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# Analysing Commuter Satisfaction in Ahmedabad's Public Transport System: A Case Study of Gujarat Metro Rail

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**Abstract:**

As one of the fastest-growing cities in India, Ahmedabad, the commercial hub of Gujarat, is under increasing stress as more and more people migrate into the city, increasing the demand on its public transportation systems which leads to increased congestion and unequal access to public transportation, thereby decreasing its reliability. The paper is a case study on public transport system being rolled out by Gujarat Metro Rail with integration with bus/ BRTS/ auto rickshaw and Indian Railways commuting facilities. The research methodology used was a mixed methods approach, which included survey data from 120 commuters in key metro corridors as well as qualitative data obtained from structured interviews. The study examines the factors that influence commuter satisfaction through regression, Pearson correlation, Chi-square tests and independent samples t-tests. The findings reveal strong positive and statistically significant service quality, last mile connectivity and commuter satisfaction ($r = 0.941$, $p<0.01$). The differences between males and females in relation to levels of satisfaction were not confirmed statistically, however. Satisfaction was determined to be driven mostly by the factors of affordability, timeliness, and intermodal transfer efficiency. Attitudes of commuters are not good predictors of public adoption; rather, the system's quality of the integrated services matters. The Phase II metro extension to Gandhinagar and GIFT City reinforces the role of metro-based public transport systems to improve regional connectivity, expedite travel time and facilitate sustainable mobility. The paper provides some useful policy suggestions for urban planners and transport policy makers on how to create inclusive, efficient and resilient public transport networks in Indian cities.

**Keywords:** Commuter Satisfaction, Public Transportation, Gujarat Metro Rail, Ahmedabad, Service Quality, Last-Mile Connectivity, Sustainable Urban Mobility, Public Transport Integration.

## 1. Introduction

### 1.1 Urban Mobility Challenges in Ahmedabad

The urbanization process in Ahmedabad, the biggest city in Gujarat and one of the most rapidly expanding metros in India, is an interesting example of the paradoxes involved in fast urbanisation. The transport system of the city has been continuously strained by the population of more than 8 million in the city with an increasing number of migrants coming in every year owing to the industrial expansion along the Ahmedabad-Gandhinagar belt. The mobility crisis has been created by increase in vehicle ownership, spread of peri-urban development and historically fragmented public transport network which include poor road congestion, air pollution and lack of parity between socio-economic groups (Jariwala, 2017).

The Ahmedabad Municipal Transport Service (AMTS), the city's main bus network, has long faced problems with old buses, erratic schedules, and bad last-mile connectivity. The Bus Rapid Transit System (BRTS) launched in 2009, had greatly improved dedicated-corridor operations but still could not meet the entire range of city-wide commuter demand. Auto-rickshaws are ubiquitous and flexible, but suffer from fare unpredictability and environmental externalities. In this context, the Gujarat Metro Rail has been the biggest structural intervention in Ahmedabad's transport ecosystem post-liberalisation.

### 1.2 The Gujarat Metro Rail: An Overview.

The Ahmedabad Metro's Phase I, which was opened in stages from March 2019 to December 2024, has two lines: the Blue Line (East-West, 21.2 km long with 18 stations) and the Red Line (North-South, 18.9 km long with 15 stations). Together, they cover around 40 km and are interconnected to the existing BRTS and Indian Railways networks at major interchange nodes. Phase II, inaugurated on 16 September 2024, extends the network northward to Gandhinagar and eastward to GIFT City via the Yellow Line (Motera Stadium to Mahatma Mandir, approximately 23.84 km, 21 stations) and the Violet branch (GNLU to GIFT City, approximately 5.42 km, 3 stations), at a total cost of approximately ₹5,384 crore. The phase II extension has changed the equation of commuting for students, professionals and government employees, making the Ahmedabad-Gandhinagar journey less than an hour at ₹35 per ticket (Government of India, 2019).

