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Envisage the Creation and Development of Knowledge Landscape of Executive Governance and Federalism (1974-2022) through Scientometric and Bibliometric Analysis

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Abstract

Federalism is a form of government which provides an apt solution to complex and diverse societies for effective public service delivery. On the other hand, governance has a significant role in the public service delivery, and it has central role in any federation because government is present at three different tiers, thus, governance is critical and complex affair in this form of government. Moreover, the executive branch of government is vital in any federation for governing the affairs of the country, therefore, executive governance is significant for effective and efficient public service delivery. Executive governance in the context of federalism requires thorough investigation, research, and exploration because knowledge creation in this domain can not only add to the literature but it has also practical significance. Therefore, knowledge generation and research are vital on this particular domain, hence, this quantitative research study has been conducted to explore prominent authors, leading knowledge production countries, sources, citations, co-authorships, keywords, and co-occurrence through bibliometric and scientometric analyses by using R software and Vosviewer. The statistical analysis of 47 documents extracted through Scopus database for the period of 1974-2022 has been conducted through scientometric analysis whereas mapping of different dimensions has been done through biblioshiny of R software and Vos viewer for reconnoitering the knowledge landscape of executive governance and federalism.

Key Words: executive governance, federalism, bibliometric, scientometric, knowledge landscape.

Introduction

Governance is an ability of a government (Fukuyama, 2013, p.350) and the executive branch of government has an imperative role in governing the issues of the government. Thus, executive governance is vital in satisfying the needs of the people because it is a prime objective of any government. Likewise, executive governance has a key role in federalism where government is present at three different levels or tiers. Therefore, it is a significant area of study for intellectuals and scholars for assessing the effectiveness and efficiency of executive governance in any federalism which provides suitable solution of government for diverse and

complex societies. Therefore, it is interesting and epochal to find out the state of knowledge creation in this significant domain of executive governance and federalism. This research study has tried to determine the level and state of knowledge production in the landscape of executive governance and federalism.

Literature Review

Federalism is a type of government which provides effective solution to the complex and diverse societies for efficient and effectual public service delivery. It paves way for establishing governments at three different levels (federal, provincial/state, and local) for fulfilling the needs and addressing the problems of general public efficaciously. Several scholars like Daniel J. Elazar believes that federalism as a form of government existed since ancient times (Elazar, 1987, p.11-12) but modern history had witnessed the federalism as an effective form of government since 18th century in the age of Enlightenment (Anderson, 2008, p.8). It was the period when different scholars of diverse fields started to explore, assess, analyze, and explicate federalism theoretically but through the prism of different perspectives like social, political, administrative, and constitutional. Although, there were confederations also at that time, thus, literature was available on both (Norman & Karmis, 2005, p.103) but the creation of United States of America (USA) as an independent country in 1787 was the major breakthrough in the field of federalism as an independent knowledge domain. USA is considered as an ideal federation of modern times which had created a distinct landscape of knowledge regarding federalism (Malan, 2017, p.103). This event had started scholarly debates and production of vast knowledge on federalism as a distinct and independent area of study. Various scholars have contributed in the production of knowledge in this areas but James Madison, John Jay and Alexander Hamilton are noteworthy scholars of federalism as their contribution is splendid while explaining and exploring federalism in the scholarly manner (Norman & Karmis, 2005, p.103). They have produced excellent scholarship on federalism as a distinct field of study and made-up ways for many other scholars for further exploration and investigation. The significant feature of their scholarship was the constitutional aspect of federalism which provides a strong foundation to any federation for operating in an effective manner. Later on, many other scholars and intellectuals explored federalism politically, socially, administratively and also conducted comparative studies of different federations for the contribution in the knowledge landscape of federalism.

The federation has multiple dimensions which have inspired scholars for study, exploration, and investigation but there is another vital and significant dimension of a federation which requires thorough and exhaustive inquiry and research, and this dimension is termed as governance. It is a vital aspect of any federation because it is a main facet of any type of government which ensures effective and efficient public service delivery. The executive branch of any government has a central role in governance because this branch mainly involves in the operations of government and in a federation, executive operates at three different levels (federal, provincial, and local) and performs diverse range of functions according to the constitutional jurisdiction for satisfying the needs of general public efficaciously. Henceforth, the executive branch of government has a critical role in governing the issues of the government for public service delivery which is a prime objective of any type of government. According to Fukuyama (2013, p.350), governance is an ability of a government, thus, governance by executive branch is epochal for effective and

efficient public service delivery. Moreover, there is a multilevel government system in any federation because of its presence at three different levels, therefore, governance by the executive which can be termed as executive governance, is critical in any federation because it plays significant role for satisfying the needs of general public which is an ultimate duty of any type of government. This discussion establishes the significance and vitality of executive governance in any federation; thus, it is essential to investigate, explore, study, analyze, and explain executive governance in the context of federalism.

Numerous Scholars like Kymlicka, Castiglione, Bellamy and Stepan have explored diverse dimensions of federalism (Rabbani, 2011, p.231) and modern literature have diverse and extended range of scholarship on federalism from the lens of nationalism, globalization, justice, liberalism, culture and multilevel governance but it is required to explore the availability of scholarship on federalism with reference of executive governance because it has central stage in any federalism as it indulges directly in the public service delivery which is an ultimate objective of any country. Consequently, an important question arises that is knowledge created on executive governance in the context federalism? Moreover, it is also required to explore how much knowledge has produced on executive governance? Furthermore, it is also pertinent to find out the answer to the question that which significant scholars have contributed to the domain of executive governance and federalism for producing knowledge in this regard? It is also relevant to explore the answer to the questions that where and when knowledge has produced in the landscape of executive governance and federalism? The most important question while exploring the knowledge landscape of executive governance and federalism is about the co-occurrence of both phenomena because executive governance in the context of federalism is much needed to explore as it is imperative for effective public service delivery. This research study has tried to find out answers to all these questions scientifically.

Research Objectives

This research study has following research objectives;

- ✓ To explore the extent of knowledge production on executive governance in the context of federalism
- ✓ To find out the major contributors of the knowledge creation in the domain of executive governance and federalism
- ✓ To analyze the period and places of knowledge creation in the landscape of executive governance and federalism.
- ✓ To find out the co-occurrence of federalism and executive governance.

