



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 8, August 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.569

9940 572 462

6381 907 438

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A Stakeholder Perspective on Improving Barriers in Implementation of Public Bicycle Sharing System (PBSS) in Amravati

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ABSTRACT:

A STAKEHOLDER PERSPECTIVE ON IMPROVING BARRIERS IN IMPLEMENTATION OF PUBLIC BICYCLE SHARING SYSTEM (PBSS) IN AMRAVATI

The use of public bicycle sharing system (PBSS) is increasing very vast in India and other developing countries. The first PBS system was adopted in the year 1965 in Amsterdam. The modification of the generation of PBSS takes place, now we are upto fifth generation. The main moto to implement PBSS is to reduce the CO2 consumption, traffic density, and to look forward positive health benefits. For short trips upto three miles the PBS system is comfortable. The rises of the fuels prices is increasing day by day, therefore not affordtable by the low-income group citizen. And to introduced Non-Motorized Transport(NMT) to citizen and to support the cycling and reduce short trip cost. For implementation of PBSS system in Amravati the small questionair based survey is performed using google forms. 40 Stakeholder from different fields gives their reviews on implementation of PBSS in Amravati. By performing survey this paper identified 24 barriers which divides into six main barriers. The Analytical Hierarchical Process (AHP) and Fuzzy Analytical Hierarchical Process (FAHP) is applied to examine the barriers. The barriers are short-listed and ranked them using AHP and FAHP according to Indian scenario. The main contribution of this paper is to identify barriers before implementation of PBSS in Amravati.

KEYWORDS:BARRIERS, PBSS, AHP

I. INTRODUCTION

Most of the Asian cities are facing several socio-economic problems related to transport such as traffic congestion, airpollution, GH Gemissions, traffic accidents and fatalities, noisepollution among others. It is estimated that road congestion alone cost Asian countries 2-5% of their GDP annually due to countless hours of delay, loss of economic opportunities and the waste of billions of gallons of fuel and higher transport cost.



Fig.No 1: Public Bicycle Sharing System Dockless



Fig.No 2: Rises in the used of PBSS

According to WHO, an average of 15 million people are injured in urban road accidents in developing countries each year and the majority of victims are poor pedestrians and bicyclists. The Public Bicycle Sharing System (PBSS) is firstly introduced in Amsterdam in year 1965.

The most important moto to implement the PBS system is to look forward the health benefits, because in busy schedule peoples don't have time to exercise.

II. RELATED WORK

User perspective on improving barriers in implementation of PBSS in Amravati. By doing small survey using google forms create, the perspective of stakeholder is collected, stakeholder in Amravati from different area and from different fields gives their responses. There were 13 questions in the google form and send to the 40 stakeholder and results are here.

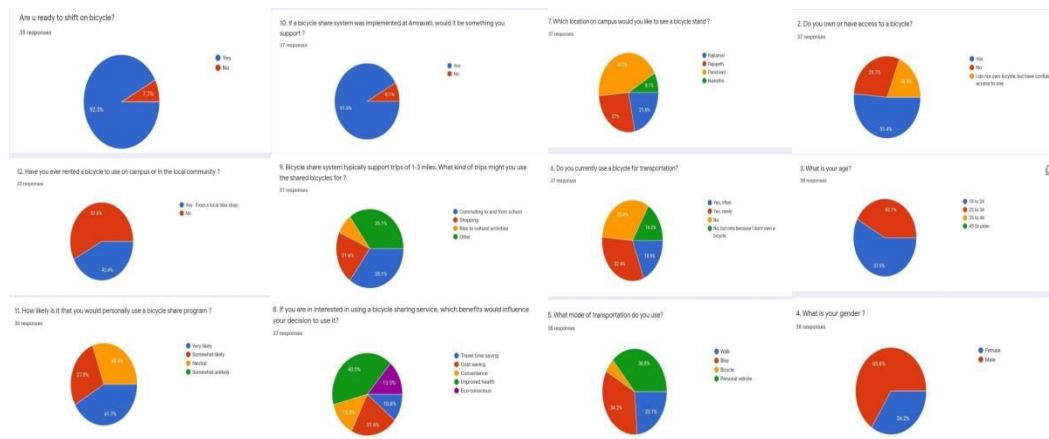


Fig.No 3: Results of responses

III. METHODOLOGY

The Analytic Hierarchy Process (AHP) is a method for organizing and analyzing complex decisions, using math and psychology. It was developed by Thomas L. Saaty in the 1970s and has been refined since then. It contains three parts: the ultimate goal or problem you're trying to solve, all of the possible solutions, called alternatives, and the criteria you will judge the alternatives on. AHP provides a rational framework for a needed decision by quantifying its criteria and alternative options, and for relating those elements to the overall goal.