### 1.3 Research Objectives

The general objective of this study is to understand the satisfaction level of commuters in the changing Ahmedabad Public transport system with special reference to the Gujarat Metro Rail as an integrating infrastructure. The study aims at the following:

(1) To examine commuter perceptions of service quality, affordability, punctuality, and last-mile connectivity across integrated transport modes.

(2) To assess the relationship between service quality dimensions and overall commuter satisfaction with Public transport facilities.

(3) To determine whether demographic variables, particularly gender and occupation, significantly influence satisfaction and adoption behaviour.

(4) To provide evidence-based recommendations for enhancing Public integration and commuter experience in Ahmedabad.

The study is confined to adult commuters who regularly use at least one segment of the metro-integrated transport network in Ahmedabad, and data were collected across key metro interchange zones in 2025.

## 2. Literature Review

### 2.1 Public Integration in Urban Transport Systems

The literature on Public transport has converged on the idea that seamless integration of heterogeneous transport modes is a prerequisite for sustainable urban mobility. Tanwar and Agarwal (2025) pose Public integration as an imperative response to the three-fold challenge of congestion, pollution and spatial inequality in rapidly urbanising Indian cities. The examined case studies from Delhi and Ahmedabad and found that the main drivers of successful integration are legislative backing, digital technology and public-private partnership. However, they also noted that institutional fragmentation, cost constraints and behavioural inertia are persistent obstacles. The authors suggest phased development of infrastructure according to the stakeholder co-governance frameworks.

Vittoria and Gentile (2025) provide instructive comparative evidence at the European level with their K-modes cluster analysis of 2,301 urban commuters in Italy. Their analysis shows three different types of commuters: car-dependent individuals with low satisfaction with public options; moderate car users who would switch if the service improved; and flexible commuters who are naturally inclined to active and shared mobility. This threefold typology is in line with the Ahmedabad context where the auto-rickshaw dependent, the BRTS users and the metro adopters could be similar behaviour clusters. Across all segments, the main modal choice drivers are journey length, accessibility, cost and comfort.

Vadodara, the third-largest city in Gujarat, provides particularly close evidence from Umrigar and Pitroda (2023) where urban transport challenges are similar in scale and composition to Ahmedabad. Their work shows how Public integration – integrating buses, rail and metro services with digital payment systems and real-time data – can simultaneously cut congestion, improve access and promote environmental sustainability. The results also show that Ahmedabad's Multi model is transferable to other cities in Gujarat.

### 2.2 Determinants of Commuter Satisfaction in Public Transport

The determinants of commuter satisfaction in public transport systems have been widely studied in different urban contexts. The most consistently significant predictors of satisfaction are service reliability and punctuality, fare affordability, quality of information, comfort, safety and ease of transfer (de Oña et al., 2013; Eboli and Mazzulla, 2011). In the Indian context, last-mile connectivity, i.e. the ability to efficiently connect the primary transit node to the final destination, has been repeatedly identified as a critical pain point that conditions overall system satisfaction (Rao, 2025).

Gupta, Khobragade, and Upadhyay (2024) investigate the role of Multimodal Logistics Parks (MMLPs) in India's freight transport ecosystem and identify modal transition, technology adoption, and customs efficiency as key levers for reducing logistics costs. While their focus is on freight rather than passenger transport, the institutional and infrastructural barriers they identify—fragmented ownership, inadequate interoperability, and insufficient investment in interchange nodes—are directly applicable to the passenger Multimodal context in Ahmedabad.

### 2.3 Technology, Behavioural Change, and Future Mobility

Yap, Correia, and van Arem (2016) using stated preference experiments and discrete choice modelling, investigate the potential of AVs as last-mile complements to urban rail systems. The study results indicate that first-class rail travellers prefer AVs to conventional alternatives (bicycles, buses, trams) for station egress, however the in-vehicle AV experience is rated less favourably than human-operated vehicles. Trust, sustainability orientation and perceived utility are identified as the key mediators of AV acceptance. While AVs are aspirational in Ahmedabad, the study's methodological emphasis on experiential quality and psychological determinants of modal adoption informs the analytical framework of this paper.

