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EXTENDED ABSTRACTS

A Model to Determine the Share Amount of Effective Factors On Contractual Claims of Contractors Using Radial Basis Function

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1. Introduction

In the present paper, results of experimental and numerical investigations on the stress concentration factor (SCF) distribution in internally ring-stiffened tubular KT-joints of offshore structures are presented. In this research program, an experimental study was followed by a set of parametric stress analyses for 118 steel ring-stiffened KT-joints subjected to axial loads. The analysis results were used to present the general remarks on the effect of geometrical parameters on the SCF distribution along the weld toe, and to establish a new set of SCF parametric equations.

2. Introduction

Construction projects are complicated, dynamic and unique. Besides, the differences of nature of involved factors and also cultural, financial, and technical challenges make the dispute as a common occurrence in the construction industry and consume resources of project builder (Cheung et al., 2007). Claim and dispute are principal and effective factors with negative consequences on the triangle which can be considered as extra cost in construction projects (Levin, 1998). Accordingly, claims play a fundamental role in contractual relations between owner and contractor (Hasheminasab, 2013).

It should be mentioned that disagreement and misunderstanding made the dispute and claim has many complicated and related factors (Arditi et al, 1998). In accordance with its prominent capabilities in process of 'prediction', using Radial Basis Function can help accurate determination and foresight of the share amount of each factor.

The study aimed at designing a predictive, project- related, fast, and accurate model to determine the share amount of each involved factor (owner, consultant, and contractor) in creating the common claims in construction projects in Iran.

3. Methodology

*2.1. Structure and aim of the stu*dy

The overall structure of this paper is shown in Fig. 1. The study is descriptive and information were gathered in library researches, questionnaire, and interview (field researches). The aim of the present paper is recognition, analysis, and determination of the share amount of each involved factor in three-factor

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construction projects (in Iran) due to the important role of each factor in recognition, correct encounter, and preventing of occurring incorrect claims.

