ENHANCING URBAN MOBILITY

Data and Analysis to Support Enhancement of the Chennai MTC Bus App

November 2024

CAG
Citizen consumer and civic Action Group

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Authors

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About CAG

Citizen consumer and civic Action Group (CAG) is a 39-year-old, non-profit, non-political, and professional organisation that works towards protecting citizens' rights in consumer and environmental issues and promoting good governance processes including transparency, accountability, and participatory decision-making.

Contents

Executive Summary

The rise of smartphone-based applications have revolutionised public transportation in cities like Chennai. With apps designed for route finding, taxi hailing, and ticket booking, users now have access to a range of convenient tools to facilitate their daily commutes. These digital solutions not only enhance the commuter experience but also contribute to reducing traffic congestion and pollution by helping commuters find the shortest routes. The focus of this study is the effectiveness of Metropolitan Transport Corporation (MTC's) bus application, which aims to simplify bus navigation for users, especially newcomers. Launched in 2022 and expanded to iPhone Operating System(iOS) in 2024, the app helps users locate nearby buses using Global Positioning System(GPS) technology and offers features like route mapping and an SOS button for emergency contacts. This application primarily aims to help commuters, particularly those unfamiliar with the city, by utilising an automatic vehicle location feature to find nearby buses. To assess the impact of this application, CAG conducted a survey of 500 bus commuters in Chennai.

The study's findings revealed that 57% of bus commuters have access to a smartphone. Additionally, 34% still rely on keypad mobiles, while 9% do not use a mobile device at all. This indicates that 43% of bus commuters lack access to a smartphone necessary to utilise the Chennai Bus application. Among those who do use the Chennai Bus app, we discovered that 70% use it very rarely, only 7% use it regularly, and 6% use it every other day. In addition to Chennai Bus application users, Chalo emerged as the most preferred alternative, making up 48% of transport-related searches and inquiries. Following Chalo, Google Maps and the Unreserved Ticketing System(UTS) app, along with Moovit, ranked as the second and third most commonly used applications for transport needs.

Users of the Chennai Bus application have reported that they primarily utilise the app to check arrival and destination times, identify bus numbers or stops, understand bus routes, and track MTC buses. However, overall, Chennai Bus application users encounter various challenges with the app's functionality. Some of the common issues include frequent freezing, inaccurate bus information, poor GPS features, lack of details (such as ticket prices), and infrequent updates on bus schedules, among others. By analysing the strengths and challenges of the Chennai Bus App, this study aims to contribute to further improvements in public transport accessibility and user satisfaction, aligning with broader goals of technological innovation and sustainable urban mobility.

Recommendations

The Chennai Bus application is a useful tool for passengers looking for public bus information on their smartphones. However, this study has revealed that despite its many features, technical issues and an inadequate interface limit its overall effectiveness.
Here are some recommendations provided by the survey respondents:

- GPS tracking should be precise.
- The application must be free of glitches and should not freeze.
- Any modifications to bus routes, bus stop changes, or cancellations must be updated in the app without delay.
- Information about the types of buses should be displayed for the benefit of passengers.
- Search options for locations or bus stops need enhancement to ensure a more user-friendly experience.
- The ticketing system should be integrated with the application.

Introduction

Innovations in Transportation Technology

Technology is transforming the transportation industry in various impactful ways. Innovations such as electric vehicles, automation, digitisation, data analytics, and ride-sharing applications are driving this transformation. Together, these advancements are creating a transport network that could be efficient, convenient, and safe. Engineers and the transportation industry collaborate closely to implement these technologies, ensuring that more people reach their destinations quicker, more safely, and with a minimal carbon footprint. These technological advancements are fundamentally reshaping how we travel.

As transportation technology continues to evolve, our methods of getting from one place to another will also enhance. With the progression of technologies like artificial intelligence, deep learning, and data science, vehicles themselves will improve. These advancements will further enhance ride-hailing services such as Ola and Uber. Moreover, transportation applications like Google Maps, GPS navigation systems, UTS, Chennai Metro, and the Chennai Bus application will make navigation effortless and accessible.

In addition, sustainable transportation has emerged as a key focus in various government policies and action plans. To promote sustainable travel, several applications have been developed to assist the public in finding public transport and planning their journeys. By offering real-time data on vehicle status and locations, these tools empower individuals to better plan their trips and avoid traffic jams. Furthermore, numerous mobile applications are being introduced to simplify transport planning for users. One notable example is the Metropolitan Transport Corporation's "Chennai Bus App," designed to provide comprehensive information about MTC and SETC buses for its users. Initiatives like these can promote sustainable transportation options while offering information right at our fingertips.

Mobile Application for Public Transportation in Chennai

Smartphones have become a significant part of our lives and have become unavoidable in our day-to-day lives. Many people have started to use them for an ever-widening range of purposes, including transportation. There are several mobile applications that help with transportation in Chennai. Some of the widely used and popular mobile applications in Chennai are Chennai Bus, Chennai Metro Rail, Uber, Ola, Google Maps, Chalo, Moovit, UTS, etc.

Whether it's mobile applications designed for route finding, taxi hailing, or booking transport tickets, each serves a unique purpose in delivering information and enhancing convenience for users. In Chennai, every public transport provider offers its own mobile application to facilitate their services. These applications are designed to cater to the diverse needs of commuters, offering features such as real-time tracking, fare estimation, and schedule

updates. For instance, the Chennai Metro Rail application provides users with crucial information about metro timings, station facilities, and route maps.

Moreover, these applications often include user-friendly interfaces and multilingual support to accommodate the city's diverse population. They are continuously updated to incorporate feedback from users, making them more efficient and reliable over time. These technological advancements not only enhance the convenience for daily commuters but also promote the use of public transportation, contributing to a reduction in traffic congestion and pollution. In this study, we focus on the Chennai public bus transport system, known as MTC, and evaluate the effectiveness of their mobile application and its usefulness for users.

A study by CAG in 2022, examining how commuters in Chennai access and utilise public transit information systems found that only 21 out of 506 individuals used mobile applications for obtaining transit information. Most commuters depend on word of mouth from friends, family, and fellow travellers for their transit needs. Furthermore, the study revealed that while commuters feel confident navigating familiar routes, they struggle with new routes, particularly when using buses. This proves that there is a need and scope to improve our information system available via our mobile applications.

