



RESEARCH ARTICLE

Analyst Recommendation: A Bibliometric Analysis

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ARTICLE INFO	ABSTRACT
Received: May 22, 2024	<p>The purpose of this paper is to identify the pattern of research related to analyst recommendations. The sample of this study was based on 119 documents between 1983 to 2020 from the Scopus database. This study employed a bibliometric analysis. This study has found that most of the documents were the article type which were published in journals. Further, this study also discovered an increasing trend of interest in this research throughout the period. English was the dominant language used and economics, finance, business, and accounting were the most popular subject areas related to this topic. This research has also identified the most active and influential authors, and the most utilised keywords associated with this research. The findings of this research should be useful in guiding researchers to identify potential future research issues by looking at what has been done worldwide. We have concluded that there are many more to explore about this topic, including sustainability issues which are being hotly debated nowadays.</p>
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INTRODUCTION

A financial analyst is one of the essential intermediaries who play significant roles in the financial markets. They gather, process, and evaluate information about a company's performance for business decisions and investment recommendations. Investment recommendations are one of the results of a comprehensive analysis including the earnings forecasts, cash flow, and target price. and valuation model (Abhayawansa & Guthrie, 2016; Michaely & Womack, 2005). Generally, analyst investment recommendations can be categorised into three broad categories, including buy, sell, and hold. These recommendations help investors in making their investment decisions because the analysis conducted by the financial analyst translates the complex information and converts it into simple buy, sell or hold recommendations (Jegadeesh, Kim, Krische, & Lee, 2004).

The New York Stock Exchange (NYSE) Rule 472 (2002) and National Association of Securities Dealers (NASD) Rule 2711 (2002) defined a research report as "a written or electronic communication which includes information reasonably sufficient upon which to base an investment decision and includes a recommendation" (NASD, 2002). Financial analyst reports are regarded as important sources of information for investors. This is because financial analysts are skilled professionals who need to interpret financial and non-financial data before providing their recommendations. In addition to public information, financial analysts also analyse private information in order to provide a more

comprehensive analysis to the investors. The main body of an analyst report comprises qualitative and quantitative analyses and the results of the key indicators (Asquith, *et al.*, 2005).

Research relating to financial analyst recommendations has received attention from researchers because of the informativeness of the analyst reports. It includes examining the information relevance of earnings forecasts, stock recommendations, target prices, and narrative information in the financial markets. There are studies exploring the reaction of financial markets to stock recommendations provided by the financial analysts (Aggarwal, *et al.*, 2017; Bellando, *et al.*, 2016; and Barber, *et al.*, 2001). Several studies have been carried out to evaluate the market reactions to the earnings forecasts (Clement & Tse, 2005; Cooper, Day, & Lewis, 2001) and also the market reaction to the target prices issued by financial analysts (Bilinski, Lyssimachou, & Walker, 2013; Bradshaw, Brown, & Huang, 2013).

Using a bibliometric analysis, this study has identified the pattern of research related to analyst recommendations from the Scopus database. Liu, Tian, Kong, Lee, and Xia (2019) suggested that a bibliometric analysis describes the knowledge status, features, and trends in a certain discipline. A bibliometric analysis may include qualitative and quantitative analysis on a publication database, such as Scopus and Web of Science (Aleixandre-Benavent, Aleixandre-Tudo, Castello-Cogollos, and Alexiandre, 2017; Liu, *et al.*, 2019). Wang, *et al.* (2018) reported that the bibliometric analysis has been widely used to measure the performance for various disciplines. Thus, this paper is intended to answer the following research questions (RQs): *RQ1: What is the current publication trend of analyst recommendations?*, *RQ2: Which are the most influential countries and source titles?*, *RQ3: Who are the most active authors?*, *RQ4: Who are the most influential authors, and?* *RQ5: Which themes involving analyst recommendations are the most popular amongst scholars?*

2. LITERATURE REVIEW

2.1 Role of financial analysts

A financial analyst plays an important role in the financial market. Past literature demonstrates that the financial analyst is able to be a sophisticated information processor; monitors the performance of the financial market, especially the covered companies; and acts as a market intermediary.

