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A Study on the Proposed Voice-Enabled Booking Facility for Rapido Auto and Bike Services among People Aged 45–60 Years

[*1] Dr. A Sree Lakshmi

[*1] Assistant Professor, Department of Commerce, Andhra Loyola College (Autonomous), Vijayawada, Andhra Pradesh, India.

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***Corresponding Author**
Dr. A Sree Lakshmi
Assistant Professor, Department of Commerce, Andhra Loyola College (Autonomous), Vijayawada, Andhra Pradesh, India.

Abstract
The rapid growth of app-based transportation services has made travelling more convenient. However, booking rides through mobile applications may be challenging for some people aged 45–60 years due to difficulties in typing destination details, identifying pickup locations, understanding application features and navigating digital maps. Consequently, some individuals depend on their children, relatives or friends to book rides. This study proposes an innovative voice-enabled booking facility for Rapido Auto and Bike services to promote independent mobility among people aged 45–60 years. The proposed system uses Artificial Intelligence (AI), speech recognition, GPS and multilingual voice commands to enable users to book rides by speaking their pickup and destination details. The study adopts a descriptive and exploratory research design, with Vijayawada City as the study area and a proposed sample of 100 respondents. A structured questionnaire is used to understand users' difficulties, dependence on others and willingness to adopt voice-based booking. Illustrative data analysis indicates a potential demand for such a facility. The proposed system aims to improve convenience, accessibility, confidence and independent travelling.

Keywords: Voice-enabled booking, Rapido, Auto services, Bike services, Artificial Intelligence, Speech Recognition, GPS, Digital Accessibility, Independent Mobility.

1. Introduction

Digital technology has transformed the transportation sector through mobile-based ride-hailing applications. Services such as Rapido Auto and Bike allow customers to book transportation, identify pickup locations, view estimated fares and track drivers through smartphones. Although these applications offer convenience, some users experience difficulties while operating them. People aged 45–60 years may have varying levels of digital literacy and may find it difficult to type destination names, select locations on maps, understand application features or complete the booking process independently. In certain situations, they depend on their children, relatives or friends to book rides. Such dependence may reduce their confidence and flexibility in travelling independently. To address this issue, the present study proposes a voice-enabled booking facility in Rapido Auto and Bike services. Through a simple microphone button, users can speak their destination in Telugu, English or Hindi. The proposed system recognises the spoken command, identifies the location through GPS and displays or announces suitable vehicle options.

For example, a user may say:

- Telugu: "నాకు కాలేజీకి ఆటో కావాలి."
- English: "I need an Auto to College."
- Hindi: "मुझे कॉलेज जाना है।"

The proposed facility is intended to make ride booking simpler, more accessible and independent.

2. Statement of the Problem

The existing mobile-based ride-booking process generally requires users to open the application, enter destination details, identify pickup points, select a vehicle and confirm the booking. These steps may create difficulties for people aged 45–60 years who are not comfortable with digital applications.

Some users may not know how to enter the destination correctly or may find it difficult to identify their exact pickup location on a map. As a result, they may depend on other people to complete the booking.

Therefore, there is a need to examine the difficulties faced by this age group and propose a simple voice-enabled booking facility that helps them book Rapido Auto and Bike services independently.

3. Need and Importance of the Study

- To reduce dependency on children, relatives and friends for booking transportation.
- To simplify the ride-booking process through voice commands.
- To provide multilingual support, particularly Telugu, English and Hindi.
- To reduce difficulties in typing destination details and identifying pickup locations.
- To improve digital accessibility and confidence among middle-aged users.
- To encourage independent travelling through technology.
- To suggest an accessible booking innovation for Rapido Auto and Bike services.