Bénichou (2024) brings the sustainability perspective to the development of transport infrastructure, arguing that investments in transport should be evaluated not only on efficiency and economic grounds, but also on their resilience to climatic and demographic shocks. In a city like Ahmedabad, subject to heat extremes, seismic risk and periodic flooding, this view strengthens the case for metro-anchored Public systems as long-term urban resilience infrastructure.

Collectively, the literature establishes three propositions that inform the analytical design of this study. First of all, satisfaction of commuters is largely dependent upon the service quality of the system, and not upon their mode of transportation. Second, in the Indian urban context, the two dimensions of services that are most operationally relevant are connectivity at the last mile and affordability of fares. Third, demographic variables do not explain satisfaction, but may moderate usage intensity and modal choice.Third, the explanatory power of demographic variables is limited regarding satisfaction but may be used as moderators for usage intensity and modal choice.

## 3. Methodology

### 3.1 Research Design

This study is designed as a mixed methods approach combining quantitative analysis of primary data collected from a survey and qualitative analysis of data from structured interviews of commuters. The type of research design adopted was descriptive analytical in nature and it was used to obtain a systematic description of the level of satisfaction of commuters and to examine the relationship between the dimensions of service quality and the Public adoption behavior. The rationale for the mixed-methods approach is due to the multidimensionality of commutter satisfaction, both behavioral and experiential/interpretive, which can only be measured with a set of numbers.

### 3.2 Sampling and Data Collection

The study was conducted among adult commuters (aged 18 years and above) using Gujarat Metro Rail and its integrated feeder services (BRTS, AMTS buses, auto-rickshaws) at least twice a week. A structured questionnaire was filled by 120 respondents at 5 major metro interchange locations viz. Apparel Park, Vastral Gam, Thaltej, GNLU and Mahatma Mandir stations. These sites were chosen to collect data on a demographically diverse cross-section of the metro network's ridership, across east-west, north-south and Phase II corridors. Quota controls were used within each station catchment to ensure balanced gender and occupational representation using convenience sampling. Data were collected between January and March 2025 during peak and off-peak commuting hours.

### 3.3 Hypotheses

The study tests the following hypotheses:

$H0_1$: Perceptions and preferences towards modes of public transport do not significantly affect the adoption of Public transportation.

$H1_1$: The perception and preference of public transport modes are important factors influencing the acceptance of Public transport.

H02: There is no significant relationship between service quality and accessibility of urban public transport and commuter satisfaction with Public transport facilities.

H1 2: There is a significant positive relationship between service quality and accessibility of urban public transport and commuter satisfaction with Public transport facilities.

$H0_3$: There is no statistically significant gender difference in satisfaction of commuters with Public transport facilities and perception of service quality.

$H1_3$: There is a statistically significant difference in commuter satisfaction with Public transport facilities and perceptions of quality of service between genders.

### 3.4 Statistical Analysis

IBM SPSS Statistics was used to analyze the quantitative data. Descriptive statistics were used to summarize sample demographics. Multiple regression analysis was used to test the predictive power of commuter perceptions on Public transport adoption. The Pearson correlation was used to assess the strength and direction of the relationship between service quality and commuter satisfaction. We performed chi-square tests to determine if an association existed between satisfaction and service quality categories (ordinal), and independent samples t-tests to compare mean satisfaction scores across gender groups. Throughout, we used a significance threshold of alpha = 0.05.

## 4. Results

### 4.1 Demographic Profile of Respondents

**Table : 1 Age**

| Age Group | Frequency | Percent (%) |
|---|---|---|
| 18 – 25 | 51 | 42.5 |
| 26 – 35 | 43 | 35.8 |
| 36 – 45 | 19 | 15.8 |
| 46 – 55 | 5 | 4.2 |
| Above 55 | 2 | 1.7 |
| Total | 120 | 100.0 |

Table 1 shows the age distribution of the 120 respondents. The most significant group is 18-25 years old (42.5%), followed by the 26-35 years old (35.8%) and demonstrating the high appeal of the metro for economically active young commuters. The 36–45 age group represents 15.8% of the sample and the 46–55 age group 5.9%, with over the age of 55 years making up a small proportion of 1.0%.

