Bibliometric analysis of scientific production on international trade and cryptocurrency

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Keywords: Cryptocurrency, International trade, Bibliometric analysis, Web of science

1. Introduction

Cryptocurrencies have attracted the attention of several sectors in recent years such as finance (Burggraf and Rudolf, 2020; Qureshi et al., 2020; Apergis et al., 2020), computer sciences (Prybila et al., 2020; Alonso-Monsalve et al., 2020; Borges and Neves, 2020), and international trade (Chu et al., 2020; Makarov and Schoar, 2020). Recently, several studies on cryptocurrency have been published in many disciplines. The highly fluctuating cryptocurrency market had its peak in 2017 (Higbee, 2018). Such cases lead to the growth of end-to-end markets and the emergence of new cryptocurrencies in blockchain technologies as an important element of financial markets (Rehman and Apergis, 2019). The future of cryptocurrencies is expected to reshape the digital assets and financial industries. Cryptocurrency is based on blockchain technology, it bears its features and offers confidentiality to its users. With its low transaction cost potential and ability to make a transaction without finding an intermediary, it's attracted huge attention in the last decade (Baek et al., 2019). The cryptocurrency is traded 24 hours (Groby et al., 2020), and the blockchain which is the technology used by cryptocurrencies offer opportunities for international organizations. Cryptocurrency technologies are the tools to facilitate economic development and provide customized management services. It has the capability of proving the digital asset or content of a document at a certain time. It is a payment mechanism and accounting system that has human-to-machine interaction and also machine-to-machine transaction capacity. Moreover, it is a worldwide ledger that can register, approve and transfer all assets of the community (Swan, 2015). Although cryptocurrencies have several positive aspects, certain challenges are also observed such as integration with the real world while applying and using cryptocurrencies. These challenges along with the positive aspects will be the future productive and efficient areas of research for us (Bhat and Vijayal, 2017). In this study, a bibliometric analysis was conducted on the studies focusing on international trade and cryptocurrency. The purpose of the analysis was to determine the academic knowledge...
production features of the publications focusing on international trade and cryptocurrency. In this way, the characteristics of the interaction between cryptocurrency and international trade will be revealed.

2. Related literature

Bibliometric analyses have been used in several scientific disciplines. For example; Kamran et al. (2020) analyzed blockchain and the Internet of Things with a bibliometric study method. Miot et al. (2020) applied a bibliometric approach to their publications on Dermatology in 2009-2019. El Mohadab et al. (2020) used a bibliometric method to map the current state of COVID-19. They analyzed various aspects such as the number of publications, number of citations, and the country of publication. Vem et al. (2021) used a bibliometric method for their publication on forty years of applied mathematical modeling. The purpose of their study was to determine the leading authors, topics, universities, and countries in that field. They used VOSViewer software for visualization. Tsai et al. (2020) reviewed the literature in order to perform the bibliometric analysis of municipal solid waste management in a circular economy. Pizzi et al. (2020) focused on the publications of academics in the field of business and management on sustainable development. They used VOSViewer software for visualization in their study where they focused on 266 publications from 2012 to 2019. Gao et al. (2020) studied open innovation. Wang et al. (2021) used the data from 1980 to 2019 in their study where they focused on decision-making on indefinite groups. In that period, they analyzed 4887 articles they found on the Web of Science (WoS). Like in several publications, they also analyzed different aspects such as countries, organizations, and authors. Usman and Ho (2020) analyzed more than 4000 articles in their study where they focused on the application of soil and water reclamation. Alvarez-Peregrina et al. (2020) analyzed 346 articles published from 1960 to 2019 in their study on multifocus contact lenses. Merediz-Solà and Bariviera (2019) performed a bibliometric analysis of Bitcoin literature. They used a dataset of 1162 articles indexed on WoS. Their study described the keywords, authors, and journals about Bitcoin which is a leading cryptocurrency. As another example, the data from 1989 to 2019 was collected using the keyword “Analysis using ANSYS.” This analysis also covered the search on titles and abstracts in addition to subjects and keywords and key phrases in articles. As a result of the search, they included 359 articles they found in their bibliometric analysis (Muhammad et al., 2020). Some studies did not search all articles but instead, they selected a hundred articles having the highest number of references and included them in the analysis (Paladugu et al., 2002).