Significance of Research Study

This research study has scientifically explored the answers to different questions regarding the evolution of knowledge creation in the landscape of executive governance and federalism with help of bibliometrics and scientometric analyses. It is pertinent to note that this research study has explored the knowledge creation with the special focus on executive governance only in the context of federalism because

federalism has explored extensively politically, socially, constitutionally, administratively and culturally and abundant knowledge has been produced on federalism with all these facets but it is germane to find out the knowledge landscape of executive governance and federalism which is vital aspect of any federation for public service delivery. The findings of this research study have not only elaborated the state and extent of knowledge creation on executive governance in the context of federalism, but it can also help to set out the future directions of research and knowledge production in this particular domain.

Research Design

This study has found out the evolution of knowledge landscape of executive governance and federalism. It has been tried to find out the research conducted on the executive governance in the context of federalism through statistical historical analysis for the period of 1974-2022. The bibliometrics and scientometric analyses have been conducted to analyze the data from different publication sources like peer reviewed journals, reports, conference proceedings, books, reviews, and other related documents on the chosen knowledge landscape of executive governance and federalism. Bibliometric analysis helps to analyze the data of research publications through a statistical and mathematical technique (Ellegaard and Wallin, 2015). Bibliometric as a term was first coined and used by Alan Pritchard in 1969 for measuring, comparing, assessing, and ranking publications and also finding out the relationship and research trends (Kalantari et al., 2017). This technique has been used extensively for assessing the references, authorship, content, and citations of publications. Therefore, this technique has been used for analyzing the research trends, relationships, and authorship of executive governance along with federalism as executive governance is imperative and vital in a federation for satisfying the needs of general public effectively, thus, it is important to assess and analyze the knowledge landscape of executive governance in the context of federalism.

Scientometrics analysis is also conducted in this study for figuring out the effect of publications and their authors in influencing the evolution and development of knowledge landscape of executive governance in the context of federalism (Leydesdorff and Milojević, 2015). Moreover, scientometric analysis also helps to analyze the performance and productivity of research in terms of focus indicators, scientific citations, and intellectual mapping (Bormann and Leydesdorff, 2014). Likewise, scientometric analysis has helped to find out the production of research work on executive governance in the context of federalism, scientific citation of produced research work and mapping of executive governance with federalism in the available scholarship for the period of 1974-2022.

The sampling of this research study has been done through Scopus, a well-reputed and credible database of academic research work. This database contains valid and reliable academic research work of diverse fields including social sciences (Morant and Soriano, 2016) as the main strength of Scopus is to cover research work all-inclusively especially relevant to social sciences (Mongeon and Paul-Hus, 2016). Therefore, it has been considered while accessing the past and present scholarship on executive governance and federalism over the period of 1974-2022. The query for fetching the required data from Scopus contains Executive Governance AND Federalism. It has produced only 47 records from academic research journals, books, and web sources. All these 47 documents contain the word federalism,

governance, executive or executive governance whereas these documents belong to the diverse fields of Political Science, Public Administration, Public Policy and Social Science. The author has used different bibliometric indicators for this search like author, knowledge domain, language, and countries. It has enabled the author to analyze the production and trend of knowledge regarding executive governance in the context of federalism over the period of 1974-2022. The author has employed R-package using Biblioshiny which is a statistical software tool (Aria and Cuccurullo, 2017) along with VOSviewer science mapping software (Van Eck and Waltman 2010). For analyzing different trends, relationships, and patterns of knowledge landscape of executive governance and federalism. Both these software tools have combined different techniques of clustering and visualization for thorough analysis of evolution, production, and progression of knowledge landscape of executive governance in the context of federalism.

Data Analysis Results and Discussion

The complete scanning of the data through selected software tools shows the complete picture as shown in Table 01. The main information about the data shows that annual growth rate of the knowledge production in the landscape of executive governance and federalism is 2.93% whereas these forty-seven (47) documents have 4488 references. Moreover, the average citation of each document is 15.23 and 42 documents are published in research journals and books. There are 76 authors who have authored these 47 documents whereas authors of single-authored documents are 26. On the other hand, the percentage (%) of international co-authorship is 14.89. The data information in Table 01 shows the bifurcation of 47 documents found in the chosen knowledge landscape of executive governance and federalism over the period of 1974-2022. This bifurcation shows that there are 34 research articles, 4 books, 8 book chapters and 1 conference proceedings among these documents.

Table 01: Data Information

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	1974:2022
Sources (Journals, Books, etc)	42
Documents	47
Annual Growth Rate %	2.93
Document Average Age	8.77
Average citations per doc	15.23
References	4488
DOCUMENT CONTENTS	
Keywords Plus (ID)	66
Author's Keywords (DE)	107
AUTHORS	
Authors	76
Authors of single-authored docs	26
AUTHORS COLLABORATION	
Single-authored docs	26
Co-Authors per Doc	1.66
International co-authorships %	14.89

DOCUMENT TYPES

Article	34
Book	4
book chapter	8
conference paper	1

Authors and Citation Analysis

The following Table 02 shows the authors, the number of documents authored by each author and the citation of each author. The highest cited author is A. Trochev with 118 citations whereas B. Crum is second highest in this regard with 106 citations.

Table 02: Authors, Documents and Citations

Author	Documents	Citations
trochev a.	1	118
crum b.	1	106
abers r.n.	1	52
keck m.	1	52
bolleyer n.	1	46
börzel t.a.	1	46
rodríguez v.e.	2	44
ward p.m.	2	44
duina f.	1	40
raunio t.	1	40
schraggerr.c.	1	36
asare b.	1	28
bulman-pozen j.	1	28
cairney p.	1	28
studlar d.t.	1	28
behnke n.	1	27
mueller s.	1	27
mény y.	1	25
thompson f.j.	1	22
downey d.c.	1	20
myers w.m.	1	20
selcher w.a.	1	19
baland d.	1	17
lecours a.	1	17
fusarelli l.d.	1	14
mceachin a.	1	14
saultz a.	1	14
benz a.	1	13

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galiani s.	1	11
torre i.	1	11
torrens g.	1	11
sawer m.	1	8
sengupta m.	1	8
goelzhauser g.	1	6
harguindéguy j.-b.p.	1	6
le roy k.	1	6
rodríguez lópez e.	1	6
rose s.	1	6
saunders c.	1	6
sánchez sánchez a.	1	6
menzies j.	1	3
dahal h.	1	2
gardner t.g.	1	2
graves t.j.	1	2
jackson t.	1	2
joachim b.	1	2
karki m.	1	2
panday d.	1	2
belling v.	1	1
dahir a.h.	1	1
fernandes g.a.d.a.l.	1	1
fernandes i.f.	1	1
gordin j.p.	1	1
graham l.s.	1	1
hershi z.d.	1	1
mccarty n.	1	1
mendras m.	1	1
pachauri s.	1	1
roland g.	1	1
rowland a.m.	1	1
sheikh ali a.y.	1	1
shrotriya e.	1	1
spink p.k.	1	1
zimerman a.	1	1

On the other hand, the following figure 01 shows the authors with their local citations. TJ Graves and M Sengupta both have 2 local citations of their published work.

