum account balances
  - Interchange fees on consistent, high-volume recurring payments

- From the given transaction dataset, over 17% of 92,304 total transactions are of type "Bills and Utilities"

- After segmentation of clients, over 39% of overall segments spend over 95% every month on category "Bills and Utilities"

- Currently, TD Cash Back Visa Card does not offer a "1% Cash Back on all purchases" option for low-income, high-savings individuals who spend regularly on recurring payments

✓ *$120 annual fee (can waive if user maintains account balance of $20,000)*

✓ *2% in Cash Back Dollars on regularly recurring payments*

✓ *1% in Cash Back Dollars on all other Purchases*

✓ *No annual household income requirements*

Presentation of Findings (Question 2)

Identified 9 Client Segments using k-means clustering***:

Segment Title	Percentage Spent on Top Category	Population Percentage Per Segment (PPPS)	Potential Interchange Fees Per Month*
High Income Heavy Taxpayer	81% on Taxes	14%	$157.10 **
Mid. Income Heavy Taxpayer	74% on Taxes	19%	$87.30 **
Heavy Mortgage/Rent Payer	91% on Mortgages/Rents	11%	$83.40 **
Mid. Income Heavy Utility User	96% on Bills/Utilities	23%	$11.70
High Income Heavy Utility User	95% on Bills/Utilities	13%	$6.70
Travel Enthusiast	76% on Traveling	2%	$4.50
Home Renovation Lover	41% on Homes	5%	$3.60
Pay Day Loan Payer	86% on paying Pay Day Loans	2%	$3.50
Foodie/Shopaholic	98% on Shopping and Dining	11%	$2.90

*Potential Interchange Fees Per Month = 100 clients x PPPS x Total Averaged Monthly Expense per Segment x 1% interchange rate(assumed)
**Paying taxes, mortgages, or rents is not always possible with credit cards
***https://github.com/jimmylihe/ADS_Associate_TD_Case_Study

Presentation of Findings (Question 3)

Selected Mid. Income Heavy Utility User Segment because it has:

- A combined account balance of over $30,000
- No transaction from or to their savings accounts over the entire 232-day duration
- The largest proportion(23%) over all segments who likely do not yet hold a credit card
- The highest Potential Interchange Fees Per Month* ($12) over all segments payable by credit cards
- An average age of 54 and an average annual income of under $10,000
- Recurring utilities and bills contributing towards 96% of all its monthly expenses

TD Cash Back Platinum Visa Card is a great fit for this segment's characteristics:

- ✓ Waive $120 annual fee if user maintains a combined account balance of at least $20,000
- ✓ Earn 2% in Cash Back Dollars on regularly recurring bill payments set up on your Account
- ✓ Earn 1% in Cash Back Dollars on all other Purchases made with your Card
- ✓ No annual household income requirements

Potential Challenges/Risks when Targeting the Mid. Income Heavy Utility User Segment:

- Additional marketing costs with this segment's age (ex: promoting this card via phone calls)
- Additional service costs with this segment's age (ex: helping to set up recurring payments in-person)