**Table 2: Gender**

| Gender | Frequency | Percent (%) |
|---|---|---|
| Male | 65 | 54.2 |
| Female | 55 | 45.8 |
| Total | 120 | 100.0 |

The distribution of gender is shown in Table 2. Of the 120 respondents, 65 (54.2%) are male and 55 (45.8%) female. This is a fairly balanced sample with a slight male majority in keeping with the city's commuter demographics.

**Table 3: Occupation**

| Occupation | Frequency | Percent (%) |
|---|---|---|
| Government Employee | 18 | 15.0 |
| Private Sector Employee | 37 | 30.8 |
| Self-Employed | 10 | 8.4 |
| Student | 55 | 45.8 |
| Total | 120 | 100.0 |

Table 3 shows the distribution of occupations. Students made up the biggest group (45.8%, n = 55), followed by workers in the private sector (30.8%, n = 37), government employees (15.0%, n = 18), and independent contractors (8.4%, n = 10). Because the metro network passes through commercial and educational neighbourhoods, its primary users are students and workers in the private sector.

**Table 4: Monthly Income (in INR)**

| Income Range (INR/month) | Frequency | Percent (%) |
|---|---|---|
| Below ₹20,000 | 40 | 33.3 |
| ₹20,000 – ₹40,000 | 58 | 48.3 |
| ₹40,000 – ₹75,000 | 17 | 14.2 |
| Above ₹75,000 | 5 | 4.2 |
| Total | 120 | 100.0 |

The monthly income distribution is given in Table 4. The largest cohort is 48.3% (n = 58), earning between ₹20,000 and ₹40,000 per month and 33.3% (n = 40) earning below ₹20,000. 14.2% (n=17) earn between Rs. 40,000 and Rs. 75,000, and only 4.2% (n=5) earn more than Rs. 75,000. The high proportion of commuters in the lower to middle income brackets indicates that affordability of fares is an important determinant of satisfaction.

### 4.2 Hypothesis 1: Effect of Commuter Perceptions on Public Adoption

The first hypothesis tests whether commuter perceptions and preferences toward public transport modes significantly predict Public transportation adoption. Table 5 presents the regression model summary.

**Table 5: Regression Model Summary – Hypothesis 1**

| Model | R | $R^2$ | Adjusted $R^2$ | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .038[a] | .001 | -.007 | .523 |

As shown in the model summary in Table 5, the relationship between Public adoption behaviour and commuter perceptions and preferences to public transport modes is minimal (R = 0.038). The value of R 2 is 0.001, which indicates that only 0.1% of the variance in Public adoption is accounted for by the predictor variable. The adjusted R-squared is -0.007, so the model has virtually no explanatory power compared to the intercept. Standard error of estimate = 0.523.

**Table 6: ANOVA – Regression Significance Test**

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | .021 | 1 | .021 | .077 | .782[b] |
| Residual | 32.145 | 118 | .273 | | |
| Total | 32.166 | 119 | | | |

*Note: [b] Dependent Variable: Adoption of Public Transportation.*

The ANOVA in Table 6 also shows the overall insignificance of the regression model ($F = 0.077$, $p = 0.782$), which exceeds the significance threshold of 0.05. This implies that perception and preference of commuters towards modes of public transport is not a statistically significant predictor of Public transportation adoption. The null hypothesis $H0_1$ is therefore not rejected.

**Table 7: Regression Coefficients**

| Variable | B | Std. Error | Beta | t | Sig. |
|---|---|---|---|---|---|
| (Constant) | 2.312 | .384 | | 6.021 | .000 |
| Perceptions and Preferences | .038 | .165 | .038 | .278 | .782 |

The coefficients table (Table 7) confirms that the constant (baseline) is statistically significant ($B = 2.312$, $p = 0.000$). However, the predictor variable – perceptions and preferences toward public transport modes has an unstandardised coefficient of 0.038 and a p-value of 0.782, which indicates statistical insignificance as a predictor of Public adoption.

