TRANSPORTATION PLANNING PROBLEMS IN DEVELOPING COUNTRIES

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1 INTRODUCTION

The importance of planning in transportation is obvious. As residents of Istanbul and Turkey, we can easily observe the negative effects of unplanned transportation, and see that ineffective planning, with regard to its concepts and instruments does not reduce the problems at all.

The most striking fact of the last fifteen years of the transportation field in Turkey is that 1700 kilometres of motorways were built by spending 16 billion US dollars. On the other hand, at the stage where decisions were being made for these motorways, the “1983-1993 National Transportation Plan” was in operation and revisions were being conducted after its first three years. Decisions of building 1200 kilometres of motorways were made in spite of the fact that no new motorways were suggested in this national plan. On the contrary, a high-speed railway was suggested, and a quarter of the construction was complete when it was abandoned in favour of the new motorways. The National Plan was abandoned in this manner and without any reason and without any explanation at all. Today, none of these motorways use more than 10 % of their capacities. Another issue simultaneous with the motorway decision was the construction of new airports using the slogan “a new airport to each province”. These airports were recently closed after about ten years of operation during which only a few planes used them weekly.

Another fact is the planning cycle formed by continuously repeating plan and project making. No feasibility studies were made for the motorways mentioned above, and even some had their projects made by the contractor firms after the beginning of the construction. Studies and projects continued to be made many times for the abandoned high-speed railway. Another exaggerated example is the city of Bursa. It had its transportation master plan made 3 times in 10 years.

Some of the examples are unplanned developments resulting from the lack of or a misunderstanding of the planning concept. The others are developments against plans under operation. The lack of a planning tradition causes diffidence against the planning concept and reduces the effects of the efforts made in favour of planned development.
Planning approaches are criticised also in developed countries, where there is a planning tradition and where planned development is under operation. Some of the criticism centres on methodology and instruments (Genton, 1971; Wachs, 1985). Some say that instrumental approach should be replaced by the communicative approach (Willson, 2001). Most of the criticism focuses on demand predictions, which lie in the centre of the classical planning processes. Talvitie (1997), who approaches the subject from a philosophical direction and bases his ideas on economical and psychoanalytic theories, believes that transportation and societal planning is extensive far beyond the individuals’ economical behaviour. He proposes that the utility function should be expanded beyond the limits of economical behaviour. He stresses that the following three questions should be positively answered because of the important role of demand prediction in planning.

1. Can socio-demography, land use and travel demands be forecast as a function of observable variables?
2. Can stable goals and plans be formulated, satisfying both the goals and predictions?
3. Has a tractable process been devised for implementing the plan?

The only possible answer for all of these questions is stated to be “no”. Also added is the fact that the effect of survey errors and errors resulting from unknown and unobservable variables is high regarding the results. Thus, these subjects should be…

Planning problems are deeper in the developing countries. Without the necessary tradition and the past experiences, the planning efforts cannot yield the best results in a short period of time. First of all, the planning concept should be adopted and assimilated. The question is not “why planning?” This stage is over. The questions of “what kind of plan” and what kind of application” are waiting to be answered.

This paper consists of some ideas on the answers to these questions, with regard to the developing countries.

2 LEVEL OF DEVELOPMENT AND TRANSPORTATION

The relationship between the level of development and transportation can be examined from different points of view. Certainly the most dominant indicator, among others, is the National income. Low national income results in poor transportation infrastructure. Therefore, big investments continue to be necessary in the developing countries.

The flexibility of transport demand against the national income is higher than 1. For example, as the increase in national income in Turkey in the 25-year period between the years 1970 and 1995, had an annual average of 4.31%, there were increases of 5.28% in passenger-km and 5.95% ton-km values. In this case, a 1% increase in national income ignites an increase of 1.23% in passenger demand and 1.38% in freight demand. These figures are 2.34% for passengers and 0.90% for freight respectively in the 15 EU countries.
The increasing trend in the passenger transport is an expected development. The relationship between the level of development and the level of car ownership is also obvious. The rapid increase of car ownership in the developed countries, and the fact that today it corresponds nearly to one car per two persons, has brought forward the problem of traffic congestion. On the other hand, it has also been understood through the years that the whole problem cannot be solved by just solving the congestion problem. Although the level of car ownership is relatively lower in the developing countries (eg, one car per ten persons in Istanbul), over the years traffic congestion has been accepted as the primary transportation problem indicator. Thus, the heart of the matter is missed and only the symptom is taken into consideration instead of the real problem. This traffic congestion does not exist only in the rush hours, but it continues throughout the day in cities like Istanbul. Actually, this problem has become a common syndrome for most of the big cities in developing countries (Bovy, 1976).

