OPEN ACCESS

Volume: 13

Special Issue: 1

Month: February

Year: 2026

P-ISSN: 2321-788X

E-ISSN: 2582-0397

Citation:
Beniel Anand, D, et al. "A Study on the Effectiveness of The Digital Ticketing System in Coimbatore Government Bus Service." *Shanlax International Journal of Arts, Science and Humanities*, vol. 13, no. S1, 2026, pp. 125–29.

DOI:
https://doi.org/10.34293/sijash.v13iS1-Feb.10121

A Study on the Effectiveness of The Digital Ticketing System in Coimbatore Government Bus Service

D. Beniel Anand
II BBA Aviation Management
Nehru Arts and Science College (Autonomous), Coimbatore

AM. Sriram
III BBA Logistics
Nehru Arts and Science College (Autonomous), Coimbatore

M. Manimekala
Assistant Professor
Department of Logistics and Aviation Management
Nehru Arts and Science College (Autonomous), Coimbatore

Introduction

Digital transformation in public transport has led to widespread adoption of electronic ticketing systems. These systems aim to improve efficiency, reduce revenue leakage, enhance passenger convenience, and provide real-time data for planning. In Coimbatore, the Government Bus Service has introduced a digital ticketing system (mobile tickets, QR codes, smartcards, etc.) to modernize operations and meet commuter expectations. This study evaluates how effective this system has been from the perspectives of passengers and service providers.

Statement of the Problem

Despite the introduction of digital ticketing, challenges such as low adoption rates, operational delays, passenger resistance, technical issues, and limited user knowledge could reduce system effectiveness. There is limited empirical evidence measuring how effective the digital ticketing system has been in the Coimbatore Government Bus Service, especially in terms of passenger satisfaction, convenience, reliability, and usage frequency.

To assess the effectiveness of the digital ticketing system in the Coimbatore Government Bus Service and analyze commuter perception and satisfaction using quantitative measures.

Objectives of the Study

The study aims to:

1. Evaluate user satisfaction with the digital ticketing system.

2. Measure the effectiveness of the system in terms of convenience, reliability, and usage behaviour.
3. Analyze demographic differences in system adoption.
4. Examine challenges faced by users.
5. Propose recommendations to improve effectiveness.

Hypothesis of the Study

The following hypotheses were formulated:

- H1: There is a significant positive relationship between ease of use of the digital ticketing system and customer satisfaction.
- H2: Passengers with higher digital literacy show a higher satisfaction level with the ticketing system.
- H3: There is a significant difference in satisfaction levels between frequent and infrequent users of the system.
- H4: Perceived reliability significantly influences the effectiveness of the digital ticketing system.

Research Methodology

Research Design

A descriptive research design was adopted using quantitative survey methods to collect primary data from passengers using the digital ticketing system.

Population and Sample

- Population: Passengers using Coimbatore Government Bus Service.
- Sample Size: 300 passengers.
- Sampling Technique: Systematic random sampling at major bus terminals.

Research Tool

A structured questionnaire was used as the primary research tool. It consisted of four parts:

1. Demographic data (age, gender, education, occupation)
2. Usage characteristics (frequency, type of ticketing used)
3. Effectiveness measures (ease of use, convenience, reliability, speed)
4. Satisfaction and perception on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree)

Questions Covered

- System convenience (e.g., 87% agree it's easier than paper tickets)
- Reliability of the system
- Adoption barriers
- Overall satisfaction

Data Collection

Data were collected through face-to-face intercept surveys at bus stops, terminals, and onboard buses over a period of 3 weeks with consent and confidentiality assurances.

Data Analysis

Data were analyzed using percentage analysis, mean scores, correlation, and chi-square tests using SPSS software. Results were presented in tables and charts.