Another study conducted in this way was a bibliometric analysis performed for the Industrial Marketing Management Journal, in which they found that although the studies on “trade” were at the center of the research topics of the relevant journal, it was one of the least researched topics. Further analyses demonstrated that there was a limited number of studies on technological innovation. It appears that research studies mainly focus on international B2B trade. These studies ignored the role of such tools as the Internet of Things, artificial intelligence, blockchain, and production technologies. Certain research gaps can be identified through analysis of journals and recommendations can be devised for further research (Lacka et al., 2020).

3. Methodology

Bibliometric analysis enables researchers to perform macro and micro analyses of numerous studies, which may be helpful for them (Kokol and Vošner, 2019). The term statistical bibliography was proposed by Hulme (1923). This term seems to be ignored for two decades until it was used by C. F. Gosnell in an article on the obsolescence of literary works. Due to the recent increased attention to the assessment of scientific production, bibliometric studies have been performed and become a discipline. Following the establishment of the Institute for Scientific Information (ISI) in the USA in the 1960s, Eugene Garfield started the metrification of articles, journals, researchers, and organizations. It was later used by Raisig (1962) in a critical on citations. However, several authors never thought that the term statistical bibliography was sufficient. For that reason, the term bibliometrics is suggested for studies where mathematical and statistical methods are applied in books and other means of communication (Pritchard, 1969).

Bibliometric analysis is a common technique used to assess performance (Burghardt et al., 2020) With bibliometric analysis, it is possible to gather information about the structural features of the research field (Umut and Coştur, 2007). Today, scientific articles are compiled in large databases that allow assessing different aspects of articles such as authors, keywords, subject, citation, and organizational cooperation, and they are attached to indices. Considering that authors need to make a careful selection to cite the most relevant studies for their articles so that most of the cited articles can reflect their significance in the discipline. With this, organizations get valuable information about the individual and collective effects of the studies. The importance of bibliometric studies is beyond the organizational level. New researchers in a discipline can use it to understand the scope of the topic, emerging trends, and development in time. In this sense, it is different from the conventional literature research (Merediz-Solà and Bariviera, 2019). Like in many other study fields, bibliometric analysis is still evolving (Holden et al., 2005).

The publication features of the discipline are the first and effective indicator whether a bibliometric
analysis is applicable to a field. International peer-reviewed journals are a good option to see the publication features. If international journals are dominant or at least important means of communication in a discipline, bibliometrics analysis can be applied in most cases (Van Raan, 2005). The bibliometric analysis offers an effective way to handle thousands of articles and review the relevant literature from a macro perspective (Wang et al., 2020).

We searched those publications according to the following keywords: ("blockchain," "cryptocurrency," "bitcoin," "ethereum," "international business," "international trade," "logistics," "finance"). The results were analyzed according to publication years, WoS categories, source titles, research areas, countries/regions, document types, meeting titles, organizations, organizations-enhanced, book series titles, funding agencies, languages, and authors. WoS has become a golden standard for research discovery and analytics by diligently indexing the literature. WoS connects publications and researchers by way of citations in the comprehensive databases covering each discipline and controlled indexation. This database allows researchers to study certain areas such as Science Citation Index Expanded, Social Sciences Citation Index, and Conference Proceedings Citation Index-Science. To retrieve data from these areas, the following formula can be used (Chen et al., 2014): \[ \text{TS} = \text{"life cycle assessment" OR "life cycle analysis" OR "life cycle sustainability assessment" OR "life cycle sustainability analysis" OR "eco balance" OR "ecobalance"}. \] Timespan = 1998–2013.

### 4.2. Tables

After all indices in Table 1 are searched on WoS; 25 publications from 2020, 358 from 2019, and 249 from 2018 were found (Table 2). Table 2 shows that the number of publications on the relevant query fields including primary cryptocurrency, blockchain, and international trade has increased in recent years. There was a remarkable increase in 2018 and beyond compared to the previous years.

Top three fields where the relevant articles were published were business finance, economics, and computer science information systems. Based on Table 3, it can be suggested that there is a high interest in cryptocurrency and technologies in the business finance sector. The publications in this sector were ahead of the other fields.