4. Review of Literature

1. **Misra, Shirgaokar, Agrawal, Dobbs and Wachs (2022):** In their study titled "How Older Adults Use Ride-Hailing Booking Technology in California," the researchers examined the ride-hailing booking behaviour of 2,917 respondents aged 55 years and above. The study found that people who were confident in using technology were more likely to book rides through applications, whereas those who were cautious about technology were more likely to depend on telephone booking or assistance from others. The study highlights the importance of making ride-hailing booking processes convenient and accessible to users with different levels of technological confidence.
2. **Bayne, Siegfried, Beck and Freund (2021):** In their research titled "Barriers and Facilitators of Older Adults' Use of Ride Share Services," the authors examined the factors influencing older adults' use of ride-sharing services. The study identified independence, convenient transportation and driver assistance as important facilitators. Safety concerns, affordability and technological difficulties were identified as barriers. The researchers suggested that transportation services should be designed according to the needs of older users.
3. **Irawan, Joewono, Belgiawan, Chalermpong and Thaithatkul (2022):** In their study titled "Examining the Ride-Hailing Adoption Behaviors among Older Adults in an Indonesian City: The Case of Yogyakarta," the researchers examined ride-hailing adoption among 289 older adults aged 50 years and above. The study classified users according to whether they booked rides themselves or depended on others. It found that smartphone ownership, technology experience, health conditions and physical limitations influenced ride-hailing adoption. The study emphasised the importance of addressing technological barriers to improve access to ride-hailing services.
4. **Chen, Lifset, Han, Roy and other co-researchers (2023):** In their research titled "Screen or No Screen? Lessons Learnt from a Real-World Deployment Study of Using Voice Assistants With and Without Touchscreen for Older Adults," the researchers examined how older adults interacted with voice assistants. Their study indicated that participants appreciated visual information but often preferred responding through speech rather than touch. The research highlighted the potential of combining voice interaction with visual support to improve accessibility for older users.

Research Gap

The above studies examine ride-hailing adoption, technology-related barriers and voice-assistant accessibility. However, there is scope to examine a voice-enabled, multilingual booking facility specifically for Rapido Auto and Bike services among people aged 45–60 years in Vijayawada City. The present study proposes integrating speech recognition, GPS-based pickup identification, destination recognition and spoken booking confirmation into a simplified ride-booking process. The contribution is the proposed application of these features to the needs of the selected age group. Voice technology itself is not claimed to be a completely new invention.

5. Objectives of the Study

- To identify the difficulties faced by people aged 45–60 years while booking Rapido Auto and Bike services through mobile applications.
- To propose an innovative voice-enabled booking facility using Artificial Intelligence, Speech Recognition and GPS technology.
- To examine the usefulness of multilingual voice commands in enabling users to book Auto and Bike services independently without depending on others.
- To assess customer acceptance and willingness to adopt the proposed voice-based booking facility to improve convenience and independent travelling.

6. Research Methodology

Particulars	Details
Research Design	Descriptive and Exploratory
Study Area	Vijayawada City
Target Respondents	People aged 45–60 years
Proposed Sample Size	100 respondents
Sampling Technique	Convenience Sampling
Primary Data	Structured questionnaire and interviews
Secondary Data	Research articles, journals, books and relevant websites
Statistical Tools	Percentage Analysis, Weighted Average

Sources of Data

Primary Data: Primary data are proposed to be collected from people aged 45–60 years through a structured questionnaire and personal interaction.

Secondary Data: Secondary data are collected from published research articles, journals, books and relevant online sources relating to ride-hailing services, digital accessibility and voice-assistant technology.

7. Proposed Voice-Enabled Booking Innovation

The study proposes the introduction of a voice-enabled booking option in the Rapido mobile application.

7.1 Main Features

1. **Voice Booking:** A clearly visible microphone button enables users to speak their destination instead of typing it.
2. **Multilingual Support:** The system recognises Telugu, English and Hindi voice commands.
3. **GPS-Based Pickup Identification:** The system automatically identifies the user's current pickup location, subject to location permission.

4. **Destination Recognition:** AI-based speech recognition converts spoken destination details into text and matches them with map locations.
5. **Vehicle Selection:** Users can request an Auto or Bike through voice commands.
6. **Fare Announcement:** The estimated fare is communicated through audio.
7. **Driver Information:** Driver name, vehicle details and estimated arrival time are announced.
8. **Voice Confirmation:** The system asks the user to confirm the destination, vehicle type and estimated fare before placing the booking.
9. **Ride Tracking:** Important ride updates and driver-arrival notifications are communicated through voice.
10. **Emergency Support:** An easily accessible emergency contact and customer support option is provided.