The specific reasons of traffic congestion in Istanbul and other cities in developing countries can be summarised as follows:
- The urban texture is not appropriate for cars.
- Car owners spare a relatively big amount of time budget for transportation; ie they tend to use cars many times and for longer periods. Thus, the rate of car usage is high.
- Traffic management is inadequate.
- Disobedience to the traffic rules is widespread.
- Public transport is inadequate.

Actually, most of the measures taken against congestion are meaningless because they lack permanency and do not solve the non-car-owning majority’s problems. Thus, it can easily be said that the real problem waiting to be solved in the developing countries, is public transportation, which the vast majority depends on. The average age of the population and the present rate of mobility are low (eg, daily mobility in Istanbul is 1.0, whereas it is between 2.0 and 3.5 in the developed countries). This fact means that in the future, the rate of the population depending on public transport will increase.

3 PLANNING BASED ON DEVELOPMENT CONDITIONS

Transport plan can be expressed as a process of activities formed up for the purpose of meeting the cost of transport needs arising from the socio-economic activities in a specific region at an acceptable level of service and along with its external costs. Making correct plans for the desired development is a subject of long-term studies. The developments taken place in the last 50 years are mostly structured around the developed economical and social systems of the USA and European countries. As far as the expressed...
structural features and facilities are concerned, it becomes even more essential to investigate this subject deeply for developing countries.

In the countries, where the current planning methodologies have been developed, there is a stable balance in terms of economic and social aspects. The developments are, to a great extent, take place in the desired way. For this reason, efforts for creating the supply to meet the increasing transport demand with respect to increasing population, growing economy and search for quality have gained importance. This situation results in a requirement for the prediction of the demand, creation of different alternatives for supply and selecting the optimum. In the prediction of the demand that lies in the centre of the planning process, the assumption that the former trends in the selection of transport modes would be the same in the future, might be valid in the steady state structures of these countries. Furthermore, the data required for forecasting and assessments are usually reliable and adequate. Since the transportation infrastructure in these countries have almost been completed, investments of great importance may not be necessary. However, in the developing countries, in terms of economy and the geographical distribution of socio-economic activities, definition of predictable trends extending from the past to the future is mostly impossible. The developments might take place in the forms of leaps rather than linear improvements. In this case, investments may be much more expensive depending on demand predictions based on unrealistic assumptions.

In some big cities, as a result of inconsistencies in land use and rapid increase of the population, possibility of creating supply capacity may disappear in practice. In this case, validity of common planning methodology might become controversial and land use planning may become primary.

4 PLANNING IN DEVELOPING COUNTRIES

With respect to the explanations given above, might the planning approach and its methodology, widely applied in the USA and European countries be valid outside these countries, eg Turkey? The answer is unlikely to be positive. Because the core of this approach mentioned above, a different formulation should be assessed for the developing countries. For example, the development path in Turkey first needs to be stopped and then altered; because the highways, which carry 95% of the passengers and 93% of the freight, have almost taken the whole burden of transportation. The railways seem to be approaching an end. Despite being inside a lively sector, the airways are a transport mode that has limited opportunities for growing. Although every geographical opportunity exists for it, marine transportation cannot be developed. And of course, there is the fact that around 7000-10000 people die in traffic accidents each year.
The share of highways in the city of Istanbul is around 92% despite the effort put in developing the rail systems. The time lost in urban transportation and its stress causes production losses and bring along negative effects on peoples’ emotional state. Nationwide transportation in Turkey and urban transportation in Istanbul is in such a state that because of this imbalanced development, it can no longer reach a healthy structure. So, instead of supporting the present trend, it should be halted and redirected in order to solve the problems.

