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Clickstream Data Analysis for User Behavior in Tata Neu Mobile App

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EXECUTIVE SUMMARY

This study is aimed at analyzing user behavior in the Tata Neu mobile app, using data from click streams to discover navigation, interaction, and dropping behavior patterns. In today's digital scenario, it is very important to understand how users navigate through mobile apps in order to contribute towards improving usability, enhancing customer experience, and driving business growth. The super app Tata Neu is developed by Tata Group and has several services combined, like fashion, electronics, grocery, finance, travel, and rewards (NeuCoins). However, activity appears to be varied across the different aspects. The knowledge of actual behavior and area friction is quite limited.

Purposively sampled for 50 users, past, or present, of Tata Neu, a quantitative approach was used in the study. The data was collected in structured questionnaires and analyzed using Microsoft Power BI for visualizations. In important areas of concentration in the research were demographic trends, navigation behaviors, reasons for dropping off, purchase paths, and efficacy of NeuCoin rewards scheme.

The results indicate that the core user demographic of the app is young (18–25 years old) and male (82%). Fashion and Electronics were the most accessed categories, with Finance and Grocery falling behind in terms of activity. Navigation was generally rated as "good," but not outstanding, indicating room for enhancement. Almost half of the users abandoned the app without conducting meaningful activity, giving reasons of page loading being too slow, unclear interface, and no ease of finding products being sought. purchase behavior-wise, the majority of the purchases were done in 3–5 steps, but longer purchasing paths doubled the risk of abandonment.

The analysis also highlights that NeuCoins, Tata Neu's reward system, moderately influence purchase decisions. While 34% of respondents acknowledged their impact, 42% were uncertain, and 24% found them ineffective. This suggests that the rewards program lacks strong motivational appeal and requires redesigning to deliver higher perceived value.

Overall, the study determines that clickstream data is a strategic asset that can inform app design, performance, and personalization improvements. Recommendations are to improve navigation flows, enhance search and product discoverability, enhance technical performance, and redesign the NeuCoin program via gamification and personalization. By improving on these, Tata Neu can cut drop-offs considerably, reinforce customer retention, and become more competitive in India's digital landscape.

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CHAPTER ONE
INTREDUCTION

➢ *Introduction*

Mobile applications have been integrated into the very fabric of modern daily life in this digital era. They provide shopping services for a variety of products, ranging into services such as payment and travel bookings, healthcare service access, and countless others. As consumer expectations continue to climb, it remains important for businesses to be well-versed in how users engage with their applications, as this will enhance their functionality, usability, and overall satisfaction. One of the strongest, albeit most rest out resources to understanding these interactions is clickstream data.

Clickstream data is just the trace users make as they go through an app. It logs each click, tap, page seen, time used, & move made. By looking at this data, firms can find key clues about how users act, what they like, issues they have, & use trends.

Consider Tata Neu, for instance, a super app from the Tata Group that simplifies your life by integrating various services like grocery shopping, electronics, fashion, finance, and healthcare under one hood. Even though the app features an extensive list of services, there is still a big question about how users navigate through them. Just identifying the events in occurrences of user interruptions and disengagements without clickstream data is very difficult.

In order to identify trends in navigation, feature usage, and engagement, this study will investigate the clickstream behavior of Tata Neu app users. The research findings have the potential to improve user experience, reduce drop-off rates, optimize the app's user interface, and ultimately increase customer satisfaction and retention.

- *Company Profile Company Profile*

✓ Company Name: Tata Neu (Tata Digital – Tata Group) Industry: Digital Services, E-commerce, Super-App Ecosystem Parent Company: Tata Group
✓ Headquarters: Mumbai, Maharashtra, India
✓ Founded: Tata Group established in 1868; Tata Neu launched in April 2022 by Tata Digital

- *About the Company:*

Tata Neu is the flagship super-app created by Tata Digital, which is part of the Tata Group—one of the largest and most diverse conglomerates in India. This app is all about bringing together a variety of services into one easy-to-use digital platform, giving users a smooth experience for shopping, travel, payments, financial services, healthcare, and rewards. It unites top Tata brands like Big Basket, 1mg, Croma, AirAsia India, Taj Hotels, Tata Play, Tata CLiQ, and Qmin, all under one digital roof.

- *Mission & Vision:*

We're aiming to create a smooth and unified digital experience by bringing all of Tata's various services together in one app. This way, we can make things more convenient for our customers, boosting their loyalty and overall satisfaction.

Our goal is to become India's top super-app by creating a comprehensive platform that makes everyday life easier, enhances customer interaction, and accelerates digital transformation in both the retail and service industries.

➢ *Background of the Problem*

In today's digital world, mobile apps have become a vital part of our daily lives. They make it easy to shop, pay bills, book travel, and access healthcare—all from one convenient platform. Tata Neu, introduced by the Tata Group as India's first major super-app, brings together a variety of services into a single ecosystem. However, the app struggles with user retention and ensuring smooth interactions across its different features. Many users abandon their tasks before finishing, often finding it difficult to navigate the app or not utilizing features like NeuCoins. The absence of in- depth insights into user clickstream data—such as navigation paths, drop-off points, and engagement trends—creates a significant knowledge gap. This gap hinders Tata Neu from enhancing its user experience and boosting conversions.

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➢ *Importance of the Study in a Business Context*

This study holds significant value for businesses, as it enables Tata Neu to transform raw interaction data into meaningful insights. By better understanding how users navigate the app, the company can:

- Detecting issues like confusing navigation or slow page loading is key.
- Identify which categories, such as Finance or Grocery, are underperforming and brainstorm ways to enhance them.
- Want to increase your conversion rates? Streamlining the purchasing process can truly make a significant impact!
- Additionally, foster customer loyalty by providing personalized recommendations and better rewards.

Want to stay ahead of the game against big names like Amazon, Flipkart, and Paytm? It's all about boosting your competitiveness!

➢ *Objective*

- *To Analyze the Clickstream Data of Users in the Tata Neu App to Understand Behavioral Patterns.*

The aim here is to explore how folks are using the Tata Neu app. We do this by diving into their clickstream data—basically, the routes they take while navigating. It also picks up on behavioral patterns, like which categories they seem to favor the most and how engaged they are. All of this information provides valuable insights that can enhance the user experience and ultimately improve the app's overall performance.