According to Bradshaw (2011), Garcia-Ayuso (2003), and Lee & Lo (2016), sell-side analysts are regarded as sophisticated processors of corporate information. Chen Xia, *et al.* (2010) suggested that, because financial analysts have more experience, deeper understanding, and better training about the companies and industries, they possess higher skills to process the information as compared to retail investors. Non-professional investors are encouraged to depend on analyst recommendations before making investment decisions. Groysberg, *et al.* (2008) found that sell-side analysts are more accurate in making their earnings forecasts, reflecting their expertise in their financial statement analysis.

Financial analysts also play the role of monitoring the financial market in general, and specifically the performance of the companies they are following. They do the monitoring by collecting and analysing corporate information before distributing the processed information to the interested parties, such as retail investors and institutional investors. They provide the latest information to enhance the informational efficiency and facilitate prices to be more revealing (Chung & Jo, 1996).

Further, as information intermediaries, financial analysts depend on private and public information sources to gather and evaluate the performances of the companies they follow, generate earnings forecasts, and issue recommendations to investors as to whether to buy, sell or hold their shares (Healy & Palepu, 2001; Simpson, 2010). Ljungqvist, *et al.* (2007) asserted the financial analysts are

responsible for channeling the related information of companies to investors. Further, Daphne, Markov, and Tomayo (2007) suggested that the financial analyst generally aggregates publicly available information and also generates new information.

3. METHODOLOGY

Using the Scopus database, the search using the term “document” as a primary search, followed with the string keywords of “article title” for analyst recommendations had been conducted on 18 March 2020. The keywords used were “analyst recommendation”, “analyst’s recommendation” or “analysts’ recommendations”, without limitation of the time period. Initially, there were 121 documents that comprised of articles, conference papers, reviews, notes, book chapters, short surveys, books, letters, and other documents. After filtering for subject area, 119 documents were included in this study.

Co-citation analysis and bibliographic coupling were used for the data analysis. Both techniques assume a greater degree of overlap in the references of a pair of articles, implying a greater degree of relation or similarity between the two publications. Vogel, *e. al.* (2013) found that the co-citation technique analyses the references or cited documents and considers a stronger relationship if they are cited together. This paper also utilised VOSviewer and Harzing’s Publish or Perish software to analyse the results.

4. FINDINGS

To answer RQ1 (What is the current publication trend of analyst recommendations?), we analysed the accessibility, document and source type, publication by year, language, and subject area for 119 items.

4.1 Accessibility, document, and source type

Based on Table 1, most of the research on analyst recommendations (95.8%) were from other types of access and were article type documents. There were only 4 (3.4%) conference papers and 1 (0.84%) editorial document type. It implies that most researchers prefer to publish articles as compared to other types of documents. Further, journals dominated the trend with 116 items (97.5%) followed by conference proceedings with 3 items (2.5%) for source type.

Table 1: Accessibility, Document, and Source Type

Access	Frequency	%	Document	Frequency	%	Source	Frequency	%
Open Access	5	4.2	Article	114	95.8	Journals	116	97.5
Other	114	95.8	Conference Paper	4	3.4	Conference Proceedings	3	2.5
			Editorial	1	0.8			
Total	119	100	Total	119	100		119	100

4.2 Publication by year

Table 2 presents the trend of publication by year. As shown, research on analyst recommendations first captured in the Scopus database were published in 1983. Meanwhile, there were 8 publications in this area between 1990 to 1999. Next, the publications increased to 25 publications between 2000 to 2009. The period between 2010 to 2019 showed a drastic increment, where there were 84 publications published in that 10-year period. Only 1 publication was published in 2020 as of the commencement of this research. In brief, we can see a growing trend of research on analyst recommendations, particularly in the Scopus database. It implies that this research topic has become more popular and ha been attracting more researchers.

Table 2: Publication by year

Duration	Frequency	Timeframe	Frequency	Percentage
2020	1	2020	1	0.8
2019	17			
2018	10			
2017	6			
2016	6			
2015	2	2010 to 2019	84	70.6
2014	15			
2013	10			
2012	6			
2011	8			
2010	4			
2009	7			
2008	1			
2007	3	2000 to 2009	25	21
2006	10			
2005	1			
2001	1			
2000	2			
1999	2			
1997	1			

1996	3	1990 to 1999	8	6.7
1995	1			
1994	1			
1983	1	1980 to 1989	1	0.8
Total	119		119	100

Further, Figure 1 depicts the trend of publications for every year for the period between 1983-2020. It shows that this research topic received the highest attention in 2019 (17 items) and this was followed by the year 2014 (15 items). Years 2006, 2013, and 2018 had 10 publications each year. Generally, we can see an increasing trend in this research topic.