In short, it can be said that a “passive” approach, which predicts the future through present trends and developments instead of directing it, can be valid for the developed countries. “Active” approaches that are directive in this sense are necessary for the developing countries. Accordingly, the planning process should have an accomplished structure based on finding the most consistent and valid solution on economical and social development as well as land use, instead of satisfying the demand for the foreseeable future.

4.1 The decisive importance of public transport

Public transport forms the skeleton of the transportation systems in the big cities. As stated before, especially in the developing countries the rate of the population depending on public transport is quite high.

The state of public transport in the cities of the developing countries differs widely from those of the developed countries. This difference brings different conflicts to the surface. Public transport in the cities of the developed countries can be considered adequate, at least when compared with the developing countries. However, this adequacy is not sufficient enough to attract the car-users to public transport.

In the developing countries, urban demand on public transport is higher. Yet, there is no existent public transport capacity that will attract the car-users. In this situation, congestion created by the relatively low car ownership comes to forefront and the unfair and illogical sharing of the transport facilities establish the main conflict. For example, the cars that use 70% of the roads carry only 20% of the travels, while the buses, which use 4% of the roads, serve 35%. The planning approach foresees the system development according to the past trends in private car demand. Since public transport is weak, this conflict is abided to. Busways become necessary on certain axes and at certain stages of the demand. However, the priority is given to the cars and the share of the road that are necessary for them are determined first; the remaining portion is then allocated to buses. With this approach, the problem cannot be solved at all.

On the other hand, at demand values, where rail systems become obligatory, feasibility studies mostly turn out to give negative results, not only financially but also economically. The reason for this is that the value of time, which has weights of up to 80% among the utilities, stay at low levels as a function of national income. Economical values of fatalities
and injuries in traffic accidents are disturbing even ethically and the decrease in fatalities and injuries do not make a positive contribution to the feasibility results. The main conflict in the developing countries and their cities is that the capacities (busways or especially rail systems) which are necessitated by the demand cannot be created or there is an important delay in this process. Two natural results of this are:

- Required transportation support is not given for a healthy urban development; furthermore, hope for a healthy city disappears.
- The delay compensation resulting from the delay in constructing the high-capacity transportation system rises rapidly and surpasses the investment cost. For example, this situation is present in Istanbul. Costs of investments such as the subway are increasing rapidly while alternative costs as operating costs reach quite high values.

The results of an old study on the public transport systems, and especially rail systems in the major cities of the developing countries are quite interesting. (Un Groupe de Recherche Routiere de l’OCDE, 1974). In this study financed by the OECD, survey results from 21 different cities including Istanbul, which have rail systems or have rail system projects under operation, are evaluated. A comparison made between these 21 cities regarding their populations and incomes per capita can be seen in Figure 1. The total income curves (ie. population x income per capita) in the graph indicate that all of the cities having an income of over 15 million USD have subway systems; whereas, most cities having an income of lower than 5 million USD do not have them. This means that even cities with populations over 10 million do not possess rail systems.

Figure 1. Comparison of incomes and populations of certain cities in developing countries

The most important reason stated for building a subway system is the improvement of public transportation. This is followed by the requirement for solving or reducing traffic congestion, which should be considered as a false concept, as mentioned above. Another aim is to support land use planning policies. The main reason stated for Istanbul is this latter one.
The reasons of the problems in rail systems are also examined in this study. The main reason is found to be the mistakes made in the planning stage. According to this, no feasibility studies were conducted for some of the subway systems. Those that were conducted are far from being adequate in both quality and scope. Significant deviations are observed in demand and cost predictions compared to reality. Timetable and price matching with other systems is usually neglected. Errors can be made in route selection. Some of these errors can be of great extent and unrecoverable.

4.2 Planning Methodology

For the developing countries, transportation planning has become a methodological problem, or even further, a modelling problem; and has become equivalent to the model itself. Reflection of the approach’s passive behaviour on the methodology is a natural case. Thus, it may not be very useful to go into the details of the methodology. Meaningful results can be obtained though, by mentioning certain points.
- The assumption that relationships based on measurements made in a time interval will not change in the prediction period will bring the model into a static state.
- There are many hidden and arbitrary assumptions in its structure.
- With demand production, travel decision is made before the idea of where, how and why to go. This means that it is not affected by the transportation system.
- It is assumed that the mobility of car owners will continue. No justice or fairness is considered in mobility between different social groups.
- There is the possibility of a well-calibrated model giving wrong results for movements between certain zones.
- There is no possibility for considering preferences arising from the inadequacy of the public transport system.
- Effects in the distant future are underrated by the actualisation technique. For example, the reductions in traffic accidents cannot affect the result because of high actualisation.