Table 4 shows that the top three journals where articles about international trade and cryptocurrency are published were dominated by finance and business journals. After the top three, a high number of social sciences journals is also remarkable.

Databases = (SCI-EXPANDED, SSCI, CPCI-S, CPCI-SSH). The retrieval time was 2014.03.31. TS was referred to as a topic search (i.e., search in the title, keywords, and abstract fields of a publication). The metadata of all articles included in the WOS (2020a) index accessed on 21.02.2020 was analyzed. These topics attract the attention of wide circles such as the financial economy, international trade, logistics, computers, and law. This part presents useful information to journals or authors interested in publishing articles on these topics about the development of the topics studied in such articles. Bibliometric rendering of the study was performed by using VOSviewer (version 1.6.14) package software. The website (http://lert.co.nz) was used to draw the world map.

### 4. Findings

#### 4.1. Query

The data regarding the types of indices presented in Table 1 were searched in the WoS database. From the searched indices, SSCI, SCI-EXPANDED, and A&HCI have the oldest records. The data in these three indices have been stored there since 1975. The query used to collect data from WoS was as follows: ALL FIELDS: ("blockchain" OR "cryptocurrency" OR "bitcoin" OR "ethereum") AND ("international business" OR "international trade" OR "logistics" OR "finance"). Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI Timespan=All years.

#### 4.2. Tables

| Table 1: Names of indices in the query (WOS, 2020b) |
|-----------------------------------------------|
| Short Index Name | Index Name | Starting Year |
| SSCI | Social Sciences Citation Index | 1975 |
| SCI-EXPANDED | Science Citation Index Expanded | 1975 |
| A&HCI | Arts and Humanities Citation Index | 1975 |
| CPCI-S | Conference Proceedings Citation Index-Science | 1990 |
| CPCI-SSH | Conference Proceedings Citation Index-Social Science and Humanities | 1990 |
| BKCI-S | Book Citation Index-Science | 2005 |
| BKCI-SSH | Book Citation Index-Social Sciences and Humanities | 2005 |
| ESCI | Emerging Sources Citation Index | 2015 |

Table 2: Publication years

| Publication Years | Records | % of 767 |
|-------------------|---------|----------|
| 2020              | 25      | 3.259    |
| 2019              | 358     | 46.675   |
| 2018              | 249     | 32.464   |
| 2017              | 91      | 11.864   |
| 2016              | 24      | 3.129    |
| 2015              | 14      | 1.825    |
| 2014              | 5       | 0.652    |
| 2012              | 1       | 0.130    |

Table 5 shows the number of publications by research areas. Business Economics ranks the first with 469 publications. This is followed by Computer...
Science with 180 publications. Engineering ranks third with 91 publications. It appears that the number of publications in the first ranking area is different from and higher than that in the other areas.

### Table 3: Web of Science categories

| Web of Science Categories | Records | % of 767 |
|---------------------------|---------|----------|
| Business Finance          | 316     | 41.199   |
| Economics                 | 135     | 17.601   |
| Computer Science Information Systems | 86 | 11.213   |
| Computer Science Theory Methods | 69 | 8.996    |
| Business                  | 63      | 8.214    |
| Engineering Electrical Electronic | 63 | 8.214    |
| Computer Science Interdisciplinary Applications | 53 | 6.910    |
| Telecommunications         | 48      | 6.258    |
| Management                | 43      | 5.606    |
| Operations Research Management Science | 23 | 2.999    |
| Physics Multidisciplinary  | 23      | 2.999    |
| Engineering Industrial    | 19      | 2.477    |
| Law                       | 19      | 2.477    |
| Computer Science Software Engineering | 18 | 2.347    |
| Social Sciences Mathematical Methods | 14 | 1.825    |
| Information Science Library Science | 12 | 1.565    |
| Multidisciplinary Sciences | 12 | 1.565    |
| Education Educational Research | 11 | 1.434    |
| Mathematics Interdisciplinary Applications | 11 | 1.434    |
| Transportation Science Technology | 11 | 1.434    |
| Computer Science Artificial Intelligence | 9 | 1.173    |
| Computer Science Hardware Architecture | 9 | 1.173    |
| Engineering Multidisciplinary | 9 | 1.173    |
| Transportation            | 9       | 1.173    |
| Green Sustainable Science Technology | 8 | 1.043    |

(52 Web of Science Categories Value(s) Outside Display Options.); (3 Records (0.391%) Do Not Contain Data in The Field Being Analyzed.)

