

Stakeholder Perspective on Improving Barriers in Implementation of Public Bicycle Sharing System in Amravati

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Abstract- Efforts to alleviate the risks presented by climate change and peak oil have increasingly depended on several initiatives including the development of low-carbon mobility solutions. Public bicycle sharing programmes (PBSPs), a low carbon alternative that enables point-to-point mobility for short excursions, are garnering international attention as an essential option for communities striving to adopt climate smart urban development. Despite Planners and legislators in many nations strive to boost the share of journeys performed by bike. However, this is frequently problematic. Amravati is growing city we need to adjust this cycle system for diirent resion. In the present study, all the difficulties in PBSS implementation have been identified and grouped into six categories including Social, Institutional, City infrastructure, Travel characteristics, Technological and Geographical barriers for ranking purpose. Further we perform data analytics for discovering understanding of data utilising SPSS programme. And we will strive to figure out the solution how we can do adapt this approach to our Amravati city.

Keywords- Stakeholder Perspective, Improving Barriers ,Public Bicycle Sharing System , Amravati City

I. INTRODUCTION

The concept of Public Bicycle Sharing System (PBSS) was initially introduced in Amsterdam in the year 1965 and since then it is growing rapidly in and around the world within the last decade. By August 2021, there were more than 10 million bikes shared in diverse kinds of schemes. This report comes along with improvements to The Bike-sharing World This PBS System includes self-service public use bicycles and electric assisted bicycles with either the 3rd generation with fixed station or 4th generation with free-floating dock less system

Hierarchical structure of PBSS barriers.

Sources (Patel & Patel, 2020)

Within the span of last ten years, bike-sharing services have been rapidly increasing their penetration in India . India's first public bicycle sharing project launched in Mysuru and adapting many more cities this system rapidly. Interestingly, in India, cycling is a traditional mode of transportation from school-going children to local milk vendors use bicycles for their daily activities or for an occupation. However, with the push towards motorization, the number of bicycles on the road has dropped significantly. The bicycle mode share in India has decreased constantly from 35% in 1980 to 13% in 2016(Tiwari, 2011)

A. Bike-sharing in pandemic times

It's a cliché to mention that the COVID-19 pandemic changed almost every aspect of our lives and caused multiple impacts on our cities' landscapes, economies, and citizens' lives.

Bike-sharing is not an exception. On the one hand, biking appeared as a safe and convenient alternative to other modes of transit, and many countries and regions saw impressive growth in the number of cycling trips. On the other hand, some companies didn't sustain the lockdown impact and suspended services. Also, people reduced their general daily trips, decreasing the number of users of many bike-sharing systems.

B. Objectives of study

1. To study various PBSS barriers in amarawarti city
2. To study Stakeholders perceptionon improving barriers in implementation of public bicycle sharing system
3. To study public bicycle sharing system
4. To propose corresponding strategies to address the challenges encountered in the management of PBSS in Amravati.

II. LITERATURE REVIEW

1.1 Aldred, R., et al. (2019)

In this paper author has discussed about the obstacles to cycling investment, with the goal of better understanding mistakes to ramp up cycling levels. It is based on the qualitative data gathered through an internet questionnaire of over 400 interested parties, as well as seven in-depth interviews. Many respondents indicated that chronic barriers to change, such as an insufficient funding and leadership, continue to stymie progress. Participants shared their perspectives on how challenges emerge over the course of a scheme's life. In authorities that gave little thought to cycling promotion, press and public opponents were not cited as a major matter. However, once formulation and management have officially started, this can happen fast; however, examples of schemes that have successfully proceeded despite this were provided. According to the findings, there is a growing disparity between officials that have resolve key challenges or those who have not.

1.2 Fishman, E., et al. (2012)

In this paper, author states that the goal of this study was to investigate the barriers and enablers to just using CityCycle, a bike sharing start sharing arrangement in Brisbane, Australia. Participants were divided into three groups for focus groups. Group one comprised of infrequent and non-cyclists (no bicycle riding in the previous month), group two of regular bicycle riders (riding a bicycle at least one full month), and group three of CityCycle members. The data were analysed using a thematic analytic method.

1.3 Godavarthy, R. P., & Rahim Taleqani, A. (2017)

This paper aims to collect more resources and insight about winter bike sharing in the United States, such as users' desire to use bike share programmes in harsh winters, as well as operators' strategies, challenges, and best practises for providing bike - share operational processes without disruptions in cold U.S. cities. Great Rides Bike sharing subscribers in Fargo, North Dakota, had been polled in October 2015 to determine their eagerness to use bike share programme in the winter and the variables impacting their ridership.

