

Bibliometric Analysis on Stock Prices through Historical Indexed Review by using Scopus Database from 1930 to 2020

Zubair Mustafa^{a,b}, Suresh Ramakrishnan^a, Ali Fadhil Ali^{a,c},
Azeem Abdullah^a, Abdulrahman Mohammed Abu Iqrain^{a*}

^a Faculty of Management, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia;

^b Department of Management Sciences, University of Swabi, Khyber Pakhtunkhwa, Pakistan

^c Faculty of Administration & Economics, University of Kirkuk, 36001, Iraq

Z.M zmmuhammad@graduate.utm.my; S.R. suresh@utm.my; A.F.A.

aazeem@graduate.utm.my A .B.; ali20@graduate.utm.my A.M.A.I. abuiqrain@gmail.com

*Corresponding Author: zmmuhammad@graduate.utm.my

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Abstract

Stock price refers to the current price of single shares of a public limited company that is registered on the stock exchange. Stock price is considered as a performance measurement tool for firms' performance, financial performance, stock exchange performance, shareholders wealth, associated risk factors, earning per share, returns on equity, per share dividend and dividend yield. Current research posits to scope of publication, prolific authors, institutions, and countries are the main objective of the study. Giving the importance of stock price phenomena, this study focuses on two steps systematic review protocol to present the literature review of indexed publication. For investigation different analysis synthesis-approaches (publication analysis and bibliometric analysis) were used to study the data of published articles on stock price identified from the Scopus academic database. This study provides many implications on the current position of the literature on stock price relevancy in leading publications and occurrences. The findings suggest a robust map and direction for future research.

Key Words: Stock Price, Bibliometric Analysis, Co-authorship, Co- occurrences, Scopus database.

1. INTRODUCTION

From a common perspective stock price is associated with the financial performance of corporate business. Traditionally, the theory of economics and financial posits that stock prices are mainly influenced by firms' internal and external factors. He, Sun, Zhang, and Li

(2020). Corporations from the same sectors face similar regulatory and organizational policies and the same macroeconomic situations. Regarding internal factors, their impacts on stock prices are both long run and short run, while external factors distort the stock price for the long run. He et al. (2020) demonstrated that the COVID-19 pandemic impact the stock prices over the globe, and prices of stocks remain lower for long time. Junjie, Gang and Chao (2013) opined that in stock market, there are numerous causes such as financial policy, monetary policy, industrial policy, foreign trade policy, financial disclosures, accounting information, investors' predictions, market supervision and other internal factors can probably reason to change in the stock price of the firms.

There are many puzzles regarding stock prices, one of them is the ancient approach is efficient market hypothesis (EMH). This approach is dominant to describing the stock prices; that is rigorously grounded, in a way which it applied from basic principles that are mainly accepted in economics Fender (2020). On the other hand another puzzle is the performance of stock price is likely to be impacted by board structure and decision-making (Ni, Huang, & Chen, 2019). Therefore, exploring stock prices are indeed influenced by many internal and external factors that are studied by different scholars and researchers (Beaver, Eger, Ryan, & Wolfson, 1989; Fan & Wong, 2002; Ferreira, Ferreira, & Raposo, 2011; Gompers, Ishii, & Metrick, 2003; Gul, Kim, & Qiu, 2010; Gul, Srinidhi, & Ng, 2011; Hertzal & Li, 2010; Huang & Ni, 2017)

The goal of this review study is to explore the overall publication evolution, top cited articles, top journals, co-occurrences and, the overall body of knowledge on the concept of stock price. To consider knowledge contribution associated with stock price essential with the corporate performance. This review answers the following research questions.

- a. What are the overall article volume and distribution by time, and venues of published on stock price research studies?
- b. What are the most significant authors, institutions, and articles?

In order to answer these research questions, the scholars analyzed 18747 peer-reviewed journal articles obtained from Scopus indexed database. Current study adopts bibliometric study methods to synthesize the material based on stock price and share price both. The bibliometric study approach integrates citation analyzing, co-citation analyzing, and keywords co-occurrences map analysis to flash out the conceptual structure of base of empirical study. The worth of bibliometric study lies in the position of articles, the evolution of body of literature over time period and disclosing the conceptual association of the current body of knowledge. Therefore, current study explores illuminating on the key areas of stock price over the globe.

This study adds up to the literature by furnishing a bibliometric study of the stock price literature that has not been done yet. A bibliometric study, that is distinctive from a general literature review, explores the top prolific articles, journals, topics, and authors in a branch of knowledge. The results postulate recommendations for new scholars and researchers in the domain of authors and articles that have been cited more frequently, and in the way they are linked. Furthermore, keywords co-occurrences analyzing emphasizing the commonly studied areas in this literature, and how the pre-eminence of subject matter has transformed through these years, which entails an invaluable reference for researchers about developing areas of phenomenon of interest.

2. DATA SOURCE AND METHODOLOGY.

Researchers used the Scopus database as a data source for investigation. The electronic database was established in 2004, a well-established database is a source of scientific publications to distribute the knowledge. For accomplishment of this review article on “stock prices” will contribute towards literature and extensive knowledge about publications and citations.