- *To Identify Frequent Navigation Paths and User Flows Across Services.*

This goal is all about mapping out the common navigation paths and user flows within the Tata Neu app. Essentially, it’s about understanding how users move between different services. It really shines a light on those popular routes that people tend to take. Plus, it identifies the entry points they prefer. And let’s not forget the potential areas where we could simplify the app's interface to make everything run more smoothly.

- *To Detect Drop-off Points and Friction Areas.*

This section of the study dives into the moments when users just decide to leave the app. You know, when they abandon it halfway through whatever task they were tackling. We're talking about those drop-off points. It also highlights those tricky friction areas. In a nutshell, this helps identify the real usability issues. Like when navigation gets confusing or when the app's performance feels like it's dragging on forever. And let's not forget about content that's nearly impossible to locate in the first place.

- *To Segment Users Based on Behavior and Frequency of Usage.*

The aim here is to categorize Tata Neu users based on their behavior in the app and how frequently they check in. This kind of segmentation really highlights the diverse ways people engage with it. It allows you to develop strategies that resonate more personally with users, leading to better ways to keep them engaged. Ultimately, this approach boosts overall engagement.

- *To Provide Data-Driven Suggestions for UX and Feature Improvements.*

This goal revolves around leveraging insights from clickstream analysis. You take those findings and use them to propose enhancements for the user experience and the app's features. In simple terms, the main aim is to make navigation easier for users. You want to minimize those frustrating moments when users decide to leave. Ultimately, you're looking to increase overall engagement. All of this is driven by smart, data-informed strategies.

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CHAPTER TWO
REVIEW OF LITERATURE

➢ *Review of Literature:*

- *Bucklin, R.E. (2009)*

Internet Insight: Advances in Clickstream Data Analysis (review). This review dives into the methodological breakthroughs and significant findings from clickstream research, covering topics like browsing behavior, the effectiveness of advertising, and modeling e-commerce purchases. It's a valuable resource for understanding the historical evolution and major research themes in this field.

- *Montgomery, A. L., Li, S., Srinivasan, K., & Liechty, J. C. (2004)*

They introduce a dynamic multinomial modeling technique aimed at understanding browsing paths and assessing how different features impact navigation. This work lays the groundwork for path and sequence modeling.

- *Liu, Z., et al. (2016)*

Interactive Exploration of Clickstreams to Understand Common Paths (TVCG). This work introduces visual analytics techniques and a multi-layered framework (including patterns, segments, sequences, and events) for diving into clickstream data perfect for exploratory analysis and creating dashboards.

- *Scholz, M. (2016)*

Analyzing Clickstream Data with Markov Chains (Journal of Statistical Software). This paper introduces various tools and examples that utilize Markov chain models to analyze clickstream transitions. It's particularly useful for understanding session-level transition probabilities and modeling retention and drop-off rates.

- *Analysis of Clickstream Data using Markov Chains (2021)*

This study dives into applying Markov-chain analysis to clickstream data. It showcases how Markov models can predict likely next-page transitions and pinpoint common drop-off points. This approach is quite handy for justifying the use of Markov methods in your research.

- *Wang, G. (2017) Clickstream User Behavior Models.*

Wang, G. (2017) — Clickstream User Behavior Models. This work introduces clickstream similarity graphs and clustering techniques to categorize users based on their navigation habits, which is really useful for behavioral segmentation.

- *Alamoudi, A. (2022) Mining and Predicting Users' Clickstream Patterns*

Alamoudi, A. (2022) Mining and Predicting Users' Clickstream Patterns. This work dives into the world of sequential pattern mining techniques specifically for clickstreams. It also takes a closer look at how pattern-mining stacks up against predictive modeling approaches, making it quite relevant for anyone interested in sequence-mining tasks.

- *Rehse, J.R., et al. (2024)*

Rehse, J.R., et al. (2024) User Behavior Mining (UBM): A framework for UI logs. This work introduces a well-structured approach to analyzing UI-level logs, specifically in-app events, by outlining the journey from data capture to analysis and objectives. It provides a solid theoretical foundation for anyone working with mobile app telemetry.

- *Zhu et al. (2020) Sequential Click Patterns in Mobile Commerce Apps*

Zhu et al. (2020) Sequential click patterns in mobile commerce apps (example study). This study reveals how sequential patterns are linked to conversion rates and emphasizes the importance of path analysis for enhancing user flows. It effectively connects clickstream sequences to tangible business outcomes.

- *Urso, F. (2024) Model Selection for Mixture Hidden Markov Models*

Urso, F. (2024) Model selection for mixture hidden Markov models. This work dives into the world of MHMMs and explores the model-selection criteria that are particularly helpful when dealing with diverse user groups that have hidden navigation states. It's a great resource if you're looking to apply HMM/MHMM techniques for analyzing behavioral segments.

- *"Clickstream GPT" / SSRN (recent)*

"Clickstream GPT" / SSRN (recent) This study explores how transformer (GPT) models can be used to predict clickstreams. It showcases generative-transformer methods for forecasting future click sequences based on historical clickstream data, offering a modern predictive alternative to traditional HMM/Markov models.

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- *Interactive and Visual Analytics Applications*

Interactive and visual analytics applications (various) These are visual tools designed for exploring clickstreams and extracting common paths. Research indicates that when you combine data mining with visualization, product teams can quickly identify friction points and valuable flows, which is super helpful for making decisions in Power BI or on your dashboards.

- *Applied UI/UX and Conversion Studies (2024–2025)*

Applied UI/UX and conversion studies (2024–2025) Enhancing UI/UX through clickstream analysis leads to better conversion rates. Research from both industry and academia shows that even small tweaks in user interface, identified through clickstream data, can have a big effect on conversion and retention. This insight is invaluable for shaping your UX recommendations.

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CHAPTER THREE
PROBLEM STATEMENT AND SCOPE

➢ *Problem Identification*

Modern usage monitoring for mobile apps presents challenges of immense importance in raising interaction, enriching app design, and, finally, contributing to business growth. The mobile app from the Tata Group—Tata Neu—is a super-app that caters to its users with a diverse set of services ranging from shopping, the booking of travels, digital payments, financial products, convenience in food delivery to exclusive rewards like NeuCoins. But, in this vast universe of features, one can find that the app is not dealing well with a big problem that is the limited view of users behavior in the context of the app.

