

# Bibliometric Analysis: Cyberspace Engagement on Employee Performance

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## ABSTRACT

*Cyberspace engagement on employee performance domain keeps increasing these days as pandemic COVID-19 hit the whole world. This has created an interest among researchers to examine cyberspace topics in various areas as everyone has to adapt to digitalisation widely. This paper evaluates the trend of cyberspace on employee performance domain from 2000 - 2022. This paper uses bibliometric analysis to evaluate and analyse the research domain with a total of 728 documents extracted from the Scopus database. This paper reports the documents and source type, year of publication, authors and geographical distribution of countries in South East Asia regarding cyberspace engagement on employee performance domain. There are a few were reported on the bibliometric analysis in the domain of cyberspace engagement on employee performance.*

**Keywords:** Bibliographic Analysis, Cyberspace Engagement, Employee Performance

## 1. INTRODUCTION

The arrival of the Internet, as well as the increased use of information technologies, has led to drastic changes in people's lives. It is affecting the development of many countries by removing commerce obstacles and enables individuals all over the world to interact, engage, and brainstorm regardless of status, location, or duration (Mbanaso & Dandaura, 2015). As the worldwide spread of the COVID-19 pandemic virus has paralysed the economic structure to the point where companies are trying to overcome the COVID-19 pandemic by requiring or urging employees to work from home (OECD, 2021). Working from home has become the norm today for workers to slow the spread of the virus to others. The virus has also caused havoc in people's lives, communities, and businesses all over the world. Companies and organisations have conspired together and innovated to reduce the impact of COVID-19 on people's health and to limit threats to the economic growth and distribution channels (OECD, 2020). Hence, the COVID-19 pandemic has created new challenges in organisations regardless of the government or private sector due to work from home policy, especially in the human resource development department. This is because it is difficult to monitor the employee's work performance remotely due to the working from home policy. Therefore, many organisations are rapidly moving up their digital transformations, and cybersecurity is increasingly a top priority. If cyber threat concerns are overlooked, the consequences for reputation, operations, legality, and compliance can be severe. After all, there is no study that has been done using bibliometric analysis methods in the subject domain of cyberspace engagement and employee performance. Therefore, this paper will make use of bibliometric analysis to review the domain of cyberspace engagement and employee performance from year 2000 until recently (2000 – 2022).

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The bibliometric analysis will evaluate this research to the point about the specific domain's trend. Moreover, other researchers will find this paper helpful in obtaining the most recent publications concerning cyberspace engagement on employee performance as COVID-19 had hit the whole world as well as the authors who contributed to the publications.

### **1.1 The Concept of Cyberspace Engagement**

Cyberspace is a worldwide field within the information technology environment consisting of the interdependent network of information and technology facilities, including the online, digital infrastructure, electronic systems, and computers and controllers, according to the Department of Defence Dictionary of Military and Associated Terms (2010). Cyberspace has a historical dimension, an undercurrent of social progress, facing a modern industrial culture, Gibson (1984) claims. This highlights the fact that cyberspace has introduced new cultural practices in human activity, which is modifying human experience by bringing new insights into focus.

Choucri (2014) defines cyberspace as a borderless field formed through the connectivity of multiple machines by a worldwide computer network, which is built as a tiered structure, where physical features enable a framework of connectivity that allows the preparation, transformation, discrimination, and development of information, as well as the interaction between individuals and documentation.

### **1.2 The Concept of Employee Performance**

The word employee performance refers to an individual's work accomplishment after putting in the necessary effort on the job (Hellriegel et al., 1999; Karakas, 2010). An excellent employee performance management system is required for a company organisation to completely utilise HR and augment organisational achievement. Moreover, the performance-driven goal of an organisation must be matched with its standards so that the overall process shifts from event driven to strategic and individuals (Jena & Pradhan, 2014; London, 2003; Mone & London, 2009).