4.3 Transportation Management and Financing

Since transportation management has many authorities in the developing countries, its ability of coordination is either quite low or there is no such ability at all. Thus:
- Even though plans are made, they cannot be applied with stability and without compensation. The planners try to operate the model without taking this structure into consideration.
- The investments do not always satisfy the primary needs. They sometimes cause big amounts of money to be wasted.
- The present potential cannot be utilised effectively.
- The issue of financing is neglected in the planning stage because management is chaotic from planning to investment, operation and supervising. The planned investments lose the chance of being realised. The plan cannot become an important document from the beginning. Actually financing is primary issue for the developing countries. Isolating it from the management’s effectiveness cannot solve this issue.
4.4 Participation Issue in Transportation Planning

Transportation is integrated with urban life as an action paving the way to reach economical, social and cultural resources. It is difficult to formulise all the needs, demands and trends that are to be satisfied by the transportation system. Thus, transportation planning is, first of all, a political issue. It is important to define the often-conflicting benefits of different groups in realising this issue.

With the help of this explanation, planning of transport systems cannot be regarded as processes other than a decision-making process that develops through the interactive influences of different sides and their exchange of ideas. These sides consist of individuals and benefit groups, planners, and decision-makers.

Evaluation of transport planning through only the engineering approach by neglecting its economical, social and cultural dimensions is no longer valid. Any impact of modern planning and decision-making strategies and alternatives, on benefit groups may be evaluated by having them participate in the planning process. Figure 2 shows the relevant sides and their interactions.

![Figure 2. Sides and interactions in contemporary planning](image)

4.5 Application Problem

Some difficulties may occur in the application of plans in developing countries as a result of inadequate financing and the existence of many authorities in the institutional structure. The necessity of receiving credits for financing may cause the creditors to have the initiative on many subjects. They can be effective in different stages, from the selection of the project firms to the preferences on technical issues.

The most important problem in the application process is the institutional structure and the existence of more than one authority in this structure. The ins and outs of the application process are not thoroughly considered; the institutional framework and legislative arrangements are not evaluated satisfactorily. Foreign institutions are usually unaware of these issues. The primary requirement for the institutional framework is its reconstruction having one authority capable of coordination.
5 CONCLUSION AND SUGGESTIONS

Planning in transportation can have a quality of meaningfulness, realism, applicability and aimfulness if it is realised by taking the different conditions of each case into consideration. In this context, the validity of planning made in the USA and the European countries is in question for the developing countries. The problems faced during application prove that this doubt is realistic.

It is impossible to improve transportation through the conventional “pasive” approach, in which the future demands are predicted by utilising the past trends. Planning the transportation system in a directive and “active” way would be a logical approach. It is difficult to realise this approach, but it has become obligatory. In most of the applications, methodology is considered to have a frame consisting of running the model automatically with unsatisfactory data and deciding on investment lists. This methodological approach forms the main conflict of the plan, which leaves public transport vulnerable against cars.

Definition of problems, determination of policies and principles are not based on serious analyses. Usually, the results of the model cannot be interpreted correctly. And since the issue of financing is neglected, applicability of the plan is reduced. The institutional and legal framework is usually ignored regarding applications. The institutional structure has more than one authority and is chaotic, whereas, application of the plan is a process within this structure.

Taking these matters into consideration, the issue of planning should be assessed from the very beginning for developing countries. To achieve this, first of all coordination should be established within the institutional framework. The question of financing should be resolved, too. Although it has its difficulties, participation is also important in this context. The relationship and interaction of transportation with land use should be considered as directive and decisive. Transportation should leave its characteristic of trailing behind and should be decisive and harmonious in urban development. This aim may seem distant, but there is no other alternative for the developing countries.

REFERENCES