Figure 01: Authors with Local Citations

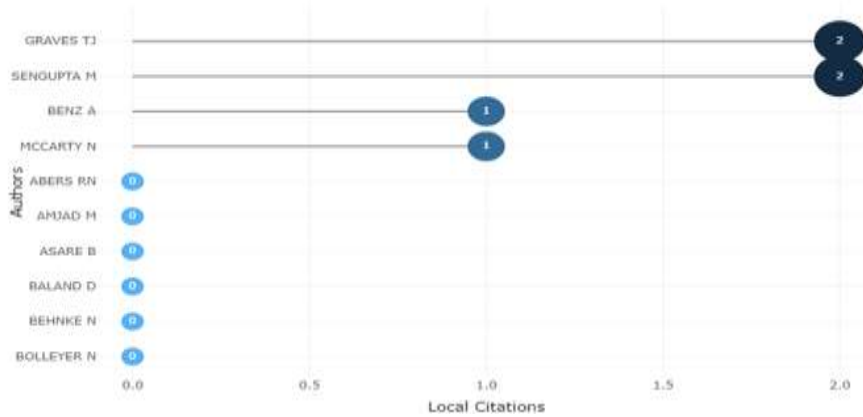
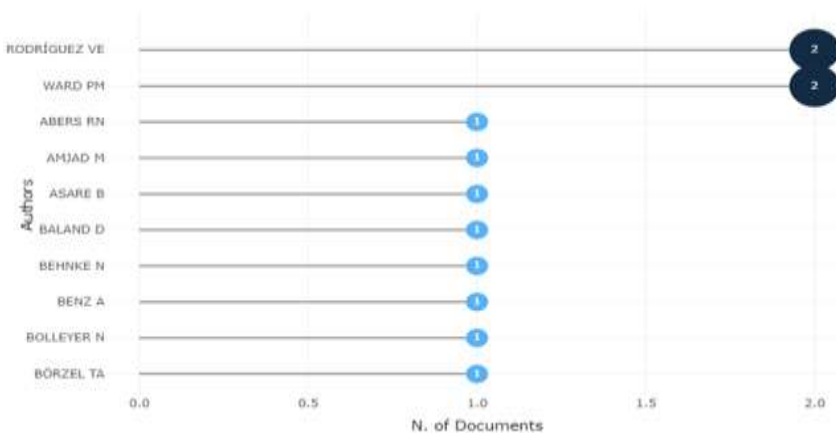


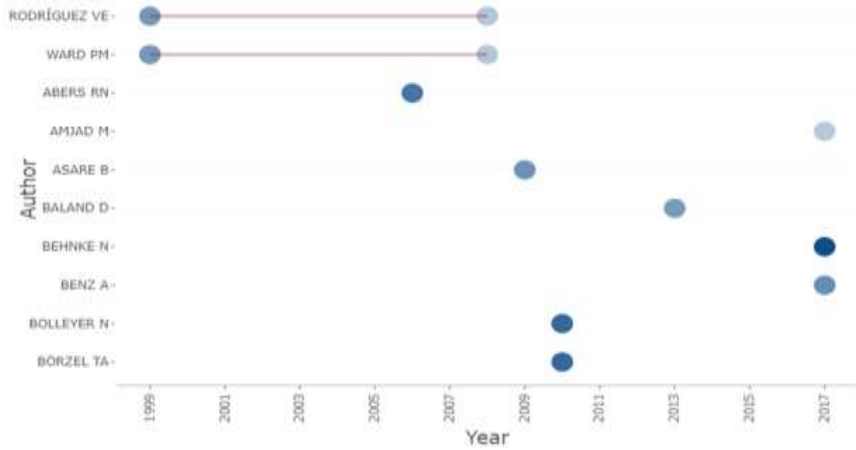
Figure 02 shows the authors with maximum numbers of documents produced in the knowledge domain of executive governance and federalism. V.E. Rodríguez and P.M. Ward are prominent authors who have produced 2 documents each on the chosen knowledge field of executive governance and federalism.

Figure 02: Authors with Documents



These main authors of this area of knowledge as shown in Figure 02 have produced their work in different time frames over the chosen period (1974-2022). The following figure 03 shows the authors along with their time frame while producing their work. Figure 03 shows that V.E. Rodríguez and P.M. Ward are again prominent authors as their time span spread over the period of 1999-2009. Both these authors have not only contributed to this domain individually but also worked collectively while producing knowledge on governance and federalism. Both these authors have also worked with other authors and produced work regarding co-governance in the domain of federalism.

Figure 03: Authors with Year



Author Co-citation Analysis

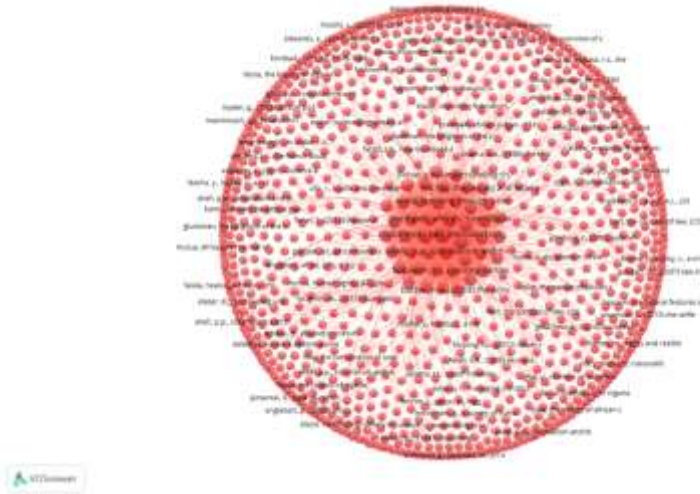
Author co-citation analysis is an effective technique for assessing and explaining the intellectual structure of knowledge landscape produced over the period of time. This analysis is carried out by VOSviewer which produces the results in the form of co-citation counting only whereas content of co-citation is not considered in this analysis. The results are produced pictorially as co-citation author network visualization and citation network density visualization. Figure 04a shows the density of citation and author over the period of time. It represents visually the authors who contributed in the knowledge domain of governance, executive governance and federalism according to their citation over the time span of 1974-2022.