According to Aguinis and Tian (2021), performance management is a significant managerial function in all types and sizes of organisations and industries. Performance management is defined as a continuous process of determining, assessing, and reviewing performance and task forces while guiding achievement with the organisation's objectives. Furthermore, an individual's performance is measured against other potential such as job expectations, goals, or standards that have been previously agreed upon, rather than the result or level of success of the person as a whole in carrying out a task.

However, this research paper uses only one web-page to find articles related to this study, which are Scopus. The researcher only selected one web-page with specific scope where the past study was published on cyberspace engagement and employee performance in Southeast Asia from 2000 until recently (2000 - 2022). The importance of this paper, readers will be able to acquire information about the number of papers published from 2000-2022 related to cyberspace engagement on employee performance by a particular institution as well group of researchers that had the excellent productivity as this paper utilise statistical and mathematical analysis technique to analyse quality indicators to provide reliable information to other researchers.

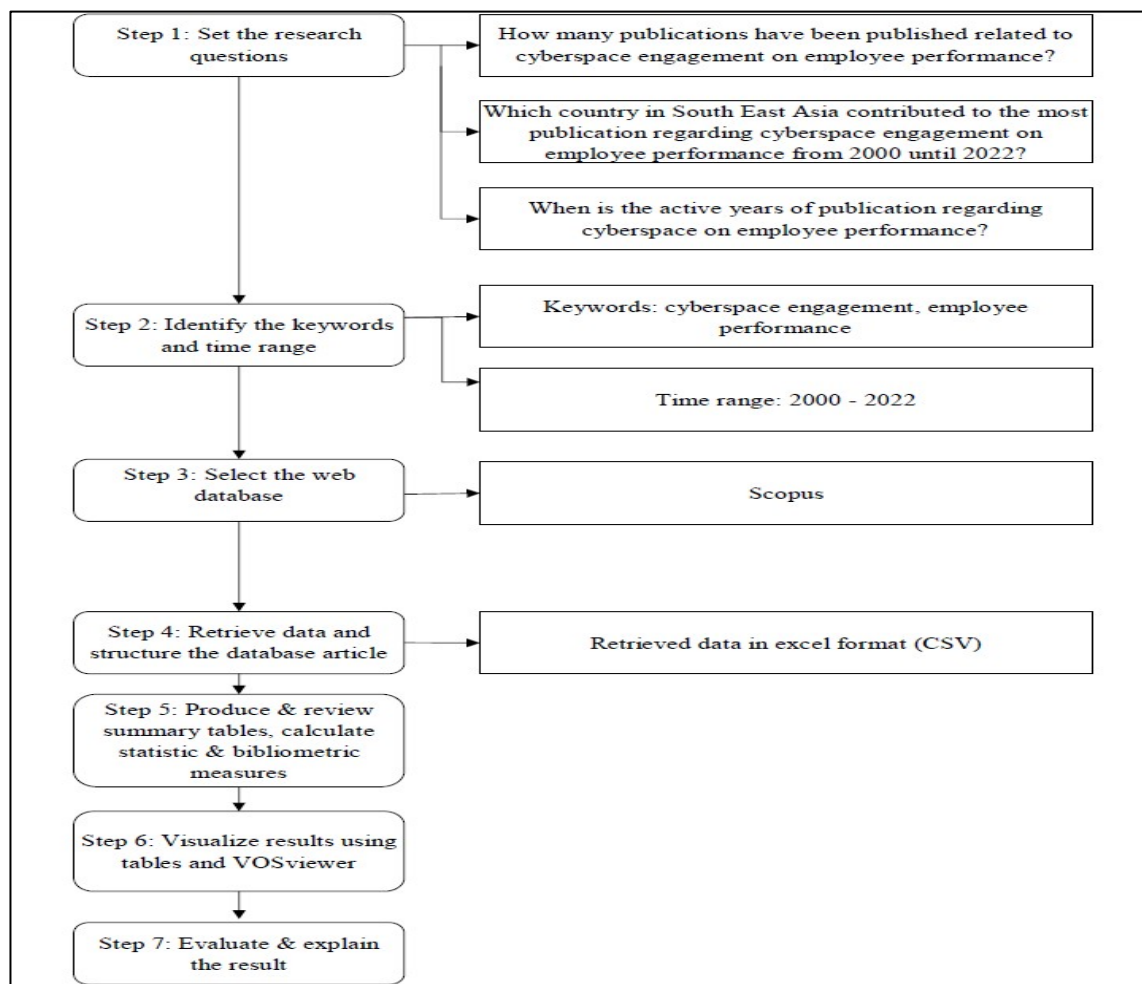
## **2. METHODS**

The bibliometric analysis utilised to examine and categorise the past research report in the cyberspace engagement on employee performance field was highlighted in this paper. The goal of the bibliometric study was to better understand the impact of cyberspace engagement on employee performance in order to see how far the field has evolved in the last two decades. Figure 1 depicts the research approach used in this study. The first step in performing this investigation

was to set the research questions: How many publications have been published related to cyberspace engagement on employee performance? Which country in South East Asia contributed to the most publications regarding cyberspace engagement on employee performance? When are the active years of publication regarding cyberspace engagement on employee performance?

The second step was to determine the keywords and time range for this article, which were 'cyberspace' and 'engagement' and 'employee' and 'performance'. Meanwhile, the time range was chosen between 2000 to 2022, with the corresponding years aimed to be the active years of cyberspace engagement on employee performance publication.