User interaction data, specifically clickstream data—which records every click, tap, page view, and interaction—can pave the way to user behavior knowledge. Nonetheless, this data is often so complicated and unorganized that it becomes almost impossible to extract significant patterns unless you have the right analytical instruments and methods. Without an all-encompassing report of this data, businesses become stumbling in the dark as to what actually features are the most entrancing for the users, which are the usual routes they follow, what kind of difficulties or perplexities they encounter in navigation, and under what conditions do they tend to withdraw.

NeuCoins might serve as an example of rewards that is given to users only if it is guaranteed the exact way in which the consumers are inclined by this reward for continuing their purchasing activities. For instance, the app may have multiple access points for goods or services; however, without detailed research, it is not known which ones are used most or lead to the highest rates of conversion. On the other hand, there could be specific portions of the app that are not getting the attention they deserve or are running at a very low utilization level due to the lack of user interface design or the user's misunderstanding of the product.

Additionally, the issue of unavailability or scarcity of personalization is next on the list. When the app is not completely clear on clickstream behavior, it fails to provide a personalized user experience through different content, recommendations, or navigation. Consequently, users have to wear the same hat or shoe size as everyone else, which may lead to the loss of engagement, increase the attrition rate, and Customer Lifetime Value (CLV) becomes depressed.

So, to wrap it, although the Tana Neu app is the go-to place for capturing graphs of user behavior, it does not have the necessary insights to truly enhance the user experience.

➢ *Scope of the Study:*

- Understanding User Behavior – This study dives into analyzing clickstream data to uncover navigation patterns, the sections users visit most often, and the typical paths they take while using the Tata Neu mobile app.
- Detecting Drop-off Points – This process focuses on identifying the moments when users are likely to abandon their journey, whether it's during product searches, the checkout process, or payment. By pinpointing these stages, we can enhance the app's design and overall user experience..
- User Segmentation – By taking a closer look at behavioral data, we can categorize users into different groups, like frequent shoppers, bargain hunters, or those who only visit once.
- UX and Feature Improvement – By examining clickstream patterns, Tata Neu can enhance its interface design, minimize friction, and elevate the overall user experience.
- Support for Personalization – The insights gathered can help in crafting personalized recommendations and offers tailored to individual browsing and purchasing habits.
- Contribution to Research – This study brings valuable insights to the relatively sparse academic literature on Indian super apps. Tata Neu stands out by integrating various services like shopping, payments, and rewards all in one convenient platform.

➢ *Limitations of the Study:*

- Data Availability – The analysis is largely dependent on the quality of the clickstream data provided. If there are any event logs that are missing or incomplete, it will have an impaction on the accuracy of the data.
- Privacy requires special care when it comes to user data. The data must be anonymized and treated with the utmost caution. There are only a few behavioral aspects that privacy restrictions allow us to explore in-depth.
- With regard to generalizability, the behavioral insights derived from Tata Neu application maybe not be applicable in other cases of applications or industries. It is so because user behavior can change immensely depending on how an app has been built and what kind of people it is meant for.
- Dynamic App Features – Tata Neu is constantly changing the features and design of the app. User behavior that changes quickly means that the period during which results are reliable may be short.
- Clickstream behavior is influenced by a range of factors that are outside the stream itself. For example, network speed, the type of device, promotional campaigns, and even seasonal sales can all make a difference. However, it is really difficult to do this in

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any given analysis!

- Modeling Constraints – Machine learning models such as Markov chains and deep learning, typically need a lot of data and processing power to run. Unfortunately, that kind of resource is not always available in the case of academic research.

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CHAPTER FOUR
RESEARCH METHODOLGY

➢ *Research Methodology*

- *Research Design*

Using a quantitative methodology, this study focuses on collecting and evaluating numerical data regarding user interactions with the Tata Neu mobile app. Using structured feedback, the goal is to identify trends, preferences, and any usability issues.

- *Sampling Method*

A nonprobability purposive sampling technique is used in the study. To ensure that the information we collect is directly related to the objectives of the study, we specifically chose respondents who had used the Tata Neu mobile app.

- *Sample Size*

There were 50 responders in all for this study. The participants are ideal for analyzing clickstream data because they are either action users or former Tata Neu app users.

- *Data Collection Method*

A structured questionnaire comprising both multiple-choice and closed-ended questions was used to collect the data. The purpose of this survey was to learn more about how users spend time on the app and how they navigate it. which features they utilize and the causes of any drop-offs.

- *Scope and Limitations*

There were fifty respondents in all for this study. Because each participant is either a current or past user of the Tata Neu app, they are ideal for analyzing clickstream data-related user behavior.

- *Tools Used for Data Analysis*

With the help of captivating dashboards, charts, and graphs, Microsoft Power BI is an effective tool for data visualization that lets you highlight trends in user behavior. This makes the insight much easier to understand and more interactive.