### Table 4: Source titles

| Source Titles                                                                 | Records | % of 767 |
|-------------------------------------------------------------------------------|---------|----------|
| Finance Research Letters                                                     | 58      | 7.562    |
| Research in International Business and Finance                               | 25      | 3.259    |
| Handbook of Blockchain Digital Finance and Inclusion Vol 2 Chinatext Mobile Security Distributed Ledger And Blockchain | 24 | 3.129    |
| Handbook of Blockchain Digital Finance and Inclusion Vol 1 Cryptocurrency Fintech Insurtech and Regulation | 22 | 2.868    |
| Physica A Statistical Mechanics and Its Applications                         | 18      | 2.347    |
| IEEE Access                                                                  | 14      | 1.825    |
| Strategic Change Briefings in Entrepreneurial Finance                        | 14      | 1.825    |
| Journal of Corporate Accounting and Finance                                  | 13      | 1.695    |
| Economics Letters                                                            | 12      | 1.565    |
| Vision 2020 Sustainable Economic Development and Application of Innovation Management | 12 | 1.565    |
| Journal of Risk and Financial Management                                      | 11      | 1.434    |
| Journal of Risk Finance                                                      | 10      | 1.304    |
| CCS 17 Proceedings of The 2017 ACM SIGSAC Conference on Computer and Communications Security | 9 | 1.173    |
| Supply Chain Finance and Blockchain Technology Case of Reverse Securitisation | 9 | 1.173    |
| Applied Economics Letters                                                    | 8       | 1.043    |
| Financial Innovation                                                         | 7       | 0.913    |
| Lecture Notes in Computer Science                                            | 7       | 0.913    |
| North American Journal of Economics and Finance                               | 6       | 0.782    |
| Quarterly Review of Economics and Finance                                     | 6       | 0.782    |
| 2018 8th International Conference on Logistics Informatics and Service Sciences LISS | 5 | 0.652    |
| Applied Economics                                                            | 5       | 0.652    |
| Banking Beyond Banks and Money A Guide to Banking Services in the Twenty-First Century | 5 | 0.652    |
| Education Excellence And Innovation Management Through Vision 2020            | 5       | 0.652    |
| International Review of Financial Analysis                                   | 5       | 0.652    |

(400 Source Titles value(s) outside display options.); (0 records (0.000%) do not contain data in the field being analyzed.)

In the breakdown of countries where the relevant publications on WoS were published (Table 6), China ranks the first with 140 studies. This was followed by the USA with 135 articles. England is in third place with 81 publications. Fig. 1 shows the distribution of publications on WoS by country. There are almost no countries in the African Continent and the Middle East from which articles are published. The Republic of South Africa is an exception in Africa. Brazil is an exception in South America. Table 7 shows the distribution of publications by type of documents. The article ranks first with 534 publications. Presentation is in second place with 177 publications. The book chapter ranks third with 73. Table 8 presents the number of publications in conferences. 32nd Conference of The International Business Information Management Association ranks the first with 12 presentations. The conference
in the second place has 9 publications and the third one has 5 publications.

### Table 5: Research areas

| Research Areas                                      | Records | % of 767  |
|----------------------------------------------------|---------|-----------|
| Business Economics                                 | 469     | 61.147    |
| Computer Science                                   | 180     | 23.468    |
| Engineering                                        | 91      | 11.864    |
| Telecommunications                                 | 48      | 6.258     |
| Physics                                            | 26      | 3.390     |
| Operations Research Management Science             | 23      | 2.999     |
| Government Law                                     | 20      | 2.608     |
| Science Technology Other Topics                    | 20      | 2.608     |
| Mathematical Methods In Social Sciences            | 14      | 1.825     |
| Mathematics                                        | 14      | 1.825     |
| Transportation                                     | 13      | 1.695     |
| Information Science Library Science                | 12      | 1.565     |
| Education Educational Research                     | 11      | 1.434     |
| Environmental Sciences Ecology                     | 9       | 1.173     |
| International Relations                            | 7       | 0.913     |
| Social Sciences Other Topics                       | 7       | 0.913     |
| Automation Control Systems                         | 6       | 0.782     |
| Energy Fuels                                       | 6       | 0.782     |
| Chemistry                                          | 5       | 0.652     |
| Instruments Instrumentation                        | 5       | 0.652     |
| Criminology Penology                               | 4       | 0.522     |
| Public Administration                              | 4       | 0.522     |
| Sociology                                          | 4       | 0.522     |
| Anthropology                                       | 3       | 0.391     |
| Area Studies                                       | 3       | 0.391     |