The third step was to choose the web database, which was the Scopus database used in this paper. The fourth step involved retrieving data from the Scopus database, which was then exported in an excel (CSV format) file to analyse. The fifth step involved produce and review the summary tables, as well as calculate the statistic and bibliometric metrics. The sixth step was using tables and VOSviewer software to visualise the data. The final step in this research was to analyse and explain the findings for better comprehension.



**Figure 1.** Research methodology adopted in the bibliometric analysis on cyberspace engagement on employee performance

### 3. RESULTS AND DISCUSSIONS

In this paper, Scopus database of 728 documents regarding cyberspace engagement on employee performance was downloaded in excel (CSV format) file following the requirements of VOSviewer used to analyse the data. The data retrieval from the Scopus database is the year published, authors and affiliation, keywords, languages used and geographical distribution of the articles. The same data of cyberspace engagement on employee performance from Scopus database were used to generate tables and graphs to find out the year of database trends such as document type, year of published and the frequency of keywords in the documents followed by the document and source type of publications, language used, keywords and geographical distribution as required bibliometric analysis.

As COVID-19 pandemic continues to ravage the world, cyber engagement keeps increasing in the employee performance domain. Researchers have therefore been interested in exploring cyberspace topics in a variety of fields, as everyone is affected by digitalisation in one way or another. The purpose of this paper is to evaluate the effect of cyberspace on employee performance over a 20 years period between 2000 – 2022.

#### 3.1 Document and Source Type

The document and source types were collected using excel format. As listed in Table 1, the most repeat document type for cyberspace engagement on employee performance domain which is article with 55.21%, followed by book (28.02%), book chapter (7.55%), review (4.95%), conference paper (3.85%) and 0.14% (editorial, note and short survey) each. While source type the most frequent are journals with 59.62%. This is because there is a growth of requests for cyberspace engagement on employee performance topics in many journals. Conferences of cyberspace engagement on employee performance keep rising around the world, and this could be the result of why the book comes in second. Cyberspace engagement on employee performance topics is least written in conference proceedings and book series as it is difficult to publish these document types as portrayed in Table 2.