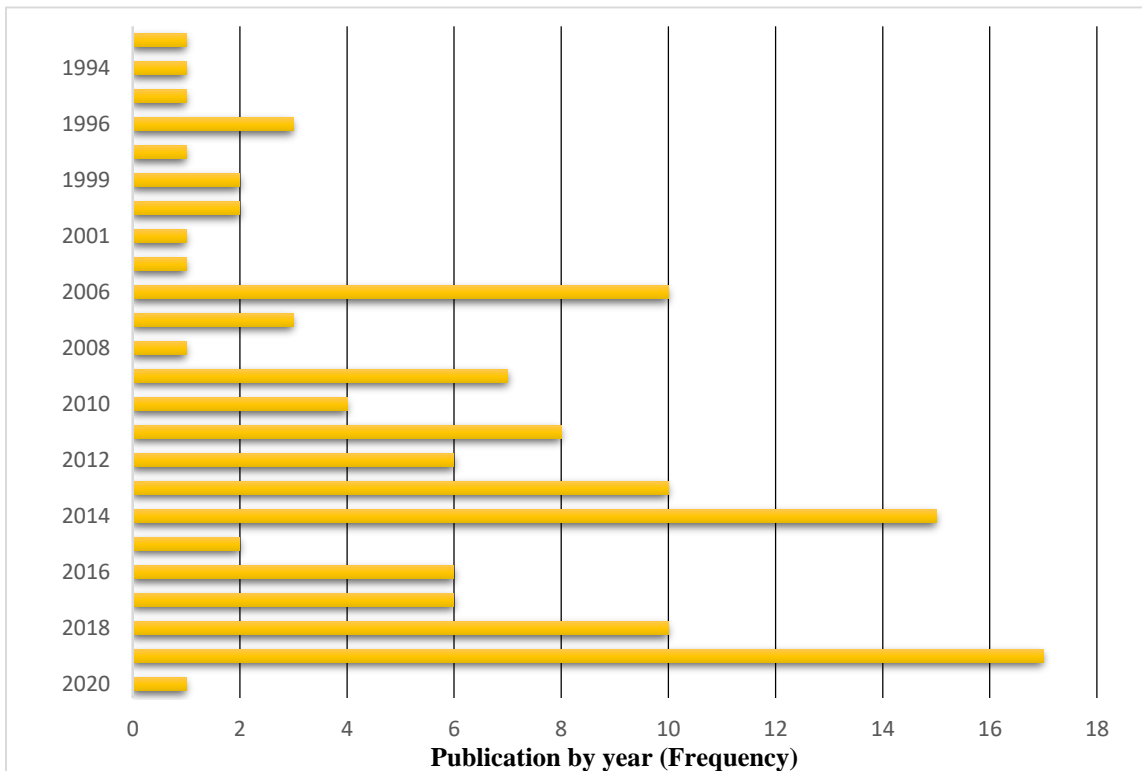


Figure 1: Publication by year

4.3 Languages of the documents

As presented in Table 3, English has become the most common language used for the publications, representing 97.6% of the total documents. It was followed by Chinese, Czech, and Spanish with 0.8 %, respectively. None of the publications were found to be published in dual languages.

Table 3: Languages Used for Publications

Language	Frequency	%
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English	116	97.6
Chinese	1	0.8
Czech	1	0.8
Spanish	1	0.8
Total	119	100

4.4 Subject area

Further, to answer RQ 1, we analysed the trend of publications by looking at the subject area. Table 4 presents the main subject area associated with analyst recommendation research. It included Economics, Econometrics, and Finance (55.9%); followed by Business, Management, and Accounting (39.4%); and Social Sciences (4.7%). The frequency exceeded 119 documents because some of the documents were associated with more than one subject area.

Table 4: Main subject area

Subject Area	Frequency	%
Economics, Econometrics, and Finance	95	55.9
Business, Management, and Accounting	67	39.4
Social Sciences	8	4.7
Total	170	100

To answer RQ2 (RQ2: Which are the most influential countries and source titles?), we analysed the most influential countries and most active source titles that had published documents on analyst recommendations.

