
EVALUATING PUBLIC AND PRIVATE TRANSPORT OF LAHORE

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ABSTRACT

The growth of urbanization, as a result, has led to a higher number of motor vehicles, due to which there has been a considerable increase in traffic volumes in recent years. The existing road capacity and service levels do not fully meet the current needs of commuter traffic and transport. Along with providing fixed route services, transit systems integrated with these services have become a necessity for the community. The research design includes selecting a case study area, Lahore. The means of systemization that have been adopted to achieve the objectives of the research carried out include topic selection, comprehensive literature review in the context of local and international scenarios, data collection covering primary and secondary, data analysis using Excel and SPSS software, interpretation of data and placement of appropriate proposals. The main result of this study is that by improving public transport safety and public transport management, people's preference for using public transport will increase. Also, public transport's cleanliness and service level will increase; hence, the preference for using public transport will increase. The research's recommended solution for the city of Lahore has been designed locally to meet the majority problem, as the solution must be low-cost, environmentally sustainable, and responsive to the social demands of the local community.

Keywords: evaluation, lahore, transportasi, public.

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INTRODUCTION

Transport and mobility are the two constituents of cities that need to be planned sustainably (Nur et al., 2021). Consequently, urbanized growth has led to a higher number of motorized vehicles, and there has been a considerable increase in traffic volume in recent years. The existing road capacity and level of service do not fully cater to commuters' present traffic and transportation needs. Urban transportation concerns hamper the growth of sustainable transportation systems across the country (Ridhani et al., 2021). Along with the provision of fixed route service, an integrated transit system with this service is the need of a community.

The decreasing transit ridership and increasing auto-ownership in cities are due to the inability of public transport to divert people towards shared driving from solo driving. Lahore is the second largest urban center in the country, and the development of rapid bus transit has catered to the public transport demand in the city (Romadhon et al., 2020). However, the inability of this rapid mass transit to cope with the travel demand and to ensure a demand-responsive service has led to increased motorization. More important is providing a door-to-door service, well synchronized with the fixed route network. Presently, the informal private and paratransit modes hamper the flexibility

of public transport and are incapable of carrying many passengers, with increased travel costs, an inefficient traffic-transportation network, and unsustainable mobility.

Lahore, the provincial capital of Punjab, is a populous city, having a population of more than 9 million (Shabbir et al., 2020). The growing population has led to an increased transportation demand of around 13.5 million daily multi-purposed motorized trips other than walking. With a population predicted to rise to over 15 million by 2015 and with this, the travel demand is expected to rise, which would stimulate the growth of private cars and a higher Paratransit dependency.

This research highlights people's perceptions and satisfaction regarding public transport in Lahore. There is an increased passenger flow and traffic congestion. There is a need for intervention to improve traffic congestion in some areas of Lahore by providing a decent yet reliable mode of travel (Mansoor et al., 2016). However, the area links to the BRT route but does not provide efficient access. The use of public transport has become minimal because of the low-quality service, increased travel time, and high fare structure. However, where Bus Rapid Transit is gaining ridership, people using the service have limited access to this fixed transit service.

Alleviating traffic congestion in the area with the deployment of an efficient and identifying all those key indicators will help access and deduce the need for such a service, ensuring decent travel, an efficient traffic-transportation network, and sustainable mobility (Khan et al., 2018).

The feasibility of introducing such a service is thus checked. Moreover, the willingness of people to shift from inefficient paratransit public transport modes is considered. Replacing the existing public transport modes with decent transport would thus ensure a decent passenger service which would help people shift from other unreliable travel modes. The study mainly focuses on minimizing congestion and providing people with a decent mode of travel. Thus, replacing existing paratransit modes, i.e., auto and qinqui rickshaws and decent passenger service, will provide people with a reliable travel option with a quality service. It will, then, reduce traffic congestion and will lead to a sustainable traffic-transportation network. This study includes the following objectives. To review the existing literature regarding sustainable urban transport and its implementation throughout the world, to study the resident's perception regarding the availability of public transport, and to detect the factors responsible for sustainable transport in Lahore city. And to highlight the possible remedies for improved and reliable urban transport service in Lahore.