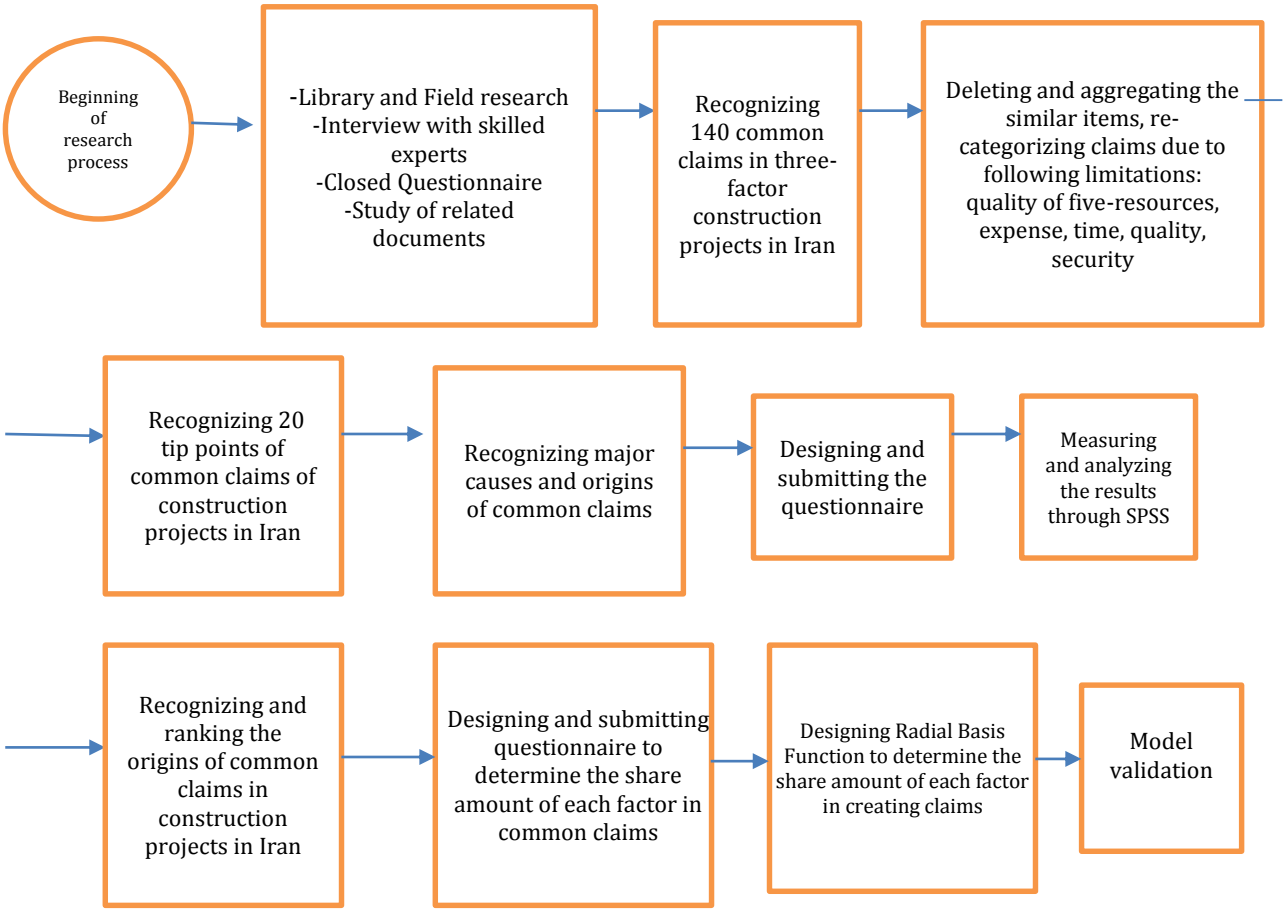

Fig. 1. The structure of the present study

2.2. The Suggested Model

As the aim of the study is designing a predictive model, there is the necessity for input in the same direction with the structure and aim of the study. In fact, on the basis of common claims in projects (inputs), the system can predict the share amount of each factor and it is shown in Fig. 2.

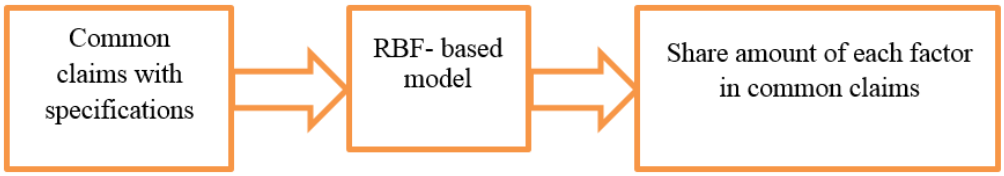

Fig. 2. Basic Input and Output of the model

3. Results and Discussion

3.1. Radial Basis Function Model of the Study

Fig. 3 illustrates the Neural network Model for contract claims schematically.

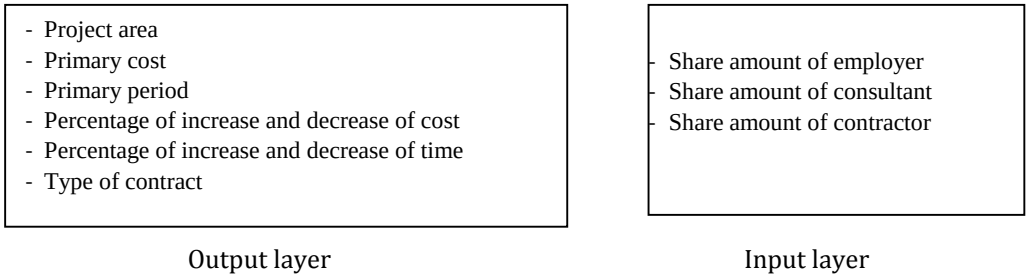

Fig. 3. Schematic structure of Radial Basis Function of the study

The Radial Basis Function figures out an input layer, hidden layer (middle), and output layer. The number of neurons of the input layer is six while the output layer consists of three neurons. The input layer of the model is information of projects including area, primary cost, primary time, percentage of increase or decrease in cost, percentage of increase or decrease in time, type of contract. The share amount of each factor (owner, consultant, contractor) is being considered as the output layer

3.2. Data Analysis

The predicted results through designed Radial Basis Function while considering the mentioned points in table 2. Comparing the RMSE values of 16 Radial Basis Function; '3-5-6' model is the most applicable and effective model. '3-5-6' model consists of a Radial Basis Function with 6 input neurons, 5 hidden neurons, 3 output neurons that have the highest efficiency in evaluation of the share amount of each factor in creating contractual claims. The correlation coefficient for processes of training and testing were 0.94 and 0.82 that are adequate values.

4. Conclusion

Determining the share amount of each project factor in creating claims of construction projects is a basic level for accurate the project and technical arbitration in claim management. Contract claims occur more in construction projects due to the fundamental nature of contract. According to achieved data of 138 trained and tested projects in the present study, the model can be applied in several construction projects as a 'predictive model'.

5. References

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