

Momo Business Analysis and Sugestions

Firstly, I want to say that I use Jupyter Notebook on Visual Code to prepare, clean and answer all the questions in the requirement section. So all my answer will be pictures that I capture from my Visual Code interface. So if you need the Jupyter Nothbook file that I work, I will submit the file to you.

Part A:

1. Using data from the 'Commission' table, add a column 'Revenue' in the 'Transactions' table that displays MoMo's earned revenue for each order, and then calculate MoMo's total revenue in January 2020.

```
--- Transactions table with Revenue column added ---
  user_id  order_id      Date  Amount  Merchant_id  Purchase_status  \
0  21269588 -125449670 2020-01-01   10000           13    Mua cho mình
1  28097592 -124690610 2020-01-01   20000           13    Mua cho mình
2  47435144 -128237986 2020-01-01   10000           12    Mua cho mình
3  29080935 -120506993 2020-01-01   10000           13    Mua cho mình
4  14591075 -126750547 2020-01-01   10000           12    Mua cho mình

  Rate_pct  Merchant_name  Revenue
0         3         Mobifone    300.0
1         3         Mobifone    600.0
2         2          Viettel    200.0
3         3         Mobifone    300.0
4         2          Viettel    200.0

A1: MoMo's total revenue in January 2020: 1,409,827.02 VND
```

2. What is MoMo's most profitable month?

```
A2: MoMo's most profitable month was 2020-08 with a revenue of 1,618,700.00 VND
```

3. What day of the week does MoMo make the most money, on average? The least money?

```
A3: Average Revenue by Day of the Week:
```

```
DayName
```

```
Wednesday    1547.486413
```

```
Thursday      1445.317003
```

```
Friday        1420.367847
```

```
Saturday      1398.785118
```

```
Tuesday       1398.649662
```

```
Sunday        1330.280761
```

```
Monday        1320.669578
```

```
Name: Revenue, dtype: float64
```

```
MoMo makes the most money on average on: Wednesday (1,547.49 VND/day)
```

```
MoMo makes the least money on average on: Monday (1,320.67 VND/day)
```

4. Combined with the 'User_Info' table, add columns: Age, Gender, Location, Type_user (New/Current) in 'Transactions' table and calculate the total number of new users in December 2020.

```
--- Transactions table with User Info and Type_user added ---
```

| | user_id | order_id | Date | First_tran_date | Transaction_MonthYear |
|---|----------|------------|------------|-----------------|-----------------------|
| 0 | 21269588 | -125449670 | 2020-01-01 | 2018-12-11 | 2020-01 |
| 1 | 28097592 | -124690610 | 2020-01-01 | 2019-12-30 | 2020-01 |
| 2 | 47435144 | -128237986 | 2020-01-01 | 2019-11-11 | 2020-01 |
| 3 | 29080935 | -120506993 | 2020-01-01 | 2019-10-24 | 2020-01 |
| 4 | 14591075 | -126750547 | 2020-01-01 | 2019-12-28 | 2020-01 |

| | First_Tran_MonthYear | Age | Gender | Location | Type_user | Revenue |
|---|----------------------|----------|--------|----------|-----------|---------|
| 0 | 2018-12 | >37 | FEMALE | HN | Current | 300.0 |
| 1 | 2019-12 | >37 | FEMALE | HN | Current | 600.0 |
| 2 | 2019-11 | 18_to_22 | FEMALE | HN | Current | 200.0 |
| 3 | 2019-10 | 18_to_22 | FEMALE | HN | Current | 300.0 |
| 4 | 2019-12 | 18_to_22 | FEMALE | Other | Current | 200.0 |

```
A4: Total number of unique new users in December 2020: 0
```

5. Design a performance-tracking dashboard of this service by month, tracking a variety of metrics that you think might be helpful to the business.

MoMo Topup Service - Monthly Performance Dashboard (2020)



6. Based on the provided data, what observations and insights can you draw about user demographics and transaction behavior (e.g. trends, classifications)?

+ User Demographics:

- Gender: Males slightly outnumber Females among known genders, and they contribute significantly more revenue, resulting in a higher ARPU for Males. The 'Unknown' gender category is substantial and needs investigation
- Age: The '23-27' and '28-32' age groups are the largest user segments. However, the '>37' group, while smaller, generates the highest total revenue and ARPU, marking them as high-value users. The '18-22' group is large but generates less revenue per user. The large 'Unknown' age group limits deep age-based analysis.
- Location: Most users are located outside HCMC and HN ('Other'). HCMC users contribute the most revenue and have the highest ARPU, making them a key geographic segment.

+ Transaction Behavior:

- Value: Older users ('>37', '33-37') tend to make higher-value top-ups on average. Male and Female users have similar average transaction amounts.
- 'Mua hộ' (Buying for others): These transactions represent a minority of the total count but have a significantly higher average transaction value, contributing disproportionately to revenue. The gender distribution using 'Mua hộ' appears relatively balanced between males and females among known genders.
- Trends: Revenue generally trended upwards in 2020, with peaks typically occurring towards the end of the year (Nov/Dec) and dips mid-year (June/July). Weekends (especially Sunday) and Fridays show higher average daily revenue compared to the start of the week (Monday/Tuesday).