(22 Research Areas value(s) outside display options); (3 records (0.391%) do not contain data in the field being analyzed.)

### Table 6: Countries/regions

| Countries/Regions | Records | % of 767 |
|-------------------|---------|----------|
| China             | 140     | 18.253   |
| USA               | 135     | 17.601   |
| England           | 81      | 10.561   |
| Germany           | 65      | 8.475    |
| Australia         | 56      | 7.301    |
| Russia            | 42      | 5.476    |
| France            | 38      | 4.954    |
| Switzerland       | 35      | 4.563    |
| Singapore         | 31      | 4.042    |
| South Korea       | 27      | 3.520    |
| Italy             | 26      | 3.390    |
| Canada            | 23      | 2.999    |
| Spain             | 22      | 2.868    |
| India             | 21      | 2.738    |
| Netherlands       | 19      | 2.477    |
| Brazil            | 16      | 2.086    |
| Poland            | 16      | 2.086    |
| Lebanon           | 14      | 1.825    |
| Austria           | 13      | 1.695    |
| Japan             | 13      | 1.695    |
| Malaysia          | 13      | 1.695    |
| Turkey            | 13      | 1.695    |
| South Africa      | 12      | 1.565    |
| Czech Republic    | 11      | 1.434    |
| Ireland           | 11      | 1.434    |

(54 Countries/Regions Value(s) Outside Display Options); (7 Records (0.913%) Do Not Contain Data In The Field Being Analyzed)

### Table 7: Document types

| Document Types      | Records | % of 767 |
|---------------------|---------|----------|
| Article             | 534     | 69.622   |
| Proceedings Paper   | 177     | 23.077   |
| Book Chapter        | 73      | 9.518    |
| Early Access        | 39      | 5.085    |
| Review              | 29      | 3.781    |
| Editorial Material  | 21      | 2.737    |
| Book                | 2       | 0.261    |
| Book Review         | 2       | 0.261    |
| Correction          | 2       | 0.261    |
| News Item           | 1       | 0.130    |

(0 Document Types Value(s) Outside Display Options); (0 Records (0.000%) Do Not Contain Data In The Field Being Analyzed.)
Table 8: Meeting titles

| Meeting Titles                                                                 | Records | % of 767 |
|-------------------------------------------------------------------------------|---------|----------|
| 32nd Conference of The International Business Information Management Association IBIMA | 12      | 1.565    |
| 24th ACM SigSAC Conference on Computer and Communications Security ACM CCS     | 9       | 1.173    |
| 33rd International Business Information Management Association Conference   | 5       | 0.652    |
| 8th International Conference on Logistics Informatics and Service Sciences LISS | 5       | 0.652    |
| 31st International Business Information Management Association Conference     | 4       | 0.522    |
| 11th International Scientific Conference On New Challenges of Economic and Business Development Incentives for Sustainable Economic Growth | 3       | 0.391    |
| International Conference on Economics Finance and Statistics ICEFS             | 3       | 0.391    |
| 11th International Scientific Conference on Financial Management of Firms and Financial Institutions | 2     | 0.261    |
| 13th IEEE International Symposium on Autonomous Decentralized System ISADS   | 2       | 0.261    |
| 15th International Scientific Conference on European Financial Systems 2018 | 2       | 0.261    |
| 1st International Scientific Conference on Modern Management Trends and the Digital Economy From Regional Development to Global Economic Growth MTDE | 2   | 0.261    |
| 21st International Conference on Advanced Communication Technology ICACT       | 2       | 0.261    |
| 30th International Business Information Management Association Conference     | 2       | 0.261    |
| 3rd IEEE International Conference on Cloud Computing and Big Data Analysis ICCBDIA | 2     | 0.261    |
| 4th International Conference on Environmental Science and Material Application ESMA | 2    | 0.261    |
| 5th IEEE International Conference on Progress in Informatics and Computing Pic | 2       | 0.261    |
| 5th International Conference on Behavioral Economic and Socio-Cultural Computing BESC | 2   | 0.261    |
| IEEE International Congress on Cybermatics IEEE Conferences on Internet Of Things Green Computing and Communications Cyber Physical and Social Computing Smart Data Blockchain Computer and Information Technology | 2   | 0.261    |
| IFIP WG 5.7 International Conference on Advances in Production Management Systems APMS | 2 | 0.261    |
| International Conference on Blockchain Technology ICBCT                        | 2       | 0.261    |
| International Seminar on Computer Science and Engineering Technology SCSET     | 2       | 0.261    |
| 10th International Conference on Computer Modeling and Simulation ICCMS         | 1       | 0.130    |
| 10th International Symposium on Foundations and Practice of Security FPS         | 1       | 0.130    |
| 10th Uwcsia Biennial Research Symposium on Information Integrity and Information Systems Assurance | 1 | 0.130    |