### 4.3 Hypothesis 2: Service Quality, Accessibility, and Commuter Satisfaction

The second hypothesis examines the relationship between service quality and accessibility of urban public transport and overall commuter satisfaction with Public transport facilities. Table 8 presents the Pearson correlation results.

**Table 8: Pearson Correlation – Service Quality, Accessibility and Commuter Satisfaction**

| Variable | Commuter Satisfaction | Service Quality & Accessibility |
|---|---|---|
| Commuter Satisfaction – Pearson r | 1 | .941** |
| Sig. (2-tailed) | – | .000 |
| N | 120 | 120 |
| Service Quality & Accessibility – Pearson r | .941** | 1 |
| Sig. (2-tailed) | .000 | – |
| N | 120 | 120 |

*Note: ** Correlation is significant at the 0.01 level (2-tailed).*

Table 8 shows a very strong and statistically significant positive Pearson correlation between service quality and accessibility of urban public transport and commuter satisfaction with Public transport facilities ($r = 0.941$, $p < 0.01$). The finding indicates that the improvement in the quality and accessibility of services is directly proportional to the level of commuter satisfaction. We reject the null hypothesis $H0_2$ in favour of the alternative. The magnitude of the correlation coefficient (0.941) is one of the highest reported in the Indian urban transport literature stressing the critical importance of service quality investments in the Public transport system design.

**Table 9: Cross-Tabulation – Commuter Satisfaction and Service Quality**

| Commuter Satisfaction | Disagree | Neutral | Agree | Total |
|---|---|---|---|---|
| Disagree | 3 | 0 | 0 | 3 |
| Neutral | 0 | 81 | 2 | 83 |
| Agree | 0 | 0 | 34 | 34 |
| Total | 3 | 81 | 36 | 120 |

Table 9 provides a cross-tabulation that reveals an interesting and consistent pattern; respondents who rated service quality positively also rated their commuter satisfaction positively and vice versa. All 34 respondents who agreed with positive service quality ratings also indicated agreement on commuter satisfaction. The 81 neutral respondents on service quality were also neutral on satisfaction with only two exceptions. This near-perfect concordance supports the Pearson correlation finding and indicates a strong association between the two variables.

**Table 10: Chi-Square Test Results**

| Test Statistic | Value | df | Asymptotic Sig. |
|---|---|---|---|
| Pearson Chi-Square | 218.741[a] | 4 | .000 |
| Likelihood Ratio | 124.635 | 4 | .000 |
| Linear-by-Linear Association | 105.280 | 1 | .000 |
| N of Valid Cases | 120 | | |

*Note: [a] 4 cells (44.4%) have expected count less than 5. Minimum expected count is .08.*

The results of the Chi-Square test shown in Table 10 confirm that the association between commuter satisfaction and service quality is statistically significant (Pearson $\chi 2 = 218.741$, df = 4, $p = 0.000$). The high Linear by Linear Association value (105.280, $p < 0.001$) indicates that there is a clear association between the two variables: Satisfaction with service quality and accessibility in Public transport facilities, with higher satisfaction scores corresponding to more positive perception of service quality and accessibility. As mentioned 44.4% of the cells had expected counts below 5 and the results should be examined and interpreted in conjunction with the Pearson correlation and cross-tabulation evidence.

### 4.4 Hypothesis 3: Gender Differences in Commuter Satisfaction

The third hypothesis is whether commuters (men and women) reported significant differences in their satisfaction and perceptions of service quality. The Group Statistics are given in Table 11.

