Guest editorial

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Special issue on "application of blockchain technologies for global operations."

Introduction

Blockchain technology is one of the emerging technologies and has also been featuring in the disruptive technology section, thereby enabling economic, social and business transformations in the recent past (Cohen and Amorós, 2014; Morkunas *et al.*, 2019). While blockchain technology has mostly been used in financial services, its impact on business operations has gradually started gaining attention (Dutta *et al.*, 2020). It has its application in situations that involve a buyer and seller and trade can be for information and technology, information, etc. Thus, blockchain offers businesses space to flourish and thereby creates a value chain for business models to expand (Tönnissen and Teuteberg, 2020). With scope and prospects primarily discussed conceptually and rarely practiced practically, there lies a gap that needs to be addressed. While businesses have shown potential in using blockchain technologies, there is a wide gap in understanding how this technology can be used universally and accepted by business operations. The adoption and adaptation of blockchain depend on intrinsic and extrinsic factors that can be further classified into technological, social, economic, psychological, etc. Swan (2015), Tapscott and Tapscott (2016).

Industries mostly use blockchain technology as a pilot project in supply chain management, real estate, health care, public policy, consumer insights and financial transactions. While firms have gained some success in adopting and implementing blockchain in their existing process, there are a handful of business operation models developed that are incorporated by the industry and academia (Kamble *et al.*, 2019; Queiroz and Wamba, 2019). With a growing number of consortia, a decrease in complexity and costs of implementation and a larger number of pilots and experiments underway, Blockchain is advancing rapidly toward greater acceptance. Astute executives and managers should understand how the technology fits in their business and how it can improve operations to capture its advantages ahead of their competitors (Behl *et al.*, 2021; Choudhury *et al.*, 2021; Behl, 2020; Behl *et al.*, 2019).

Managers are well advised to continuously monitor blockchain technologies to assess their impact and consider the strategic importance of blockchain for their business operations. Blockchain technology also offers a competitive edge for firms and makes their business processes transparent and trustworthy. Business operations also get smoother with a lack of information asymmetry, which builds on the case of blockchain to be understood by researchers, practitioners and faculty members. The Special Issue received submissions on various topics ranging from the application of blockchain in the area of finance, health care, taxation and supply chain management. The editorial team reviewed the papers carefully to ascertain their fitment as per the suggested themes of the Special Issue. The issue comprises eight papers submitted from different geographies and applied blockchain in diverse disciplines by using innovative methodological approaches.

Contribution to the special issue

The first paper, titled "A review of challenges and opportunities of blockchain adoption for operational excellence in the UK automotive industry," aimed to explore the challenges and

opportunities of blockchain technology adoption from the lens of the technological–organizational–environmental (TOE) framework for operational excellence in the UK automotive industry context. The study adopted a systematic review approach, which analyses existing academic published research papers in the top 35 academic journals and used 71 papers to perform a systematic review. The study presented opportunities to perform research in blockchain from the TOE framework angle to achieve operational excellence.

The second paper, titled "Blockchain Technology in Financial Services: A comprehensive review of literature," reviewed papers that used blockchain technology in the context of finance. The study uses a PRISMA guided systematic review and bibliometric analysis to understand how research in blockchain technology has shaped up in the past decade in the economic context. The study contributes to the existing literature by exploring and analyzing studies available on blockchain with special reference to the financial services sector. With the increasing blockchain-based operations of decentralized banking, insurance, trade finance, financial markets and cryptocurrency market, the subject is rapidly growing and seeking considerable contribution from scholars worldwide.

The third paper titled – "An integrated approach to model the blockchain implementation barriers in the humanitarian supply chain," aims to use the FBWM approach to prioritize the barriers to adopt blockchain technology in the context of the humanitarian supply chain. The study identified 14 potential barriers to BCT adoption in HSC through a literature survey. The survey comprises white papers, pilot studies, conference proceedings and journal articles. Further, the identified barriers were finalized in consultation with a team of experts. The team comprised experienced stakeholders working in the humanitarian domain and BCT development. The barriers were categorized into four (technological, organizational, exogenous and economic) perspectives adopting the kappa statistics. The findings from the study indicate that the barriers, such as "data privacy, ownership and security issues," "funding issues and cost complexity," and "technological complexities," are relatively more influential. Further, "lack of awareness and understanding among stakeholders" and "interoperability, collaboration and cross-pollination among HOs" were identified as the least significant barriers to adopting blockchain technology in the humanitarian supply chain.

The fourth paper, titled – "Barriers to adoption of blockchain technology in green supply chain management," aims to identify the barriers to adopting blockchain technology in green supply chain management (GSCM) and further analyze the cause and effect relationship to prioritize the barriers for making strategic decisions. The study examines 15 potential barriers related to the adoption of blockchain in GSCM, which is identified from the literature review and finalized after subsequent discussions with industry professionals. Integrated Fuzzy-Decision-Making Trial and Evaluation Laboratory approach analyzes cause and effect relationships and prioritizes the barriers. Fuzzy set theory is used to handle the uncertainty and vagueness of personnel biases and data deficiency problems. Three small to medium enterprises' (SMEs') are considered for gathering data and further analyzing the crucial barriers that impede the adoption of blockchain technology in GSCM. The findings reveal that "lack of management vision" and "cultural differences among supply chain partners" are the most influencing barriers, whereas; "collaboration challenges" and "hesitation and workforce obsolescence" are the most influential barriers in the adoption of blockchain in GSCM.

