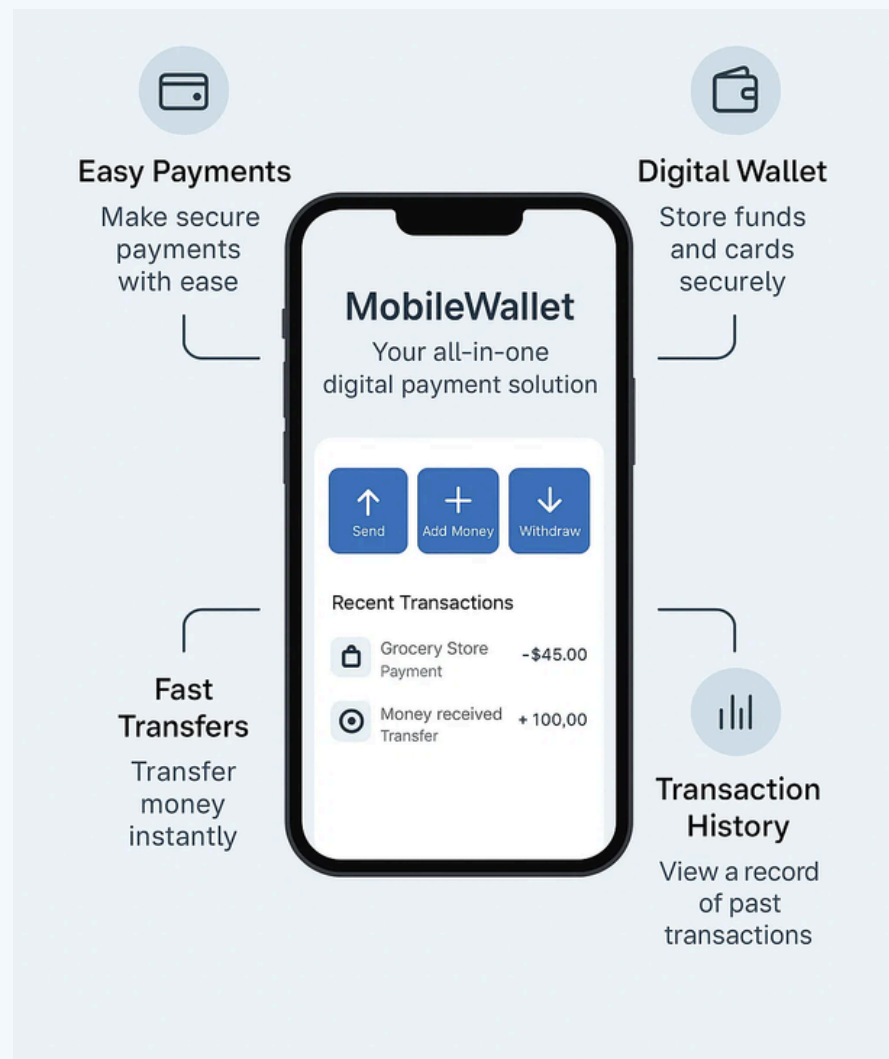




User Behavior and Revenue Analysis of MobileWallet App

By: Vandana Gangaiah

Overview



MobileWallet is a digital payment platform that securely stores users' credit and debit card details, allowing them to make transactions with ease. It serves as a one-stop solution for making payments, earning rewards, and managing personal spending, while simultaneously generating revenue through transaction fees.

Key Features

- **Seamless Payments:** Supports both online and in-app purchases across a variety of merchants.
- **Bill Payments & Recharges:** Enables quick payment of utility bills, mobile recharges, and subscriptions.
- **Peer-to-Peer Transfers:** Allows users to send and receive money instantly with other users.
- **Loyalty Points & Rewards:** Offers cashback and reward programs to encourage repeat usage and boost engagement.
- **Transaction History & Management:** Provides users with detailed insights into their spending patterns and past transactions.

Goal

This analysis explores how users interact with MobileWallet and **identifies patterns** in engagement, retention, and revenue to inform **future enhancements**.

Objectives

- Overall revenue classification.
- Identify top-spending users and their contribution to overall revenue.
- Measure user retention by calculating the ratio of one-time to returning users.
- Understand product category performance in terms of transaction fee and net revenue.
- Compare average spend and revenue between users who earn rewards and those who don't.
- Analyze revenue and transaction distribution across Urban, Suburban, and Rural areas.

Core Entities

- **User** → A person who uses the app to make transactions.
- **Product Category** → Type of item or service purchased (e.g., groceries, bills).
- **Product Amount** → Cost of the item/service before fees or cashback.
- **Transaction Fee** → Amount charged per transaction by the app.
- **Cashback** → Money returned to the user as a reward.
- **Loyalty Points** → Points earned by users for rewards or discounts.
- **Location** → Area where the user is based (Urban, Suburban, Rural).