MTC and it's bus application

Metropolitan Transport Corporation Limited is an initiative by the Government of Tamil Nadu, dedicated to serving the entire Chennai. As of August 2024, it operates a fleet of 3,352 buses across 3,233 scheduled services, catering to an impressive average of 3.18 million passengers daily[1]. The corporation offers a diverse selection of buses, including ordinary, express, deluxe, and air-conditioned options, along with complimentary bus services for women like free tickets. To ensure accessible public transport information, they utilise various platforms such as signboards, maps, their website, and newspapers. In keeping with modern trends and technology, they have introduced the Chennai Bus App to assist users in navigating their transport options.

The Chennai bus application was launched by MTC on May 4, 2022[2]. Initially offering only an Android version, it wasn't until February 22, 2024, that the iOS version became available. The primary purpose of this application is to assist commuters, especially those new to the city, in locating buses nearby through its automatic vehicle location feature. The application was created on the Locate and Access My Bus (LAMB) platform and utilises GPS

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[1] Metropolitan Transport Corporation (2024). Available at: https://mtcbus.tn.gov.in/Home/performance (Accessed: 10 September 2024).

[2] *The Hindu Bureau* (2024) 'Chennai Bus Application Launches for IOS platform', 22 February. Available at: https://www.thehindu.com/news/cities/chennai/chennai-bus-application-launches-for-ios-platform/article67875148.ece#:~:text=Transport%20Minister%20S.S.,the%20touch%20of%20a%20button. (Accessed: 15 September 2024).

technology installed in the buses of the Metropolitan Transport Corporation (MTC) fleet. It also provides information about buses arriving at specific stops and outlines various routes to reach destinations. Additionally, the application includes an SOS feature, allowing users to connect it to a family member's mobile phone for quick emergency calls at the touch of a button.

Nevertheless, there have been ongoing reports indicating that this mobile application lacks user-friendliness. Consequently, we undertook a thorough investigation into its usability issues by surveying its users for this study.

Objectives

The aim of this study is to explore the following aspects:

- Analyse the demographics of Chennai bus application users.
- Analyse how the Chennai bus application is used and its effects.
- Gather insights into the strengths and weaknesses of the Chennai bus application.
- Identify user requirements and suggestions for improving the Chennai bus application.

Methodology

A survey was conducted involving 500 bus commuters in Chennai, aiming to capture a diverse range of perspectives by representing various age groups and socio-economic backgrounds. CAG concentrated primarily on locating users of the Chennai bus application for the surveys.

The survey included questions about the application's ease of navigation, the clarity of its features, and the overall user experience. We also gathered feedback on how the application has impacted the users' daily lives, whether it has made certain tasks more efficient, and any suggestions for improvement. The survey questionnaires are attached as annexures.

Trained volunteers carried out the surveys over a four-week period from July to August 2024. They approached MTC bus users in streets, bus stands, terminals, and other public locations to collect responses.

About the Chennai Bus Application

The features available in the Chennai Bus application are listed below:

- The Chennai Bus application is available in both English and Tamil.
- It provides routes for both MTC and SETC, allowing users to search for all government bus routes inside and outside of Chennai.
- The application leverages GPS technology in city buses to deliver real-time location updates directly to the user's screen.
- It also displays the user's location using the GPS functionality available in smartphones.
- The application's algorithm processes millions of data points to estimate live bus arrival times.
- It helps identify bus stops near you, highlighting the closest one within a 1 km radius.
- Additionally, it features a comprehensive list of all bus routes and arrival times for every bus stop.
- The search feature enables users to find bus routes based on their desired destination.
- There is a dedicated section called Trip Planner, which assists in planning your journey by inputting arrival and departure locations, as well as your departure time. You can also share these trip route details with your contacts.
- The application provides a detailed route map for specific bus routes, including different stages.
- It also allows users to save their favourite routes for easier access in the future.
- An SOS function is included to send distress signals to your contacts or the police through the application, with the SOS button conveniently located in the top right corner for quick access.
- Lastly, the application includes contact numbers for feedback and complaints.

Results and Discussion

Demographics

The graph below illustrates the age and gender distribution of the participants surveyed in this study. It included individuals from various gender identities and age groups to obtain a diverse array of perspectives and results.

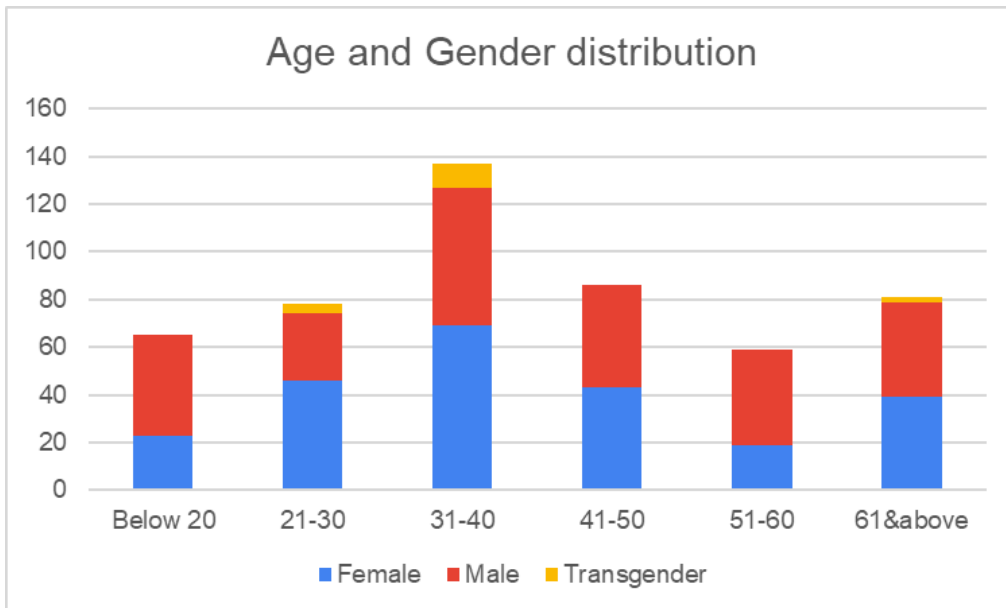|	Below 20	21-30	31-40	41-50	51-60	61 & above	Grand Total
Female	23	46	69	43	19	39	239
Male	42	28	58	43	40	40	251
Transgender		4	10			2	16
Grand Total	65	78	137	86	59	81	506