The current study covers extensive review of the empirical research publication associated with stock prices. The study utilized Scopus database as a main search engine to accumulate the mandatory data and gathered 18747 publications over the period from 1930-2020. The goal of this study is to inquire about the organized study of investigating the phenomenon of interest took out about the subject of stock price which have been published internationally reputed and credible journals, books, and web sites. For this reason, the current study examines the term stock price on Scopus database and identifies 19000 published articles and more than 4400 of highly cited articles are chosen for the purpose of the research completed by a VOS viewer; a bibliometric analysis tool. Current study limits the research on articles published over the time period from 1930-2020 and ascertains more than 18747 articles among 19000 articles from the Scopus.

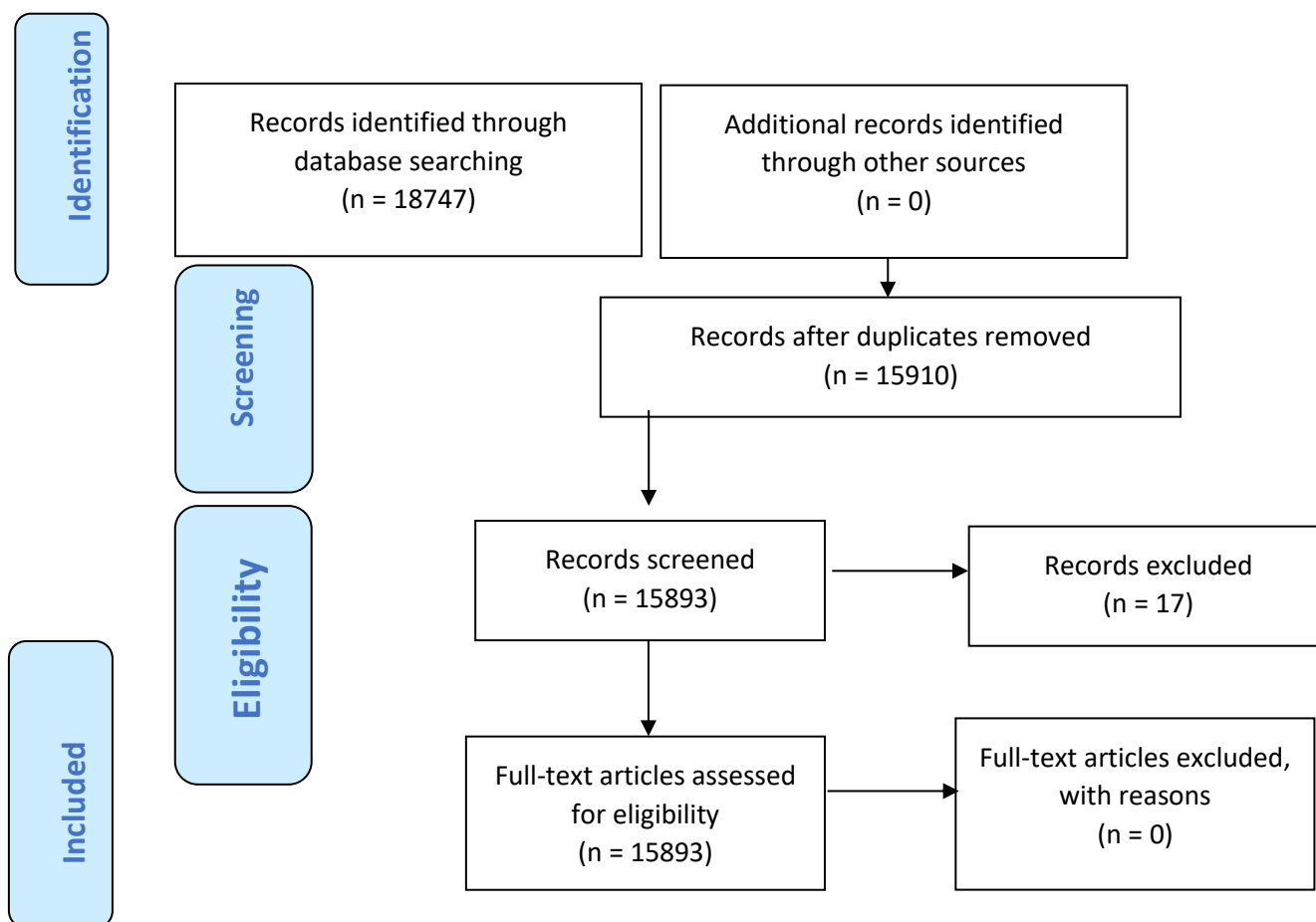


Figure 1. PRISMA flow diagram detailing steps in the screening of sources for the stock price review.

