Abstract:

In developing countries like India urbanization and motorization trends are on the increase, mass transit systems like commuter rails and bus transportation are largely unavoidable. An integrated transportation strategy is most needed so that these modes of transport are integrated efficiently to facilitate the sustainable transportation. Integrative approach is needed so that these modes of transport work together efficiently to facilitate the sustainable transportation by supporting the system of conveying people & goods which has ability to bear the traffic volume for long time both quantitatively & qualitatively. The concept of land use transport integration is based on the nature of interaction between spatial and transport development. While allocation of land uses impact demand for travel as people need to access different activities, transport infrastructure adds to the attractiveness of a location by improving accessibility and leads to change in land values. With improved accessibility, the locations become attractive for investments and it results in further development of these locations. This research provides an understanding of the concept of integration with regards to land use and transport. It endeavors to provide strategies for facilitating adoption of integrated land use transport decisions by Indian cities. Studies have confirmed that economic and demographic factors influence travel demand and suggest that these aspects are important in transportation systems planning, design and operation. Information related to user demographics, behavior and attitudes toward the existing systems can be instrumental in guiding future systems. The transportation behavior also assists in forecasting future travel demand, evaluating the effectiveness of policies, predicting the response to new technologies or services, and anticipating possible unintended consequences. Studies also show that an individual’s travel behavior, attitudes, and personality are influenced by their socio-demographic characteristics. This study examines how architectural and planning aspects and socio-demographic characteristics influence the use of the system in order to develop strategies for development of sustainable transportation. The land use changes and its impact on transportation examined in selected study area extending from core to fringe area of the city. In order to evaluate user’s travel behavior, attitude, perceptions and demographic characteristics on mass transport usage which were empirical explored in city of Pune. This research hypothesized that improper integration of land
use and transportation system is the cause of un-sustainability of current transportation system in Pune.

It further hypothesizes that people’s perceptions and needs and individual attributes such as socio-demographic variables may influence usage, and if identified and better understood, can provide necessary information to create sustainable transport systems. The findings of this research aim to develop appropriate strategies for sustainable transportation between core and fringe in context of Pune as a case.

Pune is Oxford of Asia facilities various educational institutes which further result in availability skill man power. But in the all phases of development plan the transport system at city level as well fringe area were totally neglected due to various reasons. The growth of the city directly affects on the transportation & land use pattern which result into the urban sprawl into the fringe areas of the city. Considering the need to ccompare and evaluate the appropriate solutions for, safe, feasible, economical mass transit system and relation of land use planning for the region this research is aimed to analyze changes in land use and examine how these changes are affecting travel patterns and sustainability. This involves exploring the complex relationships between the urban sprawl and travel behavior in Indian cities with a case study of Pune. This research thesis is an empirical investigation of how changing patterns of urban growth are affecting the transportation sustainability of Pune. In this work the land use pattern and transportation system is analysed in order to evaluate the degree to which the current transportation system accomplishes objectives of sustainable transportation.

The pattern of land use change and its effect on transportation system examined. Study conducted to define urban sustainability in relation to the transportation between core and fringe areas from user’s point of view based on grounded theory approach.

Literature review is done to understand the research gap in varied related topics to understand relevant concepts and theories that confirm the need for research in this field. Literature survey indicated need for further empirical investigations with reference to land use changes and its impact on transportation system and stakeholder’s perception in the present context. This research includes various methods informed from transportation research, architecture and planning social
science paradigms. Naturalistic observation, visual survey, photographic survey and structured interviews conducted to examine usage pattern and issues associated with transportation system in place. Land use survey analysis indicated the pattern of land use changes in study area. It is followed by focused group discussions as a part of grounded theory Hypotheses emerged through grounded theory methodology were further explored with questionnaire survey for the larger sample of 566 residents in fringe areas of Pune. The sample was random comprised of -- residents which represented people with various demographic factors such as gender, income, education and age.

The findings reveal that the area under study has gone through substantial land use changes in past two decades because of changes in population as well as in employment structure. These changes occurred due to the fact that some of these zones under study became more accessible and therefore people, business firms, industrialists started to relocate to take advantage of the new facility, even anticipating these changes. This phenomenon is largely ignored in transportation planning by and large. The current land use planning, the future transportation system is also assumed to be fixed, while analysis in this work indicated that the increase in population or activity in zones might require further facility enhancement. As such aspects are not considered in the assumed transportation network which is being used for land use projection it has been resulted in imbalances between transportation and land use. The disjointed planning framework not only created various problems like traffic congestion, overloaded networks but also resulted in under-utilized facilities. As per location theory and urban form theory people in different income classes compete for residential land, and considering a mono centric employment city, locate in concentric rings as densities decline going away from the employment center. Locators are trading longer commutes and higher transportation costs for added space and amenities.

Based on focused group discussion five major determinants of sustainable transportation emerged viz. service quality, financial aspects, safety, availability of amenities and environmental impacts. Statistical analysis indicated a significant association between level of education and people’s perception about overall traffic system. The results exhibit a strong association between travel time and traffic congestion as more traffic congestion means more time to reach destination and
difficulty in reaching on time. Chi square statistics indicate strong association between timely reaching to destination indicated association between cost of travel and time involved in travel. This calls for increasing number of routes as well as frequency of the service. This phenomenon stresses the need of mass transit system which is not only efficient in terms of service frequency and quality but also needs to be cost effective. Significant correlation between level of pollution and perception observed.

To address this issue the use of transportation system that generates less emission becomes imperative. Provision of mass transit system can be another effective measure as it will reduce number of motorized vehicles on the roads which cause large scale air and noise pollution. Safety of passengers is one of the major concerns which affect people’s perception about transportation system. The effect of safety concerns that users have during every day travel from their homes to the desalinations like work places, education, shopping and entertainment is statistically examined. Very strong association between people’s perception regarding transportation and safety aspects found. This factor is of prime importance for female users while safety from traffic is associated with both the gender.

This research identified that there has been an over-emphasis upon the technological, environmental aspects, at the expense of social considerations, especially user’s attitudes and aspirations creating a dissonance between the sustainability agendas to the detriment of achieving integration between transport and land use. It has been established that the attitudes, perceptions and behaviors of people towards sustainable transport are key to the development of a future ‘sustainable transport system’. This research provided an understanding of the current attitudes and behaviors of people, but it is concluded that further research is needed to gain a deeper understanding of why they hold these attitudes and perform these behaviors. This research with the consideration of attitude and behavior theory in the context of the users has provided an important conceptual understanding of sustainable transport. It can be concluded that this research developed conceptual framework and methodology based on a deeper understanding of the attitudes, perceptions and behaviors of the users people can prove instrumental in establishing sustainable planning strategies for an integrated land use and transportation in future.