METROCAR - FUNNEL ANALYSIS

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SUMMARY

This cutting-edge business model harnesses the power of technology for optimal leverage, typically through a smartphone app, to facilitate seamless and convenient ride sharing experience. Customers request rides, and track their drivers in real-time, pay electronically, while drivers have flexibility to work on their own schedules. This model has disrupted the traditional taxi industry and has become a prominent player in the transportation industry.

CONTEXT

The stakeholders have requested that the data analysis team conduct a thorough examination of Metrocar's data to pinpoint opportunities for enhancement and optimization. For instance, a key area of focus is analyzing the proportion of users who initiate an app download but fail to complete the registration process. Additionally, Metrocar is interested in understanding the percentage of users who place a ride request but then cancel it prior to the driver's arrival.

Funnel analysis is strategically implemented to accurately identify specific stages where users disengage or successfully convert, thereby significantly enhancing crucial outcomes such as increased sales, sign-ups, and conversion rates. This method is extensively leveraged in various domains, including marketing and product development, and is considered essential in propelling business growth and amplifying revenue.

Funnel analysis stands as a crucial technique in data analytics, employed to meticulously track and analyze the series of steps or stages customers navigate through while interacting with a product, service, or website. The term "funnel" aptly describes this analysis due to its resemblance to a real-world funnel – starting broad at the top and progressively narrowing down.

Objective:

Our primary aim is to foster business growth and enhance revenue by amplifying key outcomes such as bolstering sales, increasing sign-ups, and boosting overall conversions. Furthermore, this analysis will provide insights to address pertinent business questions related to these objectives.

Dataset Structure:

The comprehensive dataset for Metrocar, housed within a relational database system, comprises five detailed tables:

- app_download: This table chronicles app download details, including a unique identifier
 - > (app download key) for each download,
 - ➤ the platform used (iOS, Android, or Web)
 - > the timestamp of the download (download ts).
- signups: Focused on new user sign-ups, this table includes crucial information like
 - > the primary user ID (user_id),
 - ➤ the session ID linked to the app download (session_id),
 - > the timestamp of the signup (signup ts), and
 - > the user's age range (age_range).
- ride_requests: contains information about rides
 - ➤ ride id:
 - > primary id for a ride
 - > user_id: foreign key to user (requester)
 - driver_id: foreign key to driver request ts: ride request timestamp accept_ts: driver accept timestamp
 - > pickup location: pickup coordinates
 - ➤ destination location: destination coordinates pickup_ts: pickup timestamp dropoff ts: dropoff timestamp
 - > cancel_ts: ride cancel timestamp (accept, pickup and dropoff timestamps null
- * transactions: contains information about financial transactions
 - ride id: foreign key to ride
 - > purchase_amount_usd: purchase amount in USD
 - > charge status: approved, canceled
 - ➤ Transcsation_ts :transaction timestamps

* Reviews : contains information about driver review once the ride is completed

> Review_id: primary id of review

➤ Ride_id: foreign key to ride

Driver_id: foreign key to driverUser id: foreign key to user

➤ Rating :rating drivers for a completed ride

DATA EXTRACTION

To initiate the funnel analysis, data was meticulously extracted from the relational database system using tailored SQL queries. These queries were carefully crafted to gather the specific data needed for the analysis. An initial exploration of the dataset was conducted through SQL queries, offering early insights. Further SQL-based analysis was performed to construct customer funnels, and an additional query was developed to pull aggregated data for use in conjunction with other analytical tools. The details of these SQL queries are thoroughly documented in the APPENDIX section of this report.

The extracted data was then formatted into a CSV file to streamline the subsequent stages of statistical analysis. For the visualization and deeper exploration of the data, Tableau was utilized, enabling the extraction of diverse insights. This synergy of SQL for data extraction, combined with the advanced analytical and visual capabilities of Tableau, established a comprehensive and methodical framework for examining the dataset and uncovering significant statistical insights. This approach ensured a thorough and insightful analysis, leading to valuable and actionable conclusions.

Metrocar Customer Funnel Stages:

The Metrocar customer journey is structured into several distinct stages:

App Download: Users initiate their journey by downloading the Metrocar app from either the App Store or Google Play Store.

