Guest Editorial: The business value of Blockchain, challenges, and perspectives

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Abstract

Blockchain is believed to have the potential to digitally transform and disrupt many industry sectors such as finance, supply chain, healthcare, marketing, and entertainment. However, there are obstacles and challenges with the wide-spread applications of this technology. The special issue of "The business value of Blockchain, challenges, and perspectives" at the Journal of Information Technology Management (JITM) aims to cover this timely and hot research topic of Blockchain, the challenges it faces, and the value it brings to the different industry sectors. We received numerous submissions; nevertheless, after the initial screening and two rounds of the peer review process, ten papers have been finally accepted for publication. Accepted papers can be categorized into four categories as Blockchain for the public sector, Blockchain for marketing and advertising, Other Blockchain applications, and Blockchain platforms.

Keywords: Blockchain; Blockchain business value; Blockchain challenges; Digital transformation; Distributed Ledger Technology.

Overview of Submissions

There are ten articles in this special issue categorized into four categories: Blockchain for the public sector, Blockchain for marketing and advertising, Other Blockchain applications, and Blockchain platforms.

The first category, Blockchain for the public sector, addresses applications, opportunities and challenges with Blockchain application in the public sector focusing on healthcare and police services.

The first article "Exploring opportunities and challenges of Blockchain-Based Electronic Medical records," discovers the potentials and obstacles of Blockchain application for electronic medical records. It suggests that employing Blockchain in electronic medical files can reduce extra costs, create a comprehensive system for medical records to avoid additional costs, facilitate access to patient information, and reduce medical errors. This research also reveals that blockchain technology's challenges (low speed, difficulties in working with Blockchain, and poor integrations) are the most crucial challenges of Blockchain application for electronic medical records.

The second article "Policy Factors Affecting the technological catch-up of Electronic Health Services in Iran through Blockchain Technology," uses a case study approach, literature review, and narrations of experts to present policy factors to catch up through the Blockchain technology opportunity window. Proposed policies encompass four categories: macro policies, market, financing, and technology learning and development. Hence, this study presents a technological catch-up policy framework by Blockchain technology to policymakers in e-health sector.

The third article "Blockchain Applications for the Police Task Force of IRI: A Conceptual Framework Using Fuzzy Delphi Method," provides a conceptual framework for employing Blockchain in law enforcement organizations by analyzing and comparing best practices and case studies. The proposed Blockchain applications for police task forces and law enforcement agencies in Iran are quantitively validated and suggested as trustless authentication systems, distributed data/resource/information management, and inter-department integrated information systems.

The second category covers Blockchain applications for marketing and advertising with two accepted papers.

The fourth paper "Trust in Blockchain-Based Advertising: A System Dynamics Approach," identifies a dynamic trust model in blockchain-based advertising and acceptance of this type of advertising. Systems dynamics methodology (Sterman approach) and a dynamic research model are presented, and simulations and scenario analyses were performed to validate the causal relationships. The results show the positive effect of the audience, advertiser and advertising characteristics on trust in blockchain-based advertising that utterly leads to boosted audience loyalty.

The fifth paper "Blockchain Implications for Marketing; A Review and an Empirical Analysis," proposes a conceptual model for Blockchain benefits for marketing, including fostering disintermediation, combating click fraud, reinforcing trust and transparency, enhancing privacy protection, empowering digital marketing security, and enabling creative

loyalty programs. The proposed model is validated through a survey. It suggests that Blockchain does provide promising benefits for marketing, per se, but that depends on whether marketers use public (permissioned) blockchain or private (permissioned) blockchain, and also the ability of the blockchain community to resolve fundamental challenges and pending issues such as scalability, speed, interoperability, and privacy, besides several many others.

The third category covers other Blockchain applications, including areas of project and construction management, logistics, and international markets, with three accepted papers.

The sixth paper "Blockchain for Project and Construction Management; A Systematic and Scoping Literature Review" aims to identify the capacity and platforms for developing blockchain technology in project management and construction using a systematic and scoping literature review. Moreover, it provides some suggestions about the development and improvement areas of this technology.

The seventh paper "Blockchain Capabilities to Improve the Productivity of Maritime Logistics Processes: Review, Taxonomy, Open Challenges and Future Trends" reviews recent academic articles published since 2014 on maritime logistics focusing on blockchain capabilities. The paper also discusses and challenges the current operational paradigms and, by categorizing efforts, provides a taxonomy of research topics in maritime logistics.

The eighth paper "Challenges of using blockchain technology in the international markets" investigates the challenges of using blockchain technology in international markets concerning the risks of such emerging technologies. This study proposes 41 challenges and classifies them into the technical, educational, structural, market, infrastructure, and legal, divided into internal and external areas.

The fourth category covers Blockchain Platforms. Two accepted papers in this category have a more technical view of Blockchain technology than previous categories that are more business and application oriented.

The ninth paper "Analysis of Revocation Mechanisms for Blockchain Applications and a Proposed Model Based in Self-Sovereign Identity" assesses and discusses revocation mechanisms to contribute to the technical feasibility of several applications, which require corrective operations. It further presents a model in the academic area, which can be replicated for other types of systems in other areas.

The last paper "Blockchain-Based ERP System: Architecture and Opportunities for Future" using Exploratory Content Analysis (ECA), reviews more than three hundred scientific articles in the field of Blockchain to analyze the effects of this technology on ERP system modules such as supply chain management, maintenance, finance, project management, manufacturing, and human capital management. It proposes an architectural model for a blockchain-based ERP system.