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram is a crucial element in bibliometric analysis and literature reviews. It serves as a visual representation of the systematic process undertaken to identify screen and select relevant studies for inclusion in the review. This diagram outlines the step-by-step progression from

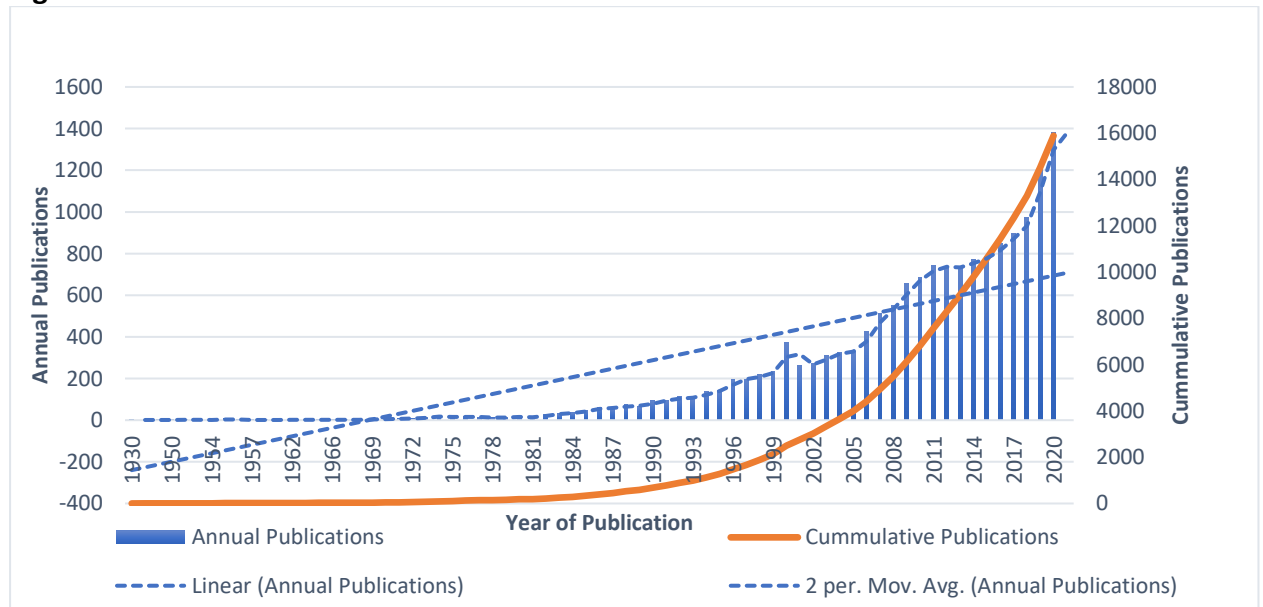
the initial search through Scopus database to the final set of studies included in the analysis. The PRISMA flow diagram provides transparency, helping readers to understand the rigorous methodology used to ensure the quality and comprehensiveness of the literature review. As a fundamental tool, it enhances the credibility and reproducibility of bibliometric analyses, ultimately contributing to the integrity of the research process and the reliability of its findings.

3. RESULTS

3.1. Overall Publication

Fig.2 represents the annual publication on the theme of stock price. From the year 1930- 2020, total 18747 articles were published. After screening through PRISMA flow diagram Figure1 shows 15893 empirical articles were finalized that were published over the globe in peer reviewed Journals. Investigators have explored that the concept of stock price has expanded less recognition from 1930 to 1972. As reported in the results, the number of publications is very little from beginning to the year 1991, almost 94 articles were published. And from 1992 to 2006 there was progress found in publication of articles; on average 243 articles annually. From the year 2007 to 2020, there was a significant boom in publishing of articles and it has been noticed that on average 820 articles were published annually. It is evident that the number of publications linked to research topic improved significantly, demonstrating the emergence of research that point out current issue in the solution for problem that will uplift the issues regarding stock price through progress of new issues identified. More than 1000 articles were published in the last four years from 2017 to 2020. It points out that this propensity will be sustained to growth and upward trend, demonstrating the worldwide importance of the subject area of stock price.

Fig. 2. Number of Publication.