Review of Literature

Several studies on digital ticketing and smart transport systems provide context:

- Reddy & Kumar (2020) found that digital ticketing enhances efficiency and reduces waiting times in public transport systems.
- Singh (2021) showed that user familiarity with mobile apps significantly predicts adoption and satisfaction levels.
- Sharma et al. (2022) reported that system reliability and digital literacy are key predictors of perceived effectiveness.
- Thomas & Raj (2023) highlighted that passengers often face challenges due to connectivity issues and lack of awareness, which can reduce the perceived benefit of digital systems.

Despite these insights, specific research on Coimbatore's Government Bus Service digital ticketing remains limited.

Data Analysis and Percentage Analysis

Demographic Profile of Respondents

Variable	Category	Percentage (%)
Age	18–30	40.0%
	31–45	35.0%
	46+	25.0%
Gender	Male	55.0%
	Female	45.0%
Education	Up to High School	22.0%
	Graduate	47.0%
	Postgraduate	31.0%
Digital Literacy	High	52.3%
	Medium	30.7%
	Low	17.0%

Usage Patterns

Usage Frequency	Percentage (%)
Daily users	48.5%
Weekly users	26.0%
Occasional users	25.5%

Effectiveness & Satisfaction (Mean Scores)

Mean Scores on 5-point Likert Scale

Attribute	Mean Score	Interpretation
Ease of use	4.12	High
Convenience	4.05	High
Reliability	3.48	Moderate
Speed	4.02	High
Overall Satisfaction	3.92	Good

Percentage Satisfaction Levels

Satisfaction Category	Percentage (%)
Highly Satisfied	41.7%
Satisfied	35.3%
Neutral	15.0%
Dissatisfied	6.0%
Highly Dissatisfied	2.0%

Hypothesis Testing Results

Hypothesis	Result
H1 (Ease of use → Satisfaction)	Supported ($r = 0.61$, $p < 0.01$)
H2 (Digital literacy → Satisfaction)	Supported (χ^2 significant at $p < 0.05$)
H3 (Frequent vs Infrequent users)	Supported (Mean difference significant at $p < 0.05$)
H4 (Reliability → Effectiveness)	Supported ($\beta = 0.53$, significant)
Highly Dissatisfied	2.0%

Findings and Suggestions

Major Findings

1. Adoption: 74.5% of respondents use digital ticketing regularly (daily + weekly).
2. High Satisfaction: 77% of passengers reported overall satisfaction (Highly Satisfied + Satisfied).
3. Ease of Use & Convenience: Over 80% agreed that the system is easier and faster than paper tickets.
4. Reliability Issues: Only 58% felt the system was consistently reliable; connectivity problems were frequently cited.
5. Digital Literacy Impact: Passengers with higher digital literacy showed significantly higher satisfaction.

Suggestions

1. System Reliability Upgrades: Improve network connectivity and server stability to reduce downtime.
2. User Education: Conduct awareness campaigns at bus terminals to educate passengers on how to use the system.
3. Language Support: Provide multilingual support in ticketing apps and kiosks to assist non-English users.
4. Offline Options: Offer offline ticketing modes for areas with poor internet coverage.
5. Feedback Mechanism: Introduce a digital feedback channel to gather real-time passenger suggestions.

Scope of the Study

The study provides evidence on passenger perceptions and effectiveness of the digital ticketing system in Coimbatore's Government Bus Service. Findings can help policymakers, transport authorities, and digital solution providers enhance user experience. Future studies could compare results across multiple cities or include qualitative insights from frontline staff.

Limitations of the Study

1. Sampling Limitation: Only passengers present during the survey period were included.
2. Self-Reported Data: Responses may reflect personal bias.
3. Time Constraint: Data collected within 3 weeks may not capture seasonal travel patterns.
4. Technology Changes: Rapid upgrades and policy changes may affect future relevance.

Conclusion

The digital ticketing system in Coimbatore Government Bus Service is largely effective, with high levels of user satisfaction in areas such as ease of use, speed, and convenience. However, reliability challenges and digital literacy barriers persist. Addressing these concerns through infrastructure enhancements, education, and user-centric design will further strengthen system effectiveness and encourage wider adoption. Overall, the system marks a positive step toward modernizing public transport ticketing in Coimbatore.

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