The fifth paper, titled – "Barriers to blockchain adoption in health-care industry: an Indian perspective," aims to identify barriers toward adopting Blockchain (BC) technology in Indian health-care industry and examine the significant issues of BC applications in the health-care industry. The study's barriers are identified by two phases: the review of literature and semi-structured interviews with hospital staff and administration operating in India. The study integrated total interpretative structural modeling and fuzzy-cross-impact matrix multiplication (TISM-FUZZY-MICMAC) methods for identifying the interrelationship among the barriers. The findings suggest that low awareness related to legal issues and low support from a high management level have maximum driving power. The technology adoption practices are expected to provide applications such as distributed, secured medical and clinical data and patient-centric systems that will enhance the health care industry's efficiency.

The sixth paper titled – "Behavioural intention to adopt blockchain for a transparent and effective taxing system," assesses the tax stakeholders' intention toward adopting blockchain technology for a transparent and effective taxing system in Bangladesh. It examines the factors influencing the users' behavioral intention to adopt BT with a blended model built on the technology acceptance model (TAM) and self-determination theory (SDT). This research develops a prescriptive model to demonstrate how the stakeholders are interested in adopting BT for the taxing system. Data were obtained through a structured questionnaire from the taxing system stakeholders, including tax policymakers, tax commissioners, tax officers, lawyers, tax consultants and the taxpayers. Statistical analyses were performed using partial least square-structural equation modeling. Results reveal that out of the two primary TAM antecedents known as usefulness (PU) and ease of use (PEU), PU significantly influences the BT adoption intention. The only cognitive variable called autonomous motivation picked from SDT has a positive and significant impact on BT adoption for tax purposes. Finally, trust is another critical determinant for explaining stakeholders' intention to adopt BT for an efficient taxing system where transparency can be ensured. This research has social consequences for a recently graduated developing economy such as Bangladesh, where transparency and efficiency matter. Because BT adoption can assure a convenient and favorable environment for the taxpayers upholding taxation principles, it can play a significant role by ensuring social justice and equity through a transparent and effective taxing system.

The seventh paper – "Assessing Blockchain Technology application for freight booking business: a case study from Technology Acceptance Model perspective," develops a framework for a freight consolidation company to adopt blockchain for the shipping community. The research critically examines the challenges faced by a global shipping company that offer freight consolidation businesses and explores blockchain technology's use to enhance freight booking operations' competitiveness and sustainability. This paper is a case study, ECU Worldwide, focusing on transforming their operations using blockchain technology for the freight booking industry. As the case is explorative, the research aims to unearth the complex blockchain adoption phenomenon as the technology is nascent at present. The research finds that blockchain technology supports solving many issues and inefficiencies of global shipping operations, but there are some barriers that they need to overcome. The research provides a framework and recommendations for a global company to consider when considering blockchain technology for implementation. Our research finding shows that smart contracts can be set up at critical points along

with the shipment route, namely, the storage, customs, carrier, transporters and consignee stage, to ensure greater security and transparency.

The eighth paper titled – "Blockchain-based Smart Contract for International Business – A Framework," develops the framework based on value chain analysis (VCA) of international trade and an ontology-driven-blockchain-design approach. The paper analyses the sequence of activities in the value chain of global trade, the terms of the contract, the data structure, the validation rules, the points-of-failure and proposes the smart contract blockchain. This paper proposes a blockchain-based smart global contract framework considering the INCO Terms 2020; it provides the validation rules and the probability of failures; identifies the elements that cause the halting of contracts and conditions of creation of side blockchains. The paper proposes a complete value chain of international sale contract (ISC), an ontology of ISC and a blockchain-based smart-contract framework based on harmonized terms, namely, the international commercial (INCO) and other terms of the contract. Besides, it specifies the elements of fraud (such as the non-integration of side chains) and uncertainty, i.e. the probability of failures.

The eight papers offer a constructive and diverse backdrop of the issues in the area of blockchain technologies. The authors' intellectual contributions steer the research in three dimensions: case-based studies, empirical evidence using operational modeling of enablers of blockchain technology and theoretical advancements to understand the adoption of blockchain technology. The papers published in the Special Issue offer critical areas of research and applications in international trade and finance. Thus, it becomes interesting to explore how blockchain technology can help firms improve their financial performance through trust and transparency.

Conclusion and future directions of study
The Special Issue paves the path of understanding the adoption, use and implementation of blockchain technology across multiple disciplines. The issue publishes eight papers summarizing the existing body of knowledge and charts out the scope to ask some interesting research questions that can be explored in the context of new sectors like public policy, disaster relief operations and international trade (Dubey *et al.*, 2020). Some of the central research questions that researchers in the future can answer are as follows:

RQ1. How can blockchain technology be useful for small and medium scale industries to improve their operational performance?

RQ2. How can government and public sector firms use the power of blockchain technology to improve efficiency and transparency while serving the citizens of the country?

RQ3. How can psychological and human resource theories be useful in explaining the adaptation of blockchain technology in businesses?

RQ4. What are the dark side to adopting and using blockchain technology in specific industries?

RQ5. How can blockchain technology be useful for entrepreneurs?

RQ6. What are the technological, social and enterprise-level factors that may lead to the failure of blockchain technology post its adoption?

RQ7. What are the risks involved in understanding, implementing and post-implementing blockchain technologies faced by organizations?

RQ8. How can blockchain technology be used with big data analytics, internet of things, cloud computing and advanced technologies?

These questions would help next-generation researchers to unfold the mysteries of blockchain technologies using innovative methodological lenses and exploring their use in different businesses across the world. This calls for performing interdisciplinary research to decode the complex nature of blockchain and its use.

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