Table 9 shows the organization where the authors of the publications are affiliated. Montpellier Business SCH ranks the first with 14 publications, followed by Cent University Finance Econ with 13 publications. The organization in the third plan has 2 publications.

Table 10 shows the list of Organizations-Enhanced publications. The University of London ranks the first with its support to 16 publications. Montpellier Business School ranks second with its support to 14 publications. The Central University of Finance Economics and University College London rank third with 13 publications. The support provided by the British organizations to publications may be the reason why the UK is in third place in the country ranking.

4.3. Keyword analysis

The size of the circles shown in the image in Fig. 2 demonstrates the frequency of the keywords. The thickness of the lines indicates which words were used together in similar studies (Kiraz and Demir, 2020). The cluster analysis was based on keyword analysis, according to which network map was created. The clusters created around the keywords were converted into Fig. 2 with three different colors.
Table 9: Organizations

| Organizations                          | Records | % of 767 |
|---------------------------------------|---------|----------|
| Montpellier Business SC               | 14      | 1.825    |
| Cent Univ Finance Econ                | 13      | 1.695    |
| UCL                                   | 12      | 1.565    |
| Singapore Univ Social Sci             | 11      | 1.434    |
| Univ St Gallen                        | 11      | 1.434    |
| Holy Spirit Univ Kaslik               | 10      | 1.304    |
| Singapore Management Univ             | 10      | 1.304    |
| Left Coast                            | 9       | 1.173    |
| Univ Hong Kong                        | 9       | 1.173    |
| Crx Markets Ag                        | 8       | 1.043    |
| Pusan Natl Univ                       | 8       | 1.043    |
| Sultan Qaboos Univ                    | 8       | 1.043    |
| Peter Great St Petersburg Polytech Univ| 7       | 0.913    |
| Rmit Univ                             | 7       | 0.913    |
| Tianjin Univ                          | 7       | 0.913    |
| Univ Sydney                           | 7       | 0.913    |
| Univ Western Australia                | 7       | 0.913    |
| Dublin City Univ                      | 6       | 0.782    |
| Nankai Univ                           | 6       | 0.782    |
| Peking Univ                           | 6       | 0.782    |
| Southwestern Univ Finance Econ        | 6       | 0.782    |
| Swiss Fed Inst Technol                | 6       | 0.782    |
| Univ Econ                             | 6       | 0.782    |
| Univ Huddersfield                     | 6       | 0.782    |
| Univ Pretoria                         | 6       | 0.782    |

(950 Organizations Value(s) Outside Display Options.; (9 Records (1.173%) Do Not Contain Data In The Field Being Analyzed.)