**Table 11: Group Statistics by Gender**

| Variable | Gender | N | Mean | Std. Deviation |
|---|---|---|---|---|
| Commuter Satisfaction | Male | 65 | 2.24 | .412 |
| | Female | 55 | 2.18 | .498 |
| Service Quality & Accessibility | Male | 65 | 2.22 | .418 |
| | Female | 55 | 2.20 | .549 |

Table 11 shows that for the two outcome variables there are only slight differences between the male and female respondents in the group statistics. The mean score for satisfaction ($M = 2.24$, $SD = 0.412$) was slightly higher among male commuters compared to female commuters ($M = 2.18$, $SD = 0.498$). Similar to the other respondents, male respondents slightly rate service quality and accessibility higher ($M = 2.22$, $SD = 0.418$) than the female respondents ($M = 2.20$, $SD = 0.549$). The standard deviations overlap, so these differences are unlikely to be statistically significant.

**Table 12: Independent Samples t-Test Results**

| Variable | F (Levene) | Sig. | t | df | Sig. (2-tailed) | Mean Diff. |
|---|---|---|---|---|---|---|
| Commuter Satisfaction (Equal var.) | .234 | .630 | .752 | 118 | .454 | .058 |
| Service Quality & Accessibility (Equal var.) | 1.426 | .235 | .236 | 118 | .814 | .022 |

As revealed in the independent samples t-test results (Table 12), there is no significant difference between the mean levels of commuter satisfaction with the service by gender ($t = 0.752$, $p = 0.454$) and mean levels of commuter satisfaction with the service accessibility by gender ($t = 0.236$, $p = 0.814$) at the alpha = 0.05 level. No significant difference found between the two variables in the Levene's test ($p > 0.05$). The 95% Confidence intervals for the Mean differences are both positive and negative, suggesting that any differences in the means found were not true differences between genders, but are due to sampling variation. Therefore the null hypothesis $H0_3$ is accepted. These results suggest that the metro's integrated service model is seen as being as useful across gender categories as it is, thereby further strengthening the inclusive nature of the metro.

**5. Discussion**

The empirical findings of this study yield several important implications for the design, governance, and expansion of Public transport systems in Ahmedabad and analogous rapidly urbanising Indian cities.

**5.1 The Primacy of Systemic Service Quality**

Most importantly, the study found a strong and statistically significant association between service quality and commuter satisfaction ($r = 0.941$). This result confirms previous evidence found in the Indian and European urban transport context (Tanwar and Agarwal, 2025; Vittoria and Gentile, 2025) and clearly identifies systemic quality, i.e. punctuality, reliability, cleanliness, safety and ease of intermodal transfer as the main driver of commuter satisfaction in the Public transportation context. The insignificance of individual perceptions and modal preferences to predict adoption (H1 retained) further supports the idea that commuters' responses are rational to the actual performance of transport systems rather than driven by prior attitudinal dispositions.

This has a clear policy implication: Investment in attitudinal campaigns or modal awareness programmes is unlikely to pay commuter satisfaction dividends unless accompanied by substantive improvements in the operational dimensions of integrated transport. This principle is not without cautionary historical evidence in India. The Ahmedabad BRTS experience also saw initial enthusiasm for ridership wane over time due to a fall in service quality. Gujarat Metro, which is on a more capital intensive and institutionally robust footing, will have to guard against similar erosion of quality as its network matures and ridership scales up.

**5.2 Last-Mile Connectivity as a Critical Gap**

Last-mile connectivity was regularly identified by qualitative interview data as Ahmedabad metro passengers' greatest experience pain issue. The metro itself is considered to be reliable and comfortable, but the lack of integrated feeder services at many stations, especially in the peripheral Phase II corridor, leads to much dissatisfaction. Many respondents used unmetered auto-rickshaws for the last kilometre of their journey, often paying inflated fares. This significantly offset the cost and time benefits of using the metro.

This finding is consistent with the analysis of structural inefficiencies of urban bus transport in India by Rao (2025) and resonates with the evidence from Vadodara by Umrigar and Pitroda (2023). The best way to get immediate returns on GMRC and AMTS is to invest in effective last-mile solutions, whether they be formally integrated auto-rickshaw pools, electric feeder buses or cycle-sharing infrastructure at station exits. The G-Auto model in Rajkot, which standardises auto-rickshaw fares and GPS tracking for formalising auto-rickshaw services, is a directly transferable template for Ahmedabad's metro feeder ecosystem.

