Advances in Consumer Research
https://acr-journal.com/
Volume-2 | Issue-6 |December: 2025
Original Researcher Article

Role Of Digital Ticketing And Mobile Apps In Enhancing Commuter Experience In Indian Railways With Special Reference To Southern Railways

Dr. P.N. Mohamed Inzamam Ul Haq[1], Mr. A. Ashokkumar[1]

[1]Assistant Professor, PG and Research Department of Commerce, Kamaraj College (Autonomous), Thoothukudi – 628003

ABSTRACT
This study examines the impact of digital ticketing and mobile applications on enhancing the commuter experience within Southern Railways, with specific focus on the Thoothukudi district. Using a structured questionnaire including seven experience-related statements, the research assessed convenience, stress reduction, time savings, information accessibility, control over travel, and overall satisfaction. Confirmatory Factor Analysis results confirmed excellent model fit, indicating that digital ticketing has a positive influence on most aspects of the commuter experience. While convenience, reduced stress, and time efficiency scored strongly, overall satisfaction showed relatively lower influence, highlighting areas for improvement. The study is geographically limited to Thoothukudi and relies on self-reported data, but provides valuable insights for improving digital ticketing services.
Keywords: *Digital Ticketing, Commuter Experience, Southern Railways, Mobile Applications*
.

1. INTRODUCTION:

The rapid growth of digital technologies has reshaped the travel experience of railway commuters across India. Indian Railways, particularly Southern Railways, has increasingly adopted digital ticketing systems and mobile applications to enhance commuter convenience and satisfaction (Ministry of Railways, 2019; IRCTC, 2020). This study investigates how platforms such as the UTS (Unreserved Ticketing System) app, IRCTC mobile applications, and other authorized digital ticketing services influence key elements of commuter experience—including convenience, reduction of travel-related stress, time efficiency, and overall satisfaction (Kumar & Raut, 2021; Parasuraman et al., 1988). The research evaluates how effectively these platforms streamline ticket purchase processes, provide real-time travel information, and empower users to manage their journeys more efficiently (Rana et al., 2015; Mogaji et al., 2021). Using a mixed-methods approach consisting of commuter surveys and interviews, the study assesses perceptions related to smoothness of digital transactions, usability, control over travel planning, and the extent to which digital ticketing contributes to a seamless commuter experience (Davis, 1989; Venkatesh et al., 2012). Challenges such as technical disruptions, digital literacy limitations, and occasional system failures are also examined to understand barriers affecting commuter satisfaction (Tripathi & Bhandari, 2020; Joshi & Mishra, 2022). Findings suggest that digital ticketing significantly improves the commuter experience by saving time, simplifying routine travel, and providing accessible information (Sivaprakasam & Raja, 2020). However, further improvements in app design, customer support, and inclusive digital accessibility remain necessary to maximize user satisfaction and adoption within Southern Railways.

OBJECTIVE OF THE STUDY

To examine the extent to which digital ticketing and mobile applications influence the overall commuter experience in Southern Railways

COMMUTER EXPERIENCE (EXP)

The commuter experience in the digital ticketing context reflects how travellers perceive the usefulness, efficiency, and overall satisfaction associated with mobile-based ticketing services. To measure this construct, the researcher adopted a five-point Likert scale ranging from *Strongly Disagree (1)* to *Strongly Agree (5)*. The Experience (EXP) dimension consists of seven well-structured statements designed to capture multiple aspects of commuter interaction with digital ticketing platforms.

These statements assess whether digital ticketing applications offer greater convenience (EXP1), reduce the stress typically associated with buying tickets at station counters (EXP2), and provide a smooth and hassle-free transaction process during regular travel (EXP3). They also evaluate the extent to which mobile apps supply useful real-time information, such as train timings, platform details, and ticket status, that contribute to an improved travel experience (EXP4). Furthermore, the scale measures perceived time savings achieved through digital ticketing compared to traditional methods (EXP5), the sense of control commuters feel over planning their journeys using railway mobile applications (EXP6), and their overall satisfaction with digital ticketing services provided by Indian Railways (EXP7).

Collectively, these seven items provide a comprehensive understanding of how digital ticketing and mobile apps influence the daily travel experience of commuters, particularly within Southern Railways.