Overall revenue classification

```
--Net Revenue Breakdown: Profit vs. Loss

SELECT RevenueCategory, SUM(RevenueEarnedPerUser) as Revenue
FROM(
SELECT user_id, RevenueEarnedPerUser, CASE
WHEN RevenueEarnedPerUser > 0 Then 'Profit'
WHEN RevenueEarnedPerUser = 0 Then 'No Revenue'
WHEN RevenueEarnedPerUser < 0 Then 'Loss'
End as RevenueCategory
FROM (
SELECT user_id, (ROUND(SUM(transaction_fee)::NUMERIC,2) -
ROUND(COALESCE(SUM(cashback),0)::NUMERIC,2)) as RevenueEarnedPerUser
FROM "MobileWallet"
GROUP BY user_id
) as innerquery) as mainquery
GROUP BY RevenueCategory
```

Query

Output

	revenuecategory  text	revenue  numeric
1	Profit	101734.66
2	Loss	-1121.34

Observation

The platform is overall **profitable**, with a net profit of Rs.101734.66 where **losses are minimal**.

Identify top-10 spending users and their contribution to overall revenue

```
SELECT user_id,  
ROUND(SUM(product_amount)::NUMERIC,2) as TransactionSumPerUser,  
ROUND(SUM(transaction_fee):: NUMERIC, 2) as SumTransactionFeePerUser,  
ROUND(SUM(cashback)::NUMERIC,2) as CashbackReceivedPerUser,  
ROUND(SUM(loyalty_points)::NUMERIC,2) as LoyaltyPointsPerUser  
FROM "MobileWallet"  
GROUP BY user_id  
ORDER BY TransactionSumPerUser DESC
```

Query

Output

	user_id character varying (512) 🔒	transactionsumperuser numeric 🔒	sumtransactionfeeperuser numeric 🔒	cashbackreceivedperuser numeric 🔒	loyaltypointspерuser numeric 🔒
1	USER_04724	29315.93	138.05	26.75	1943.00
2	USER_08946	28799.29	118.82	16.19	2760.00
3	USER_05836	25189.19	52.07	30.57	2572.00
4	USER_03945	25063.95	104.93	13.55	1770.00
5	USER_05744	24949.89	94.18	18.22	1495.00
6	USER_08775	24700.25	77.70	10.33	2331.00
7	USER_08584	23842.59	84.50	20.33	3109.00
8	USER_03888	23800.76	121.17	26.63	1369.00
9	USER_00949	23748.91	79.04	22.43	1723.00
10	USER_01223	23524.42	59.01	20.45	1023.00

Observation

- An analysis of the top 10 spenders reveals **inconsistencies** between total spend, rewards received, and transaction fees incurred.
- USER_04724, the **highest spender** with Rs.29,315.93, received only Rs.26.75 cashback and 1943 loyalty points, while also incurring the **highest transaction fee** of Rs.138.05.
- In contrast, USER_08584, who spent Rs.23,842.59, received a much higher 3109 loyalty points and more cashback (Rs.20.33) while paying a **lower transaction fee** (Rs.84.50).
- Interestingly, USER_05836 received the **highest cashback** of Rs.30.57 for a spend of Rs.25,189.19, and had the **lowest transaction fee** of just Rs.52.07 among the top 10.

Takeaway

Higher spending does not guarantee higher rewards. Some users spending less are rewarded more generously, both in terms of cashback and loyalty points. Additionally, **discrepancies in transaction fees** raise questions about fairness and consistency in the fee or reward structure.






Understand product category performance in terms of transaction fee and net revenue

```
--Product Category Wise Transaction and Revenue Analysis

SELECT product_category, COUNT(*) as TransactionCount ,
ROUND(SUM(transaction_fee) :: NUMERIC,2) as SumTransactionFeePerUser,
ROUND(SUM(cashback)::NUMERIC,2) as CashbackReceivedPerUser,
(ROUND(SUM(transaction_fee)::NUMERIC,2) -
ROUND(COALESCE(SUM(cashback),0)::NUMERIC,2)) as RevenueEarnedByProduct
FROM "MobileWallet"
GROUP BY product_category
ORDER BY TransactionCount DESC
```

Query

Output

	product_category 	transactioncount 	sumtransactionfeeperuser 	cashbackreceivedperuser 	revenueearnedbyproduct 
	character varying (512)	bigint	numeric	numeric	numeric
1	Streaming Service	299	7753.90	1535.21	6218.69
2	Education Fee	286	7449.83	1437.95	6011.88
3	Hotel Booking	274	6876.42	1364.08	5512.34
4	Water Bill	273	6582.45	1382.07	5200.38
5	Movie Ticket	272	6169.85	1381.43	4788.42
6	Food Delivery	259	6586.77	1357.84	5228.93
7	Taxi Fare	256	6622.40	1325.16	5297.24
8	Electricity Bill	252	6509.10	1320.33	5188.77
9	Rent Payment	251	6284.75	1299.59	4985.16
10	Gas Bill	250	6494.41	1218.27	5276.14
11	Loan Repayment	245	6302.64	1200.47	5102.17
12	Online Shopping	243	5904.64	1199.63	4705.01
13	Mobile Recharge	241	6008.04	1222.16	4785.88

Observation

- Streaming Service, Education Fee, and Hotel Booking are top-performing in terms of net revenue, likely due to high usage.
- **Cashback Control Matters:** Even **small increases** in **cashback** percentages can significantly **decrease net revenue**.
- **More transactions don't always mean more profit.** For example, Movie Tickets had 272 transactions but earned Rs.4,788.42, while Grocery Shopping had only 238 transactions and still earned more Rs.5,128.56.