4.5 Most influential countries and most active source titles

The analyst recommendation topic has attracted considerable attention from researchers worldwide. As shown in Table 5, the United States was the top country that had published 57 documents on analyst recommendations, followed by China with 13 documents. These two countries are amongst the giant economics in the world and their financial markets are popular amongst financial analyst researchers. Amongst the reason why most of the publications come from the United States is because this country is known for its reputation for renowned higher education programmes and the world's top education. Meanwhile, China has become a popular destination for international researchers due its unique culture, heritage, and population (Yang, Lin, and Han, 2010).

The next top countries that had published documents on financial analysts were Australia and Taiwan, with eight and six publications, respectively. Australia has become the third top publication provider because this country practices a friendly environment, excellent education system, and high

standard of living (Walker, 2012). Further, the analyst recommendation topic has also been investigated in other parts of the world, including Europe, Asia, and the Middle East.

This paper has also presented the top 20 most active source titles that had two or more publications on analyst recommendations (see Table 5). From the Scopus database, the Journal of Financial and Quantitative Analysis was the top source title which had published 6 documents, followed by the Journal of Banking and Finance, Journal of Finance, and Review of Quantitative Finance and Accounting with 5 documents, respectively. Most of the source titles were related to finance, economics, and accounting. Overall, the top 20 most active source titles were composed of 61 documents.

Table 5: Top 20 countries and top 20 source titles

No.	Country	Frequency	No.	Source Title	Frequency
1.	United States	57	1.	Journal of Financial and Quantitative Analysis	6
2.	China	13	2.	Journal of Banking and Finance	5
3.	Australia	8	3.	Journal of Finance	5
4.	Taiwan	6	4.	Review of Quantitative Finance and Accounting	5
5.	Egypt	5	5.	Finance Research Letters	4
6.	Hong Kong	5	6.	International Review of Financial Analysis	4
7.	Netherlands	5	7.	Review of Financial Studies	4
8.	South Korea	4	8.	Financial Review	3
9.	United Kingdom	4	9.	Pacific Basin Finance Journal	3
10.	Canada	3	10.	Applied Financial Economics	2
11.	France	3	11.	Financial Management	2
12.	Israel	3	12.	International Journal of Business Governance and Ethics	2
13.	Morocco	3	13.	International Journal of Islamic And Middle Eastern Finance and Management	2
14.	New Zealand	3	14.	International Research Journal of Finance and Economics	2
15.	Singapore	3	15.	Investment Analysts Journal	2
16.	Spain	3	16.	Journal of Accounting Auditing and Finance	2
17.	Greece	2	17.	Journal of Accounting Research	2
18.	Ireland	2	18.	Journal of Applied Business Research	2
19.	Italy	2	19.	Journal of Business Ethics	2
20.	Japan	2	20.	Journal of Business Finance and Accounting	2
	Total	136			61

To answer RQ3 (RQ3: Who are the most active authors?), our analysis has been based on each individual author who had conducted a research in the analyst recommendation topic and his/her affiliation.

4.6 Most active authors

As presented in Table 6, there were a total of 53 documents published by the top 20 most active authors with a minimum of two publications each. The most active author in analyst recommendations was Farooq, O. (Omar Farooq) with 6 publications. His publications include:

- (a) Does analyst following improve the informativeness of earnings? Evidence from the MENA region, *International Journal of Business Governance and Ethics* (2013);
- (b) Who was informative? Performance of foreign and local analysts' stock recommendations during the Asian financial crisis, *Research in International Business and Finance* (2013);
- (c) Improving the Information Environment for Analysts: Which intellectual capital disclosures matter the most? *Journal of Intellectual Capital* (2014);
- (d) Does analyst following improve firm performance? Evidence from the MENA region, *Corporate Ownership and Control* (2014);
- (e) Shariah-compliance and value of analysts' recommendations: Evidence from the MENA region, *Journal of Islamic Accounting and Business Research* (2014); and
- (f) Value of analysts' recommendations: Evidence from the MENA region, *International Journal of Islamic and Middle Eastern Finance and Management* (2014).

The next active author was Yezegel, A., with 4 publications. Table 6 also presents the top authors with three and two publications in this area.

For the affiliation, Table 6 shows that the American University in Cairo has the highest number of publications on analyst recommendations, with 5 publications. Situated in Egypt, the American University in Cairo has been recognised with the world cultures and vibrant forum for argument, debates, and understanding across the diversity of language, facilities, and human experiences. The second highest number of publications on analyst recommendations was affiliated with Bentley University with 4 publications. Located nearby Boston University, Bentley University offers a unique education system that comprises business and liberal arts.