Figure 04a: Citation-Author Density Visualization



The following Figure 04b represents the network of authors along with their citations in different time period.

Figure 04b: Co-Citation-Author Network Visualization



This visualization shown in Figure 04b does not explain and assess the content produced by the authors as it only explains the network of authors, co-citations and years in which knowledge is produced by these authors. It is simple counting not content analysis of identified work of authors.

Analysis by Journals

Academic research journals are a significant source for publication of knowledge created through research. These journals provide credible platform for disseminating created knowledge among the academic community. These are good and credulous sources of knowledge sharing. Henceforth, the analysis of journals is significant for assessing the knowledge production in the landscape of executive governance in the context of federalism. Figure 05a shows the journal wise contribution with reference to published content on executive governance and federalism. Figure 05a shows the contribution of the top ten journals in this knowledge landscape. Australian Journal of Public Administration, Governance in America, Journal of European Public Policy, Regional and Federal Studies and Yale Law Journal are top 5 journals which contributed to the knowledge landscape of executive governance and federalism in the form of two publication by each journal. The topics of publications show that most of the publications are on federalism, co-governance, or multilevel governance but none of them covers executive governance particularly. Moreover, the remaining contributions in the form of published work in the five other journals shown in Figure 05a further reveal that the created knowledge covers governance at local levels, multilevel governance, and federal studies only whereas executive governance and especially in the context of federalism is not point of research in these journals.

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Figure 05a: Journals with contribution on Executive Governance and Federalism m

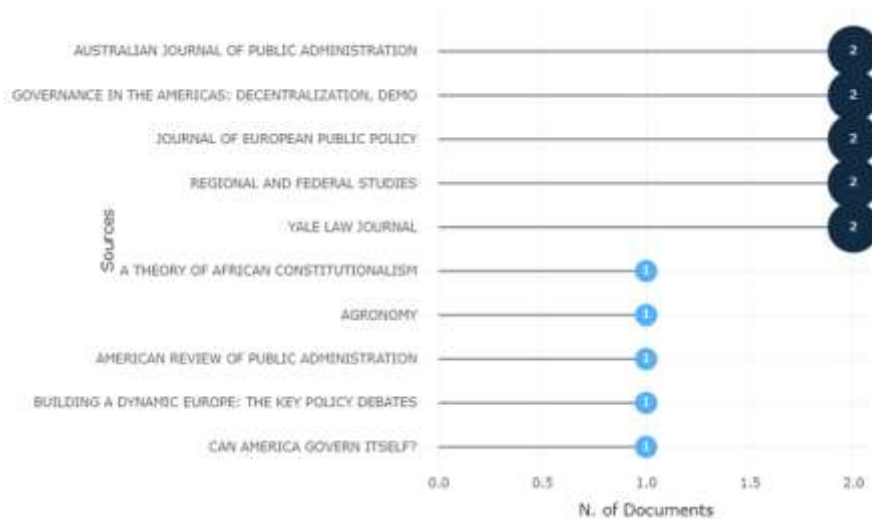
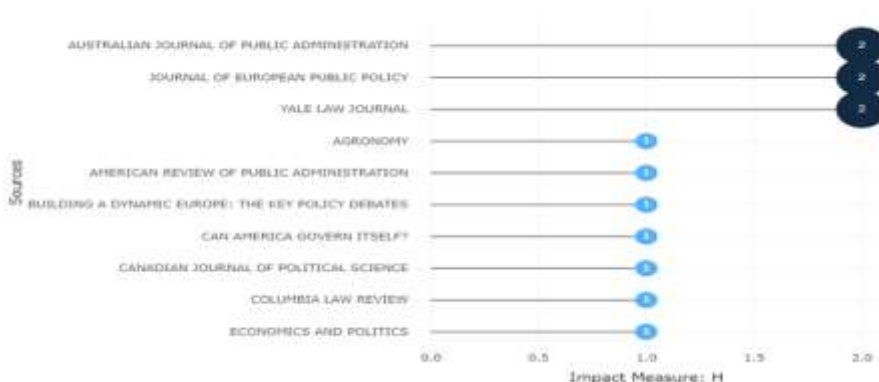


Figure 05b presented below shows the categorization of research journals on the basis of impact measurement. Australian Journal of Public Administration is again at the top in terms of impact measure. Journal of European Public Policy ranks at number two in this regard whereas Yale Law Journal ranks at number three in this category. Agronomy and American Review of Public Administration rank at fourth and fifth number in terms of impact measure whereas Economics and Politics ranks at the tenth number in this ranking. Canadian Journal of Public Administration and Columbia Law Review ranks at eighth and ninth respectively in this category but there is one commonality in all these journals that they all have contributed to the knowledge landscape of governance and federalism only over the period of 1974-2022.

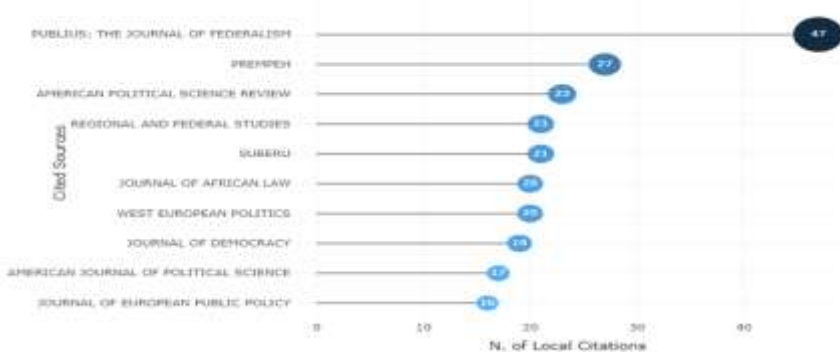
Figure 05b: Journals as per Impact Measure



The citation of published work is another criterion which enhances the credibility of the document. The figure 05c shows the ranking of journals in terms of citation. In