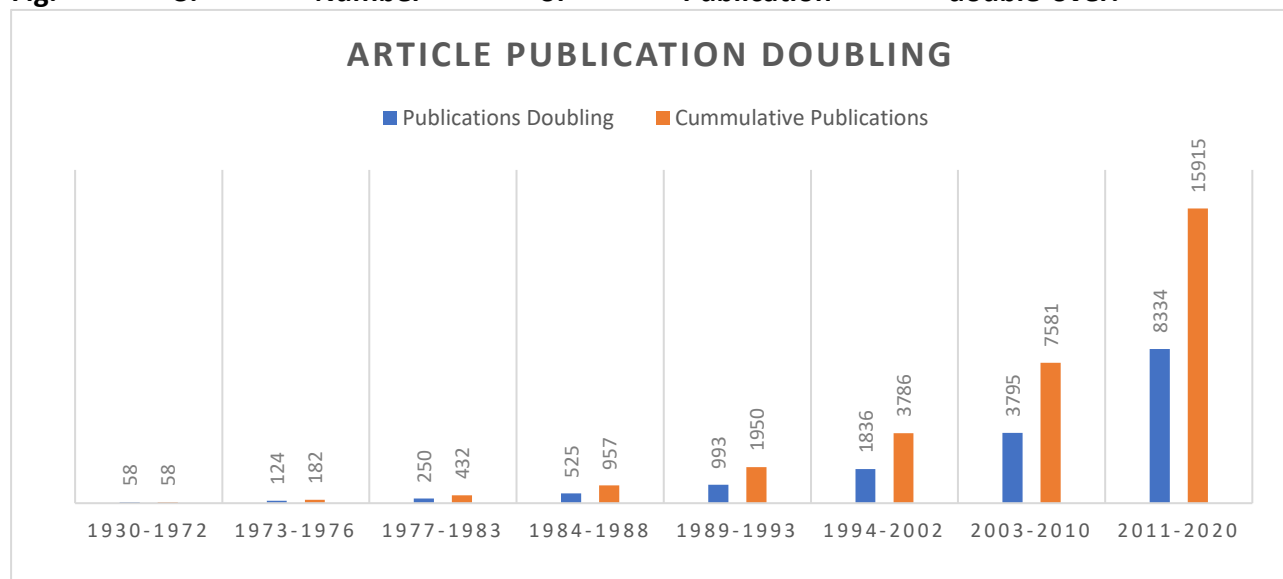


3.2. Double-Over Publication.

Figure 3 highlights the article publishing in terms of double. Our analysis demonstrates that from 1930-1972, there were 58 articles published on Scopus

indexed database. These articles doubled in number to 128 in the next four years by the year 1976. Then the next articles were doubled up by 7 years from 1977 to 1983 with total 250 articles. Same as articles were doubled in the year 1988 with 525 articles, and in the year 1993 articles were doubled with 993 articles, from the year 1994- 2002 there were 1836 articles, in the year 2003- 2010, articles were double with amount of 3795 articles, and finally, from 2011 to 2020, the articles were 8334 reported doubles. From last 3 decades, it is noticed that the articles were double with different time frame for instance 1989 to 1993 reported 8 years, same as 1994 to 2002 reported 9 years, and from the year 2003 to 2010, reported 8 years, in last from 2011 to 2020 shows 10 years which the documents were doubled.

Fig. 3. Number of Publication double-over.

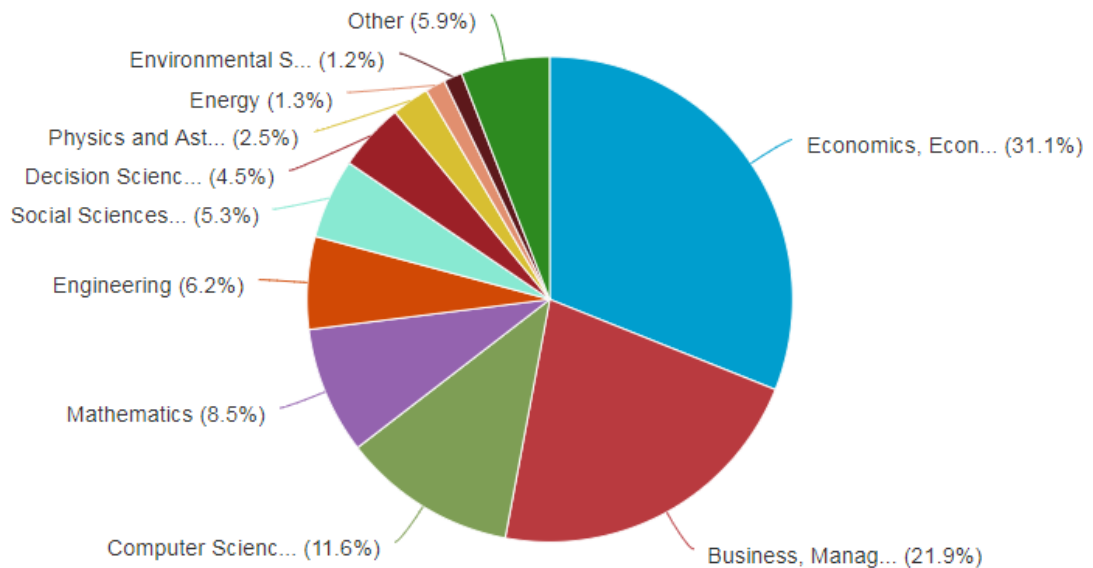


3.3. Articles Publication by Subject area.

The subject areas in which the utmost articles have been published under as follow; Economics, Econometrics and Finance (31.1 %); Business, Management and Accounting (21.9%); Computer Science (11.6 %); Mathematics (8.5%); Engineering (6.2%); Social Sciences (5.3%); Physics and Astronomy (2.5%); Energy (1.3%); Environmental Science (1.2%); and other (5.9%). Certainly, the concept of stock price got great attraction in the interest of scholars and academicians from diverse areas, consequential in a multidisciplinary research theme.

Fig. 3. Articles by Subject Area.

