International Journal of Quality & Reliability Management

Guest editorial: Recent advances on reliability modelling and quality management

This Special Issue of the *International Journal of Quality and Reliability Management* deals with recent advances in reliability modeling and quality management, which have attracted a lot of research interest in the last 3 decades. The Special Issue offers new trends and provides significant contributions to statistical process control, system modeling, system maintenance, software reliability, blockchain technology, software quality, logistic management, preventive maintenance, supply chain, supply chain reliability, quality control and resilience assessment.

This Special Issue is focused on the following 15 topics:

A convolutional neural network to identify the change point of a multistage process profile with cascade property: The present work provides an effective artificial-based approach for detecting the change point of a multistage procedure under the assumption that the underlying process fits well to a linear model. The resulting estimation of the change point was shown to be stable due to its small standard deviation.

Maintenance policies considering degradation and cost processes for a multicomponent system: The present work offers a new approach for modeling the deterioration process of a multicomponent system under both age replacement and block replacement policies. The main contribution of the paper refers to the establishment of closed formulas for crucial characteristics of the underlying problem, such as the expected cost and the mean time between replacements.

Risk-based reliability assessment and testing stoptime-based software system modeling: In the present work, the behavior of software defined network (SDN) controllers when they are launched in the market is under investigation. Among others, the authors shed some light on the impact of learning parameters in estimating the amount of debugged fault content using a software reliability growth model (SRGM).

The factors obstructing the blockchain adoption in supply chain finance: a hybrid fuzzy DELPHI-AHP-DEMATEL approach: The authors investigate the key factors obstructing blockchain adoption in supply chain finance. Moreover, the role of the identified factors for implementing blockchain as well as the cause-and-effect correlations between them is examined.

Enhancing the website usage using process mining: The authors implement the so-called process mining for predicting the web usability of hotel booking sites based on the number of users on each page and the time of stay of each user. The website usability metrics are analyzed. A specific case study is also analyzed, focusing on pre-processing the corresponding event log dataset in order to find out well-structured process maps.

An optimal software enhancement and customer growth model: a control-theoretic approach: The authors provide an analytical model to determine the new feature growth and customer growth in the software management field during the software development lifecycle (SDLC) to maximize the profit. Among others, an approach for maximizing the profit of software to be released to the market by adding new features is also proposed.

A hybrid framework for fleet management with quality concerns: a case for the food industry: In the present work, a hybrid analytic hierarchy process (AHP)-simulation framework for improving the distribution of the final products is proposed. Moreover, a sensitivity analysis, which focuses on the influence of several criteria related to quality, delay and cost on picking up the best distribution solution in food distribution, is also provided.

COVID-19: A Kano model and AHP-based classification of preventive activities under fuzzy environment: The present study aims at analyzing the preventive measures for

International Journal of Quality & Reliability Management
Vol. 41 No. 9, 2024
pp. 2229-2231

0265-671X
DOI 10.1108/IJQRM-10-2024-457

COVID-19 and their priorities with the aid of appropriate approaches, such as the Kano model and fuzzy AHP model. Among others, the categorization and prioritization of preventive actions against COVID-19 are well described and commented.

Impact of code smells on software development environments: a study based on ENTROPY-CODAS method: Throughout the lines of the present work, the most crucial impacting criteria regarding the smell taxonomies are detected. Moreover, the influence of several factors, which result in the occurrence of smells, is evaluated with the aid of multi-criteria decision-making techniques.

On the nature of supply chain reliability: models, solution approaches and agenda for future research: The present paper provides an up-to-date review of supply chain reliability, wherein several mathematical, empirical and conceptual articles are studied. The authors offer also a categorization of the supply chain reliability determinants and some concluding remarks.

Generalized new exponentially weighted moving average control charts for monitoring process dispersion: The authors provide a modification of the well-known exponentially weighted moving average control charts by implementing the generalized time-varying fast initial response. The enhancement of the performance of the proposed monitoring schemes and its superiority against its competitors is verified by the aid of run length characteristics.

Smart technologies for collection and classification of electronic waste: The present work deals with the utilization of smart technologies, such as robotics, data-driven techniques or cloud computing tools, for collecting and classifying the electronic waste. Several concluding remarks are delivered by the aid of appropriately chosen multi-criteria decision-making methods.

Assessing resilience in mechanical systems: an industrial perspective: Throughout the lines of the present work, a formulation is presented to examine the resilience of mechanical systems. Among others, the robustness of the resilient system before disruption and recovery of the resilient system after disruptions are investigated in some detail.

Some inferences on mixture of exponential and Rayleigh distributions based on fuzzy data: In the present article, the mixture of exponential and Rayleigh distributions is under investigation. The results verify that the estimation based on fuzzy data is quite accurate, especially in the presence of data vagueness.

Assessment of reliability measures and cost optimization of a solar seed sowing machine: The authors propose a general model of a solar seed sowing machine for reliability evaluation. The Markov process approach, which has been implemented, leads to the establishment of formulas for determining several characteristics of the proposed structure, such as the availability function, reliability function, reliability at different time values, mean time to failure and sensitivity.

Challenges and future directions:

(1) Consider the influences of environmental factors, such as weather conditions, on the machine's reliability and performance;

(2) Develop maintenance policies adaptable to real-time reliability data that can enhance system performance and resource utilization;

(3) Explore the Bayesian estimation method for a mixture of exponential and Rayleigh distributions under any censoring techniques with fuzzy data;

(4) Exploit smart technologies to solve the collection and classification of e-waste;

(5) Extend the implementation of the generalized time-varying fast initial response using additional control charts already established in the literature;

(6) Implement digital technologies like artificial intelligence and Internet of Things (IoT) on supply chain strategies;

(7) Investigate how emerging technologies like IoT, drones and autonomous vehicles can be useful in helping people adhere to preventive activities;

(8) Consider deep neural networks and reinforcement learning for modeling fleet distribution in food industry networks and

(9) Implement process mining techniques for analyzing the automated discovery of knowledge from data, checking compliance with regulations or healthcare applications.

We would like to express our thanks to all the authors for their important contributions and to the anonymous reviewers for their time and efficient work in evaluating the submissions. We are truly gratified by their excellent, timely responses.

Further, we would like to thank Professor Jiju Antony, Editor-in-Chief of the *International Journal of Quality and Reliability Management,* for accepting this special issue and giving his full support from the very beginning.

Mangey Ram
Department of Mathematics, Graphic Era (Deemed to be University), Dehradun, India

Ioannis S. Triantafyllou
University of Piraeus, Piraeus, Greece

Liudong Xing
School of Finance and Statistics, University of Massachusetts, Dartmouth, Boston, USA, and

Ajit Kumar Verma
Western Norway University of Applied Sciences, Bergen, Norway