Table 10: Organizations-enhanced

| Organizations-Enhanced                  | Records | % of 767 |
|----------------------------------------|---------|----------|
| University of London                   | 16      | 2.086    |
| Montpellier Business School            | 14      | 1.825    |
| Central University of Finance Economics| 13      | 1.695    |
| University College London              | 13      | 1.695    |
| Singapore University of Social Sciences Suss| 11 | 1.434    |
| University of St Gallen                | 11      | 1.434    |
| Holy Spirit Univ Kaslik                | 10      | 1.304    |
| Singapore Management University        | 10      | 1.304    |
| ETH Zurich                            | 9       | 1.173    |
| Left Coast                            | 9       | 1.173    |
| University of Hong Kong                | 9       | 1.173    |
| CRX Markets Ag                        | 8       | 1.043    |
| International Islamic University Malaysia| 8       | 1.043    |
| Pusan National University              | 8       | 1.043    |
| Sultan Qaboos University               | 8       | 1.043    |
| University of New South Wales Sydney   | 8       | 1.043    |
| Peter The Great St Petersburg Polytechnic University| 7 | 0.913    |
| Royal Melbourne Institute of Technology Rmit | 7   | 0.913    |
| Tianjin University                     | 7       | 0.913    |
| University of California System        | 7       | 0.913    |
| University of Sydney                   | 7       | 0.913    |
| University of Western Australia        | 7       | 0.913    |
| Centre National De La Recherche Scientifique CNRS | 6 | 0.782    |
| Dublin City University                 | 6       | 0.782    |
| Nankai University                      | 6       | 0.782    |

(964 Organizations-Enhanced value(s) outside display options.; (9 records (1.173%) do not contain data in the field being analyzed.)

An evaluation of the visual network map reveals that there are three main groups. The red group has 120 items; the green group has 112 while the blue group has 102 items. The dominant item in the green group is “cryptocurrency” which has a strong connection with the other items in both its own group and the ones in the other two groups. Logistic and trade in the blue group, however, could not form strong connections as much as cryptocurrency. “Business” in the red group formed a strong connection with technology, “blockchain technology,” “blockchain,” and “system” in the blue group apart from the items in its group. Fig. 3 demonstrates the connection created by the publications bearing the keywords used in the query. According to the connections, cryptocurrency and the international trade ecosystem are related.

WoS Density Graph highlights the most frequently used words. As demonstrated in the graph, phrases such as “business,” “trade,” and “logistic” are behind the phrases such as technology,” “blockchain technology,” “blockchain,” and “bitcoin.”

5. Conclusion

This paper analyses the production of academic knowledge related to international trade and cryptocurrency, recorded in the Wos database, and its power of change. The findings show that there has been a significant increase in the number of
publications in recent years. Such an increase observed in social sciences and sciences seems to continue to focus on academic literature in the coming years.

![Visual network map based on keyword analysis](image1)

**Fig. 2:** WoS network map-cluster based on keyword analysis

![First query–WoS density graph](image2)

**Fig. 3:** First query–WoS density graph

This analysis was found related to 767 publications in the WoS database. The findings indicated that an increase in the number of publications from 2016 to 2019. There were only 24 publications in 2016. This number rose to 358 in 2019. The business Finance sector ranked first with 316 publications, which was different from the others. Economics ranked second with 135 publications, followed by Computer Science Information Systems in third place with 86 publications. The Journal of Finance Research Letters had the highest number of publications in this field, with 58 publications. Regarding the breakdown by research areas, Business Economics was the area with the highest number of publications with 469. As for the breakdown by countries, China ranked first with 140 publications, followed by the USA in second place with 135 and the UK in third place with 81. As regards document type, the article ranks the first with 534 publications in this type.

The visual network map, including all indices of WoS, shows three main groups. The red group is comprised of 120 items. The green group has 112 items, while the blue group is composed of 102 items. The dominant item of the green group was “cryptocurrency,” which had a strong connection with the items both in its own group and the other two groups. “Logistic” and “trade” in the blue group,
however, could not form strong connections as much as “cryptocurrency.” “Business” in the red group formed a strong connection with “technology,” “blockchain technology,” “blockchain,” “system” in the blue group apart from the items in its group. These connections show that cryptocurrency and the international trade ecosystem are related.

Cryptocurrency and blockchain technologies attract the attention of the academic world. The change potential of these technologies may be the reason for such attention. It will be useful for organizations and countries that wish to use this potential to follow the trend of increase in the number of publications in this field carefully database. An analysis was performed on the production of academic knowledge about international trade and cryptocurrency based on blockchain technology for which very ambitious statements are made as regards its power of change.

Acknowledgments

This study was derived from the Ph.D. study conducted under HKU and Gaziantep University.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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