Next, the universities with three publications includes the Max Stern Yezreel Valley Academic College (Israel); Chinese University of Hong Kong (Hong Kong); University of Michigan-Dearborn (U.S.); University of Wisconsin-Whitewater (U.S.); Yuan Ze University (Taiwan); University of California, Davis (U.S.); Florida Atlantic University (U.S.); Tianjin University (China); Al Akhawayn University (Morocco); University of Sydney (Australia); and University of California (U.S.).

Table 6: Top 20 most active authors and affiliations

No.	Author Name	Frequency	No.	Affiliation	Frequency
1.	Farooq, O.	6	1.	American University in Cairo	5
2.	Yezegel, A.	4	2.	Bentley University	4
3.	Kudryavtsev, A.	3	3.	Max Stern Yezreel Valley Academic College	3
4.	Lehavy, R.	3	4.	Chinese University of Hong Kong	3
5.	Madura, J.	3	5.	University of Michigan-Dearborn	3
6.	Palmon, D.	3	6.	University of Wisconsin-Whitewater	3
7.	Premti, A.	3	7.	Yuan Ze University	3
8.	Sharma, V.	3	8.	University of California, Davis	3
9.	Trueman, B.	3	9.	Florida Atlantic University	3
10.	Barber, B.M.	2	10.	Tianjin University	3
11.	Clarke, J.	2	11.	Al Akhawayn University	3
12.	Devos, E.	2	12.	University of Sydney	3
13.	Galanti, S.	2	1.	University of California, Los Angeles	3
14.	Garcia-Feijoo, L.	2	14.	Emory University	2

15.	Glezakos, M.	2	15.	Florida State University	2
15.	Kovacs, T.	2	16.	Universiteit van Amsterdam	2
17.	McNichols, M.	2	17.	Franklin and Marshall College, Lancaster	2
18.	Michaely, R.	2	18.	Rice University	2
19.	Papakroni, J.	2	19.	National Taiwan University	2
20.	Womack, K.L.	2	20.	University of Missouri	2
	Total	53		Total	56

In order to answer RQ4 (RQ4: Who are the most influential authors?), we analysed the keywords with co-citation using VOSviewer software.

4.7 Keyword analysis with co-citation

The top keywords were mapped using VOSviewer, a software tool for constructing and visualising bibliometric networks. Figure 2 presents a network visualisation of the co-citation analysis and cited authors in which colour, square size, font size, and thickness of connecting lines were used to present the relationships with other keywords. The keywords with the same colour were commonly listed together. There were 42 items grouped into 3 clusters, consisting of 843 links with a total link strength of 19,174 (in red, blue, and green colours). The network visualisation map of the top keywords implied the research involved with analyst recommendations as a multidimensional research approach.