Documents by subject area



3.4. Articles Publication by Influential Journals.

The current study demonstrates results that the top 10 most influential journals are showed in the Table 1. The top ten journals are in the list in the table. The most productive journal was Journal of Finance with 274 articles covering 3.35% of the entire publication with total number of 52317 citations which is 2nd highest citations among them and 11.2 cite score in the year 2020 which is also 2nd highest. Followed by Journal of Financial Economics with 269 article publications, covering 3.29 % with total citations of 48854 and cite score 9.6 were reported, Lecture notes in Computer Science Including Sub Series Lecture Notes in Artificial Intelligence and Lecture Notes In Bioinformatics had only received the highest number of citations with a total of 3444705 and fifth in stand among top ten list of the journal's list.

According to the Cite Score report of the year 2020, seven journals have a cite score of 5 and above. Journals of the topmost and lowest cite score associated to Journal of Finance (11.2) and Lecture Notes in Computer Science Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics (1.8), correspondingly. Even though ranked in 10th with 137 articles in the Table, the total citations are quiet lower compare with Lecture Notes in Computer Science Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics which is cite score 1.8 reported. This was probably due to the main language of articles publications which is the English one, on the other hand there are 38 other local and country level languages that published articles which is less accessible and recognized, simply making it fewer access instead of English readers.

Additionally, we also observed that cite scores influence the choice of some readers (authors/scholars) while choosing the journals that suit their most relevant and novel work. Clarivate Analytics Impact factor of Elsevier-Scopus Cite score is a metric for measuring the impact of journal based on citation statistics from the Scopus index database. In our view, nevertheless, cite score would not be considered as the

sole degree. Apart from cite score, researcher would also think about whether the journal can convey the work to the target audience and add up to the development of the related discipline.

Table 1. Topmost productive journals.

Table 1: Top 10 Most Productive Journals on Stock Prices with their most cited article							
Rank	Journal Name	No. of Publications	No. of Publications %	No. of Citations	Cite Score 2020	SJR 2020	SNIP 2020
1	Journal of Finance	274	3.35%	52317	11.2	11.673	5.656
2	Journal of Financial Economics	269	3.29%	48854	9.6	1.58	2.16
3	Journal Of Banking And Finance	254	3.10%	24440	4.4	18.151	6.925
4	Physical A Statistical Mechanics And Its Applications	244	2.98%	40056	5.6	0.249	0.628
5	Lecture Notes In Computer Science Including Subseries & Lecture Notes In Artificial Intelligence And Lecture Notes In Bioinformatics	183	2.24%	3444705	1.8	0.64	1.197
6	Applied Financial Economics	181	2.21%		5	3.585	2.776
7	Managerial Finance	170	2.08%	7303	5.3	1.295	1.357
8	Journal Of Financial And Quantitative Analysis	152	1.86%	50286	5.3	1.295	1.357
9	Financial Review	140	1.71%	10574	7	1.972	2.7
10	Applied Economics Letters	137	1.67%	1992	3.8	1.344	1.938

3.5. Leading countries, top institutions, and international collaboration.

Table 2 demonstrates the top 10 most productive countries augmentation to the progress of stock price research development on the globe. About 31% of the world total publications was produced by United States, by following China produced 12% of the total publications. Same like in the table shows that United Kingdom, Australia, India, Taiwan, Japan, Canada, South Korea, and Germany contributed towards publications of stock price worldwide.

As regard in terms of institutions, The New York University stand 1st with sole publication of 125 articles, in the 2nd National Bureau of Economics from United States published 111 articles, in the 3rd Hong Kong Polytechnic University published 102 documents. From the table, number 6 University from United States published 593 articles, and four Universities from Asia that produced 365 articles. Therefore, from the institutional point of view, there are two regions that stands in top ten position, United States and Asia. Additionally, United States lies at number one in terms of total publications, and top 2 institutions that produced highest number of articles also belong to United States.

Additionally, Table.2, report on the top ten highest productive institutions in the world based on the statistics of stock prices articles these research institutions had published that are showed in table 2. These institutions consist of academic as well as non-academic institutions (for instance National Bureau of Economics).

