A NEW VISION FOR URBAN TRANSPORT IN MISURATA

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Abstract

The problem of traffic and transportation has led to frustration, loss of time, fuel and waste of effort in organizing and controlling traffic. This wasted time is as a result of slow movement with increasing delays and has led to difficulties with respect to punctuality and interviews. Also, it has extended the energy and effort and increase in the proportion of air pollution and deterioration of behavior, as well. The problem of congestion during peak hours is due to the high population density and increased transportation and the growing demand for use in its various forms. In addition, this can be seen in light of the survival networks of roads and bridges intact without any development or change to accommodate changes as a result of this increase. The researcher in this study examined the factors and variables affecting the urban transport such as land uses in the urban area, urban development and urban sprawl horizontal and increase in the density of urban areas, as well as the study of the elements of assessing the efficiency of urban transport system and the basic principles of urban transport in Misurata.

Keywords: Urban transport, transportation system, sustainable transport

Introduction

Generally, the conception of any system is composed of a set of parts and elements correlated to achieve a mutual goal. Transport systems are means of transportation whether inland, air or marine, used either in urban areas or rural areas. Transport systems are part of the infrastructure and main architectural and economic utilities in urban areas. Transport system is a significant part as water, electrical and sewage networks and other components of urban system. Transport system is composed of five basic components which are: the road, the vehicle, driving power, stations/stops and operation control systems. Therefore, the figure below shows the way these components interact to produce the desired service.

Factors & Variants Affecting Urban Transport

The studies which is related to urban transport and traffic planning reveals that there are many urban factors that may affect the transport sector and traffic trips generation, such as land uses in urban area, physical development which is represented by the horizontal architectural expansion or over crowdedness in some areas or cities due to vertical growth in construction. However, some of them resulted from various traffic (internal or external), and the connection of all these to urban road network, its patterns, the maximum absorbing capacity, and its effectiveness in meeting the existing traffic needs, or the effectiveness of the parking lots within urban areas especially within the central places. All these have been discussed in this study. Thus, these factors is associated with significant variants which have a great impact by which these factors creates the daily traffic trips

First: Population Growth

The function of population is a significant variant in statistical analysis of transit and traffic. It is one of the factors that affect the total daily trips, as population is the most dynamic variant to any other one. There is a direct relationship between the number of population and the population density in urban areas on one part, and the number of daily traffic within a given area, on the other part. Urban transit studies underline that there are strong connections between the increase in family members and the rise in the number of the trips, as it is revealed that the rate of daily trips of the commuters rises with the increase in the number of family members with an amount of 0-8 daily trips for each additional person. Also, the studies underline that the more trips, the more the number of employees in the family.

Second: family's monthly income average

Social and economic characteristics of population correlate generally with traffic. Most planning studies in connection to transport show that there a direct relationship between families monthly average income and the number of daily trips people do. That is, the rise of family income leads to an increase in their purchasing capacity, and in addition to their living standard which results in creating bigger number of trips to meet the family's needs.

Third: vehicles ownership

Currently, there is a great increase in using private vehicles, to the extent that road networks in the most cities has failed to accommodate all these numbers of cars. Owning a private car is one of the factors that affect the generation of daily traffic trips, which leads to traffic tie-ups on urban

roads thereby resulting to more accidents. The percentage of people who owns a car is noticeably high worldwide. According to statistics conducted in Iraq in 1970, it was 5 cars for every 1000 person, this percentage reached up to 82 cars for every 1000 person in 1995. In Baghdad, it counts up to 35 cars for every 1000 person in 1980; in Cairo, it was 25 cars for every 1000 person in that same year. However, these factors are used as indicators in estimating the future demand on transport within the cities.

Factors for evaluating the effectiveness of urban transport in Misurata

1. The percentage of population within the area of transport service (stations)

Accordingly, the percentage of population within 5-10 foot-walking space to each bus-stop was calculated.

2. The citizen's contentment in transport

This refers to the degree of contentedness and satisfaction which is associated with the effort required to access, and the time needed to get to the bus-stops. The data is classified on the basis of the beneficiaries against others, and their percentage out of the total number of those who answered the questionnaire.

3. Time to access

It is an important factor, thus the locations of the transit lines end should be clearly specified; then, courses to different housing areas; after that, a specific line is picked up for field study, then, the time taken for each line is calculated by means of public and private transport at different time of the day, week and year in order to measure the fluctuation of traffic.

