ANALYSING THE IMPACT OF BUS RAPID TRANSIT (BRT) PEOPLE BUS SERVICES ON THE QUALITY OF LIFE OF URBAN LABOUR: A CASE STUDY OF KARACHI

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Abstract
The study aimed at to analysing the impact of Bus Rapid Transit (BRT) people bus services on the quality of life of urban labour in Karachi. Using the primary quantitative data, it is found that the there is a strong correlation of the factor of accessibility, effectiveness and reliability and energy efficiency with the quality of the life of urban labour in Karachi. BRT runs on the main roads of the city thus there are no such accessibility issues. It is cheap and comfortable, having the facility of AC. BRT can further improve if it extends its routes for accessibility of people and a separate route must be run for BRT so that its functioning does not get affected.
Keywords: Bus Rapid Transit (BRT), Urban Labour, Quality of Life, Public Transport

1. INTRODUCTION
1.1 Background of the research problem

Over 24.2 million daily trips are generated in Karachi, from which about 60 percent are dependent on the present system of public transport. However, the provided transportation system does not follow quality standards, and there is a risk in traveling via such transport. These include local minibuses and Qingqi, which, although widely used by people in Karachi for travel, are not considered safe because they overload the transport despite not having space. This leads to issues such as theft, injuries, suffocation, and other health problems. At times, there is an unavailability of transport services due to strike calls or fuel shortages (CNG/diesel). These factors affect the travel of urban laborers, who must reach their workplaces daily on time but face hardships due to limited transport accessibility.

Given these persistent challenges, Karachi urgently requires a structured and reliable mass transit solution that ensures affordability, safety, and efficiency for daily commuters. The existing transport system not only fails to meet quality standards but also lacks the capacity to accommodate the city's growing population. In response to these concerns, the government has introduced the Bus Rapid Transit (BRT) system, an initiative designed to modernize Karachi's public transport network and provide a more sustainable commuting alternative (Dawn, 2025, March 11). The project was sponsored by the Government of Sindh with financial assistance from the Asian Development Bank (ADB), the Asian Infrastructure Investment Bank (AIIB), the French Agency for Development (AFD), and the Green Climate Fund (GCF) (The Express Tribune, 2019, July 3). It is expected to bring a massive change to the city by addressing transportation needs and improving the quality of life for urban laborers.

The BRT system consists of multiple lines designed to serve different areas of Karachi:

1.1.1 Red Line BRT

A 26.6-kilometer corridor projected to benefit approximately 1.5 million residents, accounting for about 10% of Karachi's population, who live within a kilometer of a Red Line BRT station. Initially facing delays due to challenges posed by stakeholders, including the Civil Aviation Authority, the project is now targeted for completion by December 2026 (Dawn, 2025, March 16).

1.1.2 Yellow Line BRT

The 21-kilometer Yellow Line is expected to serve around 300,000 passengers daily, significantly improving transit connectivity in key commercial and residential areas. Construction is advancing ahead of

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schedule, with completion expected in May 2025, five months earlier than the initially planned date of September 2025.

1.1.3 Green Line BRT

Covering a 27.5-kilometer route, the Green Line BRT has a daily ridership capacity of approximately 135,000 passengers, reducing congestion on key arterial roads. Operational control of these lines was transferred to the Sindh government on March 10, 2025, marking a significant step toward unified management and streamlined operations (Dawn, 2025, March 11).

1.1.4 Orange Line BRT

Spanning 3.9 kilometers, the Orange Line serves an estimated 50,000 passengers daily, connecting critical transit points within the city. The Orange Line BRT, also known as the Abdul Sattar Edhi Line, is a key addition to Karachi's mass transit network. While smaller in scale compared to other BRT corridors, it plays a crucial role in linking major transport hubs and ensuring connectivity between different parts of the city (The Express Tribune, 2021, December 10).

The BRT system aims to provide Karachi's residents with an affordable and reliable transportation option. While specific fare structures are yet to be finalized, the system is expected to offer cost-effective travel alternatives, reducing the financial burden on daily commuters.

The research is significant as it critically evaluates the prospects of using BRT in Karachi for urban labor through statistical findings. Previously, no comprehensive research has justified whether BRT was an effective step toward improving transportation in the city. This study contributes by highlighting the changes brought by BRT implementation while assessing its efficiency, reliability, accessibility, and economic returns.

The aim of this study is to analyze the impact of BRT and People's Bus Services on the quality of life of urban labor in Karachi. The key objectives include:

- Assessing the accessibility of BRT services for urban laborers.
- Evaluating the efficiency and reliability of BRT services.

BRT is one of Karachi's most heavily funded projects, launched by the Sindh Government to address public transit needs. Additionally, the People's Bus Service—comprising Red Buses, White Buses (electric vehicles), and Pink Buses (for female passengers)—operates on eight routes, connecting major residential areas to commercial and business hubs. These air-conditioned buses have a seating capacity of 40 passengers, with additional space for 40 standing commuters and designated areas for women. The People's Bus Service maintains a fixed fare of PKR 50 per ride, except for Route 9, which charges PKR 100 beyond Malir Halt.