ANALYSIS AND INTERPRETATION OF DATA

Reliability and Validity Criterion

To fortify the solution, it is crucial thing to calculate the reliability statistics for the collected data. Here, Cronbach's Alpha test was conducted to find the reliability and validity of the data. Since the value of 0.7 or greater is considered to be more reliable in the case of the Cronbach's Alpha test. The value for the Cronbach's Alpha test which we calculated is 0.833 which is greater than the considered value. So, this indicates the reliability and validity of the collected data.

Table 1 – Reliability Statistics

Cronbach's Alpha	N of Items
0.833	7

Source: SPSS Output

Since the Cronbach's Alpha values for the entire seven experience variables are with equal to or greater than the value of 0.7 and the corrected item correlation is also significantly higher than 0.3, which lies within 0.343 to 0.664, this further shows that the variables are more reliable. The researcher finds that the analytical data is reliable to conduct the Confirmatory Factor Analysis (CFA) after validating the data by reliability statistics.

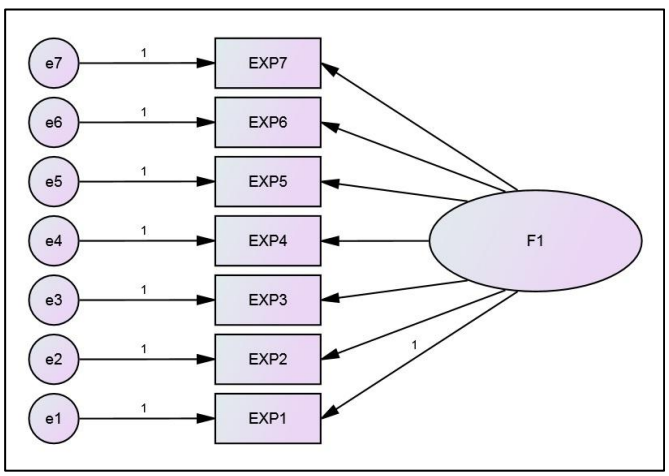
Confirmatory Factor Analysis

For this a model was drawn with the help of SPSS – AMOS software to fit this latent variable for analysis to understand this in a more effective and understandable way on what is okay and what is not so good on this. To that, confirmatory factor analysis has been calculated for the present study to understand the Commuter "Experience" model.

Assessment of Model Fitness

The fitness of the model is specified through some Fitness Indices. And if there is any item which fails to fit the model due to a poor factor value has to be removed from the model. For that, the researcher has developed the model and applied the confirmatory factor analysis for the Experience model. The basic model for the Experience constructed with seven variables is presented in the following Figure 1.

Figure 1 – Experience Basic Model



The Experience model contains seven variables (presented in square) with one latent construct (Circle). The measurement error is represented as 'e'. The standardized regression weights of the model are presented in the below Table 2.

Table 2 – Standardized Regression Weights - Experience Model

Variable code	Variables	Weights
EXP1	Using digital ticketing apps makes my overall train travel experience more convenient.	0.685 ***
EXP2	Digital ticketing significantly reduces the stress associated with purchasing tickets at railway stations.	0.757 ***
EXP3	I find the digital ticketing process to be smooth and hassle-free during my daily commute.	0.665 ***
EXP4	Mobile apps provide useful information (timings, platform details, ticket status) that enhances my travel experience.	0.702 ***
EXP5	Digital ticketing helps me save substantial time compared to traditional counter-based ticketing.	0.696 ***
EXP6	I feel more in control of my travel plans when using mobile applications provided by Indian Railways.	0.652 ***
EXP7	Overall, digital ticketing and mobile apps enhance my satisfaction as a commuter on Southern Railways.	0.364 ***

Source: AMOS Text Output

*** Significant – p-value ≤ 0.001

From the above Experience model, the level of regression weights is within 0.364 to 0.757, the researcher concludes that in this study, the well-developed and dependable user interface and required information which are organised and frequently updated were the best experiencing aspects for the commuters. The standardized and unstandardized graphical model output with values is presented in the following Figures 2 and 3.