If it requires more than a means of transport, this should be taken into consideration (for example: private means of transport requires counting the time needed to move from the parking spots to the final destination of the trip).

4. Crowdedness

Crowdedness is to be measured by comparing the time that the trip takes during the trip at different times. The delay that occurs is to be calculated per minutes from the beginning of the traffic jam up to the end of it.

5. Type of road surface

The road is a very important element in transportation. Majorly, the surface of the road is not paved in the same way as other aspects of the city for different reasons.

6. Citizen's contentment to transport means

This criterion stands on the following factors:

- To what degree the means of transport is overcrowded.

- The temperature, humidity, level of noise and the degree of cleanliness inside the vehicle.
- How many times the vehicle stops.
- The compulsory subjection to different weather conditions.

Polls from houses or inside the means of transport are relied on so as to measure this criterion.

7. Percentage of traffic accidents

The statistics of police and traffic administration is counted in here. This statistics may appear less than what actually occurred concerning the unreported pedestrian accident and mild injuries, and housing areas are compared accordingly, taking into account that police statistics is most likely based on the victim's address and not where the accident occurred. Besides, the details police records mentioned are variable between the administrative units.

8. Number of transport means- connected crimes

Crimes such as pick pocketing, theft and assaults take place during the trips of the vehicle, or it stops, especially; in the case of overcrowded or rarity of commuters. This information is obtained from police records, and these areas are compared on the basis of crime percentage to population.

9. Trip cost

The cost is divided into direct cost, incurred by the commuter, and indirect one. Others include material cost and non-material such as air pollution. Material cost is to be calculated for each space unit, and according to the type of transport means, housing areas are compared in accordance with the line that connect them with the downtown and with other areas of the city, and their costs.

10. Level of noise

It means the noise that disrupts the non-commuters. It is normally measured by special measuring devices or by means of a questionnaire. It is measured during certain times and locations specified in advance, thus the percentages are to be compared between different housing areas. The measurement should be taken in entertainment sites, outdoors, offices, hotels (near highways, particularly), near hospitals and schools.

Conducting a survey on noise by means of a questionnaire is not objective when measuring the levels of absolute noise inhabitants suffer from or exposed to, but it is acceptable if the goal is to identify the areas exposed to noise.

11. Air pollution due to transport means

This is to be measured periodically along the heavy traffic roads. By specifying the pollution percentage in the studied locations as samples, areas of high-level concentrations that affect human life and health are identified.

The best measurement is to discover the number of individuals who are exposed to concentrations beyond the permissible limits.

12. Effectiveness of transport services

It is the outcome result of previous evaluation elements, which is carried out by means of field surveying to investigate opinions of the population, whether in the transport means or in their houses and should be done periodically (at least every year).

Major principles of sustainable transport

First - accessibility:

The access of people, places, goods and services is a key in terms of welfare, socially and economically. Transport is the major means in order to achieve this goal. Accessibility should be cheaper, that is; by improving the opportunities, people may seize to communicate and commute, when variable options are offered to them to fulfill their need.

Second - social Justice:

Transport system is a significant element of the national economy, which directly contributes in building society and improving the quality of life. Therefore, countries should provide the transport systems to achieve social justice and fairness between people and territories, offering the basic prerequisites for transport in order to meet the needs of all population, in all their social classes which include the poor, urban and rural areas.

Third - integral planning of Transport:

Decision makers of transport planning are responsible for putting forward the integral and sustainable systems and solutions, and there is no mere partial of provisional ones, by taking the following steps:

1. To guarantee the coordination between all bodies which include private, pubic and stakeholders in planning, executing and operating transport systems. Hence, their decisions should bear in mind the environment, health, energy and land usages in urban areas.
2. Their decision related to transport should be open and universal, the mass have to be acquainted to all options of transport and the resulting impacts, encouraging them to join in the decision making process in order to ensure that the different needs of society are addressed (for instance to conduct personal interviews in the rural and urban areas, with cyclists, … etc.).
3. The future forecasts of the social and environmental impacts expected to take place due the use of transport means, and to prepare the decisions necessary to such impacts, instead of encountering them after they have actually occurred. This may lead to more costs,

because the decisions relevant to transport are majorly massive, with a long-term cost in basic infrastructure.