**Table 1.** Document Types

Document Type	Frequency	% (N=728)
Article	402	55.21
Book	204	28.02
Book chapter	55	7.55
Review	36	4.95
Conference paper	28	3.85
Editorial	1	0.14
Note	1	0.14
Short survey	1	0.14
<b>Total</b>	<b>728</b>	<b>100</b>

**Table 2.** Source Types

Source Type	Frequency	%(N=728)
Journal	434	59.62
Book	253	34.75
Conference proceedings	27	3.70
Book series	14	1.92
<b>Total</b>	<b>728</b>	<b>100</b>

### 3.2 Year of Publication

The first article of cyberspace engagement on employee performance domain was published in 2000 and then the second publication took some time to be published in 2003. There is less interest in cyberspace engagement on employee performance domain at the early years of publications, however articles keep rising each year especially 2021 with 106 articles were published during COVID-19, as there are numerous signs of development and strength across the academic distributing area. 2021 likely be a record year for entries because of the expansion in exploration and articles connected with the cyberspace subjects during COVID-19 which contribute the increment of articles as a significant number of which distributors gave free admittance to, guaranteeing that pertinent and ideal examination and information contacted the most extensive potential crowds as fast as could really be expected.

**Table 3.** Year of Publications

Year	Frequency	% (N=728)	Cumulative Percent
2000	2	0.27	
2001 - 2002	0	0	0.27
2003	1	0.14	0.41
2004	2	1.27	0.68
2005	4	1.55	1.23
2006	9	1.24	2.47
2007	11	1.52	3.99
2008	12	1.65	5.64
2009	10	1.37	7.01
2010	14	1.93	8.94
2011	15	2.06	11
2012	34	4.67	15.67
2013	38	5.22	20.89
2014	44	6.04	26.93
2015	44	6.04	32.97
2016	61	8.38	41.35
2017	51	7.03	48.38
2018	64	8.78	57.16
2019	68	9.33	66.49
2020	93	12.77	79.26
2021	106	14.56	93.82
2022	45	6.18	100
<b>Total</b>	<b>728</b>	<b>100</b>	

### 3.3 Language of Documents

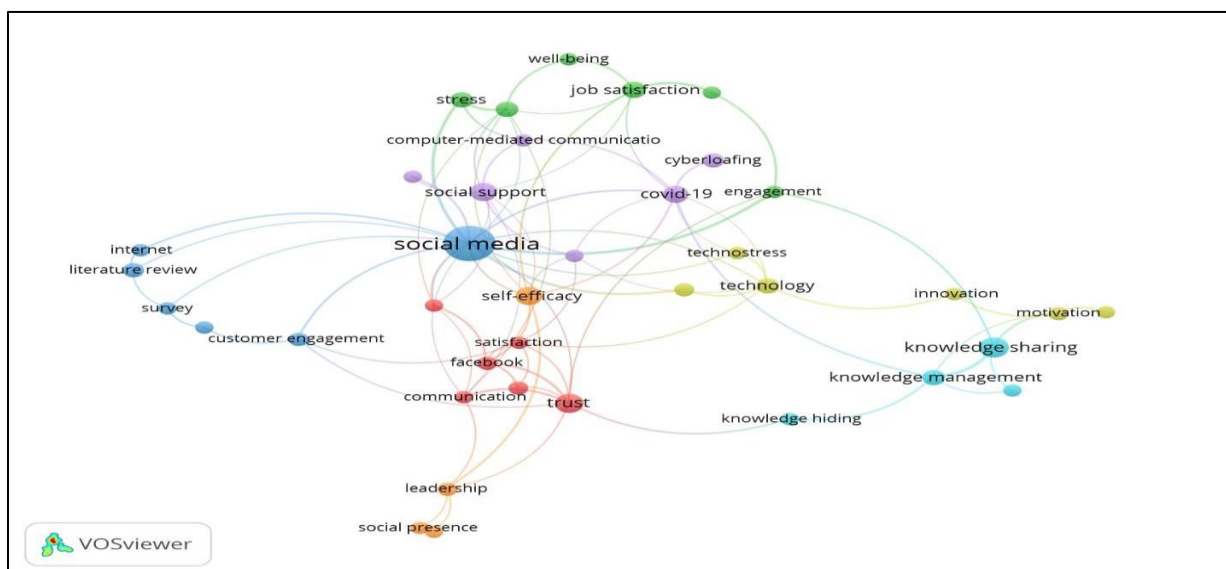
The documents are actively written in English with 99.58% of the publications and the remaining is in Persian, Spanish and French with 0.14% as stated in Table 4. English as the worldwide scholastic language works with the global versatility of youthful scientists (Graddol, 2006). English has been the language of decision for the overwhelming majority of global academic articles. Therefore, people can easily read and understand the articles if they are in the English language.