1.4 Mateo-Babiano, I. (2017)

This paper states that usually requires of bikes haring schemes, as well as the factors that have facilitated or hampered the emergence and assimilation of PBSPs as a low-

carbon mobility option in the Asian context. While recognising the bit of difficulty in preparing for a low-carbon society, having to build the evidence base is even more important. Such an project aims to contribute to the scant information and analytics available to direct seeded low-carbon planning and policy, particularly in the context of active transportation in Asia.

1.5 Meddin, R., & DeMaio, P. J. (2020)

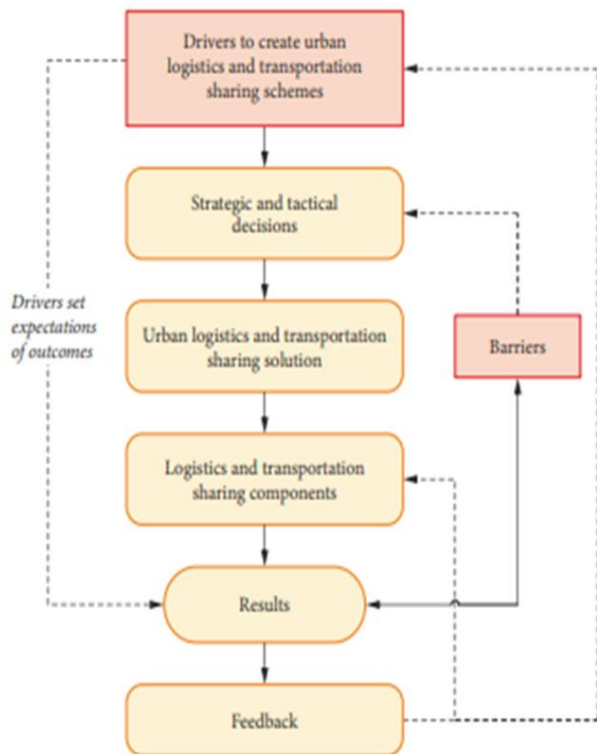
This paper states that bike-sharing has been an improve attitudes for metropolitan areas and populations, increasing mobility and access to benefits and opportunities while also going to contribute toward a more financially viable urban environment. At the time of writing, many cities appear to be moving on from the COVID-19 pandemic, resuming operations and implementing changes managed to learn from this extreme global event. Bike-sharing programmes survived the pandemic and proved to really be resilient and adaptable enough to spark more profound changes with how we move around and interact with our cities. By August 2021, more than 10 million bikes would have been shared through various schemes.

III. METHODOLOGY WORK STUDY

The bicycle sharing services operated by service providers are of 3rd or 4th generation technology which enables customers to plan their route in a better way and find the nearby stations for pick up or drop off the bicycles (Sindhu and Athira, 2017). The decision makers of cities in India are now focusing to implement PBSS. However, the success of the system mainly depends upon various factors such as social factors, travel pattern, administration, infrastructure, environment of locality etc. If this factors are not dealt properly then at later stage it could be act as barriers Hence, Article published by Patel and Patel, (2019a) demonstrated methodology with the help of FAHP to rank the barriers using 12 experts from four working domain i.e. Academic, Consultant, Scientist and service provider. In that study the perspective of the different stockholders was not addressed. The view points of the stakeholders will matter a lot to deal the right barrier at right time which are affecting to the PBSS. The present study is the extension of the work carried by Patel and Patel (2019).

In the present study, our main focus on amarawati city, we will select the experts belonging to different groups were consulted for pair wise questioner survey to prioritize the barriers. We will focus on academicians, freelance consultants, scientists and researchers,, operator of PBS system,, decision makers from a government organization The

domain experts who have exposure to urban transport studies, social perception, institutional vision, and other parameter concerning implementation and use of NMV are invited to opine on PBSS barriers. The distinct but productive opinion was received and the agreement between experts was also checked with the help of Kendall's coefficient of concordance and it was found that the expert's opinion is having a strong agreement among each other. The opinion from each group of experts is compared with each other with respect to each barriers by segregating barriers in to controlled and uncontrolled barriers.



V. RESULT AND DISCUSSION

An questionnaire survey was administered to evaluate the interest of various stakeholders, representing the public, private and non-government entities, on bike sharing in Amravati. We also examined the barriers and facilitators to PBSP implementation to be able to inform and guide the way forward for PBSP research and potential projects in developing Amravati.