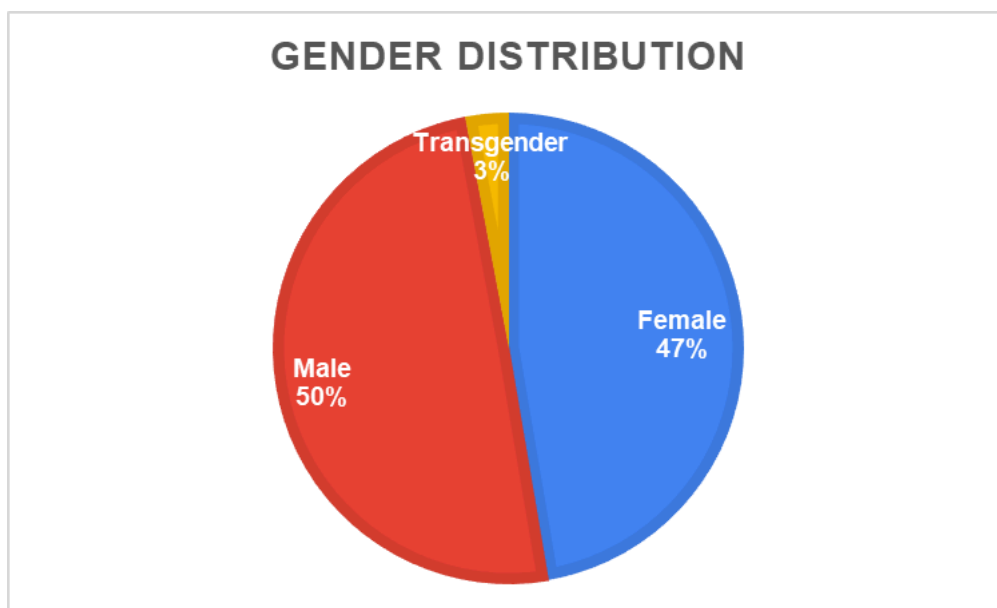*Figure 1: Gender and age distribution of people surveyed | n=506*

Figure 2: Gender distribution of people surveyed | n=506

Language proficiency

Language is essential to access smartphone applications. To determine if language poses a barrier for participants, we enquired about their proficiency in Tamil and English. The survey revealed diverse levels of fluency among the participants. Some expressed confidence in their ability to read, write, and converse in both languages. while others indicated a preference for one over the other.

In terms of English proficiency, approximately 23% of the population is fluent, and 20% possess an intermediate level of skill. This means that a total of 43% of those surveyed are capable of using the phone in English. The graph below depicts the distribution of English language proficiency among the individuals surveyed.
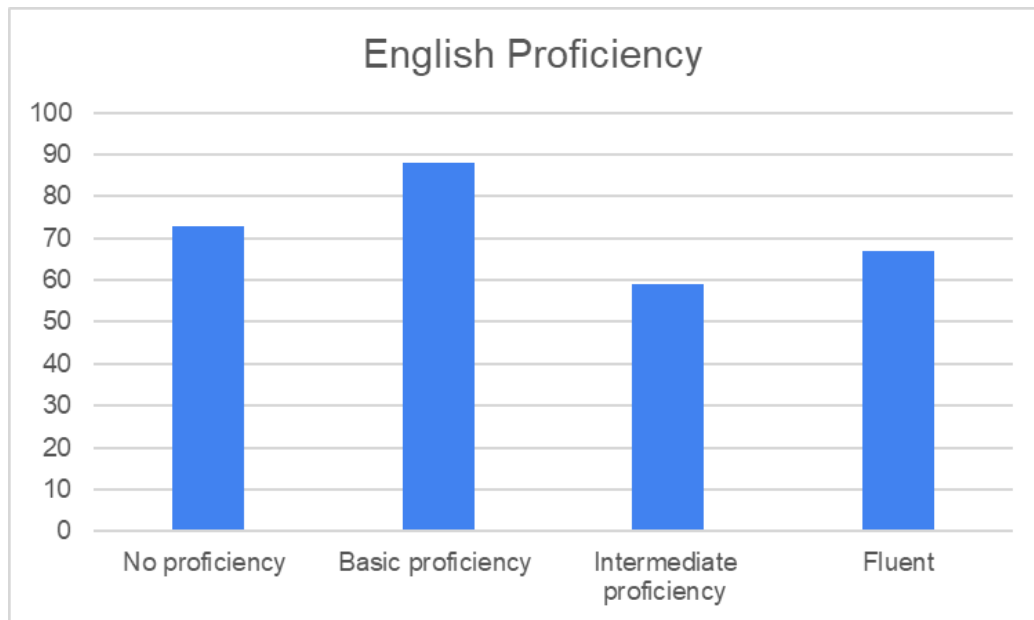

Figure 3: English proficiency of survey respondents | n=287

Tamil language proficiency

All the people surveyed had a basic level of Tamil language proficiency and above. The analysis shows that more than 90% of the people surveyed have the proficiency to read and write in Tamil, which allows them to use their mobile phones in Tamil.
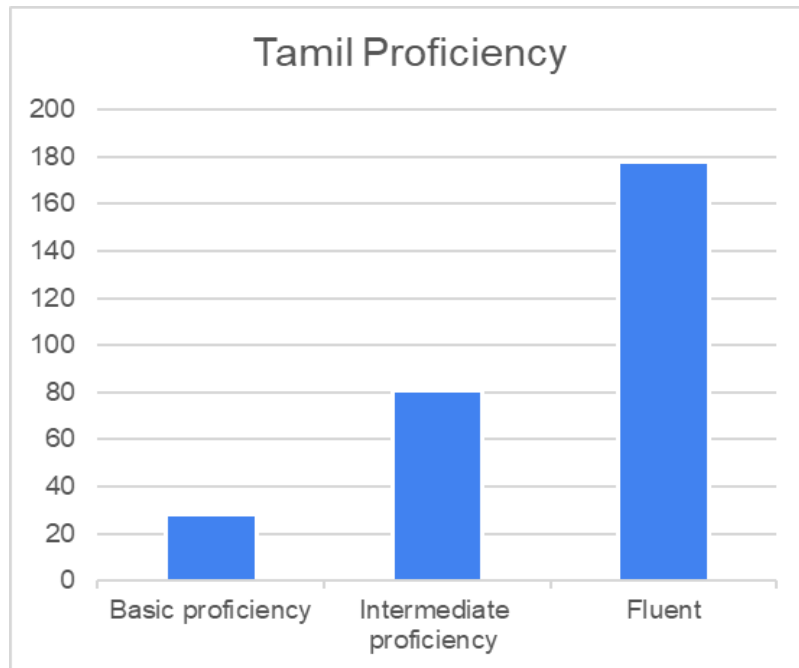
Figure 4: Tamil Proficiency of survey respondents | n=287