**Table 4.** Languages Used for Publications

Language	Frequency	% (N=728)
English	725	99.58
Persian	1	0.14
Spanish	1	0.14
French	1	0.14
Total	728	100

### 3.4 Keywords Analysis

Figure 2 and Table 5 showed the keywords analysis using VOSviewer and excel format. From Figure 2, the connection from most of the keywords is related to each other. The size of words shows the repeat keywords used related to cyberspace engagement on employee performance such as social media is the biggest number and align with frequency of author keywords as shown in Figure 2. The same colour of the keywords means the keywords were shared between the subjects as it showed the blue colour in Figure 2. The social media (14.14%) keywords are mostly related to other keywords used in the articles shown in Table 5 followed by the words: knowledge management, trust, self-efficacy, social support and COVID-19. Therefore, this study can be focused on knowledge sharing research.



**Figure 2.** Network Visualisation Map of the Author Keyword using VOSviewer

**Table 5. Author Keywords**

<b>Author Keywords</b>	<b>Frequency</b>	<b>Percent</b>
Social Media	42	14.14
Trust	12	4.04
COVID-19	10	3.37
Knowledge Management	8	2.69
Knowledge Sharing	14	4.71
Self-efficacy	11	3.70
Engagement	5	1.68
Facebook	6	2.02
Job Satisfaction	9	3.03
Social Support	11	3.70
Stress	8	2.69
Technology	8	2.69
Work Engagement	8	2.69
Motivation	6	2.02
Boundary Management	6	2.02
Communication	5	1.68
Computer-mediated Communication	5	1.68
Customer Engagement	6	2.02
E-learning	5	1.68
Leadership	6	2.02
Organisational Commitment	5	1.68
Organisational Identification	5	1.68
Satisfaction	5	1.68
Gender	6	2.02
Innovation	5	1.68
Internet	5	1.68
Knowledge Hiding	5	1.68
Literature Review	7	2.36
Online Community	5	1.68
Personality	5	1.68
Survey	5	1.68
Well-being	5	1.68
Technostress	5	1.68
Cyber-loafing	7	2.36

Author Keywords	Frequency	Percent
Gamification	5	1.68
Social Capital	5	1.68
Social Presence	5	1.68
Virtual Reality	5	1.68
Decision Support System	6	2.02
Service Recovery	5	1.68

### 3.5 Geographical Distribution of Publication – South East Asia

Table 6 shows the country in South East Asia that contributed the most publications related to cyberspace engagement on employee performance between 2000 until 2022. As stated in Table 6, Malaysia contributed the most publications with 45.1% and followed by Indonesia (33.9%), Vietnam (9.7%) and Thailand (11.3%).

**Table 6.** Country in South East Asia Contributed to the Most Publications

Country	Frequency	% (N=62)
Malaysia	28	45.1
Indonesia	21	33.9
Vietnam	6	9.7
Thailand	7	11.3
Total	62	100