Figure 2 – Standardized Graphical Model

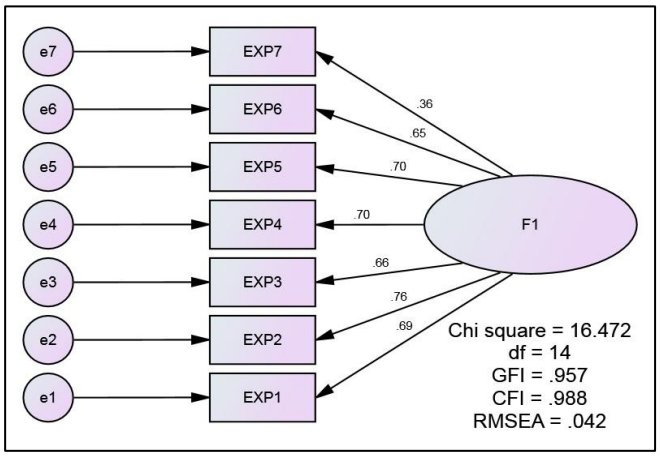
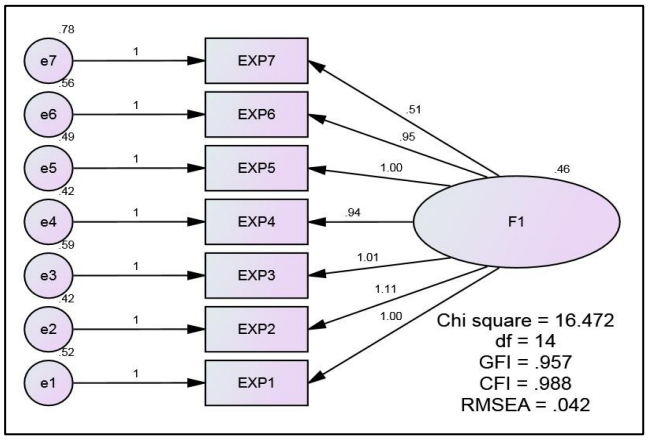


Figure 3 – Unstandardized Graphical Model



The confirmatory factor analysis (CFA) results are presented in Table 3.

Table 3 – Confirmatory Factor Analysis (CFA) results

Category Name	Name of the Index	Index Value	Critical Value	Observation
Absolute Fit	RMSEA	0.042	< 0.08	The Required level is achieved
	GFI	0.957	> 0.90	
Incremental Fit	CFI	0.988	> 0.90	The Required level is achieved
Parsimony Fit	Chi-square / df (CMIN)	1.177	< 3.0	The Required level is achieved

Source: AMOS Output

FINDINGS:

Goodness of Fit Index (GFI)

The fitness index Goodness of Fit Index (GFI), is analysed to find the model fit to the variables. Even though the level of acceptance is > 0.90 (Joreskog & Sorbom, 1984), as a rule of thumb, the GFI value close to 0.95 to 1 reflects a good fit. The calculated value of GFI for the model is 0.957, which indicates absolute fit of the model.

Comparative Fit Index (CFI)

Like the Goodness of Fit Index (GFI), Comparative Fit Index (CFI) is also used to analyse and determine whether the model is fit or not. For CFI, the critical value of 0.90 or larger will indicate the model fit to be acceptable (Bentler, 1990); (West et. al., 2012). The calculated value on the model fit is 0.988 for CFI which ultimately displays the model fits perfectly.

Root Mean Square Error of Approximation (RMSEA)

RMSEA (Root Mean Square Error of Approximation) value is a bad fit value where the good fit of the model is considered with lesser values. The value which is ≤ 0.06, will be considered to be satisfactory (Hu & Bentler, 1999). But if the value is ≥ 0.10, it will become unfit model and will never be considered further (Browne & Cudeck, 1993). The calculated RMSEA value is 0.042, which indicates a perfect fit of the model.

CMIN and CMIN/df

Choices of the constructed model to fit the variables can be identified by the calculation of CMIN. The chi-square value calculated for the model is 16.472 with the degrees of freedom (df) value 14. The lesser value now better displays the model fits with its variables. The chi-square/df or CMIN/df good fit of the model when the value is lesser than 3. If the value is less than 5, it is sometimes permissible for the model to be considered fit (Marsh & Hocevar, 1985). The calculated CMIN/df value for the model is 1.177 (16.472/14). This substantially exhibits that the model fit is completely perfect.

MANAGERIAL IMPLICATIONS

Make apps even more convenient to use.

Since many commuters' value convenience, the app design should be made simpler with fewer steps to book tickets. Faster loading screens, clear icons, and easy navigation will help passengers complete ticketing quickly without confusion or repeated attempts.

2. Reduce stress during ticket purchase.

Digital ticketing is mainly used to avoid long queues, so the apps must work smoothly during peak hours. Providing clear instructions, reliable server performance, and instant confirmation messages will help commuters experience less tension while booking tickets.