Sign-Up: Next, users register an account within the app, providing essential details such as their name, email, phone number, and payment information.

Ride Request: Users then request a ride by specifying their pickup location, destination. **Ride Acceptance:** A nearby driver receives and accepts the ride request.

Ride Completion: The driver reaches the pickup location, the user boards the car, and is transported to their destination.

Payment: Post-ride, the payment is processed automatically through the app, and a receipt is emailed to the user.

Review: Finally, users are encouraged to rate their driver and share feedback on their ride experience.

Metrics for Funnel Analysis:

Two primary metrics were employed to assess the conversion and drop-off rates at each stage of the funnel:

Metrics for Funnel Analysis:

Percent of Previous: This metric calculates the conversion rate as a percentage of users who advanced to a given stage, relative to the number in the preceding stage. It is instrumental in monitoring user progression and is vital for optimizing user experience and enhancing conversion rates at different points of the funnel.

Percent of Top: This approach calculates the conversion rate based on the total number of users at the funnel's initial stage. It is particularly valuable for evaluating the effectiveness of marketing strategies and user acquisition efforts.

Conversion rate: the rate at which users move from one step to another **Drop-off rate**: the rate at which users drop from one step to another without finishing.

Funnel Metrics Description:

funnel_step: Indicates the specific stage within the customer's journey.

funnel_name: Names each step in the customer journey for clarity.

user_count: Tracks the quantity of users present at each funnel stage.

lag: Reflects the user progression, calculated as the difference in user count between the current and previous funnel steps.

diff: Measures the net change in user count from the initial step (app download) to the current step, highlighting user retention or loss at each stage.

conversion_rate: Represents the proportion of users moving from one stage to the next, calculated by dividing the current step's user count by the previous step's count. For

instance, a 74.65% conversion rate at the "sign up" stage implies that 74.65% of those who downloaded the app proceeded to sign up.

dropoff_percent: Calculates the rate at which users exit the funnel between stages, computed as 1 minus the conversion rate. For example, a 25.35% drop-off at the "sign up" stage signifies that 25.35% of users who downloaded the app did not sign up.

Key Insights:

The journey begins with "app_download," attracting 23,608 users.

A notable drop-off of 25.35% is observed from "app_download" to "sign_up."

The "ride requested" stage shows a 70.40% conversion from "sign up."

"ride_accepted" demonstrates a high conversion of 98.97% from "ride_requested," indicating minimal drop-off.

However, "ride_completed" experiences a significant drop, with only 50.77% completing the ride after acceptance.

"payment" maintains a 100% conversion, suggesting all users who complete their ride proceed to payment.

The "review" stage sees a 69.76% conversion rate from "payment," with a 30.24% drop-off.

Recommendations:

Key Drop-Off Points for Improvement:

Transition from "app_download" to "sign_up" (25.35% drop-off).

Stage from "ride requested" to "ride accepted" (10.03% drop-off).

Crucial drop from "ride_accepted" to "ride_completed" (49.23% drop-off).

Strategies:

Optimizing Sign-Up: Enhance the sign-up process to decrease friction and boost user conversion from download to registration.

Supply-Side Analysis: Expand the analysis to include supply-side data (driver-related metrics) to gain comprehensive insights into service quality and customer drop-offs.

Enhancing Transition from Ride Request to Acceptance: Investigate and improve the user experience during this critical transition.

Addressing Ride Completion Drop-Offs: Explore the causes behind the substantial drop-off between ride acceptance and completion. This could stem from service quality, user experience, or other factors.

Encouraging Reviews and Feedback: Motivate customers to provide feedback after each ride.

Sentiment Analysis: provides a qualitative dimension to the quantitative data, offering a more comprehensive understanding of the customer journey. It helps in pinpointing emotional drivers and barriers within the funnel, guiding more effective strategies to enhance customer experience and conversion rates.

Integrated Analysis: Combine insights from sentiment analysis, demand-side, and supply-side funnel data for a holistic understanding and improvement strategy.

Enhanced Metrocar Funnel Analysis Insights and Recommendations:

Key Insights:

Metrocar operates across three platforms: iOS, Android, and Web. iOS leads with a 60.53% user share, followed by Android at 29.38%.