### 3.6 Author

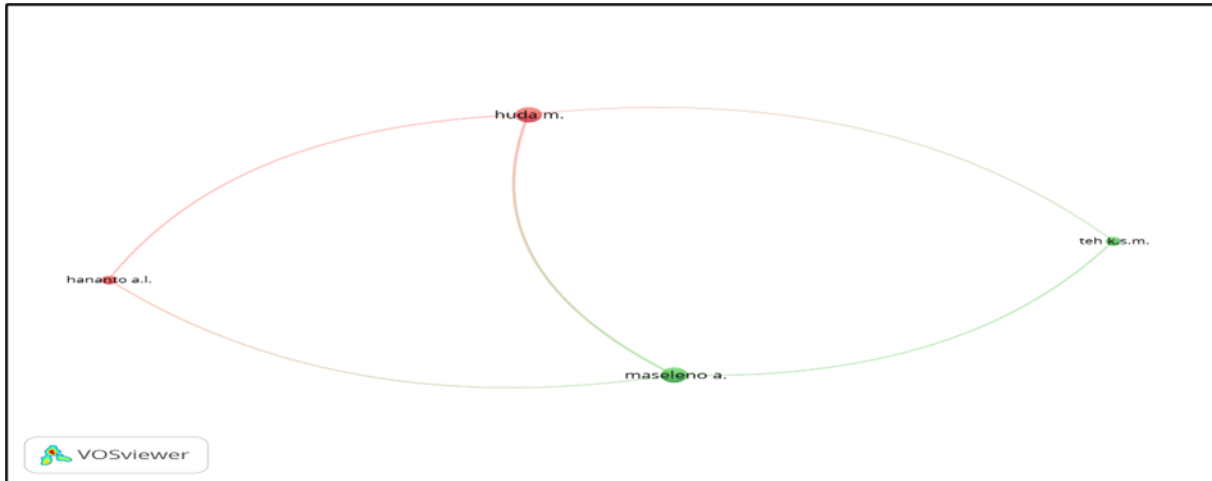
Table 7 shows the top ten most productive authors followed by the respective number of documents they published. The most active authors listed were Huda and Maseleno with 12 (22.6%) and 11 (20.8%) documents published. Figure 3, 4 and 5 shows the network visualisation map using VOSviewer. Figure 3 shows the involvement of authors who published at least three articles with a minimum of three citations. Meanwhile, Figure 4 shows the relationship of organisations involving the author who published 5 articles for each organisation. Figure 5 depicts the involvement between active countries and authors in publication regarding cyberspace engagement in the employee performance domain. It shows that United States was related to other countries such as China, Australia, United Kingdom and Netherlands.

**Table 7.** Top 10 Most Productive Authors

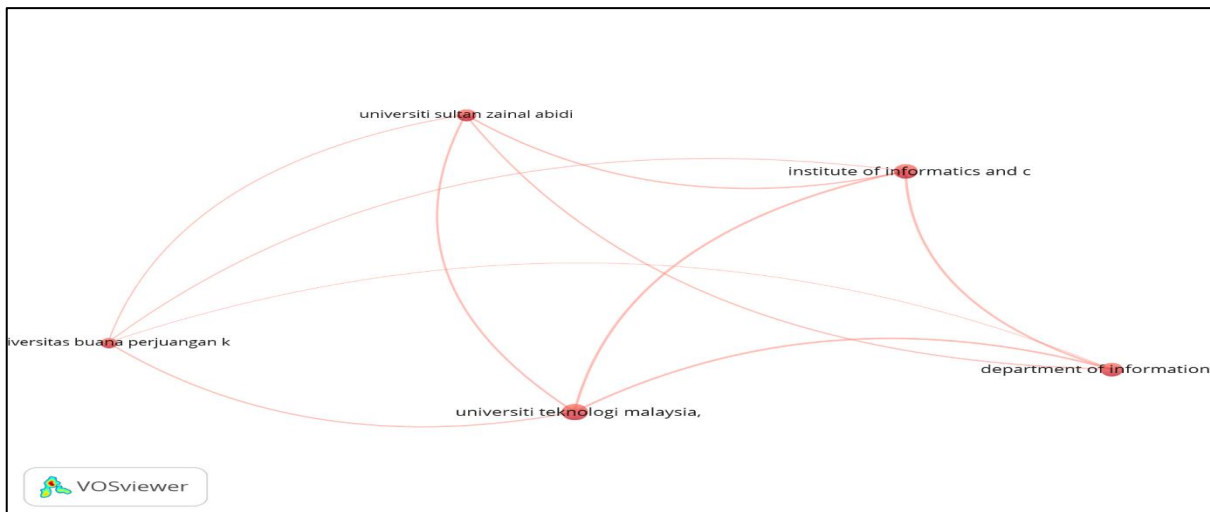
Author's Name	Number of Documents	% (N=53)
Huda	12	22.6
Maseleno	11	20.8
Van Zoonen	7	13.2
Bakker	5	9.4
Ahmadi	4	7.5
Olfat	4	7.5