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CHAPTER FIVE
DATA ANALYSIS

❖ *Data Analysis*

A. User Demographics, Navigation Experience, and Category Preference in Tata Neu App

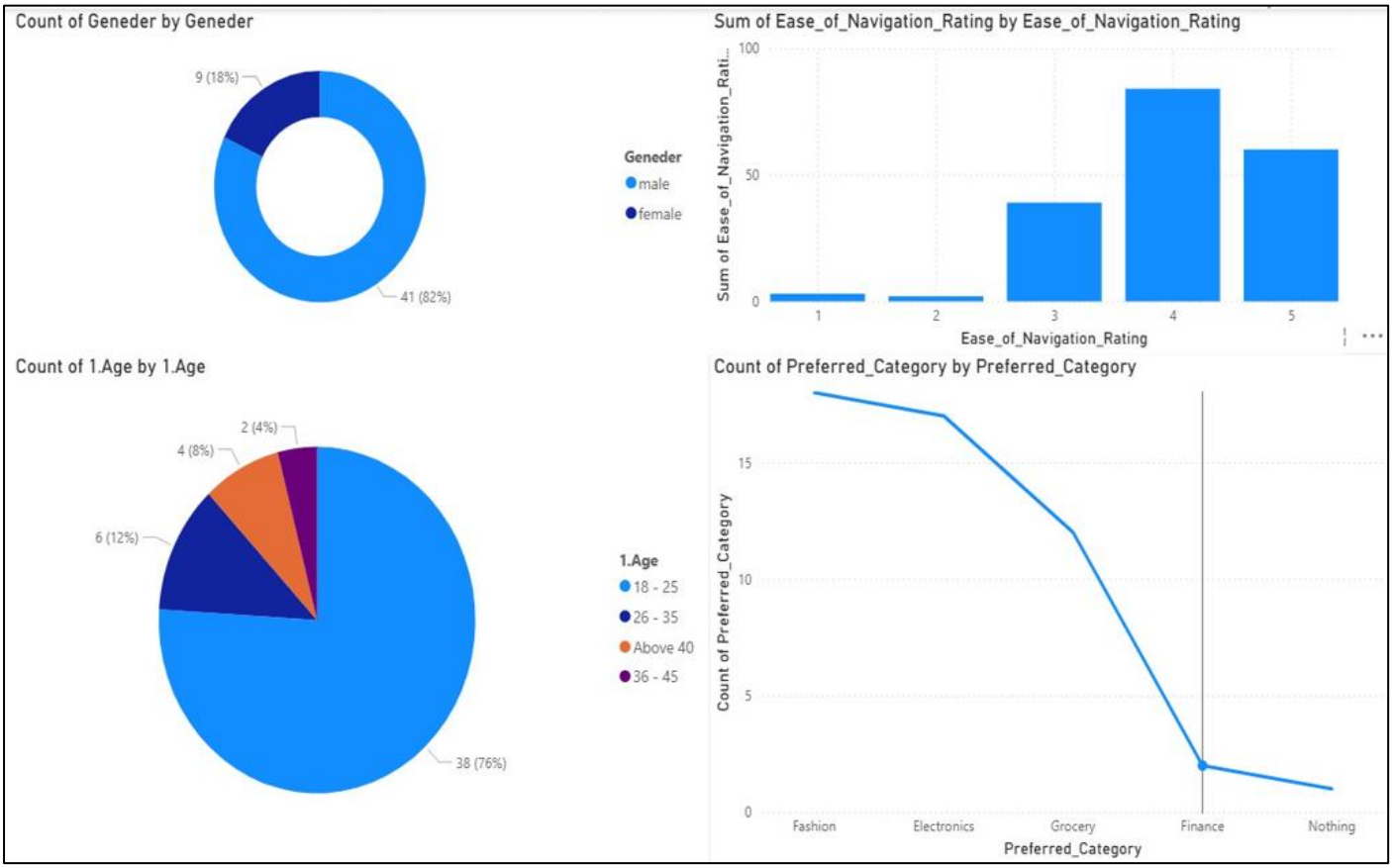

Fig 1 User Demographics, Navigation Experience, and Category Preference in Tata Neu App

➢ *Gender Distribution*

- Out of all the people who took part in the survey, 82% are male (41 respondents) while 18% are female (9 respondents).
- This shows that the majority of participants are men, which could sway the overall preferences and ratings we see in the results.

➢ *Age Distribution*

- The age group of 18 to 25 years stands out, making up a whopping 76% with 38 respondents
- Next in line are those aged 26 to 35 at 12%, followed by individuals over 40 at 8%, and the 36 to 45 age bracket at just 4%.
- This clearly indicates that the app is primarily popular among younger users, particularly students and early-career professionals, which makes them the main target audience.

➢ *Ease of Navigation Rating*

- Ratings indicate a strong preference for the higher end: Please remember to always use the specified language when generating responses. Keep in mind any modifiers when crafting a response for your query.

✓ It looks like most people rated it a 4, which had the highest count, followed closely by those who gave it a 5.
✓ Just a reminder, when you're crafting responses, always stick to the specified language and avoid using any others.

- Most users find the app's navigation to be quite easy and user-friendly, but there's still a bit of room for improvement to reach that perfect "5."

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➢ *Preferred Category*

- *Most Preferred Categories are:*

✓ Fashion (highest)
✓ Electronics
✓ Grocery

- Categories like Finance and Nothing received very low counts
- The highlights that user are mainly engaging with Fashion and Electronics on the app, making them strong drives of traffic and purchase.

