

Understanding the impact of Covid-19 on Blockchain and upon Sustainable supply chains (SSC)

Keywords: Blockchain, sustainability, Covid-19, Supply Chain management, Systematic literature review

Topic(s): Blockchain in Operations and Supply Chain Management

Word count: 998

Purpose: The impact of Covid-19 upon supply chains

The impact of COVID-19 has been wide ranging and unprecedented for its severe impact with lockdown policies, limitation to freedoms as well as how operations took place (Barman et al. 2021). In the last twenty years several disruptions in supply chains due to earthquakes (i.e. Japan 2011), tsunamis (i.e. Indonesia, 2004), nuclear or radiation accidents (i.e. Fukushima Nuclear Leak in Japan, 2011), which were regionally capsulated and did not impact world-wide operations as COVID-19 did (Xu et al. 2020). The impact of supply chain disruption included food and labour shortages (Barman et al. 2021), transportation challenges (Ali et al., 2021) to mention some. The challenges generated were diverse based on the nature of operations and services and products rendered; for example perishable food being impacted due to the lack of distribution channels and timely transportation (Kumar et al. 2021). Supply chain literature reveals that the implementation of innovative solutions, such as blockchain technologies have capabilities to address these issues (Badhotiya et al., 2021). Global supply chains require secured and controlled systems to ensure an effective and efficient distribution of products, preventing any type of waste. The implementation of blockchain can play a critical role by providing quick, safe and secure solutions; for example in food companies to adopt food traceability (Rejeb et al. 2021). Another example was the transport systems in New Zealand after the Kaikōura earthquake in 2017, in which a quick recovery and a continued mobility of users and goods was enabled through the information and data generated and exchanged between organisations (Blake et al. 2019). But, to what extent the adoption of Blockchain could be beneficial during Covid-19? Although researchers and practitioners' interest on the subject is high, there is still a need for further investigation (Toorajipour et al., 2021). Supply chains are diverse in complexity, infrastructure, as well as geographical span, amplified by the Covid-19 pandemic. Therefore, the aim of this research is to identify the contributions of Blockchain technologies to SSC within the context of Covid-19 through a systematic review of the existing literature. Thus, the main research question is 'How did Covid-19 impact the sustainability in supply chains within the setting of Blockchains?'

Research Design

The adoption of a systematic literature review (SLR) approach provides “a key tool ...to manage the diversity of knowledge for a specific academic inquiry” (Tranfield and Denyer, 2004, p.208). This study adopted an evidence-informed, SLR approach, following the guidelines suggested by Denyer and Tranfield (2009). This process includes five refinement stages:

Table 1: Five SLR stages

1	Pilot research - Understanding the current literature and construct the criteria for literature selection
2	Locating the studies - Aiming for a comprehensive, unbiased search, the inclusive search keywords string: ({Covid-19} OR {pandemic}) AND TITLE-ABS-KEY ({Sustainability} OR {blockchain}) AND TITLE-ABS-KEY ({supply chain management} OR {SCM} OR {logistics})) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (EXCLUDE (PUBYEAR , 2018)) was used on Scopus, which has been considered a reliable database (Valenzuela et al., 2017; Fahimnia et al., 2015)", which resulted with 98 papers.
3	Study selection and evaluation - Inclusion/exclusion criteria: the search covers the papers published between 2019 to 2021 due to the relevance of Covid-19; only peer-reviewed journal were considered for the review; papers employ Blockchain within Covid-19 context; papers contribute to sustainability; they are written in English.
4	Analysis and synthesis - Identifying the associations between parts of different studies.
5	Reporting the results - Discussing the outputs and identifying areas for further research.

Findings

This study aimed to provide a descriptive and thematic analysis of the selected articles will be conducted, and we sought to go beyond description to critically examine the literature problematization. This will allow us to critically evaluate the level of knowledge on the phenomenon under investigation and to sow the seeds for new approaches and future research opportunities. While the thematic analysis indicated that the selected papers and identified themes in the structure of the inquiry was based upon computing, agriculture, and healthcare (see Figure 1).

