Estimation of flexural rigidity in existing bridges by using an Artificial Neural Network and the measurement results

NGUYEN HUU HUNG 1, \*, DAM MINH HUNG2

1 University of Transport and Communications, Hanoi, Vietnam

2 Training, Construction and Human Resource Development Joint Stock Company No6, HoChiMinh city, Vietnam

\*Corresponding author: nhhunggttp@utc.edu.vn

**Abstract:** This paper presents a method for estimating the flexural rigidity of existing bridges using Artificial Neural Networks and measured data. First, the author uses the finite element method to obtain the modal frequencies and their corresponding spacetime frequency parameters. And then, the flexural rigidity of the bridge is estimated from the relationship between the modal frequencies and the flexural rigidity. The results show that the proposed method is capable of predicting the flexural rigidity of the bridge with high accuracy.

**Keywords:** Flexural rigidity; Modal frequency; Nondimensional frequency; Bridge.