Stakeholders compare the importance of criteria, two at a time, through pair-wise comparisons. Example, do you care about job benefits or having a short commute more, and by how much more? AHP converts these evaluations into numbers, which can be compared to all of the possible criteria. This quantifying capability distinguishes the AHP from other decision making techniques.

IV. EXPERIMENTAL RESULTS

By doing small survey using google forms we identified 24 barriers in Amravati for implementation of public bicycle sharing system (PBSS). From various fields we took the responses of different stakeholders from different fields.

A) Social Barriers (SB)

1. Negative Perception towards cycling (SB1)
2. Habit of Private mode travel (SB2)
3. Wealthy Social Status of citizen (SB3)
4. Poor Tech – savvy level of citizen (SB4)
5. Lack of Awareness to adopt NMT (SB5)
6. Unsuitable Dressing Culture (SB6)

B) Institutional and Governance Barriers (IB)

7. Lack of priority and vision for development (IB1)

8. Lack of Marketing strategy to promote NMT (IB2)
9. Lack of Financial Resources for Operating NMT (IB3)

C) City Infrastructure Barriers (CIB)

10. Unavailability of space for exclusive bicycle lane (CIB1)
11. Poor Physical Condition of road (CIB2)
12. Poor intersection management (CIB3)
13. Absence of Hierarchical road network (CIB4)
14. Lack of continuity of bicycle lane (CIB5)
15. Congested street (CIB6)

D) Travel Characteristics Barriers (TCB)

16. Longer Trip Length (TCB1)
17. Multi destination trips (TCB2)
18. A Trip with more than one person or with cargo (TCB3)
19. Lack of last and first mile connectivity with PT (TCB4)

E) Technological Barriers (TB)

20. Lack of IT infrastructure (TB1)
21. No CCTV surveillance (TB2)

F) Geographical Barrier (GB)

22. Steep Terrain (GB1)
23. Unfavourable climatic conditions (GB2)
24. High level of pollution (GB3)

V. CONCLUSION

The barriers are identified before the implementation of the public bicycle sharing system (PBSS) and the various reviews is taken from the stakeholders. The introduction of AHP is given. In the present study, 24 barriers in PBSS implementation have been identified and classified into six categories namely Social, Institutional, City infrastructure, Travel characteristics, Technological and Geographical barriers for ranking purpose. Further to remove the vagueness in ranking, Analytical Hierarchy Process (AHP) has been used to rank the barriers.

REFERENCES

- [1] Coelho, L.M.G. 'Multi-criteria decision making to support waste management: A critical review of current practices and methods'. doi:10.1177/0734242X16664024. Vol.10, April, 2017.
- [2] Chen., Service Evaluation of Public Bicycle Scheme from a User Perspective. Transport. Res. Rec.: J. Transport. Res. Board 2634, 28–34. <https://doi.org/10.3141/2634-04>. Vol. 11, July, 2017.
- [3] Curto, A. Private and public modes of bicycle commuting: a perspective on attitude and perception. Eur. J. Pub. Health 26(4), 717–723. <https://doi.org/10.1093/eurpub/ckv235>. Vol. 12, June, 2016.
- [4] Darko, A., 'Review of application of analytical hierarchy process (AHP) in construction'. Int. J. Constr. Manage. Taylor & Francis 3599, 1–17. <https://doi.org/10.1080/15623599.2018.1452098>. Vol. 10, August, 2018.
- [5] Patel, S., Patel, C. Prioritising barriers for successful implementation of public bicycle-sharing system. Proc. Inst. Civil Eng. – Municipal Eng., doi: <https://doi.org/10.1680/jmuen.18.00068>. Vol. 12, March 2019.
- [6] De Sousa, A.A., Sanches, S.P., Ferreira, M.A.G., 2014. Perception of barriers for the use of bicycles. Proc. – Soc. Behav. Sci. Elsevier B.V. 160(Cit), 304–313. <https://doi.org/10.1016/j.sbspro.2014.12.142>. Vol. 10, January, 2019



- [7] UNCRD, Mobility and NMT in Sustainable Urban Development – Role of City Eleventh Regional EST Forum in Asia Mongolia 2-5 October 2018 Background Paper on Mobility and NMT in Sustainable Urban Transport Development Role of City Developers, 2018
- [8] Litman, Todd. Transportation and Public Health. *Annu. Rev. Public Health* 34(1), 217–233. <https://doi.org/10.1146/annurev-publhealth-031912-114502>. Vol. 11, March, 2016



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