

Marks: 50

Duration: 03 hours

Date : 07/12/2017

Note:

- 1) All questions are compulsory.
- 2) Figures to the right indicate marks.

- 1) Read the following case study and present your in-depth analysis. **(15 Marks)**

Delhi Metro:

This is a discussion on the article “Delhi Metro Rail: Beyond Mass Transit” by Pritpal Randhawa (EPW, 21 April 2012). The author basically argues that gentrification is the main motivation for the introduction of a Mass Rapid Transit System in Delhi, because the metro has neither been successful in achieving its stated objectives of reducing traffic congestion and pollution, nor is it climate-friendly. Besides leading to gentrification, the metro is also not an equitable mode of transport due to its fare structure and has evicted the urban poor from their lodgings through the acquisition of land required for its operations.

In the first part of the paper the author concludes that the Delhi Metro Rail Corporation (DMRC) has failed to reduce congestion and pollution in Delhi, after the evaluation of the compound growth rate of motor vehicles and pollution data, pre- and post-introduction of the metro rail. However, DMRC has approached the issue of congestion from the point of bringing about a modal shift or change in the mode of transportation to the metro in its area of operations, and not the reduction or arrest of growth in motor vehicle traffic in the entire city, which is contingent upon various other factors that DMRC has no influence on. The Indian Institute of Technology Delhi study referred to by the author confirms this aspect and states “Roadway Congestion Index (RCI), i.e., ratio of number of vehicles per lane and capacity of lane doesn’t get affected much more by the metro implementation. RCI is not reduced in most cities of the world, except a marginal reduction at Washington DC after introduction of metros”.¹ DMRC has never claimed to reduce traffic congestion in the manner the author perceives it.

The same is the case with the pollution figures of Delhi. The city has diesel powered commercial and passenger vehicles transiting through it every day for want of a bypass to the national highways. The number of diesel cars in the city is increasing rapidly on account of the price differential between petrol and diesel. In such an environment with diesel being a more polluting fuel, pollution data cannot provide a cognisable indication of the pollution mitigation potential of the metro. However, the fact that abatement of pollution and congestion is linked to other socio-economic processes in the city cannot nullify the positive impact of the metro on the two issues.

The author contests the clean and energy efficient nature of the Delhi metro due to its use of “fossil fuel generated electricity” from the electricity grid. Each electricity grid has “carbon intensity”, or simply the carbon emission that takes place in generating a unit of electricity. Grid carbon intensity is a function of

the energy mix a country employs to generate its electricity and DMRC has no say or control over it. Internationally, electrification is the most important strategy adopted for decreasing carbon emissions of a rail network. Reduction in emissions over diesel-powered trains is directly related to the sustainable nature of energy sources used to generate electricity. For example, Swedish rail, Statens järnvägar (SJ), which operates only electrically powered trains, uses only renewable energy from hydroelectric and wind-powered sources. Thus, an SJ train running between Stockholm and Gothenburg with 300 passengers aboard now emits only 400 g of CO₂, compared to a previous average of 44.5 kg – a reduction of over 99%.² In such a situation, DMRC has the option of being energy-efficient and using renewable energy. Use of regenerative braking and lightweight rail cars by DMRC are some of the methods of increasing energy efficiency; it is in the use of renewable energy that it has not been adequately active. Forty-two per cent of the total electricity consumption of DMRC in 2010-11 was non-tractive, i.e., utilised for purposes like lighting, air conditioning at the stations, etc. This non-tractive consumption is very amenable to being generated/ sourced from renewable sources. To this end the Ahmedabad-Gandhinagar Metro Rail project is likely to have a dedicated 20 MW wind power generation plant to meet its power requirements.

DMRC is involved in property development as its project finance has returns from property development, including rentals and advertisement built into it. The concept is not new and the Hong Kong metro, too, uses property development as a source of project finance. Property development is a means to metro connectivity, and not vice versa. The author has interpreted DMRC's involvement in property development to support his argument on gentrification. However, the entire argument would have had a different context if the government had entrusted property development to a different body, say the Delhi Development Authority (DDA), and funded DMRC from its budget. Also, the positive impact of metro alignment on property prices has not gone unaddressed as the Delhi government has proposed higher taxes where property prices have gone up. The comments of the author on the land acquisition for DMRC, including eviction of the urban poor, have not been substantiated with a study of the nature of the land acquired by DMRC. No efforts have been made to identify encroached public land and to distinguish the same from other landholdings acquired in public interest. The author points out that the fare slabs of DMRC are higher than those of the public bus service. However, on an amenity basis the DMRC fare structure should have been compared with that of the air-conditioned service of the Delhi Transport Corporation (DTC), which has higher fare structures.

Certain statements of the author are open to arguments both ways and have been interpreted by the author to support his argument. For example, the author says that as the metro enables people to stay farther away from their workplace, it may translate into larger consumption of energy itself. He ignores the established benefit of reduced housing pressure in the central areas and increased livelihood opportunities for those residing in the suburbs. Migration and urbanisation are a socio-economic reality. Further, in June this year, the DDA requested DMRC to provide connectivity to Phase IV of Narela sub-city as 50-55% of the housing in the sub-city is meant for the urban poor/Economically Weaker Sections (EWS); hence, efficient public transport connectivity was imperative. The DDA even offered to fund the metro extension project. This DDA proposal to provide connectivity can easily be construed as an attempt to gentrify EWS housing.