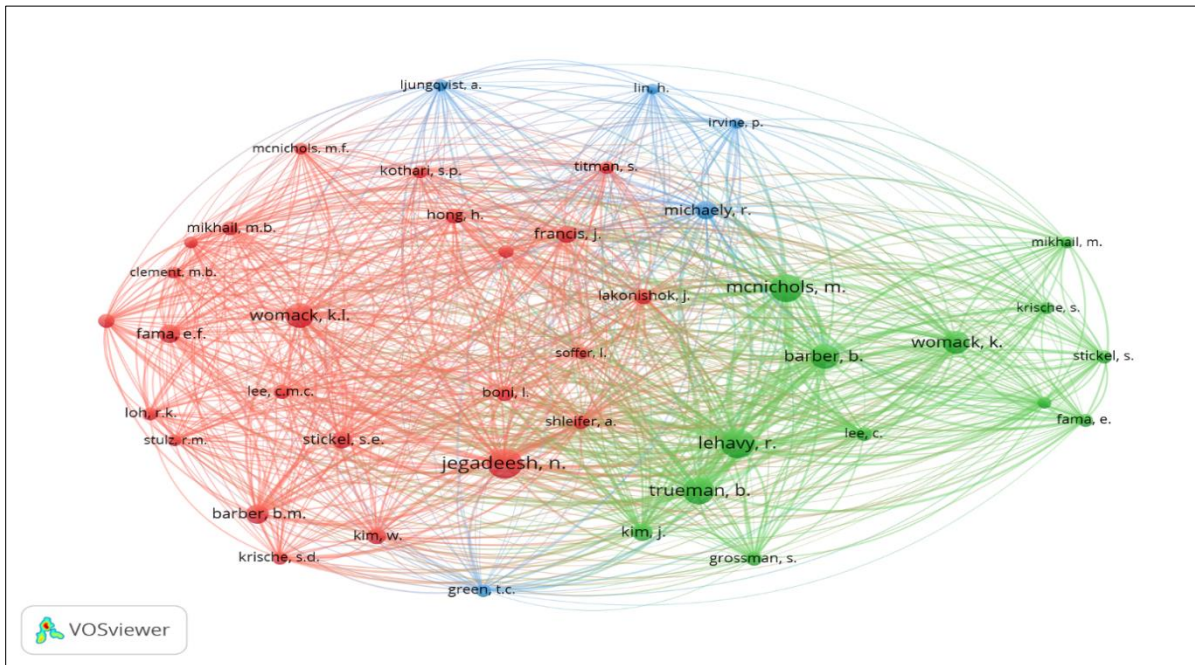


Figure 2: Network visualisation map of the top keywords

In addition, the top 20 co-citations using the network visualisation map are also presented in Table 7. Jegadeesh, N. was the highest co-citation author with 138 citations and a total link strength of 2,778, followed by Lehavy, R. with 130 citations and a total link strength of 2,801. Next, McNichols, M. produced 122 citations with a total link strength of 2,579 and Trueman, B. with 116 citations (total

link strength of 2,540). The rest of the top 20 co-citations were also presented in Table 7. Specifically, the article titled “*Analysing the analysts: When do recommendations add value*” by Jegadeesh, N. published in *The Journal of Finance* in 2014 has been cited in more than 100 co-citations. This also shows that Jegadeesh, N. is, so far, the most influential scholar that had focused on analyst recommendation research.

Table 7: Top 20 Co-citations using the network visualisation map

No.	Author	Citations	Total Link Strength
1.	Jegadeesh, N.	138	2778
2.	Lehavy, R.	130	2801
3.	Mcnichols, M.	122	2579
4.	Trueman, B.	116	2540
5.	Barber, B.	98	2214
6.	Womack, K.L.	93	1663
7.	Womack, K.	77	1472
8.	Barber, B.M.	57	909
9.	Fama, E.F.	54	956
10.	Michaely, R.	54	1111
11.	Kim, J.	46	1004
12.	Stickel, S.E.	46	742
13.	Francis, J.	45	1012
14.	Kim, W.	40	795
15.	Boni, L.	37	798
16.	Hong, H.	36	717
17.	Lakonishok, J.	35	715
18.	Lee, C.	33	770
19.	French, K.R.	32	660
20.	Lee, C.M.C.	31	686

To answer RQ5 (RQ5: Which themes involving analyst recommendations are the most popular amongst scholars?), we analysed the top cited title and abstract.

4.8 Cited title and abstract

Table 8 shows the top 20 highest and lowest cited titles and abstracts. The highest cited title and abstract was *analyst* with 206 occurrences, followed by *analyst's recommendation* with 83 occurrences and *performance* with 48 occurrences. Meanwhile, the least cited title and abstract was *addition* with 10 occurrences, followed by *brokerage firm* and *private information* with 12 occurrences. In addition, Figure 3 shows the network visualisation map of the cited title and abstract map.

Table 8: Top 20 highest and lowest cited titles and abstracts

Highest cited			Lowest cited		
No.	Term	Frequency	No.	Term	Frequency

1.	analyst	206	1.	addition	10
2.	analyst's recommendation	83	2.	brokerage firm	12
3.	performance	48	3.	private information	12
4.	abnormal return	34	4.	day	13
5.	change	33	5.	document	13
6.	recommendation revision	33	6.	equity	15
7.	revision	29	7.	financial analyst	16
8.	role	29	8.	interest	16
9.	upgrade	29	9.	analyst recommendation change	17
10.	downgrade	26	10.	buy	18
11.	recommendation change	23	11.	stock price	18
12.	analyst recommendation revision	21	12.	bank	19
13.	author	21	13.	country	19
14.	hypothesis	21	14.	information content	19
15.	optimism	20	15.	optimism	20
16.	bank	19	16.	analyst recommendation revision	21
17.	country	19	17.	author	21
18.	information content	19	18.	hypothesis	21
19.	buy	18	19.	recommendation change	23
20.	stock price	18	20.	downgrade	26