METHOD

Questionnaires have been made to address the research questions. This has been designed to evaluate the travel pattern of residents of Lahore on the bases of their preference to travel on the either public, or private mood of transport .Open ended and close-ended questions are included to describe the various indicators of the travelers related to their preferred mood to travel .major indicator that has been used in the questionnaire are security, affordability, level of services, management, congestion, and efficiency, etc. The questionnaire showing the satisfaction level regarding their preferred transport also included their travel pattern.

Every study is based on some research technique and methods. This research study includes the different techniques for evaluating the leading root causes and also the identification o potential impact and ways to reduce the marvel. This study discusses the statistical analysis technique used to interpret the data. For this purpose, researchers have performed the regression analysis. This study

discusses the statistical analysis technique used to interpret the data. The findings are discussed below.

RESULTS AND DISCUSSION

Public Transportation is a multiple occupancy vehicle service (Currie, 2018). These types of transport have their schedules because they pass specific routes at certain times throughout the day. Usually run by the city, the only advantage of this type of transport is that they are relatively cheap and everyone using the service is charged equally. However, they are often overfilled and stuffy, particularly during summer. Furthermore, drivers will not wait for you if you're running late, and buses often don't stop if they are overfilled. The primary modes of public transport in Lahore include Rickshaws and Taxis, Bus Services, and Metro Trains (Javid et al., 2020).

In contrast to public transfers, with private transfers, you don't share the vehicle with others. You only share it with the driver and your friends/family/colleagues. Private transport is the personal or individual use of Transportation that is not available to the general public, where the user can decide freely on the time and route of transit (Chavis & Gayah, 2017). Car is the most popular private transport nowadays because people prefer private transport over public transport (Chiu Chuen et al., 2014).

Public Opinion regarding Public and Private Transport

The effectiveness of private and public transport has been discussed for a long time in the context of sustainability. Many previous studies have shown that private car dependence is generally recognized as the most significant factor of atmospheric pollutant emissions from the transport sector, and the use of public transport brings a reduction in emissions. However, the financial sustainability of public transport depends on population density. Pakistan is the most urbanized and populated country in South Asia (Yamamoto et al., 2014).

The impulsive growth of population and motorization in metropolitan cities revitalized many factors, such as urban land use and transportation system that are socially, economically, and environmentally unsustainable in Pakistan. Lahore is the second largest metropolitan city in Pakistan, having a population of 11.13 million (2017). 3.5 percent population is observed to be increased annually (Wang et al., 2021). A coherent public transport network is necessary to move inside this vast population.

According to many people, public transport is not accessible to them. They only refuse to use public transport like the metro bus or orange line because the stations are far from their houses. Many females complained about the government-implemented policy, according to which seat availability to males is higher than females, which caused gender inequality. It may be one of the reasons for the low percentage in the female category.

Public transport can save you up to four times the money you use commuting in your private or personal car. Regularly using your car will require maintenance and other additional charges such as parking fees, emission tickets, and speeding fines. By using public transport, you'll be able to save all the money directed to such miscellaneous expenses of using a personal vehicle (Litman, 2015). Generally, regular bus users have more positive attitudes about bus service than non-users and assume fewer barriers to using buses. Regular bus users have more optimistic feelings towards bus service than those who do not use buses. People who never used buses or used them many years

ago have a very pessimistic image of the bus service. This may have happened due to a lack of fundamental knowledge or information regarding available bus services. Therefore, it is necessary to change negative attitudes towards the bus. At the same time, the bus operators should take necessary actions to overcome the barriers to using the bus (Nawaz et al., 2019).

