A REVIEW ON FEASIBILITY STUDY OF PROVIDING CYCLE TRACK IN EAST ZONE AREA OF VADODARA CITY

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Abstract—The "last mile" problem is becoming the increasingly serious problem during the process of development of the public transit. Traditional transit hardly meets the residents' door to door travel demands, which reduce passenger satisfaction with the public transit. Also issues on carbon emission and energy saving have been taken seriously. The central concept to increasing bicycles for short-distance trips in an urban area as an alternative to motorised public transport or private vehicles, thereby reducing traffic congestion, noise, and air pollution. Targeted at low -income groups the prime reasons for subscriptions were savings in time and money spent over other modes of transport. The main obstacle to boosting the bicycle as a regular mode of transport is safety problem due to mix motorized traffic. One option is to separate cyclists from motorists through exclusive bicycle priority lanes. A questionnaire survey will carried out from public what they want features in the bicycle track. Using that data we can design the bicycle track as per IRC-11 (cycle track design and layouts 1962).

Index Terms— bicycle, transport, bicycling, motivation, non motorized modes

I.INTRODUCTION

As an emerging economy, India now faces urban challenges that are more complex than the western world, particularly due to the sheer size of the population and rapid pace of urbanization. Rising incomes have enabled the exploding middle class to aspire for larger homes and private automobile ownership; while the majority (over 70%) is still dependent on walking and cycling. Engineers and planners in Indian cities continue to design around the needs of the automobiles- width of roads, allocation of road space, high speed roadways, flyovers- in the process ignoring the requirements of the urban poor and the surroundings.

First and last mile connectivity is a term used in transportation planning to describe the difficulty people face in reaching their origin and destination from transportation network stops and stations. In India, public transport users generally complete these trips by walking or on Intermediate Public Transport (IPT) modes such as cycle rickshaws, auto rickshaws, and shared auto rickshaws. While substantial efforts have been made to provide and improve sustainable mass transportation in India, the focus on first and last mile connectivity and linking IPT with mass transit into an included system to aid easiness of access for users is lacking. The challenges to effective, reliable and affordable public transportation solutions to address this inadequacy include: poor customer service, fare uncertainty by the informal transport sector (rickshaws, auto rickshaws and private mini buses); lack of NMT infrastructure; and urban design issues related to disconnect between public and private development.

The non-motorized transportation modes such as being realizable for shorter distances only, and lower speeds make them suitable for providing access to any transportation system under congested conditions or to any land use in the locality of our homes. NMT modes are an important and integral element of urban transport worldwide. Non-Motorised Transport includes walking, cycling, small-wheeled transport (skates, skateboards, push scooters and hand carts) and wheelchair travel. These modes provide both recreation (they are an end in themselves) and transportation (they provide access to goods and activities), although users may consider a particular trip to serve both objectives. For example, some people will choose to walk or cycle rather than drive because they enjoy the activity, although it takes longer.

NMT is often a key component of effectively encouraging clean urban transport. It can be a very attractive mode of transport for relatively short distances, which make up the largest share of trips in cities. The key to reversing the tendency towards more personal vehicle use is making walking and cycling good-looking, together with improving public transport. This can be done by a range of activities including construction of sidewalks and bike lanes, bike sharing programmes, urban planning and pedestrian-oriented development. NMT is an extremely money-making transportation strategy and brings about large health, economic and social co-benefits, particularly for the urban poor.

Cycling is amongst the most sustainable modes of mobility, which has zero dependence on fossil fuels and zero emissions unlike the motorized modes of transport, which have huge negative externalities, namely, accidents, congestion, fossil energy use, and environmental degradation. Cycling, in fact, is associated with positive externalities like health improvements, congestion reduction, lessening of air pollution and greenhouse gas (GHG) emissions, and minimizing energy use. In addition to these positive impacts, in the context of a developing country like India, cycling presents the most affordable and efficient means of travel for low-income households who find it difficult to afford most motorized transport options. Cycling enables low-income households to access jobs, markets, schools, and medical facilities in a fast and affordable manner and enhances their socioeconomic growth opportunities.

II.BENEFITS OF BICYCLE
☐ Environmental friendly
☐ Decreasing motorized road traffic
☐ Cheap compared with other mode of transportation

☐ Not emitting green house gases
☐ Significant options for improvements in the health and quality of life of citizens
☐ To help city to built on its image as a "green city"

III. LITERATURE REVIEW

A literature review surveys scholarly articles, books, dissertations, conference proceedings and other resources which are relevant to a particular issue, area of research, or theory and provides context for a dissertation by identifying past research. Many researchers have carried out research work in problems related to the bicycle lane priority, bicyclist safety, promoting non motorised modes, and bicycle friendly roadway infrastructure.

Rajat Rastogi (2011) has been promoting on non not-motorised modes for transportation system, planned and developed for habituated areas. He also presents the key issues and guiding principles of sustainable transportation system, and then discusses on sustainability of non-motorized modes across travel modes and within the modes. For non-motorised modes especially walking and bicycles discussed.