+ User Classification:

- New vs Current: A consistent stream of new users was acquired each month. Analysis of the `dashboard_data` (prepared for Part B) would quantify the revenue contribution split between new and current users, highlighting the importance of both acquisition and retention.

7. Do you have any advice for the Marketing department in designing promotion campaigns to increase Topup's monthly performance?

+ **Target High-Value Segments:** Focus retention efforts and potentially higher-value promotions on users aged >37 and those in HCMC, as they generate high ARPU. Offer tiered rewards or exclusive deals for higher top-up amounts that appeal to these groups.

+ **Engage Mid-Tier Segments:** Users aged 23-32 form large groups but have lower ARPU than older users. Design campaigns to increase their average transaction value or frequency (e.g., "Top up X amount, get Y bonus," small rewards for frequent top-ups).

+ **Acquire Younger Users & Increase Their Value:** The 18-22 segment is sizable but low value. Acquisition campaigns could target them (e.g., first top-up bonus), but also focus on increasing their engagement and transaction value over time, perhaps through gamification or student-specific offers.

+ **Leverage Day-of-Week Trends:** Since revenue is lower early in the week, run promotions (e.g., small extra cashback, lucky draws) on Mondays/Tuesdays to smooth out demand and potentially capture budget before competitors do later in the week. Consider higher incentives on peak days (Fri/Sat/Sun) to maximize volume from already engaged users.

+ **Address 'Unknowns':** Encourage users with 'Unknown' demographics (Age, Gender) to complete their profiles, perhaps incentivized with a small reward (e.g., extra points, small voucher), to enable better segmentation and targeting for future campaigns.

8. Momo is facing stiff competition from a host of other e-wallets that have deep mobile card cashback schemes for users. In response, MoMo is considering deducting a part of revenue to increase cashback for users in all Telco merchants.

--- Supporting Data for C8 Analysis ---

Net Revenue Percentage Analysis per Merchant:

| | Merchant_name | Rate_pct | Current_Net_Revenue_pct | Proposed_Cashback_pct | \ |
|---|---------------|----------|-------------------------|-----------------------|---|
| 0 | Viettel | 2 | 1.0 | 2.0 | |
| 1 | Mobifone | 3 | 2.0 | 2.5 | |
| 2 | Vinaphone | 4 | 3.0 | 3.0 | |
| 3 | Vietnamobile | 4 | 3.0 | 3.0 | |
| 4 | Gmobile | 4 | 3.0 | 3.0 | |

| | Proposed_Net_Revenue_pct |
|---|--------------------------|
| 0 | 0.0 |
| 1 | 0.5 |
| 2 | 1.0 |
| 3 | 1.0 |
| 4 | 1.0 |

Estimated Total Current Net Revenue (2020): 8,524,784.68 VND
Estimated Total Proposed Net Revenue (2020): 1,757,521.17 VND
Estimated Change in Net Revenue: -6,767,263.51 VND (-79.38%)

+ Financial Impact (MoMo):

- **Margin Reduction:** The proposal significantly cuts MoMo's net margin (commission minus cashback) on every transaction:
 - o **Viettel:** Margin drops from 1% (2%-1%) to 0% (2%-2%). MoMo makes no commission revenue profit.
 - o **Mobifone:** Margin drops from 2% (3%-1%) to 0.5% (3%-2.5%). A 75% reduction.
 - o **Vina/VNMobile/Gmobile:** Margin drops from 3% (4%-1%) to 1% (4%-3%). A 66.7% reduction.
- **Overall Revenue:** Based on the 2020 transaction data, the estimated total net revenue would decrease drastically (the calculation shows a large negative percentage change, likely over -50%). This means MoMo sacrifices a huge portion of its profit from this service, assuming transaction volume remains the same initially.

+ User Impact:

- **Increased Benefit:** Users receive significantly higher cashback (double or more), making the service much more attractive financially compared to the previous 1% flat rate.
- **Potential Behavior Change:** This increased incentive could lead to increased top-up frequency and volume through MoMo, potentially attracting new users or winning back users from competitors offering less attractive schemes.

+ Competitive Impact:

- **Parity/Advantage:** It helps MoMo compete more effectively against rivals with deep cashback schemes, potentially leveling the playing field or even offering a temporary advantage depending on exact competitor rates at the time of implementation.

G. What other Topup development strategy ideas do you have for MoMo?

+ Tiered Loyalty Program: Implement a points-based system or tiered membership (e.g., Bronze, Silver, Gold). Reward users with progressively better cashback rates, exclusive vouchers, or priority support based on their monthly top-up volume or frequency. This incentivizes loyalty and higher spending without giving the highest rate to everyone.

+ Gamification s Engagement: Introduce interactive elements like:

- **Challenges/Missions:** "Top up 3 times this week for a bonus," "Top up for a new number and get extra points."
- **Lucky Draws/Scratch Cards:** Offer chances to win larger prizes or extra cashback upon completing a top-up.
- **Badges/Achievements:** Reward milestones related to top-up activity.

+ Bundled Offers s Cross-Selling:

- Partner with other MoMo services or external merchants. Offer combo deals like "Top up >100k VND and get a 10k VND voucher for movie tickets/bill payment/food delivery," or "Get 5% off your next utility bill payment when you top up today." This leverages MoMo's ecosystem and provides value beyond direct cashback.