Tableau funnel analysis, incorporating a platform-level filter, reveals no significant variances in conversion and drop-off rates across these platforms.

Recommendations:

Uniform Platform Support: Given the consistent performance across all platforms, Metrocar should continue to equally prioritize and maintain iOS, Android, and Web platforms, ensuring a uniform user experience.

Cross-Platform Consistency: To ensure uniformity in user experience, Metrocar should maintain consistent features, user interfaces, and functionality across all platforms.

Feature and Performance Enhancement: Rather than focusing on a single platform, Metrocar should allocate resources towards enhancing features and overall app performance, benefiting users across all platforms.

Ongoing Monitoring and Feedback: Continuously monitor user behavior and feedback on each platform to identify and address any emerging platform-specific trends or issues. **Strategic Marketing Allocation**: Allocate marketing budgets in proportion to the user base on each platform, with a more significant allocation towards iOS due to its larger user share.

Regular User Experience Testing: Conduct periodic user experience tests across different platforms to ensure that updates or changes maintain a consistent quality across all platforms.

Age Distribution Analysis:

Key Insights:

The predominant age group for sign-ups is "35-44," accounting for 29.40%, followed by "25-34" at 19.56%. The "Unknown" category is notably large, comprising 30.10% of total signups.

Lower signup rates are observed in the "18-24" and "45-54" age groups, representing 10.58% and 10.36%, respectively.

Recommendations:

Targeted Marketing for Dominant Age Groups: Focus marketing efforts and user experience enhancements on the "35-44" and "25-34" age groups.

Increasing Signup Rates in Other Age Groups: Develop targeted marketing initiatives tailored to the unique preferences of the "18-24" and "45-54" age groups.

Encouraging Age Data Entry: Motivate users to provide their age information during signup, possibly through incentives like getting discounted rides on their birthday, to minimize the "Unknown" category.

User Segmentation and Personalization: Utilize age data for user segmentation, offering personalized notifications and user interfaces.

Continual Data Analysis and Iteration: Regularly analyze user data, feedback, and conversion rates across age groups to refine app features and marketing strategies.

Focused Retention Strategies: Implement retention strategies tailored to the preferences of different age groups to maintain engagement.

Ride Trip Distribution and Conversion Rates: **Key Insights:**

Peak activity periods are observed between 8 AM - 10AM and 4 PM - 10 PM, likely due to standard workday commutes.

There is a significant drop-off of 35.57% from "ride_requested" to "ride_accepted." The conversion rate from "ride_accepted" to "ride_completed" is 90.04%, and from "ride_completed" to "payment" is 95.07%.

A notable 26.53% drop-off occurs from "payment" to "review."

Recommendations:

Optimize Ride Acceptance Process: Investigate and address the high drop-off rate from ride requests to acceptance.

Enhance Ride Completion and Payment Steps: Although conversion rates are high, further optimization of these stages could reduce drop-offs.

Review and Payment Process Analysis: Examine the payment and review stages to identify and resolve issues potentially deterring users from completing the feedback process.

Overall Strategy:

The analyses suggest Metrocar is achieving consistent performance across platforms and shows potential areas for improvement in user experience and platform-specific enhancements. The age-range data should be leveraged for targeted marketing and user experience strategies, focusing on retention and conversion optimizations at critical funnel stages.

Conclusion

In conclusion, the funnel analysis offered key insights into the customer journey at Metrocar, pinpointing areas for improvement. It underscored the need to refine the signup process, enhance ride acceptance rates, and tackle notable drop-offs at the ride completion and review phases. The analysis also stressed the necessity of maintaining consistency across all platforms and implementing dynamic pricing during peak hours. These strategies are geared towards boosting user acquisition, retention, and overall customer satisfaction and experience.