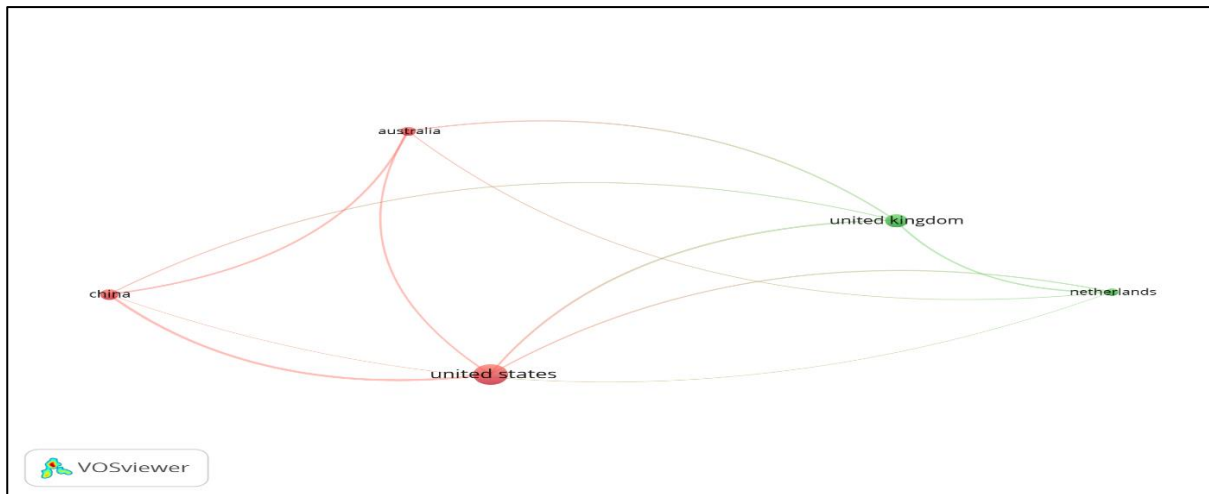
Author's Name	Number of Documents	% (N=53)
Rice	4	7.5
Huang	3	5.7
Chen	2	3.8
Abu Husin	1	1.9
<b>Total</b>	<b>53</b>	<b>100</b>



**Figure 3. Network Visualisation Map of Authors**



**Figure 4. Network Visualisation Map of Organisations**



**Figure 5.** Network Visualisation of Active Countries

#### 4. CONCLUSION

This bibliometric analysis uncovers the developing interest of researchers on the cyberspace engagement on employee performance area in which distribution on the connected point is expanding every year covering numerous nations. This summed up that information is widening to the whole world. This paper assists the researchers with getting to the most recent distributions of the authors who add to the publication with 728 were published, but there are as yet numerous topics to be found. This study has a few impediments as just Scopus data set was utilised to lead bibliometric analysis. Plus, the selection of keywords may not be precise. Other than that, the finding shows the first publication was in 2000, and that implies that this paper makes some restricted time range. Subsequently, future research should have been led and spotlight on the cyberspace issues to give astounding references to researchers. Taking everything into account, this paper could assist the researchers with finding the cyberspace engagement on employee performance field gaps.

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