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Delay and Cost Overrun in Infrastructure Projects in Jordan

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Abstract

The aim of this study is to investigate the factors that may cause overrun of the planned cost, allocated resources and scheduled time of infrastructure engineering projects in Jordan. To achieve the goal of this study, final reports of a sample of 40 public infrastructure projects implemented during the period from 2000 to 2008 were collected and analysed. The final reports were collected from the Ministry of Public Works and Housing (MPWH) of Jordan, which administers the public infrastructure projects in the capital Amman.

The analysis showed that delay and cost overrun of infrastructure projects were caused by 20 factors according to the records in the collected final reports of projects. The results showed that Terrain and Weather conditions are the top factors causing completion delay and cost overrun in infrastructure projects in Jordan.

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1. Introduction

A cost overrun is known as budget overrun or cost increase. It involves unexpected excess cost occurred due to underestimation of the expected budget of the infrastructure projects. Thus, it is important to study these cost overruns factors and to avoid them for maximum benefits and returns from infrastructure construction project.

Most infrastructure projects in Jordan are characterized by overrun in cost and time. Problem of cost overrun is critical and needs to be studied and alleviated. In the future recommendations should be developed to overcome these critical factors for future infrastructure projects.

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For this reason, final reports collected from the Ministry of Public Works and Housing (MPWH) in Jordan were analyzed and examined for several infrastructure projects in Jordan over the years 2000-2008. The actual causes for cost and time overrun recorded in the final reports of these projects were identified. Data were ranked based on their significance and the critical factors influencing cost and time overrun were identified.

2. Literature Review

Some researchers have studied the reasons of and the factors affecting cost overrun and time delay in construction projects. However, there is a lack of studies concerned with the cost overrun and time delay in the implementation of infrastructure projects in Jordan. This study aims at investigating the most important factors that can be the reasons behind cost overrun and time delay of infrastructure projects in Jordan by analyzing the final reports of these projects.

Mahamid [1] studied the factors affecting the schedule and budget of the construction projects. He conducted a field survey including 40 consultants in Palestine. The top affecting factors in the consultants' opinions are materials price instability, size of contract and incomplete drawings. The researcher stated that about all the projects suffering from cost diverge. Also it was found from the study that about 76% of projects have cost over estimation while 24% have cost underestimation. The difference between actual cost and estimated cost of construction projects has an average of about 15%. However, in another study by Mahamid [2] the top factors affecting time overrun in infrastructure projects in Palestine were studied. The study showed that major factors delaying the studied projects include: financial problems of the contractor, delay of payments from the owners. Also, the study referred to the special political situation in the area of study and its significant influence on projects. Other important factors that may delay completion of projects such as poor communication among parties, lack of efficient machineries and tools and high competition among bidders, showed significant effect on projects' schedules.

In a study by Alhomidan [3], a survey of contractors' viewpoint was conducted to investigate the top causes of cost overrun at the infrastructure projects in Saudi Arabia. A list of 41 factors of cost overrun causes was considered. Among these factors, it was concluded that according to opinions of the responding contractors the top causes of cost overrun in infrastructure projects in Saudi Arabia are internal administrative problems, delay of payments, poor communication between construction parties and delays in decision-making.

In other studies conducted in several countries, various results were obtained. For example, in Hong Kong Chan et al. [4] studied the causes of delays in construction projects. It was indicated that five causes are the main causes for projects delay. These include: poor supervision and management of construction sites, unpredictable ground conditions of the project sites, slow processes by decision-makers of the projects, and variation orders especially those presented by clients.

Another study example in India by Singh [5] concluded that the main causes responsible for delays of construction projects in India include: the lack of efficient project plans, contracts and implementation processes and procedures.

An investigation of 31 variables by Alghbari et al. [6] was conducted on construction projects in Malaysia. The study showed that the most important causes of delay for the projects in Malaysia are related to financial aspects. The second and third most common factors causing delay of projects connected with coordination and materials problems, respectively. However, another study in Malaysia by Sambasivan and Soon [7] found that the most important causes of delay in construction industry are related to contractors and resources. Lack of proper contractor's project planning and site management, lack of adequate experience, improper coordination with subcontractors and other parties and making mistakes in implementation of the construction stages are major factors that affect the projects' completion duration. Other factors related to the construction resources include the insufficient financial resources from the client and shortage of materials, labors and equipment.

Rathi et al. [8] studied different literatures related to cost overruns and its causes found that inaccurate estimates and design changes at the time of construction are the most important factor directly affects the cost. The study also found it is necessary that the project management team have a good forecasting technique to know the future business environment. This will help the owner or agency to take decision regarding procurement of materials.

Vidalis and Najafi [9] found that the factors causing cost and time overrun in Florida Department of Transportation highway projects are plans modifications, changed conditions and lack of project coordination. Amandin et al. [10] in their study on Construction Projects concluded that when project costs are efficiently monitored while the other conditions kept constant, as construction project periods increase, a proportionate increase in their costs or value is

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