The author has quoted the pioneer of DMRC, E Sreedharan, to highlight the areas where the metro has been found wanting, but has ignored an important part of his comment which is that “the metro will totally transform our social culture giving us a sense of discipline, cleanliness and enhance multifold the development of this cosmopolitan city”. One has only to walk into the nearest metro station to feel what DMRC has achieved in New Delhi. It has also been assessed that DMRC has “helped liberate women

from low income group houses in the area who feel safe venturing on to it alone".⁴ India would soon have its first fully privately-funded metro at Gurgaon (Rapid Metro Rail Gurgaon) connected to the DMRC and the construction of the same in an existing high realty value area would indicate that the motivation for metro connectivity could be just plain efficient public transportation.

Cost Benefit Analysis

Description of economic benefits and costs of the Delhi Metro requires the identification of the changes brought out by it in the transport sector of the economy. Most importantly, DM contributes to the diversion of a very high proportion of current passenger traffic from road to Metro and serves part of the growing passenger traffic demand in Delhi. As a result, there will be a reduction in the number of buses, passenger cars and other vehicles carrying passengers on Delhi roads with the introduction of the Metro. There will be savings in travel time for passengers still traveling on roads due to reduced congestion and obviously also for those traveling by Metro. The Metro also brings about a reduction in air pollution in Delhi because of the substitution of electricity for petrol and diesel and reduced congestion on the roads. There will also be a reduction in the number of accidents on the roads.

Investment in the Metro could result in the reduction of government investments on road developments and buses as also in the private sector investment on buses, passenger cars and other vehicles carrying passengers. There will be reductions in motor vehicles' operation and maintenance charges to both the government and the private sector. There could be cost savings to passenger car owners in terms of capital cost and operation and maintenance costs of cars if they switch over from road to Metro for travel in Delhi. The fare box revenue collections by Metro will be at the cost of the revenue, accruing earlier to private and the government bus operators and hence constitutes a loss in income.

The Delhi public will gain substantially with the introduction of the Metro service. It saves travel time due to a reduction of congestion on the roads and lower travel time of the Metro. There will be health and other environmental benefits to the public due to reduced pollution from the transport sector of Delhi. Land and house property owners gain from the increased valuation of house property prices due to the Metro. The Metro has the effect of increasing the income of the regional economy of Delhi vis a vis the rest of the Indian economy. Given that the per capita income of Delhi is far higher than the national per capita income, the redistribution of income in favour of Delhi may not be desirable from the point of view of income distribution in the Indian economy. The Metro provides employment benefits to the unskilled labour especially during its construction period. This labour is otherwise unemployed or under employed in the Indian economy.

The financial cost-benefit ratio of the Metro is estimated as 2.30 and 1.92 at 8 percent and 10 percent discount rates respectively while its financial internal rate of return is estimated as 17 percent. The financial evaluation of the Metro is done considering the financial flows of the project comprising the annual revenue earned and flows of investments and operation and maintenance costs. The shares of debt, equity and internal resource mobilization in investments made on Metro are 60, 30 and 10 percent, respectively.

The social cost-benefit analysis of the Metro requires the identification of benefits and the economic agents affected by it. The incremental changes in the incomes of various economic agents: passengers, transporters, public and government and unskilled labour due to the Metro could be estimated by considering the Delhi economy with and without the Metro. It is found that there are income gains to the government, public, passengers and unskilled labour while there are substantial income losses to the

transporters because of the Metro. The estimated NPSB of the Metro at 2004-05 prices and the 8 percent social time preference rate for the Indian economy is Rs. 419979.6 million. The social rate of return on investment in the Metro is as high as 22.7 percent.

The economic rate of return on investments in the Metro is 21.5 percent at market prices while the financial rate of return is only 17 percent. These rates are much higher than the recommended social time preference rate of 8 percent and 10 percent cut of rate of return for the investment in the Indian economy by a recent study commissioned by the Planning Commission, Government of India. There is a one percent increase in the economic rate of return on investment in the Metro, pegged at 22.5 percent after accounting for the differences between shadow prices and market prices of unskilled labour, foreign exchange and investment in the Indian economy in the measurement of economic benefits and cost of the Metro. Accounting for the benefits from the reduction in urban air pollution in Delhi due to the Metro has further increased the economic rate of return to 23.9 percent. This means that the benefits to the Delhi public from reduced air pollution due to the Metro increases its economic rate of return by 1.4 percent.

Delhi Metro provides incremental income to the Delhi public which has a per capita income more than two times the national per capita income. Therefore, accounting for income distributional effects of the Metro has resulted in the reduction of the social rate of return to 22.7 percent.

Sources:

<http://www.indiaenvironmentportal.org.in/files/file/Delhi%20Metro%20Rail.pdf>

<http://www.iegindia.org/upload/publication/Workpap/wp273.pdf>

- 2) A) Explain the relevance of Hofstede's indices in the current business scenario. **(10 Marks)**

OR

- B) Explain the contribution of any one of the following thinkers and what and how can we learn from them:

i. Levitt

ii. CK Prahalad

3) Discuss the importance of any TWO of the following:

(10 Marks)

- a. Ram Charan
- b. SWOT

- c. Kotler
- d. BCG Matrix

4) A) Write in detail on any TWO of the following:

(15 Marks)

- a. PESTLE
- b. Porter

Drucker

OR

B) Present your analysis of a case study that showcases the need for awareness of Business Perspectives in Management. Explain how a nuanced understanding enables effective solutions to be found. **(15 Marks)**