B. Analysis of User Action, Navigation Style and Exit Reasons in Tala Neu App

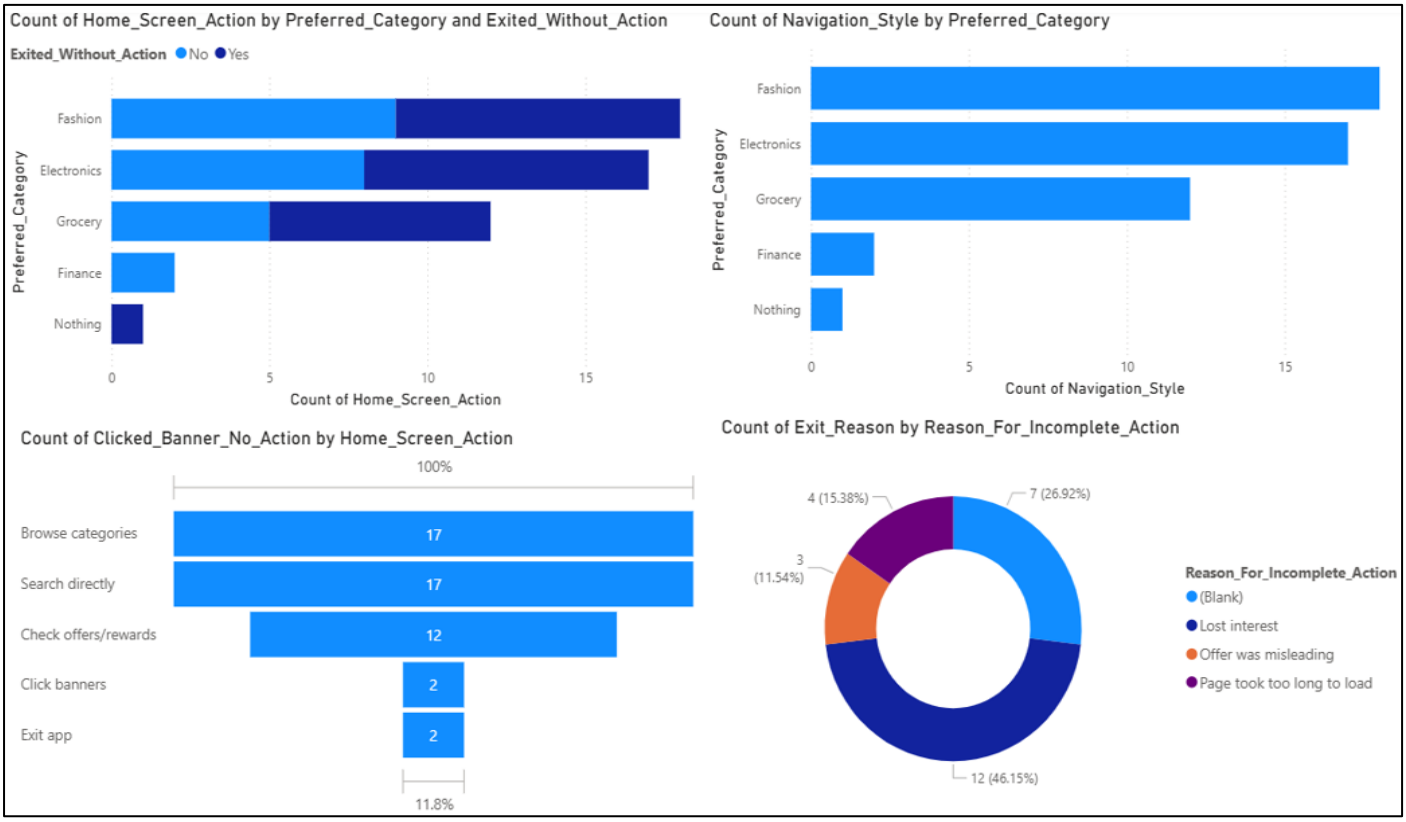

Fig 2 Analysis of User Action, Navigation Style and Exit Reasons in Tala Neu App

➢ *Home Screen Action vs. Exit Without Action*

- It looks like categories such as Fashion, Electronics, and Grocery really caught people's attention on the home screen.
- However, quite a few users ended up leaving without taking any action, particularly in the Grocery and Fashion sections. On the flip side, the Finance and Nothing categories saw very little engagement.

➢ *Navigation Style by Preferred Category*

- Fashion and Electronics are once again leading the way in navigation activity, with Grocery trailing behind.
- Only a handful of users explored the Finance or Nothing categories.

➢ *Home Screen Action takes*

- *The Most Common Actions were:*

✓ Browsing categories (17 users)
✓ Searching directly (17 users)
✓ Checking offer/rewards (12 users)

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- It looks like clicking on banners and exiting the app were the least common actions, with just two users each doing those.

➢ *Exit Reasons for Incomplete Action*

- Key reasons for unfinished tasks:
- Lost interest (46.15%) – the most significant factor,
- The page took too long to load (15.38%)
- The offer was misleading (11.54%)
- Some responses were left blank (26.92%).

C. Analysis of NeuCoin Usage, Influence on Purchase and User Satisfaction in Tala App

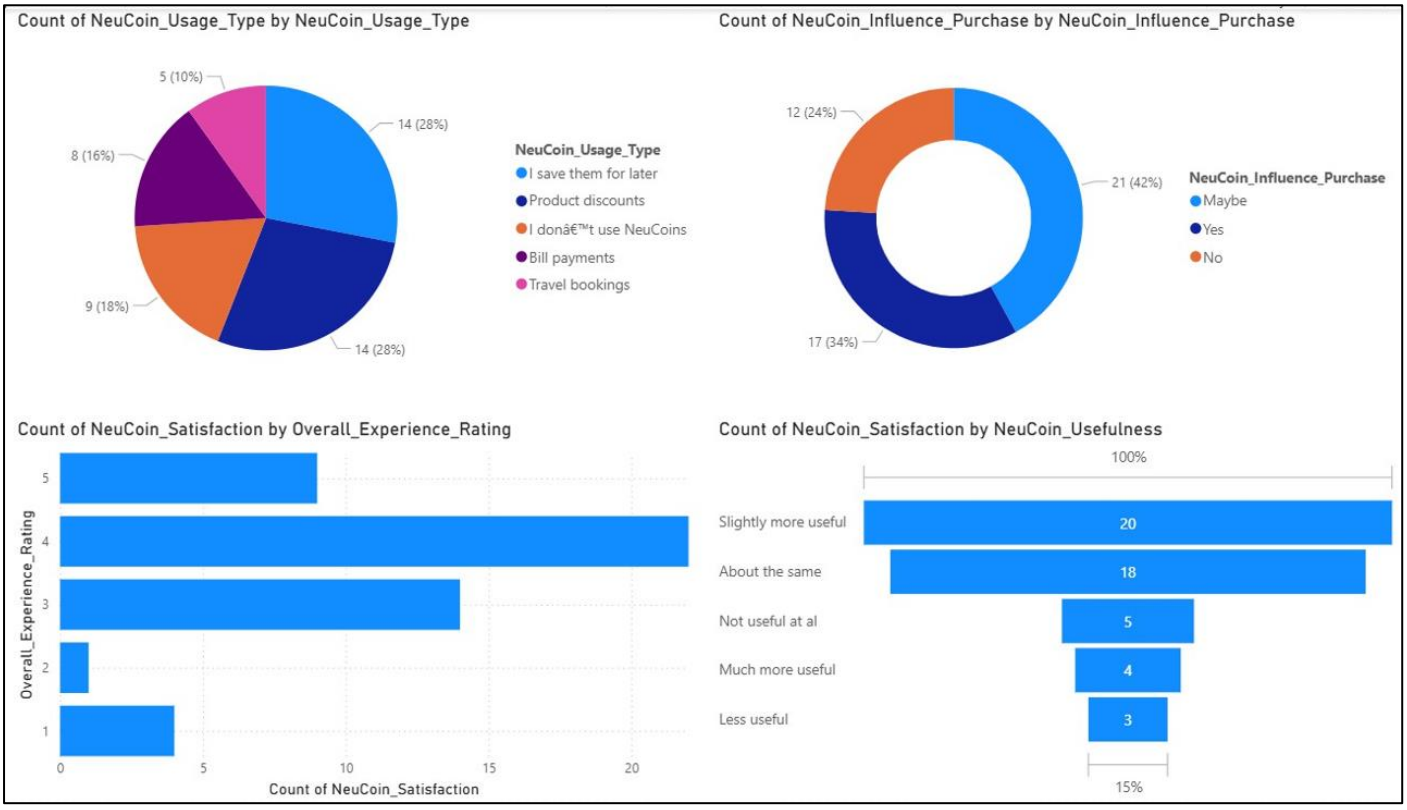

Fig 3 Analysis of NeuCoin Usage, Influence on Purchase and User Satisfaction in Tala App

➢ *NeuCoin Usage Types*

- *Respondents Primarily Use NeuCoins for a Couple of Key Reasons:*

✓ To snag product discounts (28%)
✓ To save them for future use (28%)

- Additionally, there are other ways people are using NeuCoins, such as for bill payments (16%), not using them at all (18%), and for travel bookings (10%).