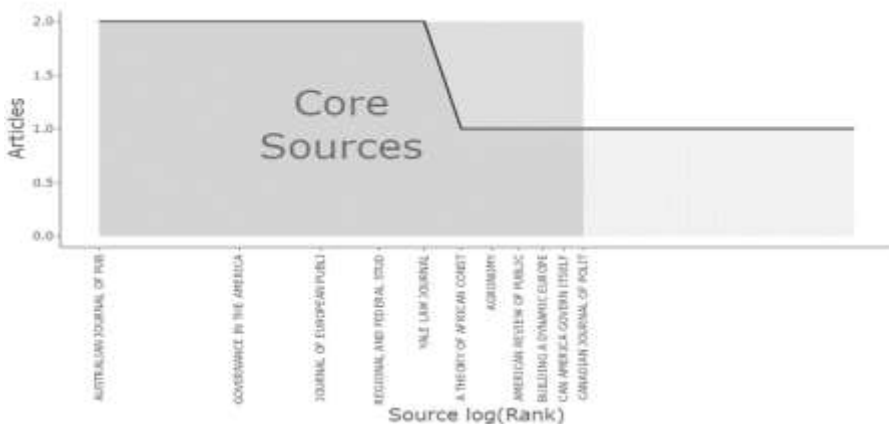
this analysis, Publius: The Journal of Federalism ranks first with forty-seven (47) citations of its published work in the field of federal studies whereas PREMPEH and American Political Science Review rank at second and third with twenty-seven (27) and twenty-three (23) citations respectively Regional and Federal Studies and SUBERU rank at fourth with equal number of twenty one (21) citations. Journal of African Law and West European Politics have equal twenty (20) citations of their published work on federalism and governance. Journal of Democracy has nineteen (19) citations of its published work whereas American Journal of Political Science has seventeen citations and ranked at seventh number on the graph as per figure 05c. Journal of European Public Policy is ranked at last number on this table of citations with sixteen (16) citations of its published work on federalism and governance.

Figure 05c: Journals as per Citations



The figure 5d presented below shows the source log according to the number of research articles. Australian Journal of Public Administration ranks at first with maximum number of published research articles in this knowledge domain whereas Governance in America and Journal of European Public Policy rank at second and third position respectively in this source log. Regional and Federal Studies ranks at number four and Yale Law Journal ranks at fifth position in this source log ranking as shown in figure 5d.

Figure 05d: Source Log



Analysis by Year

The year is one of the vital and significant indicators in bibliometric analysis of the production of knowledge. This research study has covered the period of 1974-2022 in terms of knowledge production in the landscape of executive governance and federalism. Consequently, year wise and journal wise knowledge production in different time frames have been analyzed and results are shown below graphically.

Figure 06a shows the annual production of knowledge on executive governance and federalism since 1974. The figure shows that knowledge started to produce in 1974 but its creation dropped in 1975 then ratio of knowledge production in the domain of governance and federalism remains steady till 1996. After that, again knowledge creation in this landscape improved but dropped down in the year 2000. The year 2006 and 2008 are the years in which knowledge creation enhanced as per figure 06a but the remaining years witnessed a down trend in the knowledge production in the domain of governance and federalism. The year 2014 has witnessed a very high trend in the knowledge creation in the landscape of governance and federalism as compared to previous years since 1974. The year 2021 has the highest knowledge production in the domain of governance and federalism as per the results shown in figure 06a.

Figure 06a: Annual Knowledge Production

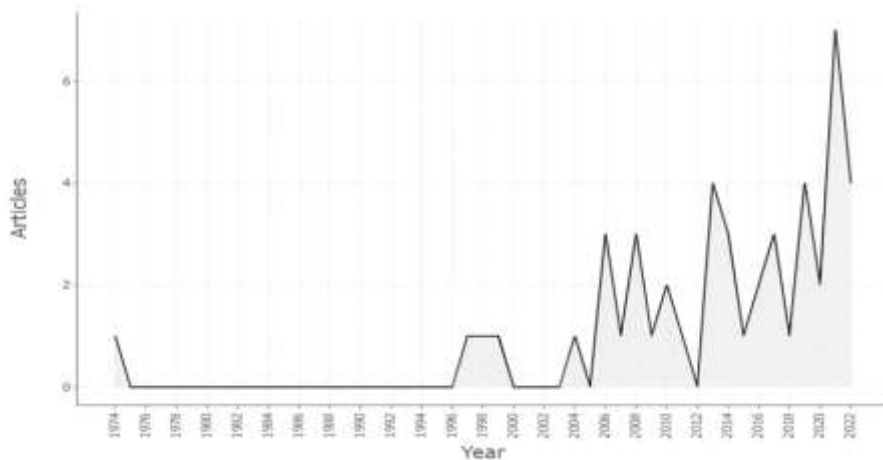
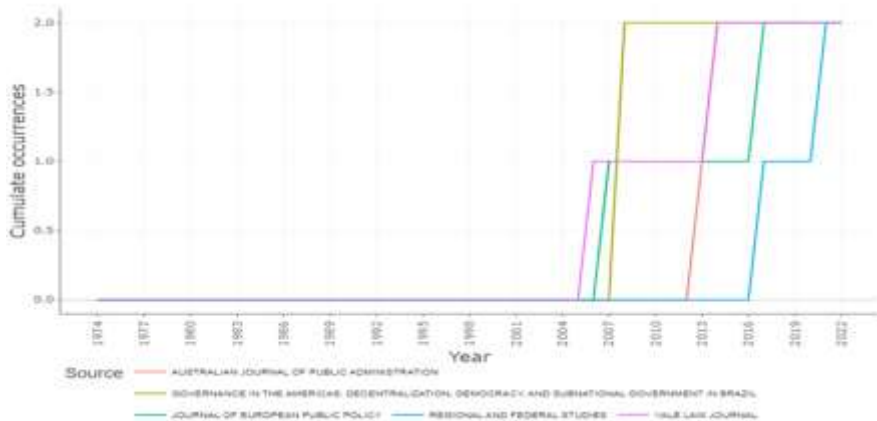


Figure 06b shows the relationship between the sources of knowledge creation in the form of journals and time frame in the form of years. The period from 1974-2005 shows the same ration of knowledge production but after that there is rising trend of the knowledge creation in the domain of governance and federalism in different research journals. Figure 06b shows that prominent journals have produced knowledge in the landscape of governance and federalism since 2005 onwards. These journals include Australian Journal of Public Administration, Journal of European Public Policy, Regional and Federal Studies, Yale Law Journal and Governance in America. These journals have produced significant knowledge in the domain of federalism and governance only since 2005-2022.