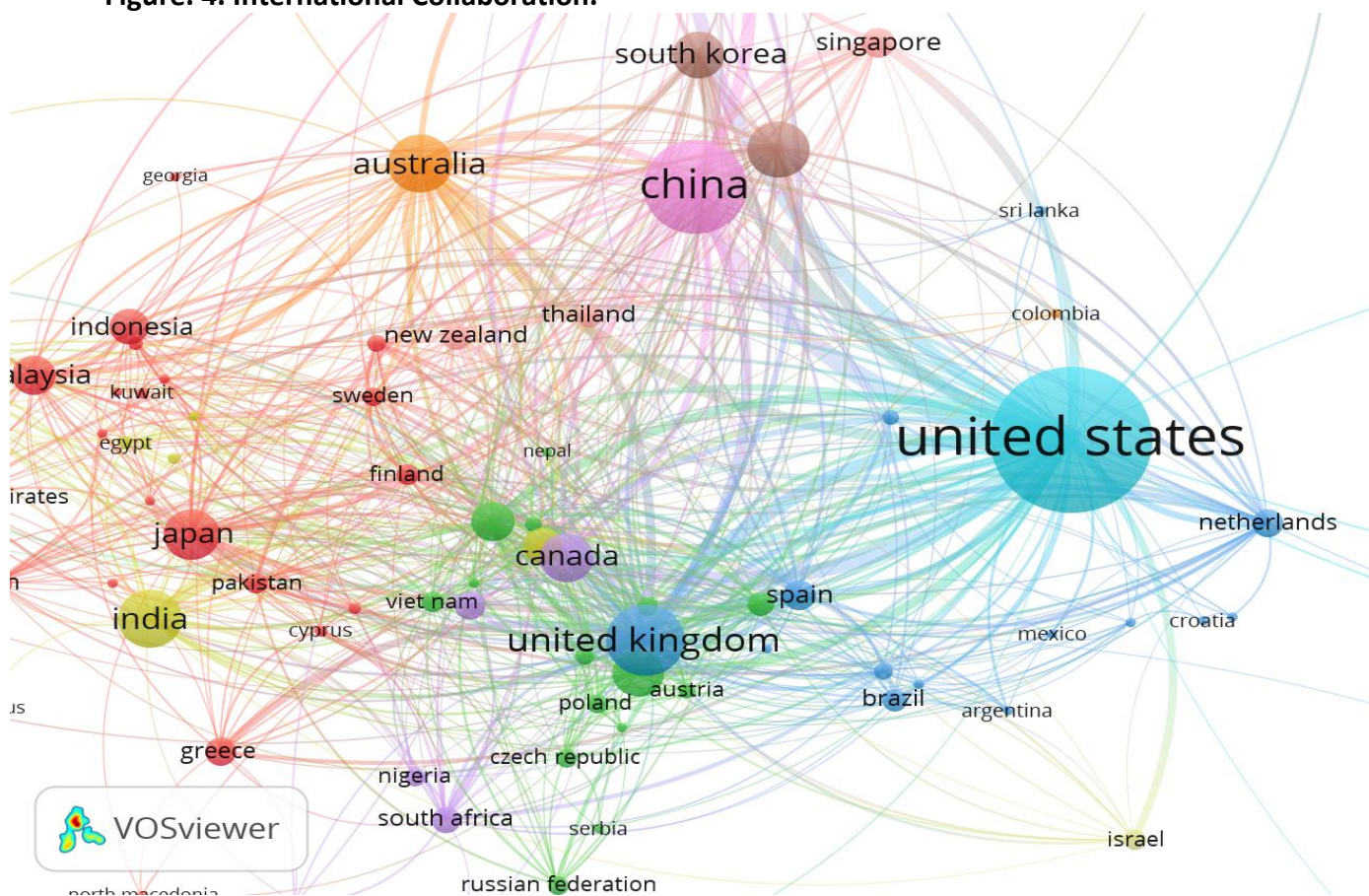
Table 2. Topmost productive journals.

Fig. 3. The top 10 most productive countries and academic institutions in Stock Price publications

Rank	Country/Territory	Total Publications of given country	Most Productive Academic Institution	Total publications of a given academic institution
1	United States	4970	New York University	125
2	China	1997	National Bureau of Economic	111
3	United Kingdom	1176	Hong Kong Polytechnic University	102
4	Australia	776	Monash University	99
5	India	772	Columbia University	93
6	Taiwan	764	Chinese University of Hong Kong	91
7	Japan	594	City University of Hong Kong	90
8	Canada	556	University of Michigan, Ann Arbor	86
9	South Korea	534	National University of Singapore	82
10	Germany	496	University of Pennsylvania	79

In addition to Figure.4, researchers have also reported the division of territories/countries by means of region is shown. The nearer two countries are positioned to one another in VOS viewer, the more robust their relationship and the robust the link between two countries, the thicker the line. The maximum number of documents belongs to United States that is 4970 and total link strength is 1720, links 789 and 13 Cluster were reported. By following 2nd highest country is China with 1997 articles, total link strength is 484, links 50 and cluster is 7 appeared. As regard with international collaboration, United States linked with 73 other countries from the globe, China linked with 51 United Kingdom with 63 countries, Australia linked with 50 countries, Canada with 46 countries, India linked with 41 countries, Taiwan with 37 countries, Japan with 32 countries, Malaysia with 31 countries, Pakistan with 27 countries, Singapore with 26 countries and Malaysia with 18 countries were reported. It is also demonstrated that 2/3 of the enumerated countries had multinational collaborative publications with less than 10 countries. Additionally, only the scholars in Latvia and Mauritius were affiliated with one country for publication on stock prices, and rest of the countries found multiple associations in the global countries. There are several elements incorporating to the postulation of multinational collaboration can be recognized to the diversification of research design, highest amount of international postgraduate and research fellows grants plus scholarships funding. It is also to have significant soft and stable research and development policy to make sure the sustainability of the multinational collaboration.

Figure. 4. International Collaboration.



3.6. Leading Authors from the globe.

Table 3 reports the top ten prolific authors in study of stock prices, attached to six countries in the following: United States (3 authors), China (2 authors), Taiwan (1 author), South Africa (1 author), Hong Kong (1 author), Australia (1 author), and United Kingdom (1 author). The very first publications scale between the years 1980 - 2006 that all the authors had character as the chief author, second author and third authors subsequently. Whereas there are no special procedures or systems in the order for authorship, the last name as author usually belongs to seniority and supervisory position. The authors affiliation demonstrated that stock price research was within areas belongs to economics, finance, econometrics, business management, social sciences, engineering, computer sciences, mathematics, decision sciences, physical and astronomy, arts and humanities, chemical engineering, and other as well.