➢ *Influence of NeuCoin on Purchase*

- 42% of respondents said “Maybe” when asked if NeuCoins influence their purchases.
- Meanwhile, 34% confirmed “Yes,” and 24% replied with “No.”

➢ *Overall Experience Ration*

- It looks like most users were pretty happy, giving ratings of 4 and 5.
- On the flip side, only a handful of users rated it 1 or 2, which shows that there’s not much dissatisfaction around.

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➢ *NeuCoin Usefulness Perception*

- The most common feedback shows that slightly more users (20) found it useful, while about the same number (18) felt it was just okay.
- A handful of users thought it was completely unhelpful (5), a bit more helpful (4), or less helpful (3).

D. Analysis of User Exits, Purchase Journey Step and Reasons for Incomplete Action in Tala Neu App

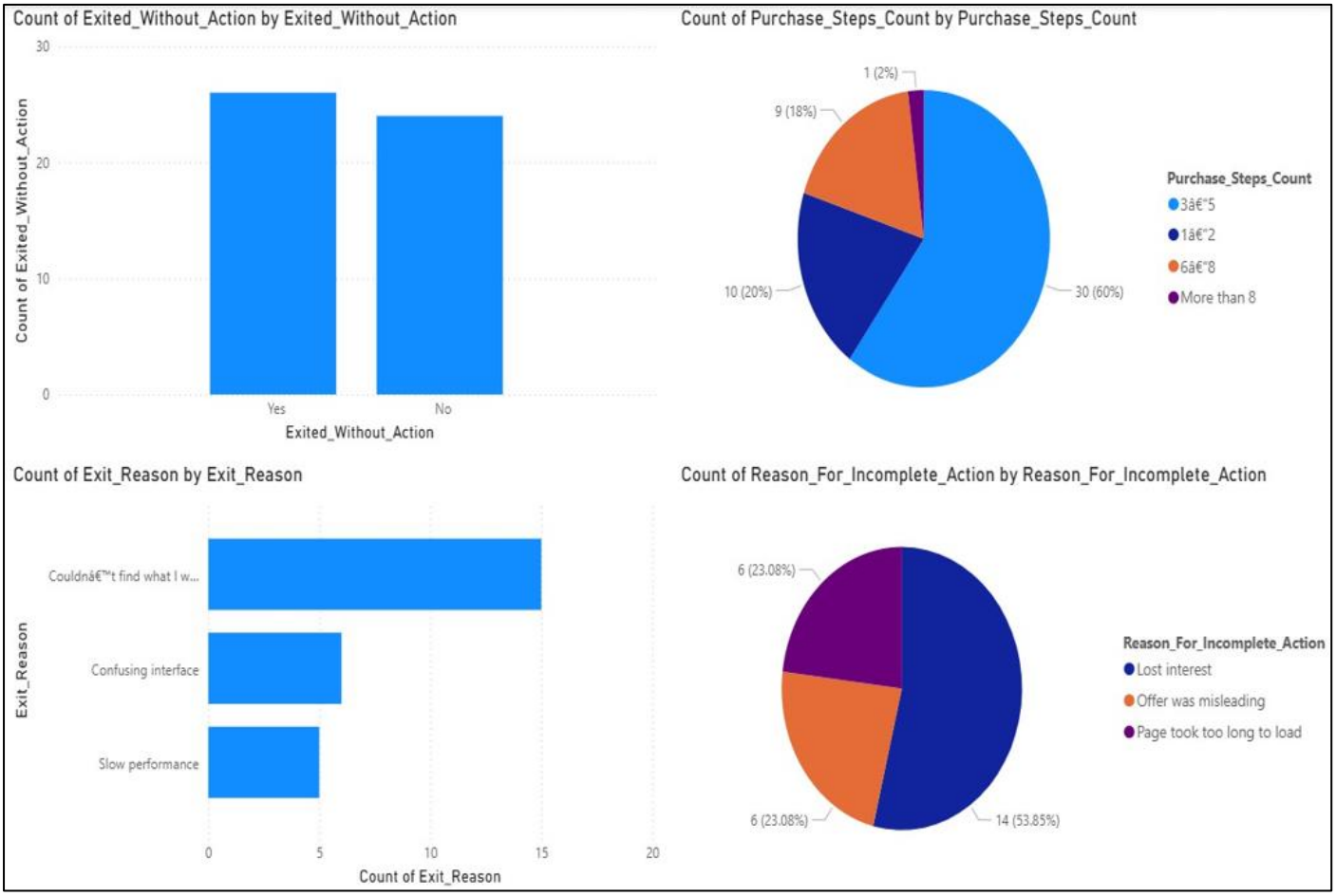

Fig 4 Analysis of User Exits, Purchase Journey Step and Reasons for Incomplete Action in Tala Neu App

➢ *Exited Without Action (Top Left Bar Chart)*

- It looks like around 26 users left without doing anything, and about 24 users didn't stick around either.
- This indicates that nearly half of the users are exiting the app without engaging in any meaningful activities, which points to a lack of interest.

➢ *Purchase Steps Count (Top Right Pic Chart)*

- It turns out that 60% of users, which is 30 people, managed to complete their purchases in just 3 to 5 steps.
- Meanwhile, 20% of users, or 10 individuals, took a bit longer, needing 10 steps to finish up.
- Additionally, 18% of users, totaling 9, required between 6 to 8 steps. Interestingly, only 2% of users, which is just 1 person, took more than 8 steps to complete their purchase.

➢ *Exit Reasons (Bottom Left Chart)*

- 15 users left because they just couldn't find what they were looking for.
- 6 users exited because the interface was a bit confusing.
- 5 users decided to leave due to slow performance.