Figure 06b: Annual Knowledge Production



Analysis by Thematic Map

The thematic map shows the structure of different concepts and themes in the knowledge domain of executive governance and federalism which is area of investigation in this study along with their density and relevance. Figure 07a categorizes the themes into basic themes, emerging or declining themes, major themes and niche themes. The basic themes of this knowledge domain include federal system, political economy and governance approaches and these themes have high density as compared to other themes. On the other hand, comparative studies of the federal system and intergovernmental relations are major themes in this knowledge domain. There are lot of comparative studies available on numerous federal systems operating in different countries whereas intergovernmental relations within a federation are also point of research in the domain of federal studies but executive governance as an independent theme or in the context of federalism is not exhibited in this thematic map. The legislation is shown as the emerging as well as declining theme, but it is always relevant in terms of both executive governance and federalism as legislation is significant and vital component in this knowledge domain but this thematic map available in figure 07a shows the concentration of this theme in Barzil whereas political conflict and political relations are available as niche themes especially in Spain. European Union is best available case study of federation and intergovernmental relationship, and it is showing as niche theme in this thematic map. Moreover, the case study of European Union best represents multilevel governance, and it helps to explore and diagnose multilevel governance in the context of federalism, therefore, it is also shown as niche theme in the thematic map.

Figure 07a: Thematic Map

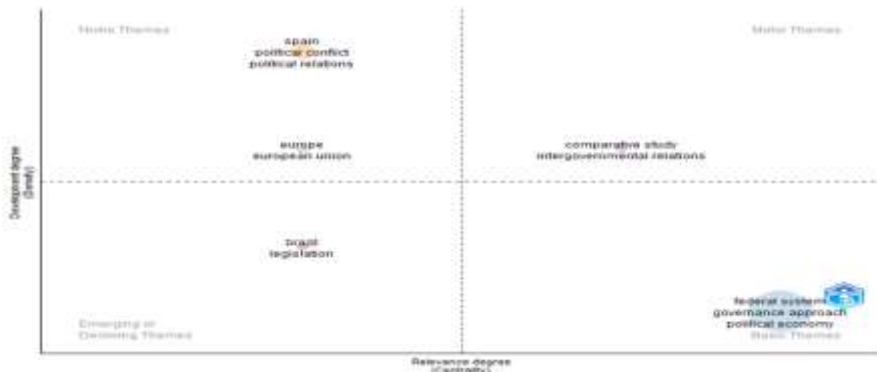


Figure 07b shows the thematic evolution of the knowledge domain of executive governance and federalism according to the year. This figure shows that there are two major themes in the knowledge landscape of executive governance and federalism. One theme is governance approach which has remained dominant between 1974-2015 whereas second major theme is federal system which has remained the focus of attention of intellectuals and scholars for knowledge creation in this domain from 2016-2022. The governance remains under researched, studied and explored in the mentioned time frame (1974-2015) but executive governance is not shown in the thematic evolution and thematic map particularly in the context of federalism. Thus, it can be established that executive governance in the context of federalism has not remained the theme of research and study over the period of 1974-2022.

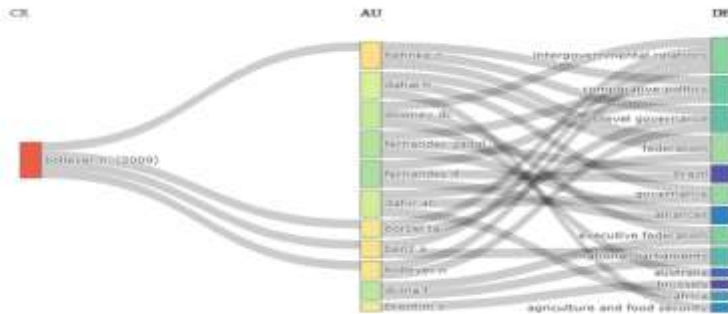
Figure 07b: Thematic Evolution



The Sankey diagram is another graphical representation of the evolution of themes and concepts along with sources and authors. It is basically a three-field plot diagram which assesses and represents the flow of sources, authors, and key words. The authors are shown in the middle of the diagram whereas key words are on the left side and source is on the right side of the diagram. The width of the arrows and

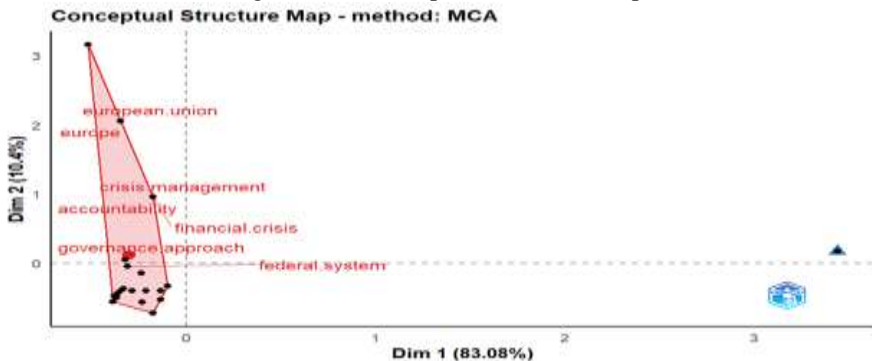
boxes for representing the flow shows the proportion of the numbers and quantity of produced knowledge (Soundararajan et al. 2014). The keywords shown in this three-field plot are occurred by maximum degree in term knowledge creation in this domain. The federalism as concept, comparative politics, multilevel governance, intergovernmental relations, executive federalism are few key areas where knowledge has been produced in the domain of governance and federalism but executive governance in the context of federalism is not displayed in this Sankey diagram which shows that it has not been the point of study over the period of time.