4. International, local, social, economical and environmental effects arising out of the decisions linked to the planning process of transport should be considered, according to the level and ends of such planning process.
5. Growth should be concentrated, and urban overflowing should be confined, and more homogeneous distribution should be applied for land use in urban areas, leading to reduction in the demand on private transport, that is; by making the possibility of car trips confined within the same area. However, all these could be done by the adoption of planning of transport systems which realize the effectiveness of land and natural resources uses.
6. Design of transport systems with spaces for pedestrians and bicycles in urban areas, so as to provide alternatives for a safe and attractive transport means for private cars.
7. Merge of transport means whether for commuters or goods, to give rise to the efficiency of the movement of goods, besides the provision of a wide assortment of transport options.
8. Preservation of historical and archaeological locations, and the limitation of noise and audio pollution, when planning, designing and constructing transport networks.
9. To give priority to ecological consideration at the time of planning to confine environmental pollution, and reduce the impact of transport means on environment., and the commitment to the conditions of preservation of biological diversity.

Fourth - Health and Safety:

Conditions of public health and safety should be observed in means of public transport in the cities, in the view of the fact that these systems should be designed and operated in a way that is not harmful to public health (physical or mental) in order to achieve social welfare and safety, and to improve the quality of life for all people.

Fifth - Quality of Environment:

Human activities has contributed in deteriorating and over consuming the natural resources with irreplaceable rates, as well as it increase the pressure on the environment and its limited capability to assimilate the wastes. However, in this regard, efforts should be made to develop transport systems that abide by the following ecological considerations:

1. To ensure that the use of the renewable resources does exceed the rate of their renewal, and that these use remain within the minimum limit.
2. To prevent pollution : transport needs may be satisfied without generating emissions that threaten the public health, global climate, biological diversity, and the safety of basic ecological processes. This is possible by reducing emissions, leftovers, and surface pollutants (potable, salty, and underground waters), particularly the ones related to air transport; besides, the waste generated from changing transport means such as vehicles, expired or broken vessels, and replacing them with new ones, in addition to the relevant infrastructure, by reducing the processes of change, and to re-use or re-cycle them helps in preventing pollution.
3. To secure and perform the administration of emergency to be integrated in the applicable transport system, in order to response to any accidents that may result in ecological disasters (oil leakage from tankers in the sea), … or any relevant accidents.
4. To confine the consumption of fossil fuel, and reduce the emissions by means of effective demand management.
5. To keep pace with the development and scientific research of the innovative, alternative technologies that helps in improving the efficiency of transport, protect environment and encourage the usage of renewable or other alternative energy.

Sixth – economic feasibility

The expenses of the sustainable transport systems should be effective in term of costs. Decision makers must create a calculating system for total costs, in a way that reflects the social, economical, and environmental reality of total costs, including the long-term costs, in order to achieve the criterion of equality and justice in payment by users of transport means in comparison to the total costs. All the economic impacts, jobs, and the benefits of re-shaping the means of transport generated should be elaborated.

Conclusion

Therefore, in the study of the urban transport in Misurata city, we discovered that the planning and design of urban transport disregard the factors affecting the transport means and accordingly, they assume their design. From among these factors comes the population growth and car ownership. Hence, ignoring these two factors when conducting the design has led to the lowering of the traffic safety on the road. Moreover, a study is conducted in order to evaluate the effectiveness of urban transport, which revealed that people are not convinced with the public transport system. As

trip takes too much time, and in addition to the crowdedness and conditions of bad weather they undergo, all these reasons hold them back from using public transport means. Furthermore, the high ratio of traffic accidents makes them to some extent, fear to use their private cars. This study concludes that the city lacks the basic principles for sustainable transport; therefore, this paper discussed the main principles that should be available in the city, such as the accessibility whether for people or commodities, the social justice, the future forecasting of the expected social and environmental impacts, besides; restricting the random urban growth, applying proper usage of land, plus the efficiency of sustainable transport, in terms of provision of health and safety in transport systems, and finally, giving priority to the environmental considerations in the planning process to reduce the effect of means of transport on environment. Upon this elaborate study, and submitting this study to Urban Planning Dept., and Traffic Dept., we however hope that these factors and principles should be taken into account when carrying out urban planning in the future, re-considering the current planning in order to restrict all these laborious problems of transport and improve transport services.

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