

# **ABSTRACT**

## **Controlling System on Change Management for Construction Sector in Risky Environment**

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Change management is an integrated system for all external and internal factors that related to change in construction project. In Iraq, construction industry has special important due to the adverse circumstances that took place in the last two decades. These events negatively affected the performance of construction projects. The most important reactions made by the Iraqi government were the enhancing legislation that control the construction industry.

The aim of this research is to evaluate the impact of the changes in legislations on the performance of construction projects and then develop a system to control changes in Iraqi construction projects.

To achieve the research objectives, interviews and questionnaire were adopt to collect data about change causes and to choose the clauses of legislation. The data of some 30 construction projects was collected. These projects were dispersed along the period from 2003-2014.

The questionnaire and Bayesian decision tree technique were used to measure the impact of legislation on the performance of projects under different legislation periods. The results showed that the legislation has an important role in enhancing the project performance. These results reflect the overall impact of legislation change on the project performance. Therefore, system dynamics model was developed to evaluate the impact of legislation on the performance of construction projects in quantitatively assessment.

Two models of system dynamics were developed, the first was developed to assess the impact of legislation changes on the cost and time performance of projects. The model showed that legislation changes lead to increase in owner, contractor and design adequacy and this lead to decrease the change in cost and time in construction project. The second model was developed to assess the quality level in construction project. The model showed that changes in legislation lead to increase the quality performance of construction project.

According to this study ; the most suitable performance in construction sector was achieved by suggested legislation clauses and predict their impact by system dynamics model and then compare the results with legislation that issued after 2014. The results showed that the proposed system lead to control changes and decrease them to 4.7% change in cost , 54.5% change in time and increase the quality level to 94.9 % .