Figure 07c: Sankey Diagram



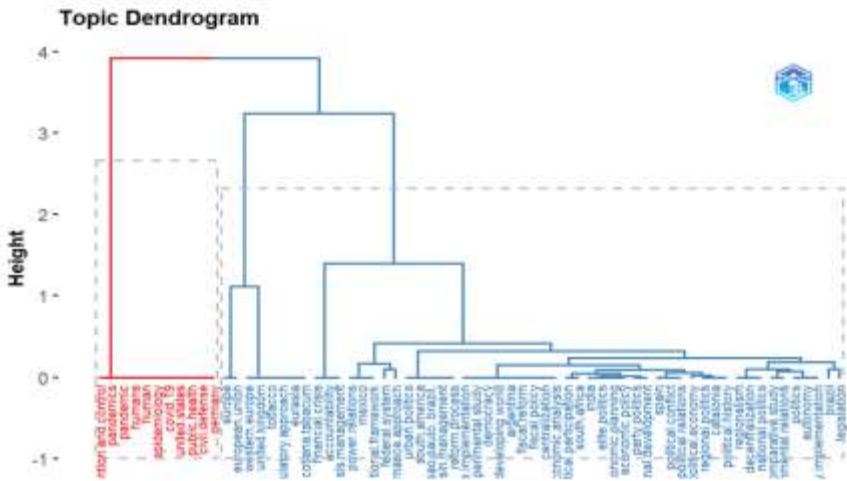
The conceptual structure explains the extent of research on the chosen domain of executive governance and federalism. The clusters in blue and red shows the research on the chosen landscape of knowledge. The red cluster is large whereas blue is very small which shows that major research has been done on the themes show in red cluster in the area of governance and federalism. The most researched themes are European Union, Europe, accountability, governance approach, financial crisis, federal systems, and crisis management whereas there is no theme shows in blue cluster which shows the intellectual trend and structure of knowledge creation in the landscape of executive governance and federalism. This conceptual structure displays in figure 07d further reveals that executive governance is not researchable theme during the period of 1974-2022 whereas governance approaches and federal system are researched and studied areas in this knowledge domain.

Figure 07d: Conceptual Structure Map



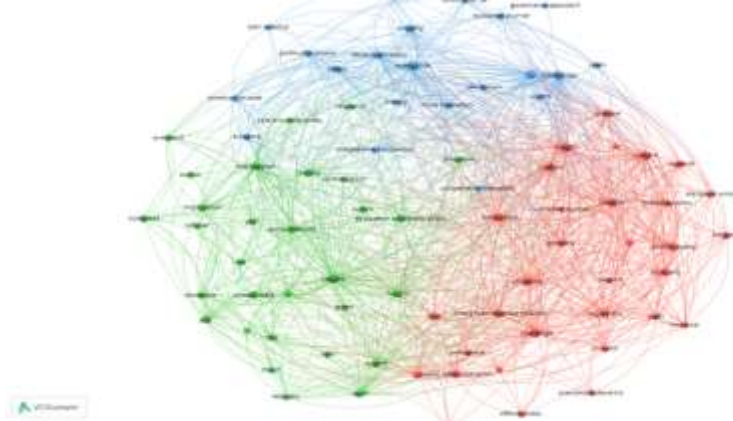
The dendrogram available as figure 07e also exhibits the extent of research on diverse themes in the knowledge domain of governance and federalism. The clusters in blue and red shows the most researched themes. The cluster red shows those themes which are low researched whereas themes in blue are in extensive investigation according to figure 07e. Both the clusters red and blue show in dendrogram reveal that executive governance is not researched area in the context of federalism.

Figure 07e: Dendrogram



Another network visualization through Vosviewer validates it that executive governance has not been researched in the context of federalism in last 48 years (1974-2022) as shown in figure 07f. This network visualization shows three clusters display in red, green, and blue. On the other hand, their relationship which is exhibited with 3386 links shown in the form of lines whereas total link strength between different items is 17853 which indicates the strength of the link of one item to others.

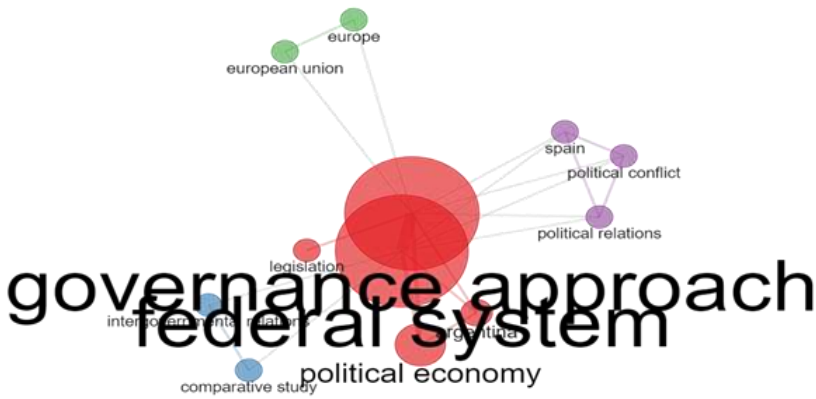
Figure 07f: Network Visualization



Analysis by Co-occurrence

Co-occurrence analysis provides a detailed examination of the frequency of co-occurring of the keywords. It also establishes the strength of occurrence of these keywords in the diverse range of publications. Figure 08a shows the co-occurrence map of governance and federalism. This map exhibits that the most co-occurring keywords are governance approach and federal system. The map shows that there is strong co-occurrence between these two keywords in the available data extracted through Scopus. Moreover, the other occurring key words are European Union, Europe, Spain, political conflict, political relations, political economy, legislation, intergovernmental relations, Argentina and comparative study but there is no betweenness of these keywords as shown in figure 08a. It further establishes that there is no co-occurrence between executive governance and federalism as per the map available below.

Figure 08a: Co-occurrence Map



Word cloud as shown in the figure 08b extracted through R software exhibits the keywords which have been used in different researches conducted in the domain of executive governance and federalism. The most prominent word is the most used word in the research studies conducted in this knowledge landscape. The most occurring word is political economy as it is most prominent in this word cloud. This cloud further explains that there is no word of executive governance appears in this figure which shows that there is no research has been conducted on this particular theme in the context of federalism.

Figure 08b: Word Cloud



The tree map displayed in the figure 08c also confirms that executive governance and federalism are not collectively researched themes in the knowledge landscape of governance and federalism. The most researched areas are federal system and governance approaches as shown in the biggest boxes in this map. Both these themes have 12% share in the total knowledge creation in the domain of executive governance and federalism. The other boxes show the frequency of their usage in the different sources of knowledge like books, chapters, research articles. The percentage shows in each box further explains their presence in the knowledge domain.

Figure 08c: Tree Map



The trend of topic of research and investigation is shown clearly in figure 08d, and it shows that there have been two main topics in trend of exploration, study, and research since 2010-2020 and these are governance approaches and federal system. It also validates that executive governance is not in trend for investigation and research in this time frame and it has not been studied and explored in the particular context of federalism.

Figure 08d: Tree Map



Analysis by Country

This section shows the knowledge production in different countries in the domain of executive governance and federalism. United States of America (USA) stands first in this regard whereas India, Nepal and United Kingdom rank at seventh (7th)

number in terms of knowledge production in the landscape of executive governance and federalism.