Sample size
 Amravati Population 2022 =778,087
 Confidence Level: 95%
 Margin of Error:5
 Sample Size: 384

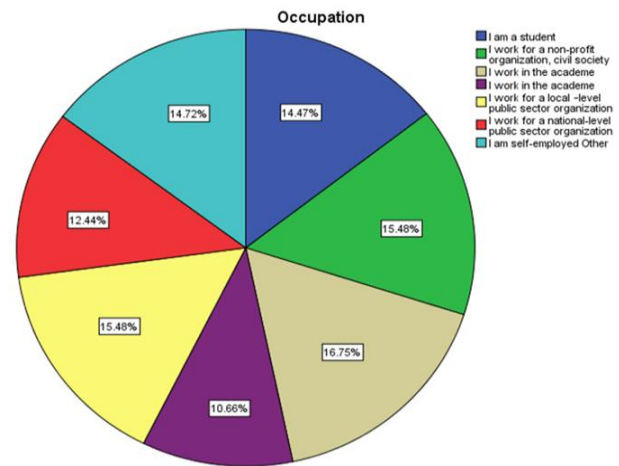


Fig No. 1

INTERPRETATION

We have taken the survey of Occupation wise. In this study of the Occupation group there were 394 respondents from the above Occupation group, the maximum respondents I work in the academe there were (66 cases 16.8 %). As well as I work for a non-profit organization, civil society and I work for a local –level public sector organization group respondents are (61 cases 15.5%). Also in this group I am self-employed Other respondents are (58 cases,14.7 %) and I am a student respondents are (57 cases,14.5 %). whereas in this Occupation group the minimum respondent is I work in the academe (42 cases 10.7 %).

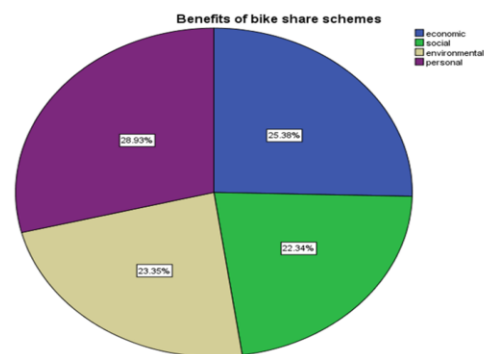


Fig No. 2

INTERPRETATION

We have taken the survey of Benefits of bike share schemes wise in this study of the Benefits of bike share schemes group there are 394 respondents is there from above Benefits of bike share schemes group the maximum respondent personal there are (114 cases 28.9 %). As well as economic respondents are (100 cases25.4%), environmental respondents are (92 cases,23.4 %). whereas in this group minimum respondent Primary social (88 cases,22.3%)

Facilitators of PBSP					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Presence of a well-connected cycling infrastructure	29	7.4	7.4	7.4
	Improve the physical design	26	6.6	6.6	14.0
	User-friendly bays/stations	23	5.8	5.8	19.8
	proximity to Other PT stops	24	6.1	6.1	25.9
	proximity to employment & population density	26	6.6	6.6	32.5
	Ease in membership (registration)	31	7.9	7.9	40.4
	Integrated ticketing	22	5.6	5.6	45.9
	30 minutes of PBSP use for free	27	6.9	6.9	52.8
	partnership with operators, PT, integrated	26	6.6	6.6	59.4
	mobility management scheme	22	5.6	5.6	65.0
	climate for NMTs	22	5.6	5.6	70.6
	Strong political will to implement scheme	29	7.4	7.4	77.9
	Strong behavior change program	32	8.1	8.1	86.0
	Extensive information dissemination & promotion	31	7.9	7.9	93.9
	policies to discourage private car use	24	6.1	6.1	100.0
	Total	394	100.0	100.0	