Madura Jeff and Anon J.C.R, both from the United States led the list with total of 51 and 47 publications since 1992 and 1993, 22 h-index, and 43 h index respectively with 1826 and 17534 total citation. The third author is Wang, Jun from China belongs to Beijing Jiatong University of Science and Technology with total publications of 35, and h-index is 24, and total citation is 1923. His first paper was published in the year 2005. There is another author from China and stands 7th in the table, with total publication of 24, h-index is 23 and total citation is 3224 reported. Narayan P.K, from Australia belongs to Monash Business School Clayton stand 2nd in term of total citation that is 13588 with 22 articles and 58 h-index.

Table 3: List of the 10 most prolific authors in Stock Prices research area.

Rank	Author	Scopus author ID	Year of 1st publication*	Total Publications	h-index	Total Citation	Country	Current affiliation
1	Madura, Jeff	35488147200	1992	51	22	1826	United States	Florida Atlantic University Boca Raton USA
2	Anon, J.C.R		1993	47	43	17534	United States	College of New York
3	Wang, Jun	5594670700	2005	35	24	1929	China	Beijing Jiatong University, Beijing, China
4	Cheng, C.H.	7404797459	1993	31	42	7031	Taiwan	Technology
5	H Singh, Yu	85295443300	1980	30	14	573	United States	Southeastern Louisiana University
6	Gupta, R	18037301200	2006	27	44	7766	South Africa	University of Pretoria, South Africa

7	Hirasawa, Kotaro	35510098600	1994	24	23	3224	China	Beijing University of Chemical Technology, Beijing China.
8	Kim, J.B.	8304603800	1991	24	36	5690	Hong Kong	City University of Hong Kong
9	Narayan, P.K.	7102708451	2002	22	58	13588	Australia	Monahs Business School, Clayton, Australia
10	McMillan, D.G.	7201699638	1997	21	20	1333	United Kingdom	University of Sterling, United Kingdom.

It is noticed that in the Table 3 depicted that top two and 5th authors from United States, and in the Table 2, topmost productive countries, and top productive institutions are also from United States. The United State found in both tables on the top.

3.7. Authors Keywords Occurrences.

Altogether 22671 total numbers of authors keywords and 24103 total links strength and 15762 links and 11 clusters were reported. Stock price key words were 571 occurred with 1100 total link strength were found with 4 cluster. We also found that share price occurred 127 times with total link strength of 325 and 11 clusters were found. Stock price also noticed co-occurred with theoretical keywords including “arbitrage free price”, “stakeholder”, and “stock market”.

Furthermore, there is also reported that stock prices occurred 571, stock market 479, stock price 429, event study 419, corporate governance 248 and stock price prediction 176 times occurred. On the other hand, after amalgamation of key terms like stock price, stock prices, share price, and share prices we report that total number of 1187 time occurred in this analysis.