7.2 Proposed Working Process

- The user opens the Rapido application.
- The user selects the microphone button.
- The user speaks the required destination.
- The system identifies the spoken language and recognises the destination.
- GPS identifies the pickup location.
- The user selects Auto or Bike through a voice command or simple screen option.
- The system announces the estimated fare and driver information.
- The user confirms the booking.
- The system displays and announces the booking status and driver arrival details.

7.3 Example of the Proposed Voice Interaction

User: "I need an Auto to College."
Application: "Your pickup location has been identified. You have selected College as your destination."
Application: "The estimated fare is displayed and announced. Would you like to confirm the booking?"
User: "Yes, book the Auto."
Application: "Your booking request has been confirmed. Driver details and estimated arrival time are available."

7.4 Privacy and Safety Considerations

The proposed system should obtain user consent before accessing microphone and location services. Voice and location information should be handled securely, and users should be able to review and correct recognised destinations before confirming a booking. The system should also provide a simple manual booking alternative.

8. Data Analysis and Interpretation

Note: The following tables and percentages are hypothetical illustrations prepared for a sample of 100 respondents. They demonstrate how the collected questionnaire data may be analysed. They are not actual survey results.

Table 1: Difficulties in Using Mobile Booking Applications

Response	Respondents	Percentage
Facing difficulties	68	68%
Not facing difficulties	32	32%
Total	100	100%

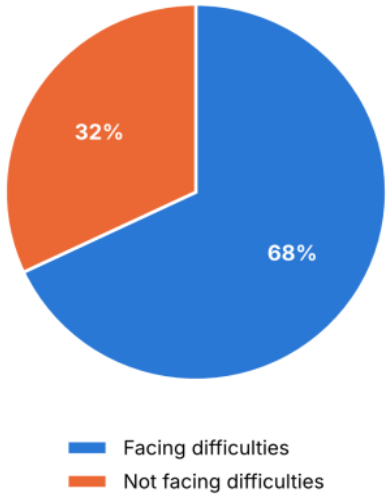


Fig 1: Difficulties in Using Mobile Booking Applications

Interpretation: The above table indicates that 68% of the respondents face difficulties while using mobile booking applications, whereas 32% do not experience such difficulties. This suggests that a considerable proportion of the selected respondents may benefit from a simplified booking facility.

Table 2: Dependency on Others for Booking Rides

Response	Respondents	Percentage
Depend on children, relatives or friends	62	62%
Do not depend on others	38	38%
Total	100	100%

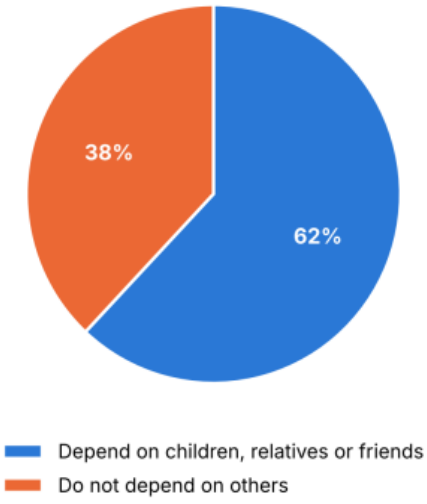


Fig 2: Dependency on others for Booking Rides

Interpretation: The analysis reveals that 62% of the respondents depend on children, relatives or friends to book rides. Only 38% do not depend on others. This indicates the importance of providing a booking facility that enables users to complete the process independently.

Table 3: Difficulties in Typing Destination Details

Response	Respondents	Percentage
Facing difficulties	65	65%
Not facing difficulties	35	35%
Total	100	100%

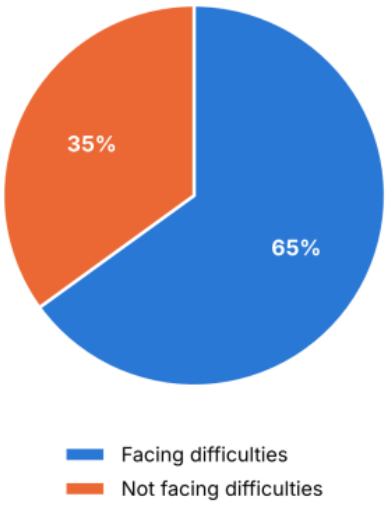


Fig 3: Difficulties in Typing Destination Details

Interpretation: The table shows that 65% of the respondents face difficulties in typing destination details, while 35% do not face such difficulties. A voice-based destination entry option may reduce the need for manual typing.