When participants were surveyed about whether their limited language skills affected their ability to use mobile phone applications, around 97% indicated that their lack of proficiency in English or Tamil has indeed impacted their experience with these applications, as illustrated in the graph below.
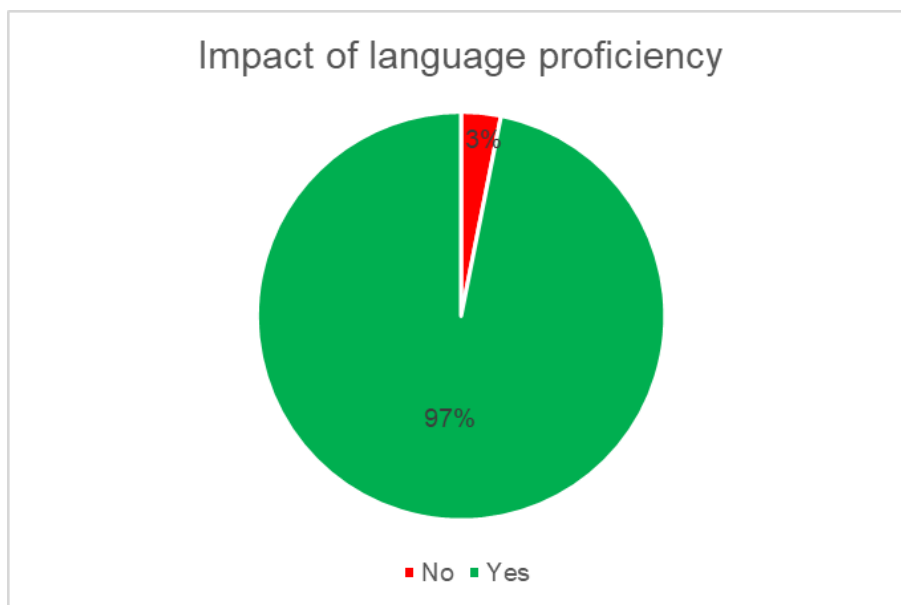

Figure 5: People's perspective on the impact of language proficiency on using smartphones | n=287

Type of mobile

Despite the widespread use of mobile phones today, there remains a segment of the population that does not utilise them. Our research indicates that approximately 9% of those surveyed do not own a mobile phone. Furthermore, 34% of respondents rely on basic keypad phones, which lack the features offered by smartphones. In conclusion, approximately 43% of the individuals we surveyed lack access to applications and the advantages they offer.
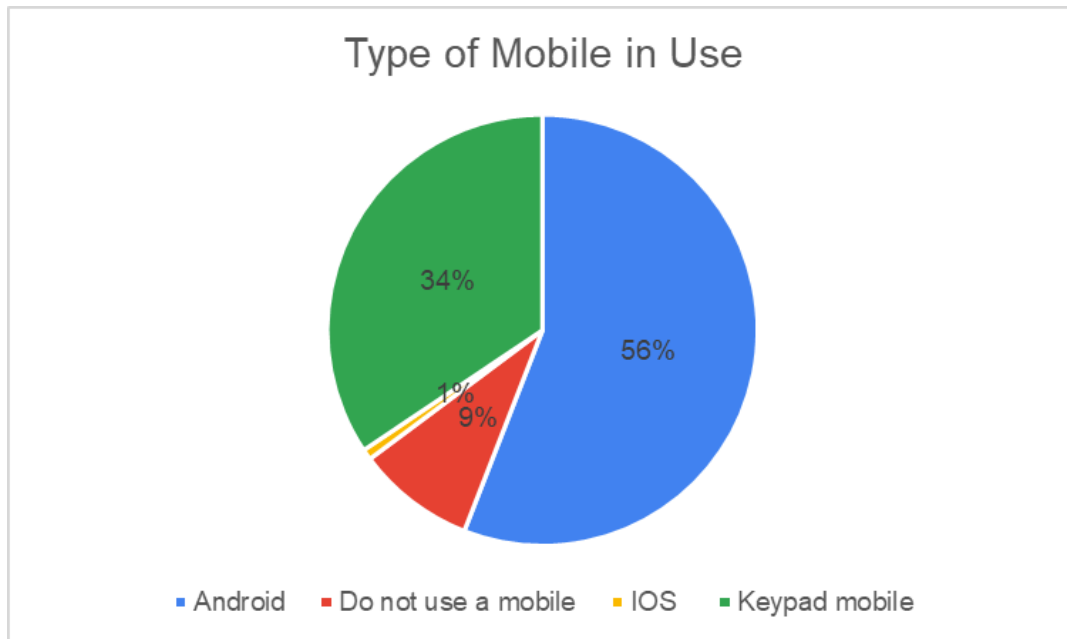