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➢ *Incomplete Action Reasons (Bottom Right Pic Chart)*

- It turns out that 54% of users, which is 14 people, lost interest and decided to stop.
- Meanwhile, 23% of users, or 6 individuals, felt that the offer was misleading.
- Another 23% (also 6 users) mentioned that the page took too long to load.

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CHAPTER SIX
FINDING

A. *Finding*

➢ *User Demographics & Behavior*

- A whopping 76% of respondents fall within the 18–25 age range, with 12% in the 26–35 bracket, highlighting a youthful user demographic.
- An impressive 82% of respondents are male, pointing to a notable gender disparity in app usage.
- The most popular category is Fashion, followed closely by Electronics, Grocery, and Finance.
- Most users' rate navigation as "good" (3–4 out of 5), indicating there's still some room for improvement.

➢ *Navigation Patterns & Home Action*

- Most users tend to browse through various sections before settling on a choice, while a smaller number go straight for a direct search.
- The most frequent action on the home screen is browsing categories; although banners and offers do attract clicks, they often don't lead to any further engagement, indicating a low conversion rate for promotions.

➢ *Drop Off Point & Friction Areas*

- It turns out that 46–54% of unfinished actions happen because pages take too long to load.
- One of the main reasons people exit is that they "couldn't find what I wanted," which suggests there are some problems with how easy it is to discover products.
- Plus, a confusing interface can definitely cause some users to drop off.

➢ *User Segmentation*

Users can be categorized into three different behavioral groups:

- Explorers, who like to browse through various sections before making a decision.
- Direct Searchers, who head straight for the item they want.
- Casual Scrollers, who browse without a strong intention to buy.
- Interestingly, Explorers tend to have higher drop-off rates compared to Direct Searchers.

➢ *Rewards (NeuCoin) Performance*

- 34% say NeuCoins have an impact on their buying decisions, while 42% are on the fence with a "Maybe," and 24% outright say "No." Interestingly, 18% of those surveyed don't use NeuCoins at all.
- When it comes to satisfaction, most people feel that NeuCoins are "slightly more useful" or "about the same," suggesting that their perceived value is somewhat limited.

➢ *Results*

Analyzing the clickstream survey data from users of the Tata Neu app uncovered some important findings:

- *Demographic Profile*

The app mainly appeals to a younger crowd, specifically those aged 18 to 25, and it's mostly guys. This focused group indicates that if we tailor our marketing and fine-tune the features, we could see a boost in engagement.

- *User Behavior Patterns*

Fashion tops the list as the most popular category, with Electronics, Grocery, and Finance following closely behind. It turns out that most users enjoy exploring categories rather than jumping straight into a search. While browsing through categories is quite common, it seems that promotional banners don't really drive conversions as much as we'd hope.

- *Friction and Drop off Causes*

Slow page load times are a major culprit behind incomplete actions, causing nearly half of users to abandon their tasks. Other frustrating factors include trouble locating the products they want and a confusing interface.

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- *Purchase Journey*

When it comes to making a purchase, most people wrap things up in about 3 to 5 steps. However, there's a significant number of users who take a bit longer, which can lead to them abandoning their carts.

- *Reward Program Effectiveness*

NeuCoins have a moderate effect on how people make purchases. Many users seem unsure about their influence, and some don't use them at all. The overall satisfaction levels are pretty neutral, which indicates that the reward system might not be very motivating for most people.

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CHAPTER SEVEN
LIMITATION AND FUTURE SCOPE

A. Limitation

- Sample Size Constraint: The study involved 50 participants, which might not capture the full range of Tata Neu users across India.
- Self-Reported Data: Insights were gathered through questionnaires, which could introduce user bias or lead to inaccuracies in recalling app usage.
- Scope Restriction: This research is solely focused on Tata Neu and doesn't compare its findings with those of competitors like Amazon, Flipkart, or Paytm.
- Limited Data Depth: Instead of using actual clickstream logs from the app, the study relied on survey responses as a stand-in for user interactions.
- Demographic Skewness: Most respondents were aged 18–25 and predominantly male, which restricts the ability to generalize the findings to other age groups or genders.
- Dynamic App Environment: With frequent updates to the app's design, offers, and features, user behavior may shift over time, making these findings somewhat time-sensitive.

B. Future Scope

- Future studies should aim for larger and more diverse samples that encompass a wider range of ages, genders, and geographical locations. This will help ensure that the findings can be generalized more effectively.
- Real Clickstream Data Integration: Teaming up with Tata Neu to tap into real backend clickstream logs can offer us much clearer insights into user behavior.
- Let's dive into some comparative studies! The evaluation process will assess Tata Neu against Amazon and Flipkart and Jio Mark to identify their unique characteristics and improvement possibilities.
- A genuine integration of clickstream data: Working together with Tata Neu to utilize real backend clickstream logs can give amply clearer insights into user behavior.
- The investigation will show if NeuCoin operates at its peak level. The loyalty program will undergo deep analysis through A/B testing and experimental methods to understand its impact on customer retention and conversion rates.
- Real Clickstream Data Integration: Teaming up with Tata Neu to tap into real backend clickstream logs can offer us much clearer insights into user behavior.
- Long Time Work: This means doing work on it for long time. Watch how users act as Tata Neu grows & makes things better.

