



## Cost and Time Interaction Behavior on Construction Materials Procurement and Execution Processes in Infrastructure Projects

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### Abstract

The cost of construction materials forms a large proportion of the total cost of construction projects. Thus, the lack of a sound time and cost management planning for construction materials procurement will lead to deficiencies in the supply and flow of construction materials, not to mention its negative consequences of delays and financial losses which are often cited as major causes of product degradation. This research will present the development of an applicable procurement management system model particularly for UPVC & Ductile pipes used in water and sewage water infrastructure Projects in Iraq. Actual data are collected from seven Iraqi infrastructure projects. These data are analyzed by using SBSS v. 23 statistical analysis programs. On the bases of analyses results, four mathematical relationships have been developed by using MATLAB R2015B and CurveExpert Basic software to be used on building a realistic procurement management system with accurate, acceptable, and appropriate results for the construction materials procurement conditions in Iraq, the system was finally tested by using actual data from Al-Latifia sewer project in Baghdad governorate, where the system showed an accuracy results of 86%.

**Keywords:** Construction Materials Management; Cost & Time Relationship; Procurement System Model.

### 1. Introduction

All kinds of construction projects constitute one of the most important civilization aspects and advancement in society, often referred to the civilization of many nations, including the creativity and the facilities creativity and monuments. Construction projects in recent times become the backbone of life and progress, where the construction sector now forms 75% of any country's investment [1].

Efficient Managing of construction materials procurement in construction projects can led to significant improvement in productivity and project profitability [2]. In order to touch on the details of this context, we will define a set of terms related to the content of the research paper as follows:

**Inventory:** "A variety of raw materials, semi-finished materials, finished materials or spare materials held by the company for the purpose of sale or use in production processes" [3].

**Demand:** "The demand is one of the directly factors influenced in deterministic the amount of inventory for any material, which is either specific were the demand is known, or probabilistic is subject to a probability distribution" [4].

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