Figure 6: Type of mobile phone usage among survey respondents | n=506

The study also indicated a clear relationship between age and mobile usage patterns. As illustrated in the graph below, younger individuals are more inclined to use smartphones, while the likelihood of smartphone use significantly declines with increasing age. Conversely, older age groups tend to use keypad mobiles more frequently than the younger generations. Additionally, our findings revealed that many participants over the age of 61 do not own or use any type of mobile phone. Likewise, we identified a small number of participants under 20 who also do not use a mobile phone. This highlights that it's predominantly the younger and middle-aged groups who own and use smartphones. This also means that the use of mobile apps is likely to soar over the coming years, making it all the more important that information systems are set up adequately, anticipating this explosion.
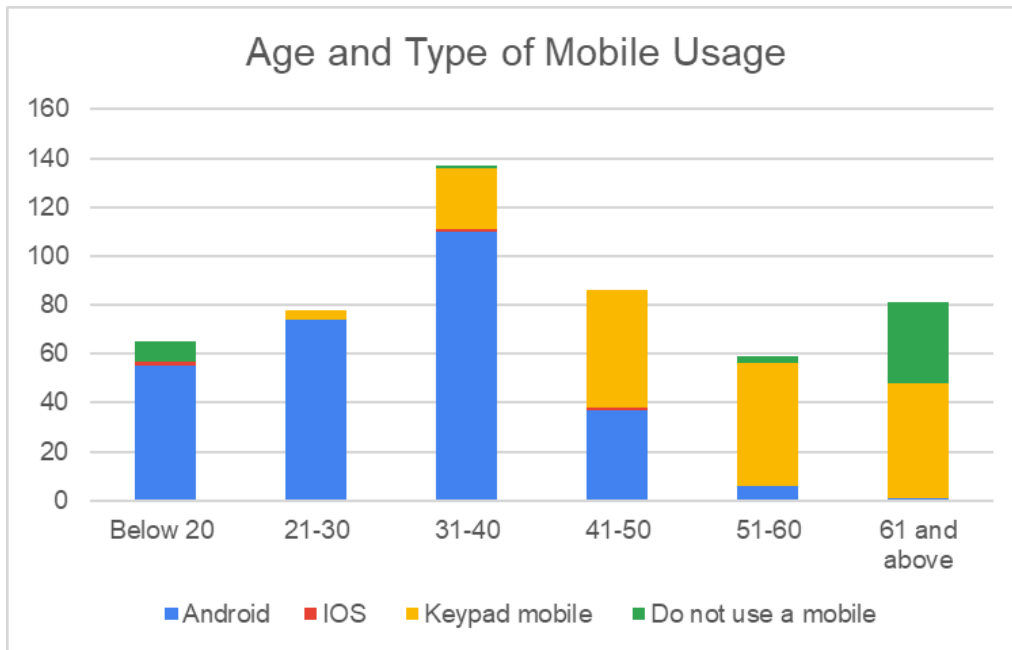
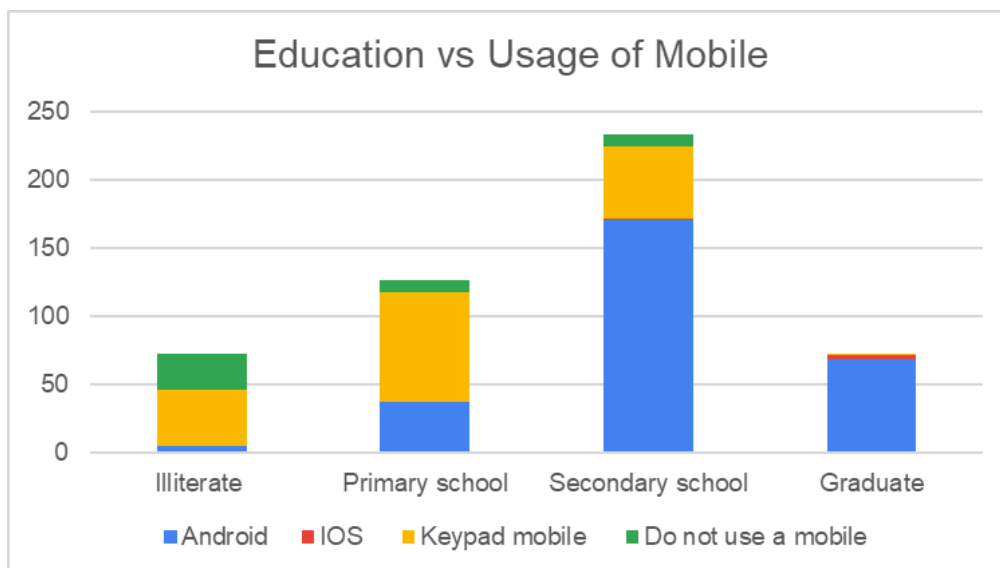*Figure 7: Correlation between age and type of mobile phone usage among survey respondents | n=506*

Figure 8: Correlation between education and type of mobile phone usage among survey respondents | n=506

The level of education a person has influences the type of mobile device they use. Most participants in the survey who were illiterate either did not use a mobile phone or opted for a keypad mobile. This is understandable, as using smartphones necessitates a certain level of literacy. Similarly, individuals with higher educational backgrounds are more inclined to use a smartphone compared to those with lesser educational backgrounds. This indicates that mobile applications may struggle to reach users with low literacy. One potential solution is incorporating intuitive design elements and simplified interfaces that require minimal literacy skills. Additionally, visual guides can help bridge the gap for users who may have difficulty

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with text-based instructions. But most importantly, the need to have information via diverse mechanisms (electronic boards, information counters etc) cannot be overstated.

Usage Trends of Other applications

In this study, we are focussing on understanding user engagement with the Chennai bus application and other prevailing transport-related applications used by people. The survey targeted individuals who actively use the Chennai bus application and other transport-related applications. Alongside Chennai bus application users, Chalo stood out as the most preferred alternative, accounting for 48% of transport-related searches and inquiries . Following Chalo, Google Maps and the UTS application, along with Moovit, ranked as the second and third most frequently used applications for transport-related requirements aside from the Chennai bus application.
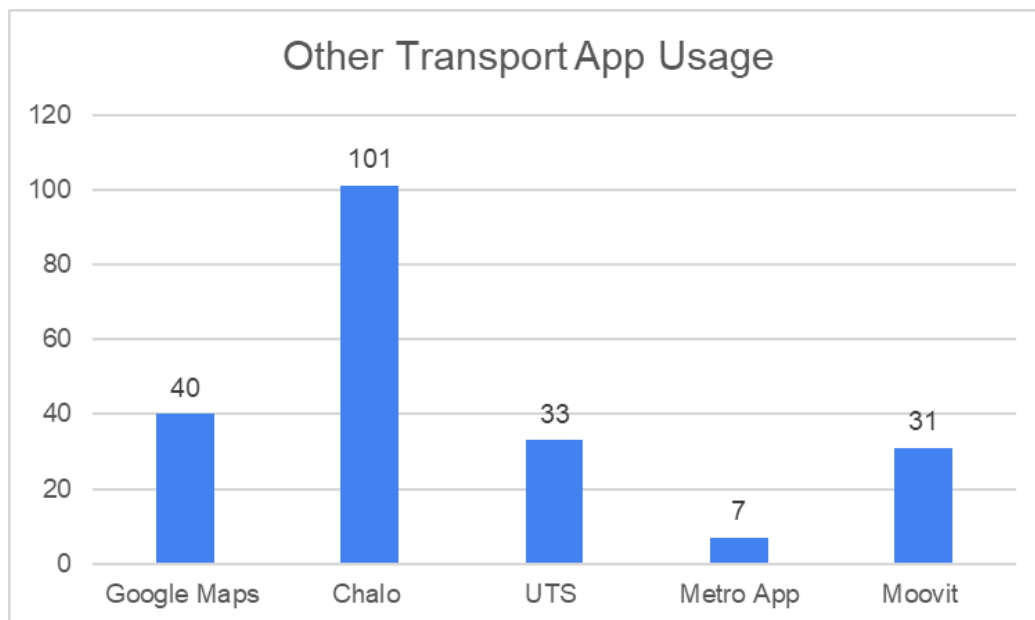