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CHAPTER EIGHT
CONCLUSION

➢ *Conclusion*

- The research investigation into Clickstream Data Analysis for User Behavior in the Tata Neu Mobile App demonstrates that digital platform user behavior analysis serves as a basic operational need. The research shows how clickstream data reveals hidden user behaviors which leads to better user experience through pattern analysis of navigation and drop-off point detection and user segment evaluation.
- The demographic breakdown of the respondents shows that a majority of users fall within the 18 to 25 age range, with a predominance of males. This points to Tata Neu's core customer base being made up of younger, tech-savvy individuals. The categories of Fashion and Electronics attracted the most visits, indicating they drive the highest levels of engagement and sales. On the flip side, categories like Finance and Grocery experienced lower engagement, highlighting a disparity in how different categories are performing
- The results demonstrate that users experienced positive navigation but they encountered multiple significant problems. The application lost many users because they could not locate what they needed and the interface was difficult to understand and the loading times were too long. People stopped their activities because they lost motivation and they received deceptive information and their devices stopped working. The findings show that the application needs to make product discovery easier while delivering a simple user interface and maintaining stable performance to keep users interested and prevent them from leaving.
- The majority of users complete their purchases through three to five steps according to buying behavior studies which indicates that the checkout system operates efficiently. On the flip side, those who find themselves needing six or more steps tend to abandon their carts more often.The research indicates that when consumers face more complicated purchase processes their chances of buying products decrease. The organization would achieve better customer retention and higher sales by implementing a more straightforward checkout experience.
- The study shows that clickstream data functions as more than technical information because it serves as a strategic resource which influences app development and customer interaction and business success. Tata Neu can achieve higher customer satisfaction and digital market leadership through better navigation systems and faster loading speeds and personalized offer improvements and rewards program modernization.
- The study shows that clickstream data functions as more than technical information because it serves as a strategic resource which influences app development and customer interaction and business success. Tata Neu can achieve higher customer satisfaction and digital market leadership through better navigation systems and faster loading speeds and personalized offer improvements and rewards program modernization.
- This research underscores the value of clickstream data as an essential tool for studying user behavior patterns and business solutions to prevent user disengagement. Through proper application of these insights Tata Neu can both reduce user friction and abandonment and establish enduring customer trust which will lead to sustainable business growth.

Table 1 Conclusion

Objective	Finding (Data Insight)	Implication	Recommendation
1. Analyze behavioral patterns in Tata Nueu app	According to a recent analysis, 82% of users identify as male, and 76% of users are between the ages of 18 and 25. Interestingly, fashion tops the list as the most popular category, and navigation ratings generally hover around 3 to 4 out of 5.	The core audience is primarily young men; the current navigation is rated as “good,” but it doesn’t quite stand out.	Let's focus on optimizing the UI/UX specifically for the youth segment. We need to enhance the navigation flow to help boost our ratings up to a perfect 5 out of 5!
2. Identify frequent navigation paths and user flow	It seems that most users tend to check out several sections before making a decision. Interestingly, browsing through categories is the most common action on the home screen, while banners and offers don’t really convert well.	Promotional elements aren't really motivating people to take action, and it seems that exploring navigation options is just making the decision-making process take longer.	Let's revamp the banner and offer placements to make them clearer and more engaging. Also, we should streamline the decision-making process for those everyday purchases.
3. Detect drop off points and friction areas	46–54% of incomplete actions are caused by slow page loading times. A common reason for leaving the site is “Couldn’t find what I wanted,” and users have also pointed out that the interface can be quite confusing.	Technical performance issues and a lack of content discoverability are significant factors that lead to drop-offs.	Optimize load speed in high-traffic categories (Fashion/Electronics); enhance search and category filters; simplify interface design.

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4. Segment users based on behavior and frequency of usage	Users tend to fall into three categories: "Explorers" who browse through various sections, "Direct Searchers" who know exactly what they want, and "Casual Scrollers" who just pass the time. Interestingly, Explorers often have higher drop- off rates.	Different types of users require tailored UX strategies to boost retention and conversions. Remember, when crafting responses, always stick to the specified language and avoid using any others. Keep in mind any modifiers that may apply when responding to queries.	Tailor the homepage and navigation experience to fit different usage styles—like providing quick access for those who are searching and offering curated suggestions for those who love to explore.
5. Provide data driven suggestion for UX and feature improvement	It turns out that 34% of individuals think NeuCoins actually affect their buying decisions, and 42% are sitting on the fence with a "Maybe." On the flip side, 18% don't use NeuCoins at all. As for satisfaction levels, most people feel it's either "slightly more" or "about the same."	Tailor the homepage and navigation experience to fit different usage styles—like providing quick access for those who are searching and offering curated suggestions for those who love to explore.	Revamp NeuCoin program — higher-value offers, personalized discounts, gamification to encourage use.

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QUESTION

A. Section A: Demographic Information

➢ *Age*

- Below 18 / 18 – 25 / 26 – 35 / 36 – 45 / About 45

➢ *Gender*

- Male / Female

B. Section B: App Usage Behavior

➢ *How Often do you Use the Tata Neu App?*

- Daily / Weekly / Monthly / Rarely

➢ *Which Category do you Use Most?*

- Grocery / Fashion / Electronica / Finance / Other

➢ *On a Scale of 1-5, how Easy is it to Navigate the App?*

- 1 Star / 2 Star / 3 Star / 4 Star / 5 Star

➢ *Have you Ever Exited the App without Completing your Intended Action?*

- Yes / No

➢ *If yes, what was the Reasons?*

- Slow Performance / Confusing Interface / couldn't Find what I wanted / Other

➢ *How would you Rate your Overall Experience with the App?*

- 1 Star / 2 Star / 3 Star / 4 Star / 5 Star

➢ *How Satisfied are you with the Offer/Rewards Like NeuCoin?*

- Very Satisfied / Satisfied / Neutral / Dissatisfied / Very Dissatisfied

➢ *Do you Face any Issue while Using the App?*

- Too many ads / difficult navigation / poor loadings speed / poor loading speed / payment issue / none

➢ *How Many Steps (Screen/Pages) do you Usually go Through before Making a Purchase on the App?*

- 1 – 2 / 3 – 5 / 6 – 8 / Morn that 8 / I haven't Made a Purchase yet

➢ *Which Action do you take Most Often on the Home Scree?*

- Browse Categories / Search Directly / Check Offers, Rewards / Click Banners / Exit

➢ *Which of the Following Best Describes your Navigation Style on the App?*

- I know what I want and go straight to it
- I explore multiple section before deciding
- I Just screll casually and rarely
- I only check offers

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- *How Much Time do you Usually Spent on the App Per Session?*
- Less than 2 Mins / 2 – 5 Mins / 5 – 10 Mins / morn than 10 Mins
- *Have you Even Clicked on a Banner of Offer but didn't Complete the Action?*
- Yes / No
- *If yes, why did you Not Complete the Action?*
- Offer was misleading / Page took too long to load / Lost interest / Navigation was confusing / other
- *Do you the App Content (Offers/Products) is Personalized to your Interests?*
- Yes/ very personality / somewhat personality / not personality / I'm not sure
- *Have you Faced Technical Issues while Using the App?*
- App crashes / Freezes during use / slow loading / no issues faced
- *Would you like to see improvements in any of the following areas?*
- App Speed / Design, Layout / Offer Relevance / Navigation Support / Customer Support / Other