Table 4: Difficulties in Identifying Pickup Locations through Maps

Response	Respondents	Percentage
Facing difficulties	58	58%
Not facing difficulties	42	42%
Total	100	100%

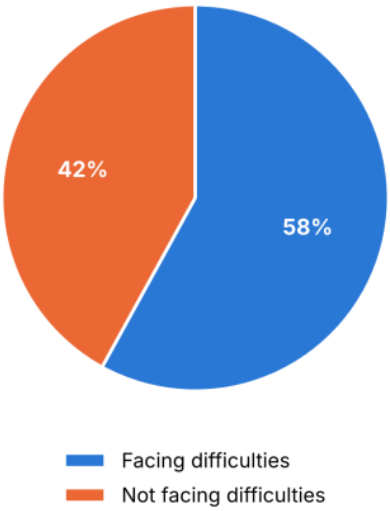


Fig 4: Difficulties in Identifying Pickup Locations through Maps

Interpretation: The findings indicate that 58% of the respondents face difficulties in identifying pickup locations through maps. Therefore, automatic GPS-based pickup identification may improve the convenience of booking.

Table 5: Willingness to Use Voice-Enabled Booking

Response	Respondents	Percentage
Willing to use	86	86%
Not sure / Not willing	14	14%
Total	100	100%

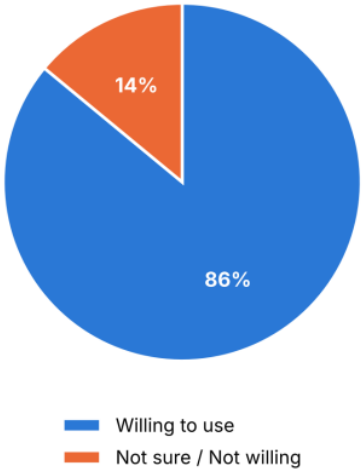


Fig 5: Willingness to use voice-enabled booking

Interpretation: The analysis reveals that 86% of the respondents are willing to use the proposed voice-enabled booking facility, whereas 14% are either unsure or unwilling to adopt it. This indicates a positive level of interest in the proposed innovation.

Table 6: Preferred Language for Voice Commands

Language	Respondents	Percentage
Telugu	54	54%
English	30	30%
Hindi	16	16%
Total	100	100%

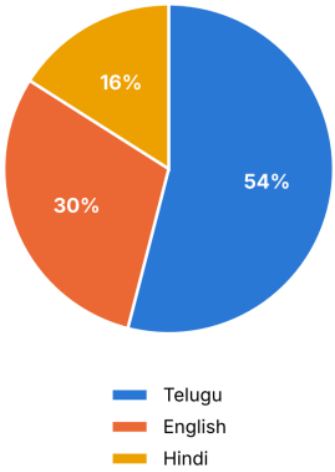


Fig 6: Preferred Language for voice commands

Interpretation: The table shows that 54% of the respondents prefer Telugu voice commands, 30% prefer English and 16% prefer Hindi. Therefore, the proposed system should provide multilingual support, with particular emphasis on Telugu for the selected study area.

Table 7: Usefulness of Automatic GPS Pickup Identification

Response	Respondents	Percentage
Consider it useful	89	89%
Do not consider it useful	11	11%
Total	100	100%

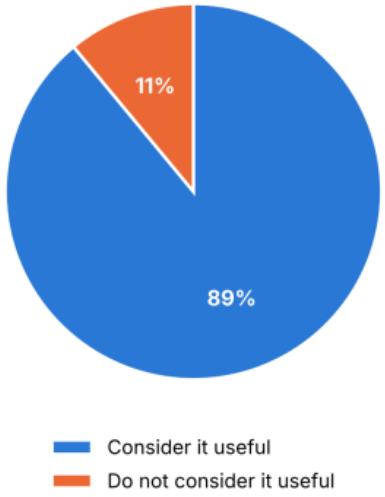


Fig 7: Usefulness of Automatic GPS pickup Identification

Interpretation: The analysis reveals that 89% of the respondents consider automatic GPS pickup identification useful. This suggests that automatic pickup detection may reduce difficulties associated with manually selecting locations.