Figure 9: Transport application usage of survey respondents other than Chennai bus application | n=212

The users use Chalo, Google Maps, the UTS application, and Moovit for various purposes, including:

● Searching and identifying public transport routes, offering multi-modal transport options that combine various transport methods like buses, trains, and bicycles for a seamless journey. For example, Google Maps offers a variety of travel options across different modes of transportation, assisting users in choosing the best routes to take.
● Checking the schedules of public transport (such as arrival times at terminals, etc.) in applications like Chalo, Google Maps, UTS application, and Moovit.

- Locating the nearest transit stops and terminals for both arrival and destination. For example: Google Maps displays all the nearest bus stops and indicates the shortest routes.
- Viewing real-time traffic conditions on the roads. For instance, Google Maps provides live traffic data, allowing users to plan their journeys according to their needs. It also identifies closed roads and offers one-way route options.
- Providing fare estimates for different modes of transport, helping users budget their trips. Example: While the UTS and Metro applications display ticket prices and enable users to purchase tickets online specific to their modes of transportation, Google Maps offers cost estimates for public transport, encompassing buses, metro, and auto.

Additionally, these applications often include features that enhance the overall travel experience. These features collectively empower users to navigate urban landscapes with greater ease, efficiency, and confidence.

Usage of Chennai bus application

Throughout our survey, we encountered significant challenges in locating individuals who actively use the Chennai bus application. Among those who have downloaded the application (161 respondents), we discovered that 70% use it very rarely, while 14% use it just once a month. A mere 7% use it daily, and 6% use it every other day. This indicates that only a small percentage of those aware of the application find it valuable enough for regular use.
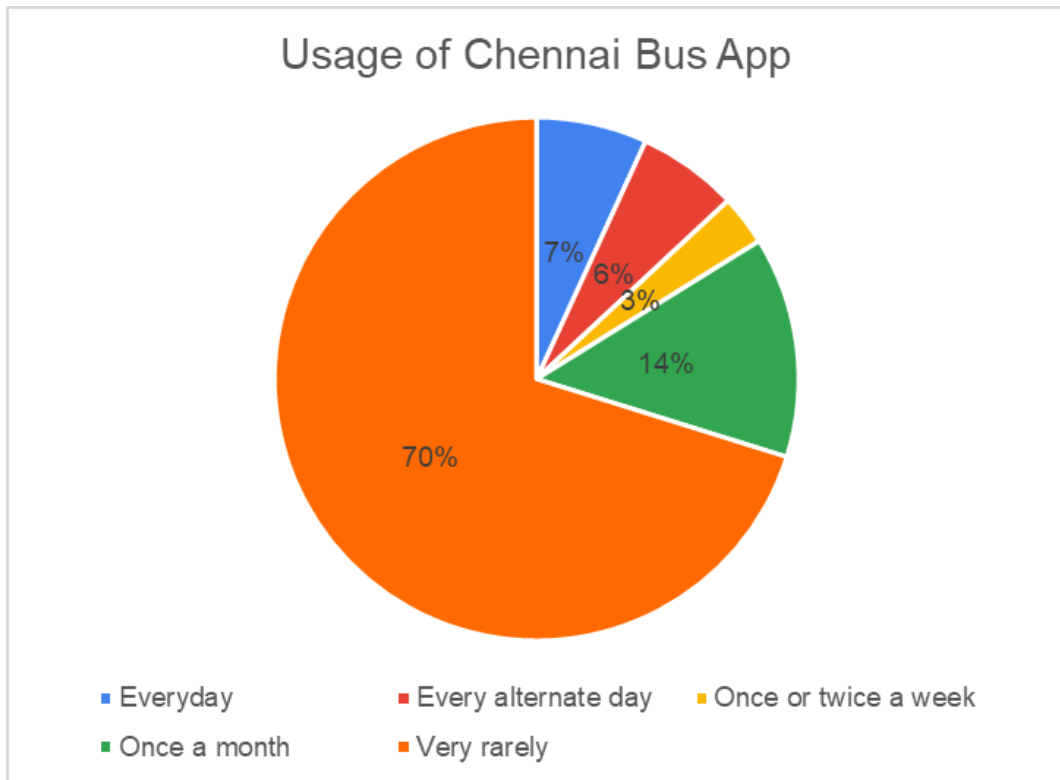
Figure 10:Usage of Chenna Bus application among survey respondents | n=161

The Chennai Bus application serves users for various purposes, including:

- Checking the expected arrival and destination times
- Identifying bus numbers
- Locating the nearest railway station and bus stop
- Understanding bus routes and destinations
- Tracking the current location of MTC buses

The following challenges are encountered when using the Chennai bus application according to the surveyed respondents:

- Around 38% of the surveyed respondents have said that the application frequently freezes, and it takes a considerable amount of time to load, making it quite frustrating to use.
- The application doesn't show the type of buses (normal, deluxe, or AC) that will be arriving.
- Approximately 29% of the respondents in the survey indicated that the bus routes shown in the application are not accurate. Some routes have changed due to metro construction, but these updates are not reflected in the application, leading to

confusion. Thus, more regular updates, as bus routes and numbers frequently change, is required.

- 17% of the respondents have said that buses often do not arrive at the times indicated by the application; they may arrive as much as five minutes early/late.
- 3 people have said that the application lacks information on whether buses are crowded.
- 30% of the respondents have said that there are instances when the application shows buses that no longer operate on the listed routes. On the other hand, numerous bus routes that are currently operating are missing from the application.
- The application consumes a significant amount of data to load, necessitating a high-speed internet connection for optimal performance.
- In areas with weak network signals, the internet data is often insufficient for the application to load, rendering it unusable.
- The GPS feature in the application does not function correctly.
- The application doesn't provide the cost of the journey/ticket.

