Guest editorial: Data-driven quality management systems for improving supply chain management performance

1. Introduction

Quality management systems are critical for new product development and support sustainable development initiatives (Siva *et al.*, 2016). A well-functioning quality management system is a prerequisite for a successful environmental management system (Wiengarten and Pagell, 2012).

The fourth industrial revolution has introduced many advanced information and communication technologies, which proved to help collect and analyzing real-time production data to support decision making in smart factories (Feng *et al.*, 2018). New concepts like cloud manufacturing have emerged that rely on data collection in cloud-based and cyber-physical systems (Mashhadi *et al.*, 2018). Therefore, data driven decision making is gaining importance among supply chain (SC) practitioners (Bag *et al.*, 2020). However, Rejikumar *et al.* (2020) underline the need for an adequate infrastructure capable of collecting and disseminating reliable data among decision-makers for the necessary confidence to adopt data-driven approaches.

Schlegel *et al.* (2018) indicated that emerging production technologies, such as additive manufacturing, enable the industrial production of customized products but are often accompanied by fluctuations in product quality, as well as low process stability. Schlegel and his research team describe how self-learning production systems may efficiently adapt to these disturbances through autonomous data-driven quality control.

The current literature indicates that data driven quality management systems have significant benefits. However, it is in a nascent stage particularly in developing countries due to influence of multiple factors such as lack of support from Department of Trade and Industry, lack of infrastructure, improper leadership styles, lack of technical skills and knowledge, etc. The Special Issue (SI) "Data-Driven Quality Management Systems for improving Supply Chain Management Performance" was launched to address the gap in the current literature. As a result, SC management researchers were invited to examine how data-driven quality management (DDQM) systems enhance SC management performance.

The following illustrative questions guided submissions for this special issue:

(1) What are the drivers, enablers, barriers and challenges of data driven quality management systems for process/resource optimization in sustainable SC management?

(2) How can organization leaders help to develop and implement synergies among employee empowerment and data driven quality management systems?

(3) What is the role of basic and advanced technologies related applications in data driven quality management systems for improving sustainable SC management performance?

2. Contribution

In response to the call for papers, we have attracted nineteen papers. The papers considered not a proper fit for this SI, were desk rejected so that authors may find other suitable outlets for their manuscripts. We have undertaken an extensive review process guided by journal guidelines. Finally, we accepted 13 papers that we believe contribute to quality management and SC management literature using a data-driven systems angle. We now discuss each contribution in detail. Our SI addresses some critical issues related to quality management and SC management, and big data with these 13 articles.

The first paper, "Big data-driven supply chain and performance: a resource-based view", examined the role of SC performance as a mediator between big data-driven supply chain (BDDSC) and sustainable firm performance. In addition, the role of firm age as a moderator between BDDSC and SC performance and between SC performance and firm sustainable performance has also been explored. The study adds to the existing literature by considering a "black box" using SC performance and firm age to comprehend the relationship between BDDSC and sustainable firm performance.

The second paper, "Influence of data-driven supply chain quality management on organizational performance: evidences from retail industry", tested a conceptual model based on the interrelation between data driven SC quality management practices (DDSCQMP) and the performance of retail firms in India. The study provides empirical justification for a structural model that identifies a positive and significant relationship between DDSCQMP and organizational performance within the context of the formal retail sector of India.

The third paper, "Data-driven quality improvement approach to reducing waste in manufacturing" proposed a methodology to aid the implementation of digital technologies and digitization of the SC to enable data driven quality management and the reduction of waste from manufacturing processes. This study proposes the HydAPI methodology that utilizes key elements of the Six Sigma DMAIC and the CRISP-DM methodologies along with additions proposed by the author to aid with the digitization of manufacturing processes leading to DDQM of SC operations.

The fourth paper, "A systematic and network-based analysis of data-driven quality management in supply chains and proposed future research directions", reviewed past and present articles about DDQM in SCs. The motive behind the review is to identify associated literature gaps and to provide a future research direction in the field of DDQM in SCs. The paper discusses the importance of data-driven techniques as drivers of quality in SC management systems. The study elaborated on the linkage between data-driven techniques and quality management in the improvement of SC performance.

The fifth paper, "Digital supplier selection reinforcing supply chain quality management systems to enhance firm's performance", explored the factors that affect the selection of digital suppliers. The authors also evaluated the alternatives for identifying the best supplier that enhances the quality management systems for digital SCs. The research on digital supplier selection and its importance in enhancing quality management systems is limited. This research is a novel approach to understanding the criteria behind the selection of the digital suppliers' role and enhancing the quality of products and services.