Before the Metro Bus Service, people used motorbikes within the city. They did not depend on conventional buses because of poor services and inconvenience. Also, they cannot afford the high fares of public transport like the Lahore local Daewoo (Javid et al., 2013). Though a car has privacy and comfort, it is not suitable for social interaction, whereas it is possible during a journey by bus. Sometimes, car passengers feel anxious because they find driving a very stressful job. On the other hand, some car drivers are very much attached to their cars emotionally. Some car drivers are very sensitively attached to and dependent on their car and express their strong negative attitude towards public transport.

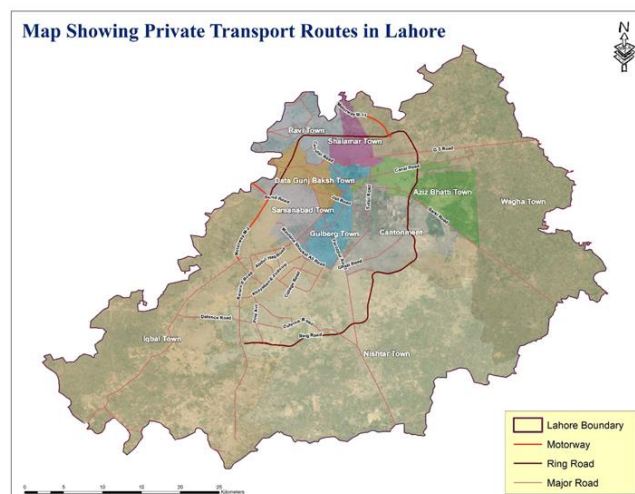


Figure 1. Existing Map Showing Public Transport Route in Lahore

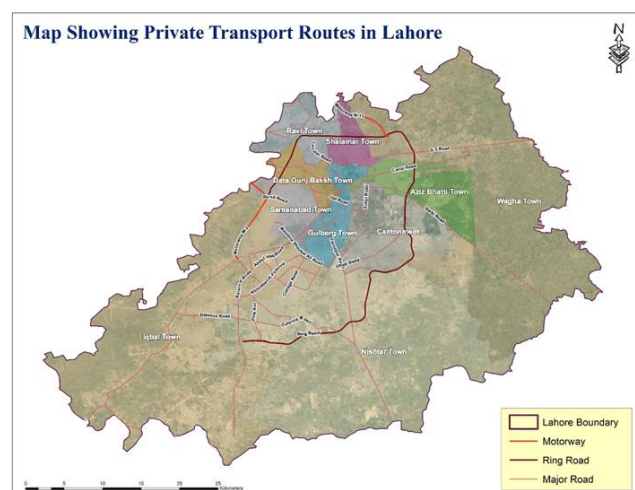


Figure 2. Existing Map Showing private Transport Route in Lahore

The data was collected from the residents and officials of the concerned Case Study Area. The data without analysis is of no Use and Cannot make sense if not presented Visually because the

visual representation develops a clear understanding of the situation. The responses recorded from the Respondents are the following.

Public Transportation and respondents' views at the concerned case study area. Preference for Public Transport over Private Transport

This response helps indicate people's preference for public transport in their respective case study areas. It represents that about 118.25% of respondents want public transport as they consider private transport is considerably expensive.

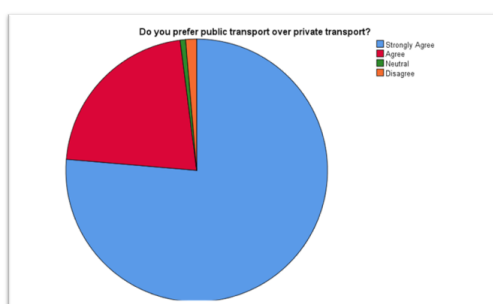


Figure 3. Public Transport Over Private Transport

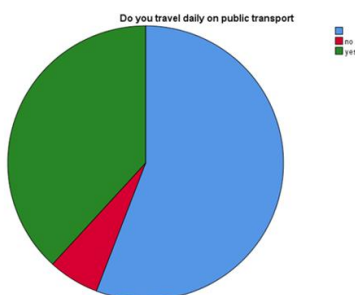


Figure 4. Travel daily on Public Transport

The above response shows that most people travel on public transport 115.28% of respondent travel, while 30% of respondents said that they do not travel on public transport.