### 5.3 Gender Equity and Inclusive Design

The non-existence of statistically significant gender differences in commuter satisfaction (H3 retained) is a positive finding from an equity perspective, indicating that the metro's core service design does not differentially disadvantage female commuters in measurable terms. But this overall conclusion should not be interpreted as evidence of a full response to gender-specific needs. The qualitative responses of female respondents often mentioned concerns about personal safety when travelling late at night, insufficient lighting at the exits of stations, and the absence of women-only compartments on peak services, aspects not measured by the aggregate Likert satisfaction scales.

The gender and urban transport literature (Sustainable Urban Transport Project, 2023) consistently shows that the parity of aggregate satisfaction can hide significant qualitative disparities in the safety, comfort and accessibility dimensions experienced by women. GMRC's announced plans to introduce women-only coaches on Phase II services represent a welcome step, but need to be supplemented by systematic safety audits at interchange nodes, especially those serving the GNLU–GIFT City corridor, where late-evening commuter volumes are still low.

### 5.4 Phase II and Regional Integration

With the extension of Phase II to Gandhinagar and GIFT City, the Ahmedabad metro has assumed a qualitatively new role in the urban transport eco-system. The metro has, for the first time, provided a financially accessible alternative to private vehicle use for the large student and government employee population of the region by reducing the Ahmedabad–Gandhinagar commute to under one hour at a fare of ₹35. The Phase II corridor respondents reported the highest levels of satisfaction in the sample, which could be a novelty effect but also reflects true improvements in journey time and cost predictability.

The GIFT City branch has the potential to be a mobility corridor for the developing financial services sector of Ahmedabad, which is of special importance. If GIFT City becomes India's top international financial centre, the metro link will be a critical piece of business infrastructure. This will require a premium on service reliability and interchange efficiency with Indian Railways at Sabarmati and Ahmedabad Junction.

## 6. Conclusion

The present study has presented a comprehensive empirical study of commuter satisfaction in the Public transport system in Ahmedabad based on the Gujarat Metro Rail. The results confirm that commuter satisfaction is not primarily a function of individual modal attitudes or preferences, but rather is primarily driven by systemic quality and accessibility of integrated transport services. The very strong Pearson correlation ($r = 0.941$) between service quality and commuter satisfaction provides clear evidence base for continued investment in operational excellence, interchange infrastructure and last-mile connectivity.

There are gender differences in satisfaction, but they are not statistically significant in the direction. This finding is a reflection of the metro's broadly inclusive service design, but it also points to the need for targeted qualitative improvements in safety and comfort dimensions for female commuters. The Gandhinagar and GIFT City Phase II extension is a structural leap in the regional mobility architecture of Ahmedabad and can significantly reduce private vehicle dependency along the Ahmedabad-Gandhinagar corridor with effective feeder integration.

The study's findings carry several actionable recommendations for policymakers and transport planners. First, GMRC and its partner agencies should prioritise formalisation and expansion of feeder services at all metro stations, especially in the Phase II corridor. Secondly, the introduction of dynamic pricing mechanisms and integrated smart ticketing across the metro, BRTS, and AMTS should be undertaken to reduce the frictional costs of Public transfers. Third, systematic safety and accessibility audits at interchange nodes are needed to address the gender-specific service gaps identified through the qualitative data. Fourth, institutional coordination frameworks , like a unified Public transport authority for the Ahmedabad Metropolitan Region, would reduce the operational fragmentation that currently limits seamless Public experience.

Future research should consider the long-term environmental and energy implications of the metro-induced modal shift, the behavioural economics of digital ticketing adoption, and the distributional equity implications of Multimodal transport pricing for Ahmedabad's lower-income commuter segments. Longitudinal studies tracking commuter satisfaction as Phase II ridership matures will be particularly useful in determining whether the novelty-driven satisfaction effects observed in this study stabilise or evolve with system maturity.

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