The following features and enhancements are requested by Chennai bus application users for the updated version of the application:

- Regular and frequent updates for the application.
- GPS tracker for all buses to enable real-time location tracking.
- A lighter app which will operate easily, using little data.
- An offline mode that provides basic functionalities even without an internet connection.Accurate display of whiteboard buses along with their correct schedules.
- Inclusion of directions to the nearest bus stop within the application.
- Integration with popular payment platforms for seamless ticket purchases.
- Accessibility features such as voice commands and screen reader compatibility to assist users with disabilities.
- Customisable alerts for specific routes and schedules to better cater to daily commuters.
- Ability to easily switch from English to Tamil within the app to enhance accessibility, and a feedback system within the application to collect user suggestions and complaints for continuous improvement. While the app does include these features, as the app interface is not very intuitive, these elements are primarily accessible only to tech-savvy individuals, making them less practical for the average smartphone user.
- The application shows only connectivity with other buses and doesn't include other

modes of public transportation.

- By incorporating these features, the Chennai bus application can significantly improve user experience and satisfaction, making public transportation more efficient and user-friendly for a wider group of users.

Application Rating

Overall, when we asked the Chennai bus application users (n=161) to rate this application, the majority of them gave it a low score of 2 out of 5. This feedback indicates several areas that need improvement. Users often cited issues with the application's interface, mentioning that it was not intuitive and difficult to navigate. Additionally, many users experienced frequent crashes and bugs, which significantly hampered their overall experience. Some also felt that the application lacked essential features that are commonly found in similar applications, making it less competitive in the market.

To address these concerns, the development team needs to be committed to making substantial updates. The application has to be redesigned with the user interface for better usability, enhance stability to prevent crashes, and incorporate the most requested features. Incorporating the suggestions provided by commuters will significantly improve user satisfaction and foster greater reliability moving forward.

Some of the positive feedback from users highlights that the application is beneficial, allowing them to access information about bus numbers, stops, and routes directly from their smartphones. It proves particularly useful for discovering new routes when assistance is unavailable.
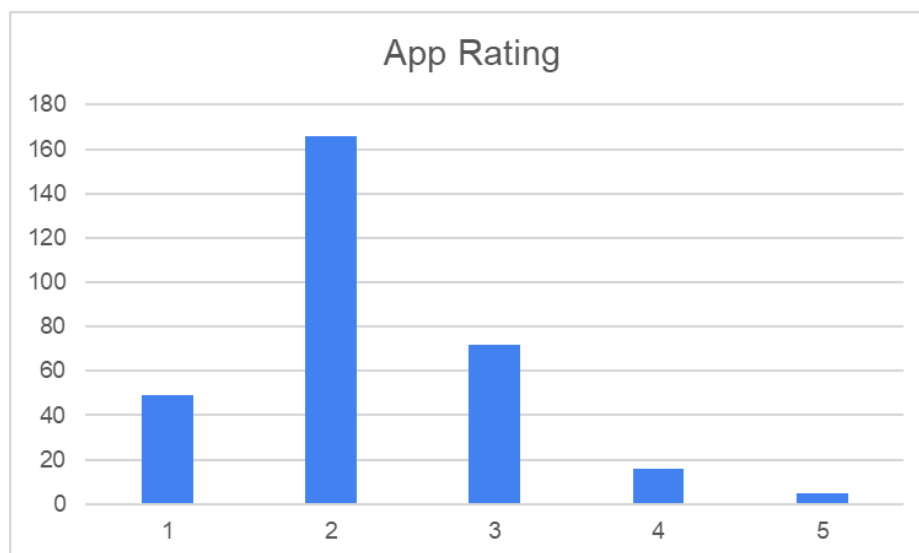

Figure 11: Chennai Bus Application rating given by the survey respondents. 1 is the lowest rating and 5 is the highest rating.| n=161

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Recommendations

The Chennai Bus application serves as a valuable resource for passengers seeking information about public buses via their smartphones. This study has highlighted that despite the application's numerous features, technical glitches and a subpar interface hinder its effectiveness. Below are the consolidated recommendations based on the feedback from survey respondents:

- The application should function seamlessly even in areas with limited or poor internet connectivity. An offline version is essential so that commuters can access information without data.
- The application must be free of glitches and should not freeze during use.
- GPS tracking for all buses should be accurate and clearly displayed within the application.
- In addition, the arrival time and travel duration can be integrated with location details similar to the display on Google Maps. This enhancement will assist commuters in planning their journeys more conveniently.
- The GPS must be capable of guiding you to the nearest bus stop based on your intended destination. It should also indicate which side of the road commuters should wait on to catch the bus heading to their final stop.
- Users should be able to search for bus destinations based on their location rather than just stops, with these stops clearly indicated on the map. Additionally, spelling errors during searches should prompt suggestions to assist users with limited writing skills.
- Any changes to bus routes, bus stop relocations, or cancellations must be promptly updated in the application.
- Given the impact of free buses on commuters, it would be beneficial for the application to provide information about the types of arriving buses, such as ordinary, deluxe, AC, and express options.
- The app could also display ticket prices for various bus types based on the destination.
- A ticketing system could be integrated, allowing commuters to purchase tickets online for a hassle-free experience on the bus. Integrating popular online payment platforms would enhance this feature.
- The language selection option should be prominently displayed on the homepage to accommodate users with varying levels of proficiency in different languages.

Conclusion

The Chennai Bus application is a promising tool for MTC and SETC commuters, offering a range of features to make bus travel more convenient. While there are some areas for improvement, the planned updates and user feedback suggest a commitment to enhancing the application's functionality and user experience.

The results from the survey show that many cited issues such as difficult interfaces, frequent technical glitches, and outdated information as primary deterrents. Additionally, some users mentioned a preference for alternative transportation applications that offer more comprehensive features, including real-time tracking and travel costs.

In light of these findings, it is clear that significant improvements are needed to enhance the user experience and increase the application's utility. Recommendations include a complete redesign of the user interface, regular updates to ensure accurate information, and the incorporation of additional functionalities that meet the needs of modern commuters. By addressing these concerns, the Chennai bus application has the potential to become a more integral part of daily travel for the city's residents.