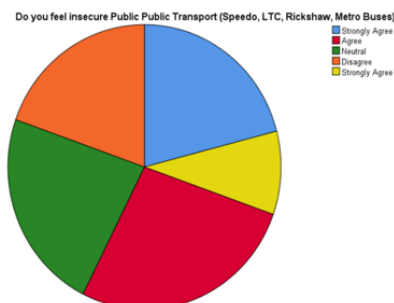


Figure 5. Is public transport safe/Insecure

The above responses show that a maximum of 43% of people considered the public transport terminals unsafe and felt insecure there. About a minimum of 11.2% of people feel that public transport terminals are insecure.

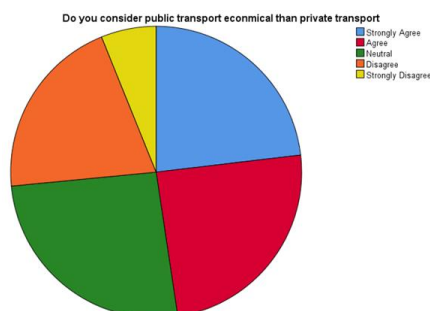


Figure 6. Is public Transport Economical /Not Economical

The graph indicates that 40% of people contemplate that public transport is affordable as it is economical compared to private transport .as the cost to travel on private transport is more significant than public transport.

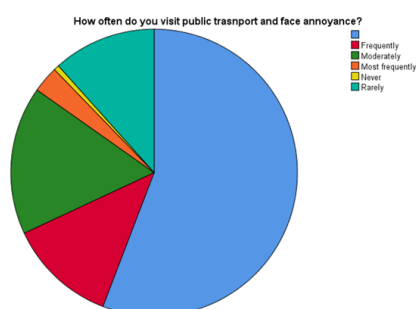


Figure 7. How often do you visit public transport and face annoyance

The above simple bar count shows the response of people about the annoyance they face while visiting public transport. About maximum 57.25% of people and a minimum of 3% of people considered that they face annoyance when visiting public transport.

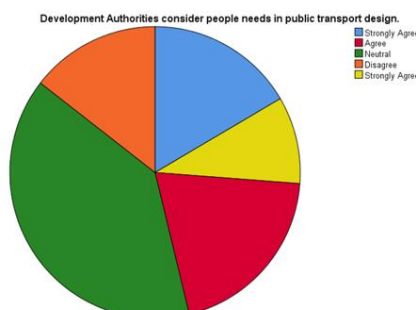


Figure 8. Do development authorities consider people's needs in public transport design

The responses show that 58% of people think that the development authorities should consider people's needs while designing public transport as it becomes user-friendly. And a

minimum of 13% of people consider that authorities incorporate public needs in designing public transport.

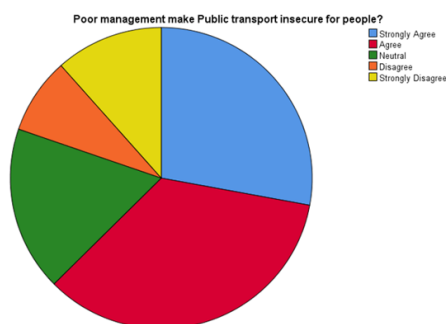


Figure 9. Poor Management Cause Public Transport Insecure for people

The figure shows that 52% of respondents considered public transport insecure due to poor staff and managing authority management. This question helps to indicate the reason for the insecurity of public transport.

