Construction of motorway in the city construction essay

The concept of real options in the construction projects of motorways has extended to design flexibility in the realistic uncertain environment. It is observed that the construction of motorways in the city can cause issues for the construction team for which certain methods or options are required to resolve. Before initiating the construction project of motorway in the city, it is important to know about the motorway along with the associated issues that can be faced in its construction (Carson & Abbott, 2012; Miller, 2011). The paper is providing these aspects of constructing motorway in the city along with the relevant advantages and disadvantages related to the construction of motorway in the city.

What is a Motorway?

Motorway is also known as controlled access highway, which provides an unhindered flow of traffic without any traffic signals, intersections, and property access. They are free of any sort of crossings, railways, and pedestrian paths but they are carried by overpasses and underpasses. The entrance and exit to the highways are provided at interchanges by slip roads allowing the vehicles to change speed between the motorway and arterial thoroughfares and collector roads (Miller, 2011; Nyamori, 2009). On motorways, opposite directions of travel are separated by central reservation such as strips of grass and traffic barrier. In New Zealand, the motorway numbers are extracted from the state highway route that is not differentiated from non-motorway sections of same state highway routes. In situations where a new motorway acts as a bypass of state highway route, the original state highway is banded of that status or renumbered (Hover, 2010; Myburgh, Wilkinson, & Seville, 2008).

Issues related to Construction of Motorway in City

The most important issues related to the construction of motorway in the city are discussed as follows.

Pre-Construction Issues

The hindrance free site for construction of a motorway in the city is not made available to the contractors in the initial stages of the project because the contractors delay the mobilization and in most cases, the contractors use the mobilization advance at any other place. One more reason for the pre-construction issue of a motorway is the extent of land to be acquired is not possible to be identified due to the outdated land records and poor quality of designs. It can be said that the additional requirements for land in cities such as New Zealand become necessary to consider the design of a motorway in a correct way (Carson & Abbott, 2012; Hover, 2010; Miller, 2011).

Another reason of pre-construction issues in motorway construction include that the trees to be cut are not demarcated properly on the drawings of design. The clearances and permissions from the Ministry of Environment and Forests is a pre-requisite, which takes time for the trees to be cut and the availability of correct design to the contractors. Since, there is no proper record exist regarding the underground utilities like water supply, electrical cables, and telephone cables (Nyamori, 2009; Myburgh, Wilkinson, & Seville, 2008; Miller, 2011). These utilities are identified as hindrance during the implementation stage of the project. For instance, in New Zealand, the shifting of overhead electrical and telephone cables require sufficient time and this leads to delay because the shifting of such utilities provides issues to the general population and suitable alternative arrangements are required

to be provided to the people (Myburgh, Wilkinson, & Seville, 2008; Miller, 2011; Carson & Abbott, 2012).

There are number of government agencies involved from which clearances and approvals are required before the shifting of utilities before starting the construction of a motorway. It requires sufficient time as the relevant laws and regulations of the state or city are applicable that are not much clear. It can be said that the obtaining of land for constructing a motorway requires at least thirty months (Hover, 2010; Myburgh, Wilkinson, & Seville, 2008).

Issues related to Surveying, Investigations, and Design

The acquisition of land for the construction of motorway is carried in accordance with the principles outlined in the Land Acquisition Act or the National Highways Act. In New Zealand, these govern the acquisition of land for defined purposes and compensation in lieu (Nyamori, 2009; Hover, 2010). The process should be initiated as soon as possible or may be at the same time as the project of constructing motorway is at the design stage. The probable reason for delay in the project of construction of motorway includes outdated revenue maps establishes the basis for preparing the plans for land acquisition. The records are sometimes not updated for long period of time (Miller, 2011; Carson & Abbott, 2012).

Moreover, sometimes the land acquisition plans are not realistic as the design consultants lack expertise in preparing such type of plans. For instance, in New Zealand, the designers do not carry out the alignment and ground verification. It is also possible that frequent changes in the designs and alignments during the implementation stage are made by the consultant

designers. In some cases, the discrepancies in the project coordinate and the reference frames results in mismatch due to which the redesign of alignment is required as well. The project authorities are required to be depending on the human resources from the authorities of revenue, who are over stretched and cannot provide the assistance on time (Myburgh, Wilkinson, & Seville, 2008; Miller, 2011; Carson & Abbott, 2012).