Ultimately, the goal is to use this feedback to make informed decisions about future updates and improvements to the application. By prioritising the needs and preferences of the users we can ensure that the Chennai application remains a valuable tool for the public, enhancing their experience and fostering greater engagement.

Bibliography

1. Metropolitan Transport Corporation (2024). Available at: https://mtcbus.tn.gov.in/Home/performance (Accessed: 10 September 2024).
2. *The Hindu Bureau* (2024) 'Chennai Bus Application Launches for IOS platform', 22 February. Available at: https://www.thehindu.com/news/cities/chennai/chennai-bus-application-launches-for-ios-platform/article67875148.ece#:~:text=Transport%20Minister%20S.S.,the%20touch%20of%20a%20button.(Accessed: 15 September 2024).

Annexure 1

1. Current location (example:. Adyar, Tondiarpet, Porur, etc..) (இடம்)_____

2. Gender (பாலினம்)
    a. Male (ஆண்)
    b. Female (பெண்)
    c. Transgender (திருநர்)

3. Age (வயது)
    a. Below 20 (20 வயதிற்குக்கீழ்)
    b. 21-30
    c. 31-40
    d. 41-50
    e. 51-60
    f. 61 and above (61 வயதிற்குமேல்)

4. Profession (தொழில்)
    a. Unemployed (வேலையில்லாத)
    b. Working professional (தொழில்முறை வேலை)
    c. MSME,Construction worker (கட்டுமான தொழிலாளி)
    d. Security/Watchman(பாதுகாவலர்/வாட்ச்மேன்)
    e. Self-employed (சுயதொழில்)
    f. Student (மாணவர்)
    g. Homemaker (இல்லத்தரசர்/ இல்லத்தரசி)
    h. Retired (ஓய்வுபெற்றவர்)
    i. Others (மற்றவை)

5. Monthly income (வருடாந்திர வருமானம்)
    a. No income/unemployed/student (வருமானம்/ வேலையில்லாதவர்/மாணவர் இல்லை)
    b. 5000 & below கீழே
    c. 5001-20,000
    d. 20,001- 40,000
    e. 40,001 - 60,000
    f. 60,001-1,00,000
    g. 1,00,001 and above மற்றும் மேல்
    h. Do not want to disclose (வெளிப்படுத்த விருப்பமில்லை)

6. Education
    a. Illiterate (படிப்பறிவில்லாத)

b. Primary school(ஆரம்பப்பள்ளி)

c. Secondary school (உயர்நிர் நிலை பள்ளி)

d. SSLC/Class 12 (பத்தாம் வகுப்பு/ +2)

e. Graduate (பட்டதாரி)

f. Post graduate (முதுகலை பட்டதாரி)

g. Doctorate (முனைவர்)

7. Which kind of mobile do you use? நீங்கள் எந்த வகையான மொபைலைப் பயன்படுத்துகிறீர்கள்?
   a. Android அண்ட்ராய்டு
   b. IOS (Apple) IOS (ஆப்பிள்)
   c. Keypad mobile விசைப்பலகை மொபைல்
   d. Do not use a mobile நான் மொபைல் பயன்படுத்துவதில்லை

[submit form if the participant do not use mobile or uses keypad]

8. English language knowledge (ஆங்கில திறமை)
   a. No proficiency (ஆங்கிலம் தெரியாது)
   b. Basic proficiency (அடிப்படை ஆங்கிலம் தெரியும்)
   c. Intermediate proficiency (சுமாராக ஆங்கிலம் தெரியும்)
   d. Fluent (ஆங்கிலம் சரளமாக தெரியும்)

9. Tamil language knowledge (தமிழ் திறமை)
   a. No proficiency (தமிழ் தெரியாது)
   b. Basic proficiency (அடிப்படை தமிழ் தெரியும்)
   c. Intermediate proficiency (சுமாராக தமிழ் தெரியும்)
   d. Fluent (தமிழ் சரளமாக தெரியும்)

10. Have you felt that your lack of knowledge of a language has prevented you from using apps? ஒரு மொழியைப் பற்றிய உங்கள் அறிவின்மை பயன்பாடுகளைப் பயன்படுத்துவதைத் தடுக்கிறது என்று நீங்கள் உணர்ந்திருக்கிறீர்களா?_____
    _____

11. What apps do you use to get public transport information?
    a. NA
    b. Google maps
    c. Metro app
    d. UTS app
    e. Chalo
    f. Moovit
    g. Others _____

11.1 Why do you prefer using these apps? (இந்த செயலியைஸை ஏன் பயன்படுத்த விரும்புகிறீர்கள்?)

12. Do you use the Chennai Bus App? நீங்கள் சென்னை பஸ் செயலியை பயன்படுத்துகிறீர்களா?
   a. Yes (ஆம்)
   b. No, but I am aware of the app (இல்லை, ஆனால் பயன்பாட்டைப் பற்றி எனக்குத் தெரியும்)
   c. No, Not aware of the app(இல்லை, செயலியை பற்றி தெரியாது)

[Submit form if the participant choose option C]

13. How often do you use the Chennai bus app? (சென்னை பஸ் செயலியை எவ்வளவு அடிக்கடி பயன்படுத்துகிறீர்கள்?)
   a. Everyday (தினமும்)
   b. Every alternate day (ஒவ்வொரு மாற்று நாளும்)
   c. Once or twice a week(வாரத்திற்கு ஒருமுறை அல்லது இரண்டு முறை)
   d. Once a month (மாதம் ஒரு முறை)
   e. Very rarely (மிக அரிதான)

14. What is your purpose for using this app?இந்த செயலியை பயன்படுத்துவதற்கான உங்கள் நோக்கம் என்ன?
   _____

15. What issues or difficulties have you faced while using this app?இந்தப் பயன்பாட்டைப் பயன்படுத்தும்போது என்னென்ன சிக்கல்கள் அல்லது சிரமங்களை எதிர்கொண்டீர்கள்?
   _____

16. What features and improvements would you like to include in the "Chennai Bus" app? "சென்னை பேருந்து" செயலியில் என்ன அம்சங்கள் மற்றும் மேம்பாடுகளைச் சேர்க்க விரும்புகிறீர்கள்?
   _____

17. How would you rate this app on a scale of 1 to 5? (1 being the least) இந்த செயலியைஸை 1 முதல் 5 வரை எப்படி மதிப்பிடுவீர்கள்? (1 குறைந்தது)