3. Ensure smoother and faster transactions.

Some commuters still face glitches, delays, or payment failures. Enhancing app stability, improving network responsiveness, and offering alternative payment options will ensure a consistent and hassle-free ticketing experience every time passengers open the application.

4. Provide clearer and more accurate information.

Commuters depend on apps for real-time train timings, platform numbers, and updates. Ensuring this information

is correct, visible, and frequently refreshed will build trust and help passengers plan their journey confidently without last-minute confusion.

5. Improve overall satisfaction with digital ticketing.

As overall satisfaction scored lower, adding features like multilingual support, quick help sections, easy refund options, and user feedback tools can make commuters feel more cared for. These improvements will help increase confidence and satisfaction with digital ticketing.

2. LIMITATIONS OF THE STUDY

The study is limited to commuters within the Thoothukudi district, which may not fully represent the experiences of passengers across the entire Southern Railway zone. Differences in population density, travel patterns, and digital usage in other districts may lead to varied perceptions.

The research focuses mainly on commuters who actively use digital ticketing platforms such as UTS and IRCTC apps. This excludes non-users or occasional users, whose challenges, resistance factors, and alternative travel behaviours may not be captured.

The study relies on self-reported responses from surveys and interviews. Commuters may overstate or understate their experiences due to memory gaps, personal bias, or social desirability, which can influence the accuracy of the results.

3. CONCLUSION

The overall results show that digital ticketing has made daily travel much easier for most commuters. Passengers enjoy the convenience of avoiding long queues, saving time, and accessing important information directly through their mobile apps. Many find the process smooth and feel more in control of their travel plans. However, some users still feel that satisfaction can improve, mainly when the app becomes slow or information is not updated. Despite these minor issues, commuters generally view digital ticketing very positively. It has significantly enhanced the travel experience in Southern Railways by offering comfort, speed, and greater confidence during journeys...

.. REFERENCES

1. Ministry of Railways, Government of India. (2019). Digital initiatives of Indian Railways. Railway Board Publications.
2. Indian Railways Catering and Tourism Corporation (IRCTC). (2020). Annual Report 2019–20. IRCTC.
3. Kumar, A., & Raut, R. (2021). Determinants of user adoption of mobile ticketing applications in public transportation. Journal of Transportation Technologies, 11(3), 245–258.
4. Sivaprakasam, P., & Raja, S. (2020). User perception of digital ticketing services in Indian Railways: A study on UTS mobile app adoption. International Journal of Management, Technology and Engineering, 10(6), 2910–2921.
5. Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology (UTAUT2). MIS Quarterly, 36(1), 157–178.
6. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340.
7. Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 64(1), 12–40.
8. Rana, N. P., Dwivedi, Y. K., & Williams, M. D. (2015). Mobile app adoption for travel and tourism: A structured literature review. International Journal of Business Information Systems, 20(3), 259–286.
9. Mogaji, E., Nguyen, N. P., & Nguyen, T. (2021). Mobile applications and customer experience in transportation services. Transport Policy, 101, 1–10.
10. Tripathi, M., & Bhandari, P. (2020). Digital literacy and barriers to technology usage in India: A demographic analysis. International Journal of Digital Society, 11(1), 1623–1631.
11. Joshi, R., & Mishra, P. (2022). Barriers to digitalization in public sector services: Issues in Indian Railways. Public Services Quarterly, 18(4), 299–317.
12. Jöreskog, K. G., & Sörbom, D. (1984). LISREL VI: Analysis of linear structural relationships by maximum likelihood, instrumental variables, and least squares methods. Scientific Software.
13. Bentler, P. M. (1990). Comparative fit indexes in structural models. Psychological Bulletin, 107(2), 238–246. https://doi.org/10.1037/0033-2909.107.2.238
14. West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modeling. In R. H. Hoyle (Ed.), Handbook of structural equation modeling (pp. 209–231). Guilford Press.
15. Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling: A Multidisciplinary Journal, 6(1), 1–55. https://doi.org/10.1080/10705519909540118
16. Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), Testing structural equation models (pp. 136–162). Sage.
17. Marsh, H. W., & Hocevar, D. (1985). Application of confirmatory factor analysis to the study of self-concept: First- and higher-order factor models and their invariance across groups. Psychological Bulletin, 97(3), 562–582. https://doi.org/10.1037/0033-2909.97.3.562.

.