

Predicting Blockchain Technology Installation Cost in Supply Chain System through Supervised Learning

Authors : Hossein Havaeji, Tony Wong, Thien-My Dao

Abstract : 1. Research Problems and Research Objectives: Blockchain Technology-enabled Supply Chain System (BT-enabled SCS) is the system using BT to drive SCS transparency, security, durability, and process integrity as SCS data is not always visible, available, or trusted. The costs of operating BT in the SCS are a common problem in several organizations. The costs must be estimated as they can impact existing cost control strategies. To account for system and deployment costs, it is necessary to overcome the following hurdle. The problem is that the costs of developing and running a BT in SCS are not yet clear in most cases. Many industries aiming to use BT have special attention to the importance of BT installation cost which has a direct impact on the total costs of SCS. Predicting BT installation cost in SCS may help managers decide whether BT is to be an economic advantage. The purpose of the research is to identify some main BT installation cost components in SCS needed for deeper cost analysis. We then identify and categorize the main groups of cost components in more detail to utilize them in the prediction process. The second objective is to determine the suitable Supervised Learning technique in order to predict the costs of developing and running BT in SCS in a particular case study. The last aim is to investigate how the running BT cost can be involved in the total cost of SCS. 2. Work Performed: Applied successfully in various fields, Supervised Learning is a method to set the data frame, treat the data, and train/practice the method sort. It is a learning model directed to make predictions of an outcome measurement based on a set of unforeseen input data. The following steps must be conducted to search for the objectives of our subject. The first step is to make a literature review to identify the different cost components of BT installation in SCS. Based on the literature review, we should choose some Supervised Learning methods which are suitable for BT installation cost prediction in SCS. According to the literature review, some Supervised Learning algorithms which provide us with a powerful tool to classify BT installation components and predict BT installation cost are the Support Vector Regression (SVR) algorithm, Back Propagation (BP) neural network, and Artificial Neural Network (ANN). Choosing a case study to feed data into the models comes into the third step. Finally, we will propose the best predictive performance to find the minimum BT installation costs in SCS. 3. Expected Results and Conclusion: This study tends to propose a cost prediction of BT installation in SCS with the help of Supervised Learning algorithms. At first attempt, we will select a case study in the field of BT-enabled SCS, and then use some Supervised Learning algorithms to predict BT installation cost in SCS. We continue to find the best predictive performance for developing and running BT in SCS. Finally, the paper will be presented at the conference.

Keywords : blockchain technology, blockchain technology-enabled supply chain system, installation cost, supervised learning

Conference Title : ICCOA 2021 : International Conference on Computational Optimization and Applications

Conference Location : Zurich, Switzerland

Conference Dates : September 16-17, 2021