Samyajit Basua and Vinod Vasudevanb (2013) have aims to find the effect of some of the bicycle friendly infrastructures on urban Indian bicycling from the user perspective. A questionnaire survey was conducted in four major Indian cities to collect data for this study. Later ordinal logistic regression model was used to form a public opinion model to rank some bicycle friendly infrastructures and policies based on public opinion using the data collected during the survey. Dedicated bicycle lane was found to be the most preferred bicycle friendly infrastructures based on the public opinion and whereas facility to carry bicycle on public transportation was found to be the least preferred one. The conclusion from this study could be used by various plan makers and stakeholders to advance bicycling in their region.

Sarma sadhu et al. (2014) have presented findings from a survey of 2000 CRT drivers in Delhi in 2011. The paper highlights the contribution of CRT in city goods movement, saving in fuel and emissions and benefits to CRT drivers. If CRTs are replaced by motorised vehicles, CO2 emission from vehicular traffic will increase by over 3% and hydro carbon emissions will increase by over 8% and six to seven hundred thousand people will have to find interchange employment. The findings have a direct impact on various urban freight policies and well fare policies for the poor.

T.M. Rahul and Ashish Verma(2014) have discussed on socio-demographic and regional factors used in the study include purpose, age, gender, educational level, occupational status, and motor vehicle ownership. The major results include a significant difference between the mean trip distances on foot for the subcategories of variables such as gender, whether the respondent owned a private vehicle, and whether the trip was made inside the CBD. One of the major implications of this study pertains to requirement of a separate acceptable distance planning guideline for deciding the location aspect of settlements categorized on the ownership of vehicles.

Ana Barberan and Andres Monzon (2016) have been discussed on bicycle sharing increase in city. They analyzed mobility surveys collected in Vitoria-Gasteiz. Noble differences appeared by trip purpose, with more cycling use for work and study purposes. Nevertheless, the occupation appeared to be correlated to the age, already identified as a key factor. According to the most recent data, the bicycle user and his trip profile is better defined by a young man, riding within a distance of 1 to 2.5 km or even until 5 km journey.

Meghna Verma et al. (2016) have study on investigated the factors that may motivate cycling among non-cyclists for a future scenario. In which they concluded that during childhood, people had a more positive perception about cycling. And also they were study on investigated the factors that may motivate cycling among non-cyclists for a future scenario. The questionnaire comprised of five sections. The first section focused on the demographic variables. The data for the present study is gathered using a face-to-face questionnaire survey on a sample collected using a random sampling method. In which they concluded that during childhood, people had a more positive perception about cycling. And also people were more concerned about the safety because of a lack of separate lanes and signals for bicyclist.

Michael B. Lowry et al. (2016) have been introduces a new method to prioritize bicycle improvement projects based on accessibility to important destination. In this paper they were using mythology in which first they classify bicycling stress using marginal rates of substitution which are commonly developed through empirical behavioral research on bicyclist route choice. The method was programmed as a geographic information system tool and requires commonly available data. The tool is demonstrated on three improvement scenarios that were recently proposed for Seattle, Washington. The full build-out scenario consists projects that include various new bike lanes, protected bike lanes, and multi-use trails. The tool produces priority rankings based on a projects ability to improve low-stress connectivity between homes and important destinations. The analysis identifies specific areas and neighborhoods that can be expected to exhibit better bike ability. Transportation planners can use the tool to help communicate anticipated project impacts to decision-makers and the public.

Saeed Asadi Bagloee et al. (2016) have discussed on bicycle's main obstacles to boosting the bicycle as a mode of transport are safety concerns due to interactions with motorized traffic. One option is to separate cyclists from motorists through exclusive bicycle priority lanes. Their main discussion is to tailor an efficient and practical method to large size urban networks. Hence, they appeals to policy makers in their quest to scientifically convince stakeholder that bicycle is not a secondary mode; rather, it can be greatly accommodated along with other modes even in the heart of the congested cities. The methodology was tested on real size network of city of Winnipeg, Canada, for which the total of 30 road segments – equivalent to 2.77 km bicycle lanes – in the CBD were found.

Ryan Swiersa et al. (2017) have conducted an online cross sectional survey of young adults (18–25 years) studying at an urban United Kingdom university was undertaken. Using convenience sampling participants were surveyed on levels of cycling (e.g. daily, weekly) alongside perceptions, barriers and motivators to cycling activity. The quantitative design there were two free text questions included to generate a small

amount of qualitative data relating to both cycling in general and the survey instrument used. The survey was piloted on 10 LJMU staff and amendments were made based on verbal feedback following this pilot prior to the study commencing. Data was extracted from the online survey into Statistical Product and Service Solutions (SPSS version 20) for analysis. Descriptive analysis were undertaken including distribution, central tendency and dispersion to generate insight into cycling activity along with potential synergies and differences between groups such as regular and non-regular cyclists.

Wei Zhu et al. (2017) have conducted survey through internet and on site questionnaire to know about cycle users' bicycle route preference. The analysis of the measures for improving the bikeway network according to different levels of priority suggests that guaranteeing cycle users road rights is the central issue for promoting bicycle travel in the city. Stated choice experiment enhanced by visualizing the choice scenarios is used to collect cycle users' bicycle route preferences through Internet and on-site questionnaire surveys. A generalized mixed logit model with a new form of utility function, taking into account the interaction between segment-level factors and travel time, is used to fit the choice data.

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