APPENDIX

SQL CODE:

--1 total ride requested
SELECT COUNT(*) AS total_rides
FROM ride_requests;

```
--1 How many times was the app downloaded?
SELECT COUNT(DISTINCT app download key)
FROM app downloads;
-- 2 How many users signed up on the app?
SELECT COUNT(DISTINCT user id)
FROM signups;
-- 3 How many rides were requested through the app?
SELECT COUNT(DISTINCT ride id) AS Total ride request
FROM ride requests;
-- 4 How many rides were requested and completed through the app?
SELECT
  COUNT(DISTINCT ride id) AS Total ride request,
  COUNT(
    CASE
      WHEN dropoff ts IS NOT NULL AND accept ts IS NOT NULL AND
pickup ts IS NOT NULL
      THEN ride id
    END
  ) AS completed rides
FROM ride requests;
select count(distinct ride_id)
from ride requests
where cancel ts is null;
SELECT COUNT(DISTINCT ride id)
FROM transactions
WHERE charge status = 'Approved';
```

-- 5 How many rides were requested and how many unique users requested a ride? SELECT

COUNT(DISTINCT user_id) AS Total_user_request, COUNT(DISTINCT ride_id) AS total_rides FROM ride_requests;

-- 6 What is the average time of a ride from pick up to drop off?

SELECT *,dropoff_ts - pickup_ts AS time_taken FROM ride_requests;

SELECT AVG(dropoff_ts - pickup_ts) AS avg_time_taken FROM ride_requests;

-- 7 How many rides were accepted by a driver? SELECT COUNT(accept_ts) AS accepted_rides FROM ride_requests;

SELECT COUNT (DISTINCT ride_id) FROM ride_requests WHERE accept ts IS NOT NULL;

-- 8 How many rides did we successfully collect payments and how much was collected SELECT

SUM(purchase_amount_usd) AS total_amount,
COUNT(DISTINCT transaction_id) AS total_transaction
FROM transactions
WHERE charge status = 'Approved' AND purchase amount usd IS NOT NULL;