The sixth paper, "The conceptual framework on integrated flexibility: an evolution to data-driven supply chain management", aims to establish a relationship between SC integration and SC flexibility to develop a two-dimensional approach, i.e. integrated flexibility. The authors have developed an entirely new integrated flexibility concept that provides a base for sustainability in a competitive market. Integrated flexibility is built on relational view and dynamic capability theory and supported by data analytics, quality management and knowledge management.

The seventh paper, "The role of 3S in big data quality: a perspective on operational performance indicators using an integrated approach", aims to provide insight into the

operational factors of big data. The operational factors/indicators are categorized into three functional parts, namely, synthesis, speed and significance. Based on these factors, the organization enhances its big data analytics (BDA) performance, followed by selecting data quality dimensions to any organization's success. This study creates awareness about the role of 3S in big data quality by prioritizing using fuzzy analytic hierarchy process (AHP) and PROMETHEE.

The eight paper, "Reinforcing the significance of human factor in achieving quality performance in data-driven supply chain management", aims to explore the various dimensions of human factors relevant for integrating DDSCQMP with organizational performance. Keeping the transition phase from "Industry 4.0" to "Industry 5.0" in mind, the paper reinforces the role of the human factor. It critically discusses the issues and challenges in the present organizational set-up. In line with the present "Industry 4.0" requirements and the forthcoming "Industry 5.0", where the need to integrate human factors with smart systems gets priority, the paper made a novel attempt to present the critical human factors and categorize them under critical driving forces. The research also contributed in linking DDSCQMP with organizational performance. The proposed framework can guide the future researchers in expanding their theoretical constructs through initiating further cross-cultural studies across industries.

The ninth paper, "Technology and leadership styles: a review of trends between 2003 and 2021", aims to review significant work by eminent researchers toward artificial intelligence in the form of trends, popular affiliations and sources, 20 most cited references, country-wise citations, popular scholars, countries and themes, affiliations and co-authorship, trending keywords, topics and co-occurrences, thematic analysis of leadership styles and technology. The research findings indicate connections between various keywords and provide interesting themes including the connection between a transformational leadership style and knowledge management, transactional leadership, empowering leadership and other combinations. Similarly, leadership is connected to leadership development, gender stereotypes, emotional exhaustion and organizational performance.

The 10th paper, "Evaluation of machine tool substitute under data-driven quality management system: a hybrid decision-making approach", evaluates quality attributes of mechanical machineries for seizing performance opportunities and maintaining competitiveness via synchronizing and reconfiguring firm's resources under a quality management system. Decision makers can realize significant benefits by streaming quality data, advanced information, technological advancements, optimum analysis and identifying quality measures and disruptions to improve performance. The study determined quality measures for benchmarking machine tool substitutes for industrial applications. Critical machine alternatives are evaluated through technical structure, dominance theory and comparative analysis to support decision-making of industrial assets based on optimization and synchronization.

The 11th paper, "Strategic issues of big data analytics applications for managing health-care sector: a systematic literature review and future research agenda", aims to find the research gaps in the literature and to investigate the scope of incorporating new strategies in the health-care sector for increasing the efficiency of the system. Unique contribution involves highlighting the importance of big data, which may be very useful for health-care sector. A comprehensive literature review is carried out for research papers published between 1974 and 2021.

The 12th paper, "Examining the role of dialogic communication and trust in donation-based crowdfunding tasks using information quality perspective", explores the role of dialogic public communication and information quality (IQ) in evaluating the operational performance of donation-based crowdfunding (DBC) tasks. These tasks are primarily used to support disaster relief operations. The authors also test the influence of cognitive trust and swift trust as moderating variables in explaining the relationship between both IQ and

dialogic communication with operational performance. The authors propose a unique framework by integrating two theoretical perspectives: dialogic public relation theory and trust transfer theory in understanding the operational performance of DBC tasks. The authors address DBC tasks catering to disaster relief operations by collecting responses from task creators on DBC platforms.

The 13th paper, "Air quality management using genetic algorithm based heuristic fuzzy time series model", aims to provide a better method for quality management to maintain an essential level of quality in different fields like product quality, service quality, air quality, etc. The proposed method is an improved version of the adaptive time-variant fuzzy time series model. Further, a nature-inspired algorithm has been integrated for the selection and optimization of fuzzy intervals.

3. Future research directions

We are sure that each of the accepted articles in this special issue has made a significant contribution to the existing body of knowledge and expanded scientific boundaries. Future researchers can further extend these studies to make progress in the domain of SC management from a big data perspective.

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