Figure 1.1: Conceptual framework
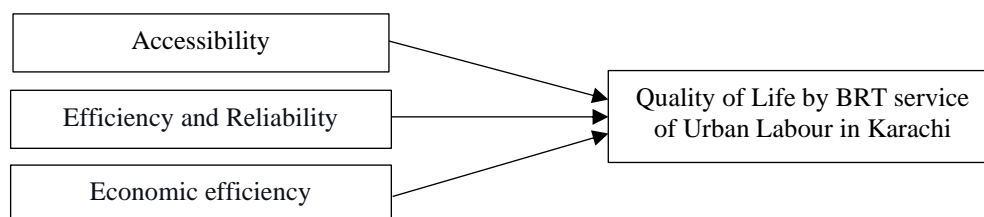
The above given conceptual framework is made to show the relationship of the variables over one another. This graphical representation is easily understandable for the readers because the arrows are showing the dependency of the variables on each other. One the left hand side are the independent variables whereas on the right are the dependent ones. These variables of BRT services will be tested to analyse their impact on bringing change in the quality of life of urban labour.

2. METHODOLOGY

It is a primary quantitative research in which, the researcher has intended to conduct surveys from the participants (Norris et al., 2016). The quantitative data would be helpful in knowing the change feasibility of BRT services for the people of Karachi in terms of numeric form. The researcher had made a survey questionnaire on the Google form based on the Likert scale having ranges from 1 as strongly agree to 5 as strongly disagree. The respondents were asked to rate the given questions in the questionnaire attached in the Appendix. The respondents of the study include the general public of Karachi which includes everyone, that is males, females, aged, youngsters, graduated, or working class. In this way, the researcher was able to get mixed responses and this was helpful to get a variety of data for analysing the services provided by BRT.

The recruitment of the participants was done using convenient sampling technique using which, only those who were easily approachable, were given the link to the forms through email, WhatsApp or other social

media platforms (Mertens et al., 2017). The sample size of the study is 100 as it is the minimum to conduct a survey and manageable for the researcher. The gathered data was analysed using SPSS software (Skinner, 2020). This helped in testing the hypothesis made by the researcher while conducting descriptive analysis, correlation analysis and regression analysis. Based on it, the researcher was able to derive key conclusions from the study which helped to conclude whether BRT services are effective or not for Karachi's urban population.

2.1   Ethical Guidelines

My research adheres to ethical guidelines by ensuring integrity, objectivity, and transparency. All sources are properly cited, and data is collected and analyzed responsibly. Confidentiality and participant welfare are prioritized, with no fabrication or plagiarism. Ethical approval has been considered where necessary, maintaining academic integrity throughout the study.

3.   DATA ANALYSIS

3.1   Descriptive statistics

The descriptive statistic table 3.1 shows that the mean value for the factor of accessibility is 2.0 whereas the standard deviation is 1.21. On the other hand, for the factor of efficiency and reliability, the mean value is 1.83 and the standard deviation is 0.93. Referring to the aspect of energy efficiency, the mean value is 1.81 and the standard deviation is 0.88. Lastly, the factor of quality of life for urban labour has the mean value of 2.0 and the standard deviation is 0.95. It is representing that the majority of the respondents have agreed about the effective results of using BRT in the city. They are also satisfied with the services of BRT with respect to accessibility, effectiveness, and energy efficiency.

Table 3.1: Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
A1	100	1.00	5.00	1.8800	1.23321
A2	100	1.00	5.00	2.0800	1.23648
A3	100	1.00	5.00	2.1200	1.09434
ER1	100	1.00	5.00	1.9700	1.11423
ER2	100	1.00	5.00	1.9500	.90314
ER3	100	1.00	5.00	1.7700	.82701
EE1	100	1.00	4.00	1.6100	.85156
EE2	100	1.00	4.00	1.9300	.89052
EE3	100	1.00	5.00	1.9600	.88671
QOL1	100	1.00	5.00	1.8000	.97442
QOL2	100	1.00	5.00	1.9500	.96792
QOL3	100	1.00	5.00	2.1000	.93744
Valid N (listwise)	100				

A – Accessiblity, ER – Efficience and Reliability, EE – Economic efficiency
QOL - Quality of Life by BRT service of Urban Labour in Karachi

The correlation analysis is used to ascertain the relationship or degree of strength of two or more variables, per the findings of the Soomro et al. (2022) study. In actuality, evaluating the relationship between the factors is beneficial. Additionally, it describes a statistical method for looking at potential linear relationships between the variables. The given table 3.2 of correlation shows that the factor of accessibility, efficiency and reliability and energy efficiency has a statistically significant relationship with the quality of life of the urban labour in Karachi due to BRT. In table 3.2, it is found that the Pearson Correlation value for accessibility is 0.818 which is high. Regarding the factor of efficiency and reliability, it is 0.693 that also shows a strong relationship. Similarly, the factor of energy efficiency has a Pearson Correlation value of 0.716 which shows a strong relationship. Thus, all the factors have a strong correlation with the quality of the life of urban labour in Karachi.