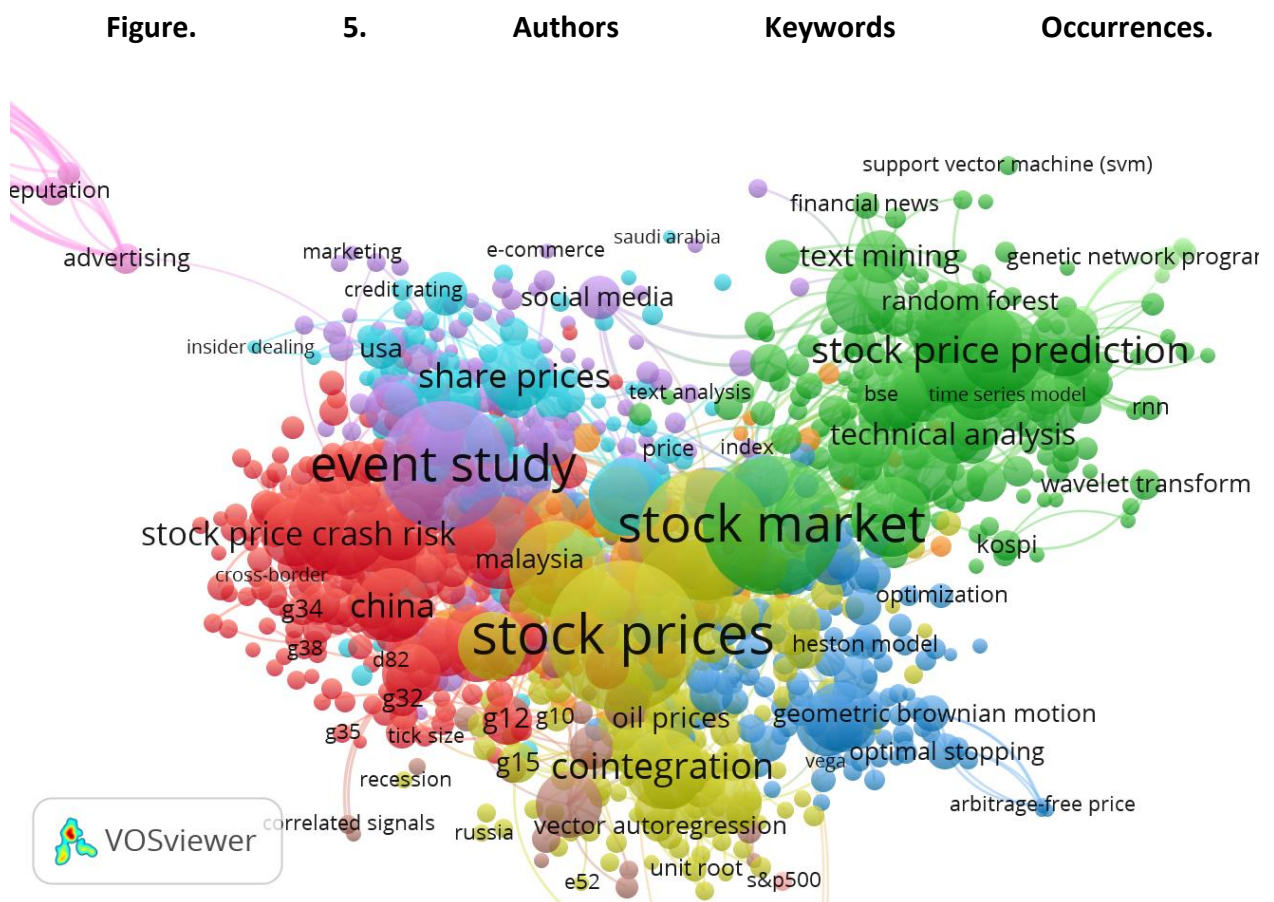


Table 4. Keywords Occurrences.

Rank	ID	Keywords	Occurrences	Total link strength
1	19098	Stock prices	571	1100
2	18778	Stock market	479	967
3	18948	Stock price	429	751
4	6314	Event study	419	684
5	3770	Corporate governance	248	499
6	21231	Volatility	246	506
7	19146	Stock returns	234	464
8	11930	Market efficiency	219	432
9	19054	Stock price prediction	176	326
10	11635	Machine learning	167	468
11	3086	Co-integration	163	363
12	7492	Forecasting	158	296
13	18887	Stock markets	155	378
14	2831	China	140	294
15	20156	Time series	135	279
16	17466	Sentiment analysis	130	327
17	15219	Prediction	127	302
18	17657	Share prices	127	325

19	4563	Deep learning	124	301
20	14224	Option pricing	122	120

3.8. Topic of Interest.

As a fast developing and modern technology era is going on, where the nature and fundamentals of business is changed, which is impact on business operations and performance that directly linked to Stock Price. Keywords consist of “stock market” were continual 479 times, event study 419 times, corporate governance 248 times, volatility 246 times, stock return 234 times, and market efficiency 219 times, in the current stock price study, while time series, sentiment analysis, predictions, deep learning, and option pricing are among the key factors in relation with.

In comparison with share price that is appeared 127 times, and share prices with 69 times, in the economics, finance, econometrics and all related field consider the same as to stock price. Difference is just recognized by the territory or country. Mainly stock price is used in United State and Canada, while share price is used in United Kingdom and rest of the world.

Since the corporate entity is developed in the year 1870 the stock price is used in the stock exchanges and between the investors, since then the researchers and scholars take deep part to investigate the stock price and its causes. There are several causes internal and external by the organization that affect the stock price, based on operations, progress and future goals stock price is determine. Currently their niche areas which needs to address and link with stock price.

4. CONCLUSION.

Current study has conveyed an overview of stock prices and share price research directions contingent on 14893 article publications fetch from the Scopus indexed database. For 90 years, a total number of 18900 articles were published. The foremost article publications came to the year 1930 by the Scopus indexed database, and then after a gap of some years publications begin with in single digit up to 1974. After 1992 a good number of publications have been reported, especially in the last 3 years of current results analysis 2018-2020, significant number of articles have been published cumulatively on the subject domain of stock price. United States stand first with regards to publications, authors, and institutions followed by China in terms of publications, and authors as well. Meanwhile stock price research has gained recognition throughout the globe and most of the countries take part in the publications. However, by analyzing the current lines of research such as environmental, economic, social, governance sustainably, and future possibility such as sustainable earnings will progress in terms of research and publications. Current study proposes that emerging future area of research will spotlight on dimension on corporate sustainability, organizational performance enhancement tools, good corporate governance practices and carbon emission CO₂. Scholars, academicians, practitioners, and policy makers shall concentrate these niche areas for policymaking towards attaining all stakeholders’ goals to sustain organizations over the long run. Further themes like stock performance, financial performance, firm performance, and good corporate governance now need to link with corporate financial sustainability with focusing on recent methodology like market value added and economic value added. In conclusion, new methodology for measuring performance could play an important role in demonstrating the performance to attract and inspire the stakeholders of the firm.

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