Table 8: Voice Booking and Independent Travelling

Response	Respondents	Percentage
Believe it supports independent travelling	88	88%
Do not believe / Not sure	12	12%
Total	100	100%

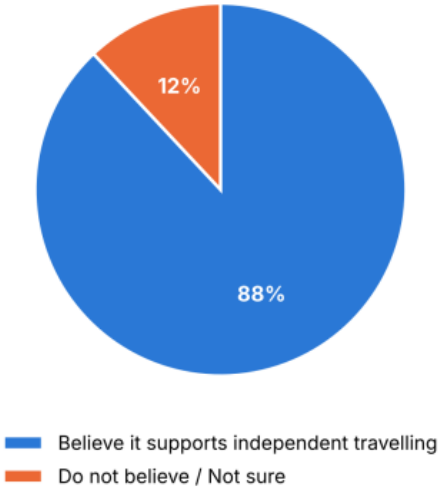


Fig 8: Voice Booking and Independent Travelling

Interpretation: The table indicates that 88% of the respondents believe that voice-enabled booking can support independent travelling. This highlights the possible contribution of the proposed system towards reducing dependence on others.

9. Major Findings of the Study

Based on the illustrative analysis of 100 respondents, the following findings are presented:

- 68% of the respondents face difficulties while using mobile booking applications.
- 62% of the respondents depend on children, relatives or friends for booking rides.
- 65% of the respondents experience difficulties in typing destination details.
- 58% of the respondents face difficulties in identifying pickup locations through maps.
- 86% of the respondents express willingness to use the proposed voice-enabled booking facility.
- 54% of the respondents prefer Telugu voice commands, followed by English at 30% and Hindi at 16%.
- 89% of the respondents consider automatic GPS-based pickup identification useful.
- 88% of the respondents believe that voice-enabled booking can support independent travelling.

10. Suggestions

- Rapido may consider introducing a voice-enabled booking facility for Auto and Bike services.
- The application should provide Telugu, English and Hindi voice-command options.
- A large and clearly visible microphone button should be provided on the booking screen.
- GPS-based automatic pickup identification should be incorporated, with an option to correct the location.
- Estimated fares, driver details and arrival times should be communicated through audio.
- The application should provide simple voice confirmation before finalising bookings.
- A manual booking option should remain available for users who prefer typing or screen interaction.
- The voice-recognition system should be tested with different accents, speaking speeds and background noise conditions.
- Voice and location information should be protected through suitable privacy and security measures.
- Rapido may conduct a pilot study among people aged 45–60 years before introducing the feature on a wider scale.

11. Limitations of the Study

- The proposed study is restricted to people aged 45–60 years.
- The geographical scope is limited to Vijayawada City.
- The proposed sample size is 100 respondents.
- Convenience sampling may limit the generalisation of findings.
- The proposed voice-enabled feature has not been developed or tested as part of this study.
- Actual adoption may depend on smartphone availability, internet connectivity, language-recognition accuracy and users' confidence in digital technology.

Conclusion

The increasing use of mobile applications in transportation has created new opportunities for convenient and flexible travelling. However, some people aged 45–60 years may experience difficulties in using app-based ride-booking services due to limitations in digital familiarity, destination typing and map navigation.

The present study proposes a voice-enabled booking facility for Rapido Auto and Bike services using Artificial Intelligence, Speech Recognition and GPS technology. The proposed system allows users to speak their destinations in Telugu, English or Hindi, identify their pickup locations automatically and receive fare, driver and booking information through audio.

The illustrative analysis suggests that a substantial proportion of respondents may welcome such a facility. The proposed

innovation has the potential to reduce dependence on others, improve digital accessibility and encourage independent mobility. Therefore, introducing a simple, secure and multilingual voice-enabled booking facility may be a useful step towards making app-based transportation more inclusive and accessible to people aged 45–60 years.

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