-- 9 How many ride requests happened on each platform? SELECT platform, COUNT(*) AS total_platform_rides FROM app_downloads GROUP BY platform;

```
SELECT a.platform,b.user id
FROM app downloads AS a
INNER JOIN signups AS b
ON a.app download key = b.session id;
SELECT p.*,c.ride id
FROM
(SELECT a.platform,b.user id
FROM app downloads AS a
INNER JOIN signups AS b
ON a.app download key = b.session id) AS P
INNER JOIN ride requests AS C
ON P.user id = C.user id;
SELECT platform, COUNT(DISTINCT ride id)
FROM
(SELECT p.*,c.ride id
FROM
(SELECT a.platform,b.user id
FROM app downloads AS a
INNER JOIN signups AS b
ON a.app download key = b.session id) AS P
INNER JOIN ride requests AS C
ON P.user id = C.user id) AS T
GROUP BY platform;
--10 What is the drop-off from users signing up to users requesting a ride?
WITH user ride status AS (
 SELECT user id
 FROM ride requests
 GROUP BY user id
SELECT
```

```
COUNT (*) AS total signup,
COUNT(DISTINCT user ride status.user id) AS total user ride
FROM signups s
FULL JOIN user ride status
ON s.user id = user ride status.user id;
--What is the drop-off from users signing up to users requesting a ride?
SELECT COUNT(DISTINCT a.user id), COUNT(DISTINCT b.user id)
FROM ride_requests AS a
RIGHT JOIN signups AS b
ON a user id = b user id;
TABLEAU EXTRACT
WITH
-- user related CTE's
 app download AS (
  SELECT
   COUNT(DISTINCT ad.app download key) AS total users app downloaded,
   ad.platform,
   COALESCE(s.age range, 'Not Specified') AS age range,
      ad.download ts::DATE AS download dt
  FROM app downloads AS ad
  LEFT JOIN signups AS s ON ad.app download key = s.session id
  GROUP BY ad.platform, s.age range, ad.download ts::DATE
 ),
 sign ups AS (
  SELECT
   COUNT(DISTINCT s.user id) AS total users signed up,
   ad.platform,
   COALESCE(s.age range, 'Not Specified') AS age range,
      ad.download ts::DATE AS download dt
  FROM signups AS s
  LEFT JOIN app downloads AS ad ON s.session id = ad.app download key
  GROUP BY ad.platform, s.age range, ad.download ts::DATE
 ),
 user ride status AS (
```

```
SELECT
   rr.user id,
   ad.platform,
   COALESCE(s.age range, 'Not Specified') AS age range,
      ad.download ts::DATE AS download dt,
   MAX(CASE WHEN rr.accept ts IS NOT NULL THEN 1 ELSE 0 END) AS
ride accepted,
   MAX(CASE WHEN rr.dropoff ts IS NOT NULL THEN 1 ELSE 0 END) AS
ride completed
  FROM ride requests AS rr
  LEFT JOIN signups AS s ON rr.user id = s.user id
  LEFT JOIN app downloads AS ad ON s.session id = ad.app download key
  GROUP BY rr.user_id, ad.platform, s.age_range, ad.download_ts::DATE
 ),
 payment status AS (
  SELECT
   rr.user id,
   ad.platform,
   COALESCE(s.age range, 'Not Specified') AS age range,
      ad.download ts::DATE AS download dt,
   COUNT(*) AS total rides with payment
  FROM transactions AS t
  LEFT JOIN ride requests AS rr ON t.ride id = rr.ride id
  LEFT JOIN signups AS s ON rr.user id = s.user id
  LEFT JOIN app downloads AS ad ON s.session id = ad.app download key
  WHERE charge status = 'Approved'
  GROUP BY rr.user id, ad.platform, s.age range, ad.download ts::DATE
 review status AS (
  SELECT
   rv.user id,
   COUNT(*) AS total reviews per user,
   ad.platform,
   COALESCE(s.age range, 'Not Specified') AS age range,
      ad.download ts::DATE AS download dt
  FROM reviews AS rv
  LEFT JOIN signups AS s ON rv.user id = s.user id
```

```
LEFT JOIN app downloads AS ad ON s.session id = ad.app download key
 GROUP BY rv.user id, ad.platform, s.age range, ad.download ts::DATE
),
-- steps related CTE's
steps AS (
 SELECT
  1 AS funnel step,
  'app download' AS funnel name,
  total users app downloaded AS user count,
  platform,
  age range,
     download dt
 FROM app download
 UNION
 SELECT
  2 AS funnel step,
  'sign up' AS funnel name,
  total users signed up AS user count,
  platform,
  age range,
     download dt
 FROM sign ups
 UNION
 SELECT
  3 AS funnel step,
  'ride requested' AS funnel name,
  COUNT(*) AS user count,
  platform,
  age range,
     download dt
 FROM user ride status
 GROUP BY platform, age range, download dt
 UNION
 SELECT
  4 AS funnel step,
  'ride accepted' AS funnel name,
```

```
SUM(ride accepted) AS user count,
  platform,
  age range,
     download dt
 FROM user ride status
 GROUP BY platform, age range, download dt
 UNION
 SELECT
  5 AS funnel step,
  'ride completed' AS funnel name,
  SUM(ride completed) AS user count,
  platform,
  age range,
     download dt
 FROM user ride status
 GROUP BY platform, age range, download dt
 UNION
 SELECT
  6 AS funnel step,
  'payment' AS funnel name,
  COUNT(*) AS user count,
  platform,
  age range,
     download dt
 FROM payment status
 GROUP BY platform, age range, download dt
 UNION
 SELECT
  7 AS funnel step,
  'review' AS funnel name,
  COUNT(*) AS user count,
  platform,
  age range,
     download dt
 FROM review_status
 GROUP BY platform, age range, download dt
),
```

```
-- ride related CTE's
 requested rides AS (
  SELECT COUNT(*) AS total rides requested,
   ad.platform,
   COALESCE(s.age range, 'Not Specified') AS age range,
      ad.download ts::DATE AS download dt
  FROM ride requests AS rr
  LEFT JOIN signups AS s ON rr.user id = s.user id
  LEFT JOIN app downloads AS ad ON s.session id = ad.app download key
  GROUP BY ad.platform, s.age range, ad.download ts::DATE
 ),
 accepted rides AS (
  SELECT COUNT(*) AS total rides accepted,
   ad.platform,
   COALESCE(s.age range, 'Not Specified') AS age range,
      ad.download ts::DATE AS download dt
  FROM ride requests AS rr
  LEFT JOIN signups AS s ON rr.user_id = s.user_id
  LEFT JOIN app downloads AS ad ON s.session id = ad.app download key
  WHERE rr.accept ts IS NOT NULL
  GROUP BY ad.platform, s.age range, ad.download ts::DATE
 ),
 completed rides AS (
  SELECT COUNT(*) AS total rides completed,
   ad.platform,
   COALESCE(s.age range, 'Not Specified') AS age range,
      ad.download ts::DATE AS download dt
  FROM ride requests AS rr
  LEFT JOIN signups AS s ON rr.user id = s.user id
  LEFT JOIN app_downloads AS ad ON s.session_id = ad.app_download_key
  WHERE rr.dropoff ts IS NOT NULL
  GROUP BY ad.platform, s.age range, ad.download ts::DATE
 ),
 payment rides AS (
  SELECT COUNT(*) AS total rides with payment,
   ad.platform,
```

```
COALESCE(s.age range, 'Not Specified') AS age range,
      ad.download ts::DATE AS download dt
  FROM transactions AS t
  LEFT JOIN ride requests AS rr ON t.ride id = rr.ride id
  LEFT JOIN signups AS s ON rr.user id = s.user id
  LEFT JOIN app downloads AS ad ON s.session id = ad.app download key
  WHERE charge status = 'Approved'
  GROUP BY ad.platform, s.age range, ad.download ts::DATE
 ),
 review rides AS (
  SELECT COUNT(*) AS total rides with review,
   ad.platform,
   COALESCE(s.age range, 'Not Specified') AS age range,
      ad.download ts::DATE AS download dt
  FROM reviews AS rv
  LEFT JOIN signups AS s ON rv.user_id = s.user_id
  LEFT JOIN app downloads AS ad ON s.session id = ad.app download key
  GROUP BY ad.platform, s.age range, ad.download ts::DATE
 )
-- Main Query
SELECT
 funnel step,
 funnel name,
 platform,
 age range,
 download dt,
 user count,
 CASE
  WHEN funnel name = 'ride requested' THEN (SELECT total rides requested FROM
requested rides WHERE requested rides.platform = steps.platform AND
requested rides.age range = steps.age range AND requested rides.download dt =
steps.download dt)
  WHEN funnel name = 'ride accepted' THEN (SELECT total rides accepted FROM
accepted rides WHERE accepted rides.platform = steps.platform AND
accepted rides.age range = steps.age range AND accepted rides.download dt =
steps.download dt)
```