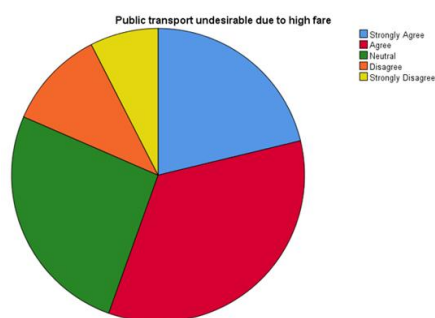


Figure 10. Rent of Public Transportation

The responses show that high fare is why people are not using public transport. A maximum of 50% of people and a minimum of 11.09% of people considered that the fare of public transport is high and therefore it is undesirable for them

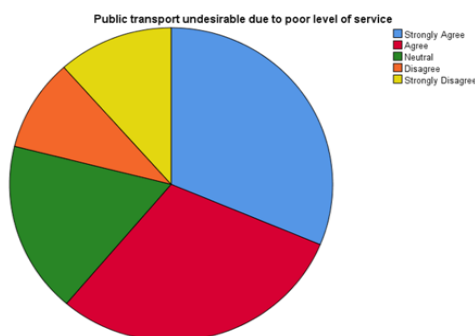


Figure 11. Checking Undesirability of Public Transportation

The graph shows the unitability of people in the context of the level of public transport service. About a maximum of 48% and a minimum of 12% people do not consider that they dislike public transport due to poor level of service.

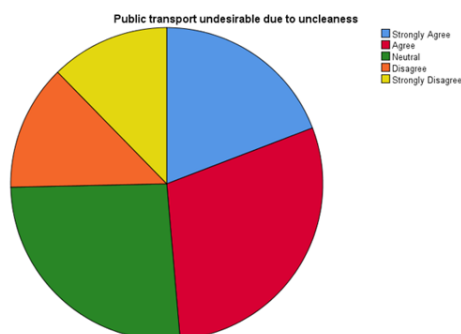


Figure 12. Checking Undesirability of Public Transportation due to uncleanness

The bar count shows that 43 % of people feel that public transport is undesirable due to its dirty environment as it is not clean as private transport.

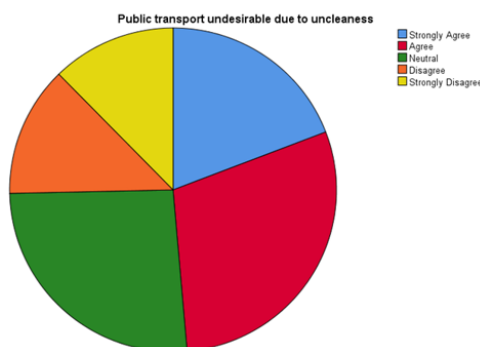


Figure 13. Checking Undesirability of Public Transportation due to Inefficiency

The responses showed that a maximum of 54% and a minimum of 11% of people considered public transport undesirable due to Inefficiency. Lack of innovation and facilities make public transport inefficient compared to private transport.

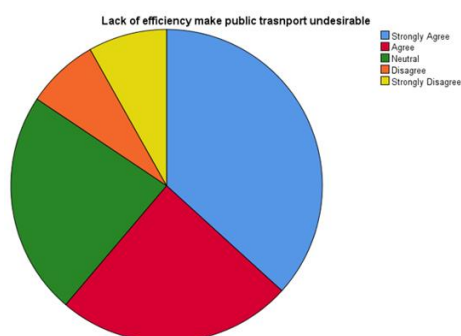


Figure 14. Role of Congestion in the undesirability of Public Transportation

The question indicates the reason for the undesirability of people that do not like public transport. A maximum of 48% and a minimum of 12% of respondents considered that congestion is the reason that they unlike public transport

To assess the value of dependent variables based on the values of independent variables (Multiple linear Regressions).

Research Question: why do people prefer private transport over public transport?