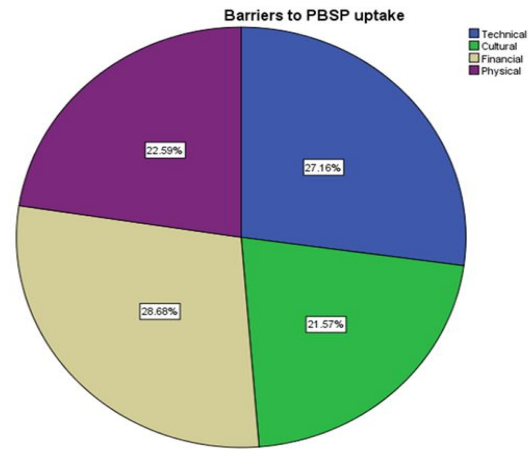


Fig No. 3

INTERPRETATION

We have taken the survey of Facilitators of PBSP wise. In this study of the Facilitators of PBSP group there were 394 respondents from the above Facilitators of PBSP group, the maximum respondent's Strong behavior change program there were (32 cases 8.1 %). As well as Extensive information dissemination & promotion respondents are (31 cases 7.9%). Also in this group Strong political will to implement scheme, Presence of a well-connected cycling infrastructure respondents are (29 cases,7.4 %) And 30 minutes of PBSP use for free respondents are (27 cases,6.9 %). And Improve the physical design, proximity to employment & population density, partnership with operators, PT, integrated respondents are (26 cases 6.6%). And proximity to Other PT stops respondents are (24 cases 6.1%). whereas in this Facilitators of PBSP group the minimum respondent is Integrated ticketing, mobility management scheme, climate for NMTs, (22 cases 5.6 %).

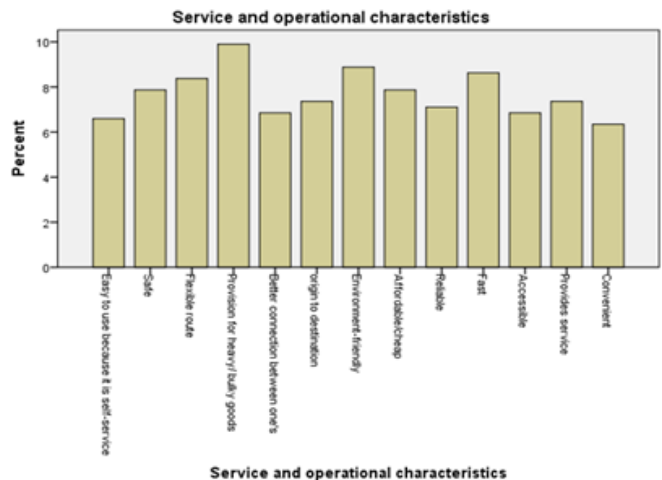


Fig No 4-Service and operational charecteristics

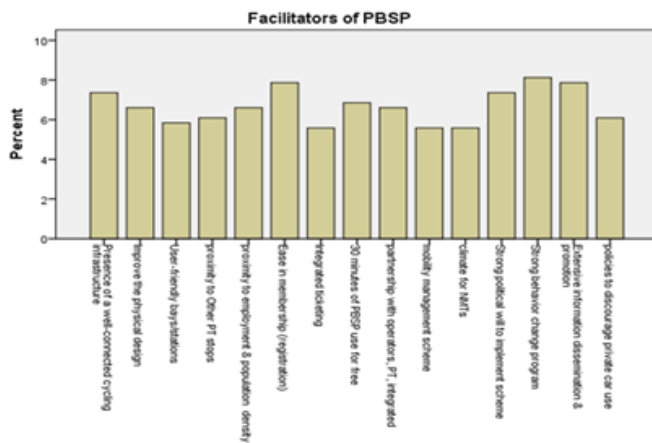


Fig No. 5-Facilitators of PBSP

VI. CONCLUSION

This study explored why bicycle sharing schemes has had limited uptake in the Amarawati city

Drawing upon the theoretical and empirical analysis that this study has undertaken, results show that there is overwhelming agreement amongst stakeholders of the benefits and values of bicycle sharing schemes.

Results further show that multiple forces are at play when examining barriers that constrain its adoption as well as facilitators to its implementation.

In fact, survey respondents agreed strongly to the presence of numerous technical, financial, regulatory and physical barriers which can deter bikeshare implementation in Amarawati cities.

Some respondents overwhelmingly pointed out to the “lack of awareness” on bikeshare’s positive effect to the community, health and environmental benefits, the potential of bikeshare as a transport alternative, and on understanding about the scheme, bicycle infrastructure and policies as key barriers to its implementation.

In a way, this research exercise successfully initiated discussions about PBSP schemes towards improving sustainable innovation policy processes while also, it can facilitate the involvement of various stakeholders early on in the planning process, which may help build support for the scheme.

Respondents were in agreement that the presence of a well-connected cycling infrastructure, proximity to both formal and informal public transportation and proximity to

employment and residential destinations are key facilitators to bike sharing.

In implementing a PBSP in Amravati, there will then need to be metrics available to assess whether the PBSP is succeeding in reaching these goals.

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