WHEN funnel_name = 'ride_completed' THEN (SELECT total_rides_completed FROM completed_rides WHERE completed_rides.platform = steps.platform AND completed_rides.age_range = steps.age_range AND completed_rides.download_dt = steps.download_dt)

WHEN funnel_name = 'payment' THEN (SELECT total_rides_with_payment FROM payment_rides WHERE payment_rides.platform = steps.platform AND payment_rides.age_range = steps.age_range AND payment_rides.download_dt = steps.download_dt)

WHEN funnel_name = 'review' THEN (SELECT total_rides_with_review FROM review_rides WHERE review_rides.platform = steps.platform AND review_rides.age_range = steps.age_range AND review_rides.download_dt = steps.download_dt)

ELSE NULL

END AS ride_count

FROM steps

ORDER BY funnel_step, platform, age_range, download_dt ASC

;

LINKS

Dashboard Tableau Public

:https://public.tableau.com/views/MetrocarRideshareCompany/MetrocarAnalysis?:langua ge=en-US&publish=yes&:display count=n&:origin=viz share link

Tableau links for Visualization

Funnel Analysis by user count

https://public.tableau.com/views/MetrocarRideshareCompany/FunnelAnalysisbyusercounty:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

Funnel Analysis by ride count

https://public.tableau.com/views/MetrocarRideshareCompany/FunnelAnalysisbyridecountry:language=en-US&publish=yes&:display count=n&:origin=viz share link

App Download by Quarter

https://public.tableau.com/views/MetrocarRideshareCompany/AppDownloadbyQuarter?: language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

Age Range of User

https://public.tableau.com/views/MetrocarRideshareCompany/AgeRangeofUser?:language=en-US&publish=yes&:displaycount=n&:origin=vizsharelink

Surge Price Analysis

https://public.tableau.com/views/MetrocarRideshareCompany/SurgePriceAnalysis?:language=en-US&publish=yes&:display count=n&:origin=viz share link

Video Presentation Link:

https://www.loom.com/share/8d6259c658f54211b79611921403e149?sid=e3430c1f-7fda-489f-99e6-de6aa20b38f3