Outcome variable = Dependent variable

Predictor variables = Independent variables

Hypothesis Testing

The table below shows that the value of p is less than 0.05, so the analysis is significant. Furthermore, it indicates that regression analysis is possible for critical evaluation of the dependent variable (preference of private transport over public transport) and its relationship with independent variables (Poor time management makes public transport undesirable, People feel unsafe in public transport, Do you consider public transport economical than private transport, Development Authorities consider people needs in public transport design., Do you feel insecure about Public Transport (Speedo, LTC, Rickshaw, Metro Buses), Public transport undesirable due to uncleanness, Public transport undesirable due to high fare, congestion make public transport undesirable, Public transport undesirable due to poor level of service, Lack of efficiency make public transport undesirable, Poor management makes Public transport insecure for people?).

Table 1. Anova Analysis

Anova					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	46.327	7	6.618	78.530	.000 ^b
Residual	11.714	139	.084		
Total	58.041	146			

Model Summary

Table 2. Model summary for regression analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. The error in the Estimate
1	.893 ^a	.798	.788	.290

R Square: 79.8% of the variance is accounted for the preference for private transport over public transport

Coefficient Box

Table 3. Coefficient box

Correlations							
	Do you prefer public transport over private transport?	Public transport in Lahore is safe	Do you consider public transport more economical than private transport	Poor management makes public transport insecure for people.	Public transport is undesirable due to the poor level of service	Congestion makes public transport undesirable	
Pearson Correlation	Do you prefer public transport over private transport?	1.000	.812	.776	.792	.773	.686

Correlations							
Public transport in Lahore is safe	.812	1.000	.860	.911	.916	.725	
Do you consider public transport more economical than private transport	.776	.860	1.000	.937	.891	.726	
Poor management makes public transport insecure for people.	.792	.911	.937	1.000	.930	.717	
Public transport is undesirable due to the poor level of service	.773	.916	.891	.930	1.000	.764	
Congestion makes public transport undesirable	.686	.725	.726	.717	.764	1.000	
Lack of efficiency makes public transport undesirable	.741	.947	.908	.946	.967	.746	
Public transport is undesirable due to uncleanness	.719	.916	.889	.930	.934	.739	

Regression Equation

$$Y = 0.332 + 0.965X_1 + 0.351X_2 + 0.435X_3 + 0.669X_4 + 0.197X_5$$

Key findings

- 1) The dependent variable, that preference to choose public transport, is most effective by the independent variable, security, and level of services as their significant values are least that is 0.000.
- 2) The second most affected independent variable is cleanliness which has a significant value is 0.002.

- 3) The third most affected independent variable is management and cost, with significant values of 0.003.
- 4) The fourth affected independent variable is congestion which has a significant value is 0.005

CONCLUSION

Although many cities, including Lahore, have adopted transportation policies influenced by the United States model of promoting private vehicles or the European and Japanese model of high-tech rail-based urban Transportation, neither of these models is particularly well suited for the city because, in both cases, society and the environment bear the costs of individual mobility. Both the benefits and the costs are shared by society and the environment. As a result, the only solution acceptable for Lahore city has been locally designed to meet the majority's problems, as the solution should be low-cost, environmentally sustainable, and responsive to the social demands of the local people. However, locally designed development programs, particularly in urban Transportation, raise questions about local institutions' institutional and human resource capacity. In the case of Lahore, international agencies' technical and financial assistance has failed to focus on building the capacity of existing institutions, which could then design local solutions on their own. As a result of this discussion, a more in-depth examination of the role of institutional relationships and capacities in transportation planning among different levels of government and their relationships with global agencies is needed to explain urban transportation decision-making in Pakistan. However, no consideration has been given to 60 percent of the trips made by pedestrians and other non-motorized modes of Transportation. Although urban rail projects are being considered for various cities in Pakistan like Karachi, Islamabad, etc., this is the first effort in Lahore to solve urban transport problems through rail-based technology. However, there are some areas in Lahore where the city is fast expanding. It's unlikely that putting LRT in one corridor will alleviate traffic concerns while also improving environmental sustainability.

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