Options and Methods for Building Motorway in City

A real option approach is appropriate for constructing a motorway in the city so as to overcome the issues identified in the above section of this paper. This option or method is without an obligation to take specific actions depending on the ways in which uncertain conditions evolve. The central element of real options approach is regarding the flexible strategies and delaying of decisions that can have a value when compared with making strategic decisions during the pre-project planning (Hover, 2010; Miller, 2011). In New Zealand, this option and approach depends on the approach developed to value and analyze options on financial assets. The methods to value options available on the real assets are for the purpose of strategic planning in construction (Nyamori, 2009; Miller, 2011).

The real options can be used to obtain the latent value in different domains, including the natural resources, research and development, technology, real estate, and product development. This work focuses on the implementation of real options approach to construction project of a motorway in the city (Myburgh, Wilkinson, & Seville, 2008; Carson & Abbott, 2012). In New Zealand, this approach can be illustrated along different dimensions, which specifically include ownership, the source of value, the complexity, and the

level to which the option is available. This common typology for real options approach is different depending on the type of managerial action implemented. The designing and construction of a motorway using the real option approach creates an option to expand the infrastructure with the passage of time (Nyamori, 2009; Miller, 2011; Hover, 2010).

It can be also implemented to the strategic planning and management of construction projects, which also improves different aspects of project planning. In New Zealand, this approach can improve the strategic thinking by helping the planners to recognize, design, and use of flexible options available to manage the dynamic uncertainty. The decisions for value adding that managers made after resolution of partial or complete uncertainty, the real option approach can reveal the latent project value (Myburgh, Wilkinson, & Seville, 2008; Carson & Abbott, 2012).

Advantages and Disadvantages for Selected Options

The real options in construction projects of a motorway in the city are established by changing the actual design of the technical system. The design of the options approach in constructing motorway includes the economic analysis that recognizes the actual demand is uncertain on long time horizon. In order to overcome the issues that may arise from the construction of motorway in the city, it is important to establish the real options into the design by strengthening the footings and columns of the original place including the upfront cost of extra work to add additional and beneficial features to the motorway (Hover, 2010; Carson & Abbott, 2012; Myburgh, Wilkinson, & Seville, 2008).

The analysis of the real options analysis reflects the flexibility provided by establishing the small area with the option to expand further has several benefits. It includes the increment in expected value of the project, reduction in maximum possible loss, increment in maximum possible and expected gains, and the reduction in initial capital costs (Myburgh, Wilkinson, & Seville, 2008; Nyamori, 2009; Miller, 2011). In New Zealand, the real options in projects and redundancy refers to the idea that elements should not be included in the design that are not meant to be change in construction. The redundancy refers to sufficient design elements to serve the same function, while the real options within the projects may not serve the same functions as existing elements to serve as a new function (Nyamori, 2009; Carson & Abbott, 2012; Hover, 2010).

The most essential issue or disadvantage in using the selected method in overcoming the issues in construction of a motorway in the city is related to the identification of real options in such type of projects because this type of project can include myriads of design variables and parameters (Nyamori, 2009; Carson & Abbott, 2012). Another issue related to the use of the selected method is that the real options in projects sometimes reflect complex path dependency or interdependency to which standard options theory does not deal. In New Zealand, the projects of constructing motorway using real options are different and needs appropriate analysis framework in which existing analysis of options has to adapt to the specific features of real options (Myburgh, Wilkinson, & Seville, 2008; Carson & Abbott, 2012).

Conclusion

It can be concluded that the flexibility in the construction of motorway in the city such as New Zealand can increase the value of projects significantly as it reduce the maximum possible loss and expected gains. The identification of real options in construction project of motorway discovers the design elements to provide worthwhile flexibility. It can be done through the screening of the entire project as it is a simplified, conceptual, and low-fidelity model for the system conceptualizing the most important issues (Myburgh, Wilkinson, & Seville, 2008).