Table 3.2: Correlation analysis

		A	**ER**	**EE**	**QOL**
Accessibility (A)	Pearson Correlation	1	.655**	.745**	.818**
	Sig. (2-tailed)		0	0	0
	N	100	100	100	100
Efficiency and Reliability (ER)	Pearson Correlation	.655**	1	.653**	.693**
	Sig. (2-tailed)	0		0	0
	N	100	100	100	100
Energy Efficiency (EE)	Pearson Correlation	.745**	.653**	1	.716**
	Sig. (2-tailed)	0	0		0
	N	100	100	100	100
Quality of Life (QOL)	Pearson Correlation	.818**	.693**	.716**	1
	Sig. (2-tailed)	0	0	0	
	N	100	100	100	100

The R square value is 0.713, according to the model summary given in table 3.3 indicates that the model can foresee 71.3% of the other variables, and that the predicted accuracy of the model will rise with the addition of new variables. The p-value of the ANOVA table 3.4 indicates that the research overall model is highly significant i.e., 0.000. Thus, it demonstrates that the study's model is appropriate for testing. The coefficient table presented in table 3.5 indicates that the significance level for accessibility and efficiency and reliability is 0.00. It means that these factors are statistically significant. However, the energy efficiency has a sig value of 0.72. These findings were triangulated through the study by Hussain et al. (2023) showing that there are no such accessibility issues of BRT because it is running on the main shahrah of the city. However, referring to energy efficiency, there is no such difference in terms of fare as local buses are also cheap. A point of difference is that BRTs have ACs and comparatively more comfort than other transportation systems.

Table 3.3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.850a	.722	.713	.45370

a. Predictors: (Constant), Energy_Efficiency, Efficiency_and_Reliability, Accessibility

Table 3.4: ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	51.287	3	17.096	83.054	.000b
	Residual	19.761	96	.206		
	Total	71.048	99			

a. Dependent Variable: Quality_of_Life
b. Predictors: (Constant), Energy_Efficiency, Efficiency_and_Reliability, Accessibility

Table 3.5: Regression Analysis

Coefficientsa						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.274	.133		2.056	.043
	Accessibility	.432	.067	.551	6.432	.000
	Efficiency_and_Reliability	.244	.079	.231	3.069	.003
	Energy_Efficiency	.184	.101	.155	1.818	.072

a. Dependent Variable: Quality_of_Life

4. DISCUSSION

The BRT routes are built on press net arterial roadways, which could put further strain on the already inadequate road network, according to the Urbano (2019) research. In actuality, multimodality is not offered by the BRT. Given the unpredictable nature of acute shocks like flooding or excessive rain, there is a clear interruption of the road networks, which further puts BRT at risk of failing to meet the city's transport needs. As a result, not only does the discontinuity of mobility indicate a weak system, but it also demonstrates inadequate overall planning.

A robust mobility system must be able to function continuously in the event of disruptions, provide access to transport for all people, and be flexible enough to redirect user traffic to different modes of transport in response to changing circumstances (Rafiq, 2016). In fact, when viewed as a component of the extensive urban network, the vulnerability of such a transport system becomes evident. The shortcomings usually erode BRT's overall effectiveness. It is clear that Karachi's transit system is not very resilient. The planned BRT scheme depends on a comparable road network, which is already overloaded with traffic. Thus, it might not be helpful in the cause building resilience for the passengers of the transport system.

5. CONCLUSION

The conclusions derived from the study show that all the factors have a strong correlation with the quality of the life of urban labour in Karachi. The study proves that there are no such accessibility issues of BRT as it is running on the main roads of the city. Everyone can easily access it. It is efficient to deal with the transport needs of the larger population. Referring to energy efficiency, no such difference is there in terms of fare as the local buses are also cheap. One factor is that BRTs have ACs and are also more comfortable than other mini busses running in the city. Referring to the key conclusions derived from the study, it is recommended that BRT must extend its routes and more buses must be initiated so that the remaining population can also avail it. Moreover, the transportation routes for BRT must be separately made so that the issues that arise because of the poor road network, do not affect the functioning of the BRT (Ahmed et al., 2020).

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Appendix
Questionnaire

Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Access to BRT Services					
I can easily access the BRT service in my area.					
The routes BRT are planned smartly, which covers the key residential and work areas.					
BRT services meet the regular needs of the community					
BRT Services efficiency and reliability					
The BRT services follow proper times and schedule					
The BRT services help in reducing travel time					
The service is reliable in term of passenger safety					
Economic Efficiency of BRT Services					
The BRT service is cost-effective as compared to alternate options					
The service has led to job creation in Karachi					
Using BRT service helps to manage my monthly expense					
Quality of Life of Urban Labor					
Safer and comfortable accommodation of BRT service has positively affected my mental and physical wellbeing					
The cost-effectiveness of BRT service has positively impacted my financial condition					
The BRT services has made commuting easy in Karachi					