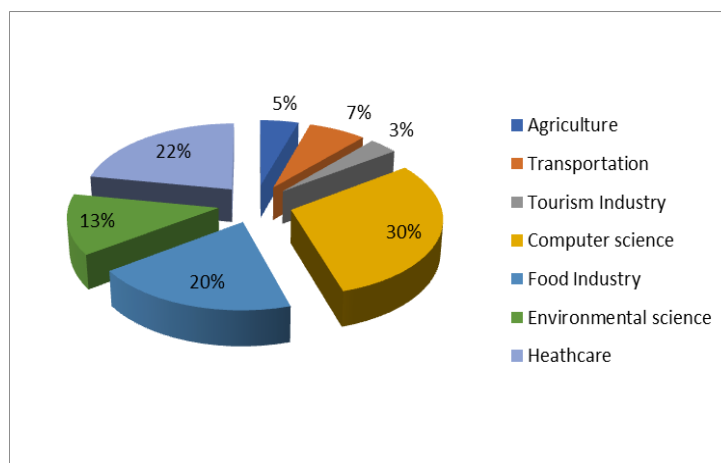


Figure 1- Papers based on the sector

The papers were rather placed during the pandemic, which reflected that 92% of the papers were published in 2021 responding to current implications of Covid-19 upon the SSC in the context of Blockchains (Figure 2).

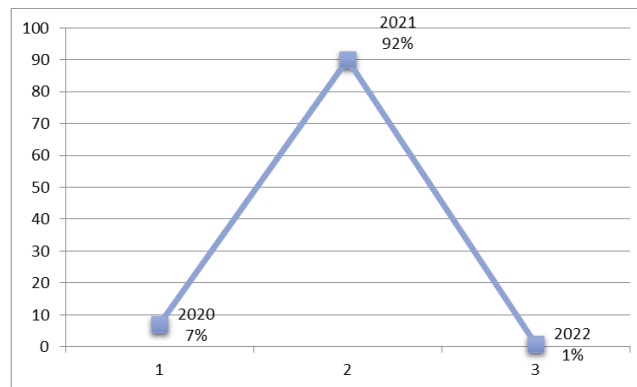


Figure 2 - Papers based on publishing date

It is interesting to note in individual journal distribution, the Sustainability journal has had the highest numbers of papers followed by International Journal of Logistics management and Strategic Change journal. Below we have listed the first 20 journal with highest numbers.

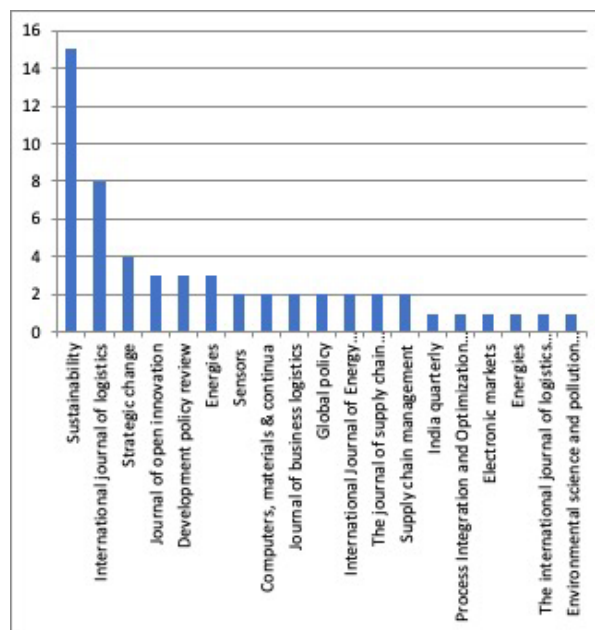


Figure 1- Blockchain the first 20 journals (based on the journal paper numbers)

Conclusion

Research has investigated the implications of Blockchain technologies focusing on performance of SSC (Park and Li., 2021) as well as discussing the barriers for blockchain adaption (Sabiere et al., 2019), however this paper focuses particularly during Covid-19 on Blockchain impact upon SSC. The findings reiterate the positive impact of Blockchain upon the SSC based on different sectors and impact on data accuracy as well as transparency across the supply chain.

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