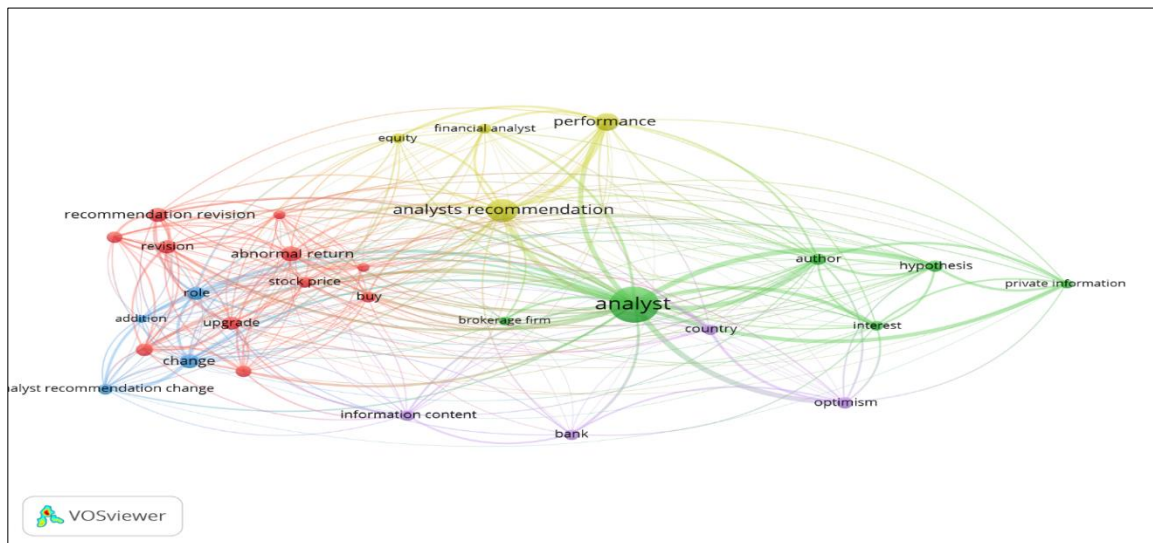


Figure 3: Network visualisation map of the cited title and abstract map

4.9 Citation analysis

Table 9 summarises the citation metrics for the analyst recommendation topic. As indicated, there were 3,195 citations reported between 1983 and 2020 for 119 documents with an average of 86.35

citations per year. The table also presents the average citations of 26.85 per paper with an h-index and g-index of 21 and 56, respectively.

Table 9: Citation metrics

Metrics	Data
Publication years	1983-2020
Citation years	37 (1983-2020)
Papers	119
Citations	3,195
Citations/year	86.35
Citations/paper	26.85
Authors/paper	2.47
h-index	21
g-index	56

5.0 DISCUSSION AND CONCLUSION

A financial analyst is one of the intermediaries between companies and investors, where the main role is to provide recommendations for investment decisions. Due to more complex transactions in the financial market, the recommendations made by the analyst would be useful for investors. In addition, the research attention to this topic also keeps growing worldwide. There are varieties of issues investigated under this topic.

From the finding, we can see an increasing trend of publications in this area from year to year. However, until 18 March 2020, the number of publications for 2020 was low. It is hoped that the number will increase towards the end of the year. Further, the publications of this research topic have been dominantly published by researchers from the U.S. Few numbers of publications have come from other continents. This might be due to the advanced financial markets in the U.S that attract more researchers to conduct their research in this area. Surprisingly, the most active author and active affiliation is from the Middle East. In other words, researchers from other parts of the world should grab this opportunity to conduct research in this under-researched area in their emerging geographical settings.

Further, related to the title and abstract, we can see the trend is towards investment decisions. Most of the keywords used are surrounding similar themes. This trend provides an opportunity for the future research to explore other themes that are still new. For example, one of the linkages that could be investigated in the future is sustainability. Recently, there has been great attention given to the sustainability concept, including the Sustainable Development Goal (SDG) as promoted by the United Nations (UN). Future research can be conducted to explore the link between analyst recommendations and the sustainability of a business.

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