Takeaway

Profitability depends not just on transaction volume but also on effective cashback control and fee structure. High usage categories like Streaming and Education perform well in net revenue, but categories with fewer transactions can still outperform others if cashback is managed efficiently. This highlights the importance of **optimizing both reward and fee strategies to drive revenue.**

Measure user retention by calculating the ratio of one-time to returning users

```
--OneTime vs Retained Users(Churn Rate)

SELECT SUM(OneTimeUser) as OneTimeUserCount,
SUM(RetentionUser) as RetentionUserCount,
ROUND((SUM(RetentionUser)::DECIMAL /
(SUM(RetentionUser) + SUM(OneTimeUser))*100),2) as RetentionRate
FROM(
SELECT (CASE
WHEN COUNT(*) = 1 THEN 1 ELSE 0 END) as OneTimeUser,
(CASE
WHEN COUNT(*) > 1 THEN 1 ELSE 0 END) as RetentionUser
FROM "MobileWallet"
GROUP BY user_id) as ChurnRateCount
```

Query

Output

	onetimeusercount bigint	retentionusercount bigint	retentionrate numeric
1	3029	903	22.97

Observation

The **majority** of users are **one-time** transactors, with **less than 25%** returning to use the platform again. This indicates **low user retention**.






Analyze revenue and transaction distribution across Urban, Suburban, and Rural areas

```
--Location-wise data

SELECT
CASE
WHEN location = 'Urban' THEN 'Urban'
WHEN location = 'Suburban' THEN 'Suburban'
WHEN location = 'Rural' THEN 'Rural'
ELSE 'Other'
END AS LocationCategory,
COUNT(*) AS TransactionCount,
ROUND(SUM(transaction_fee)::NUMERIC, 2) as TotalTransactionFee,
ROUND(SUM(COALESCE(cashback, 0))::NUMERIC, 2) as TotalCashback,
ROUND(SUM(transaction_fee -
COALESCE(cashback, 0))::NUMERIC, 2) as NetRevenue
FROM "MobileWallet"
GROUP BY LocationCategory
```

Query

Output

	locationcategory  text	transactioncount  bigint	totaltransactionfee  numeric	totalcashback  numeric	netrevenue  numeric
1	Suburban	1017	25798.20	5133.34	20664.86
2	Rural	498	12755.34	2493.64	10261.70
3	Urban	3485	87390.83	17702.42	69688.41

Observation

- **Urban users lead** in total transactions, fees paid, cashback received, and net revenue generated, followed by suburban and rural users.

This suggests:

- > Higher engagement and spending from urban regions.
- > Potential for targeted growth strategies in suburban areas.
- > Rural regions might need incentives or better access to increase adoption and usage

Compare average spend and revenue between users who earn rewards and those who don't

```
WITH UserSummary as (  
  SELECT  
    user_id,  
    SUM(loyalty_points) as TotalPoints,  
    SUM(cashback) as TotalCashback,  
    AVG(product_amount) as AvgSpend,  
    AVG(transaction_fee) as AvgFee  
  FROM "MobileWallet"  
  GROUP BY user_id  
)  
SELECT  
  CASE  
    WHEN TotalPoints > 0 AND TotalCashback > 0 THEN 'Earned Both'  
    WHEN TotalPoints > 0 THEN 'Earned Points Only'  
    WHEN TotalCashback > 0 THEN 'Earned Cashback Only'  
    ELSE 'No Reward'  
  END as Rewards,  
  COUNT(*) as Users,  
  ROUND(AVG(AvgSpend)::NUMERIC, 2) as AvgSpend,  
  ROUND(AVG(AvgFee)::NUMERIC, 2) as AvgTransactionFee,  
  ROUND(AVG(TotalPoints)::NUMERIC, 2) as AvgLoyalPoints,  
  ROUND(AVG(TotalCashback)::NUMERIC, 2) as AvgCashback  
FROM UserSummary  
GROUP BY Rewards
```

Query

	rewards text	users bigint	avgspend numeric	avgtransactionfee numeric	avgloyalpoints numeric	avgcashback numeric
1	Earned Cashback Only	2	7185.27	44.12	0.00	3.81
2	Earned Both	3930	4961.09	25.13	634.59	6.44

Output

Observation

- Many users earned **both cashback and loyalty points**, while only 2 users earned just cashback.
- **No users** earned **only loyalty points** or received no rewards at all.
- Interestingly, the **average spend and transaction fee are higher** for the **cashback-only** users, suggesting potentially **higher-value transactions** from this small group.

Conclusion

- **Revenue is strong**, with minimal losses across the user base.
- **Reward fairness and fee consistency need reevaluation** to prevent user dissatisfaction and improve loyalty.
- **Retention is low**, targeted campaigns are needed to drive repeat usage.
- **Urban focus is effective**, but rural and suburban growth potential remains underutilized.