Table 02: Country Wise Ranking

Region	Freq	Ranking
USA	31	1
SPAIN	6	2
AUSTRALIA	5	3
GERMANY	5	4
BRAZIL	4	5
CANADA	4	5
SOMALIA	3	6
INDIA	2	7
NEPAL	2	7
UK	2	7

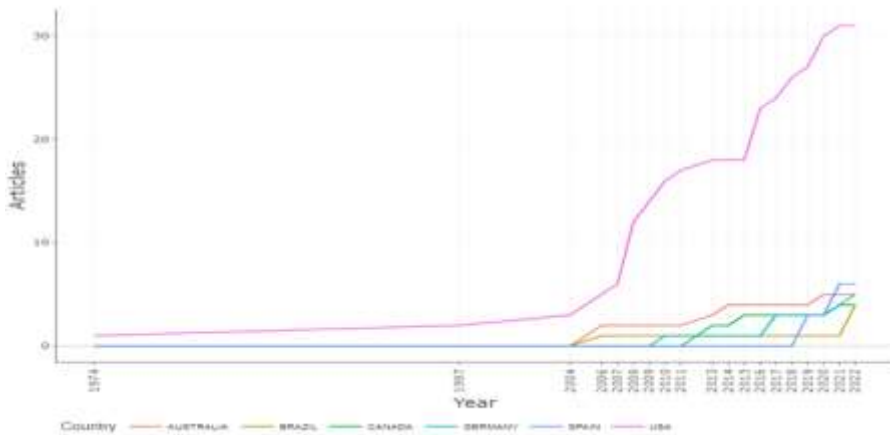
Figure 09a shows graphically the country wise knowledge production. The blue color represents those countries where knowledge has produced regarding governance and federalism.

Figure 09a: Country Wise Analysis



On the other hand, Figure 09b shows knowledge creation in the domain of governance and federalism according to the country along with the year. The maximum knowledge creation can be observed in USA since 1974 till 2022 whereas Spain is another significant country where knowledge has been produced between 1974 to 2018 as per Figure 09b as presented below. Australia, Canada, Brazil and Germany have also produced knowledge in the landscape of governance and federalism over the period of time since 1974 till 2022.

Figure 09b: Years and Countries



Discussion

This research entails the knowledge creation and evolution of knowledge in the landscape of executive governance and federalism through scientometric and bibliometric analyses. These analyses have helped to explore the production of knowledge about executive governance and federalism on the basis of country, author, sources in terms of research journals, co-citations, themes, year and co-occurrence. The period of analysis is 1974-2022 and the annual growth rate of knowledge production is 2.93% whereas there are 47 documents which have been produced over the period of time on the chosen area of federalism and executive governance. There are 76 authors who have produced this knowledge over the period of time but there are only 26 authors who have produced knowledge in the form of diverse documents as single authors. The knowledge has been produced in the form of research articles, books, book chapters and conference papers and proceedings in the domain of federalism and executive governance whereas A. Trochev ranks first as an author who has highest citation (118) of his produced document as per Table 02. On the other hand, Australian Journal of Public Administration, Journal of European Public Policy, Regional and Federal Studies and Yale Law Journal have significant place in the knowledge production in terms of number of published documents as shown in Figure 05a. United States of America (USA) ranks first as a country as per Table 02 where maximum knowledge has been produced in the domain of governance and federalism over the period of 1974-2022. It shows that USA has contributed a lot in the landscape of federalism and governance because it is considered as an ideal and leading federation in the world, thus, maximum research studies have been conducted in USA for exploring and assessing diverse aspects of federalism politically, socially, constitutionally, and administratively. Moreover, the analysis also shows that comparative studies on federal systems have been conducted abundantly for analyzing and explaining different federal systems as shown in thematic evolution (Figure 07b) and three-field plot Sankey diagram as exhibited in Figure 07c.

Conclusion

Federalism is an apt solution for complex and diverse societies because it brings government closer to the people by forming it at three different levels (federal, provincial/state, and local). It helps to improve public service delivery, which is an ultimate objective of any government. The role of governance is significant in the provision of efficient and effective services to general public because it is the government's ability to deliver according to Fukuyama (2013, p.350). Therefore, the executive branch of government has central role in the public service delivery because functioning and operations of this branch makes the public service delivery possible. Consequently, executive governance plays a vital role in a federation for satisfying the needs of the masses efficaciously. Federalism and governance are areas of study and investigation for scholars and intellectuals since long and wide range of scholarship are available on these two areas as revealed by the information extracted through the analysis of key authors, journals, affiliations, and countries. Moreover, both themes (federalism and governance) are investigated and explored collectively as shown by thematic map and thematic evolution, but executive governance has not been found as a theme of exploration and investigation through quantitative data analysis of this research study. The findings of this study, which have been obtained through bibliometrics and scientometric analyses, show that there is no knowledge production on executive governance particularly in the context of federalism which is the scope of this research study. It has been established scientifically through quantitative methodology that the authors have contributed to the great deal in the knowledge domain of governance and federalism over the period of 1974-2022 especially in United States of America which is a hub of knowledge creation on federalism as an ideal federation but executive governance particularly in the context of federalism has not been studied and explored by the intellectuals and scholars anywhere. Moreover, there is no co-occurrence of these two themes as shown by the co-occurrence map, word cloud and tree map. The most co-occurring keywords are federal systems and governance approach as shown by the map, but executive governance and federalism have not been co-occurred. Henceforth, it can be concluded through visualization and science mapping with the help of bibliometrics and scientometric analyses of the quantitative data that executive governance in the context of federalism is little to none area of investigation. Therefore, summing up, there is a vast scope of investigation, exploration, and research on executive governance particularly in any federation for the researchers.

Recommendations

Following are the limitations and recommendations based on the results of this research study;

- ✓ This research study has only used Scopus as a database for extracting quantitative data which is a limitation of this research study. Future studies can use other databases like Web of Science and Dimensions for accessing quantitative data for research.
- ✓ Executive governance has a huge margin to explore and study in any federation, thus, studies can be conducted on executive governance as a phenomenon.

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- ✓ Moreover, research studies can be conducted on executive governance structure and functions in different federations like parliamentary federations or presidential federations.
- ✓ Comparative research studies can be conducted on executive governance of different federations. Executive governance and its relationship with public service delivery can also be explored and investigated in different federal systems.

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