Bibliometric Analysis of Flood Risk Indicators Using Biblioshiny

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ABSTRACT

Purpose: The goal of this research is to investigate flood risk and indicators in urban areas by Scopus data as well as to mitigate urban flooding. The analysis is focused on describing the current trends in the search for risk due to floods. Bibliometric analysis was utilised to focus on FRA in terms of authors, titles, and keywords.
Method: In this paper, the data analysed from 240 research publications on Flood risk and indicators used for flood risk analysis the search was done on March 7, 2022. A framework of indicators has been identified as a result the identified indicators are broadly divided into various parts ranging from Natural, Social, Economic, and physical, that has been collected as Scopus data.
Results: The number of articles discussed based on flood in keywords of "Flood" and "risk" and "indicators" results on 240 research papers whereas it concluded the key importance of the most common keywords on" Flood".
Conclusion: This study provides an overview of the most popular keywords, Journals, and authors in articles on the topic of flood risk indicators additionally the selection of indicators is based on literature. Further research may be carried out to enhance these findings with the bibliometric trend.

***Keywords*: Bibliometric, Biblioshiny, Flood, Risk and indicators.**

INTRODUCTION

Flooding in urban areas is a major problem that jeopardizes people's lives. In the current urbanization setting, this problem has become more severe due to various circumstances, necessitating the need to control urban floods through flood risk indicators. Establishing a framework of indicators, the discovered indicators were subjected to bibliometric analysis in order to improve the variety of flood indicators utilized as keywords, authors, and journals.

Objectives

The goal of the study was to describe the keywords, authors, publications, and characteristics of articles on flood risk assessment and indicators that were found in the dataset. The relevance of scientific research for creating ideas and innovations in response to vulnerability makes papers on this issue interesting to discuss.

RESULTS

Publications sources: The study was from 240 journals 388 articles, 22 Book chapters 66 conferences

METHODS

Ethics statement: This research involves the disaster risk in certain parameters
Study design: This is a literature-based descriptive study involving bibliometric analysis
Setting: This study used publication data related to flood risk analysis from the dimensions database. An alternate indexation method that requires each article to have a unique DOI is the Dimensions database. In the whole data, the search phrases were "FLOOD AND "RISK." 240 research articles on flood risk and flood risk analysis are included in the bibliometric data analysis. On March 7, 2022, a search was conducted. RELATED TO THE FLOOD AND RISK issues (Dataset 1). The R-based Biblioshiny programme, which is freely accessible at https://bib-liometrix.org, was used to analyse data on keywords, authors, journals, and the characteristics of these papers on the importance of flood risk assessments.
Statistical techniques Rankings, percentages, and n-numbers are used to show descriptive data. The timing and distribution of the articles were shown using descriptive statistical techniques.

DATA ANALYSIS

The study's data was compiled from primary sources. In which, data was gathered through literature research with respect of three channels Author, Title, and keywords, while the sources included

- Three field plot
- Source impact
- Thematic map
- World cloud
- Time slice analysis
- Conceptual structure map

Three-plot field

The three-field plot displayed above depicts three platforms: centre, left, and right. The Author (AU) is in the centre, the Title (TI) is on the left, and the Author's keyword (DE) is on the right. Starting with the title, followed by the author, and finally, each author's keywords are linked to the topic of their publication, these three platforms are plotted with linkages that indicate their relationship with one another. The number of papers associated with each element is indicated by the size of each rectangle in each list.

Authors who published works in journals that have been recognised, such as zhang y, who is linked to the journal of cleaner production as affiliated with other platforms, are represented on the intermediate platform. The left platform represents Title (TI), such as "Assessment of the Impact of Floods on Terrestrial Plants," which is the formal title of the publication by zhang y. Annual grasses; environmental flood risk; flood consequence; perennial grasses; shrubs; trees are among the author's keywords (DE). On the right, each of the authors is linked to frequently used keyword subjects. This map includes a list of the top 19 authors. The size of the rectangle indicates how many papers each author has written. . Liu j, a center platform Author (AU), has linked his research papers on 11 topics, including flood, risk, assessment, based, city, indicators, urban, change, river, study, and climate. Flood disaster, flood risk, risk assessment, GIS, flood hazard, and 5 Author search keywords (DE)

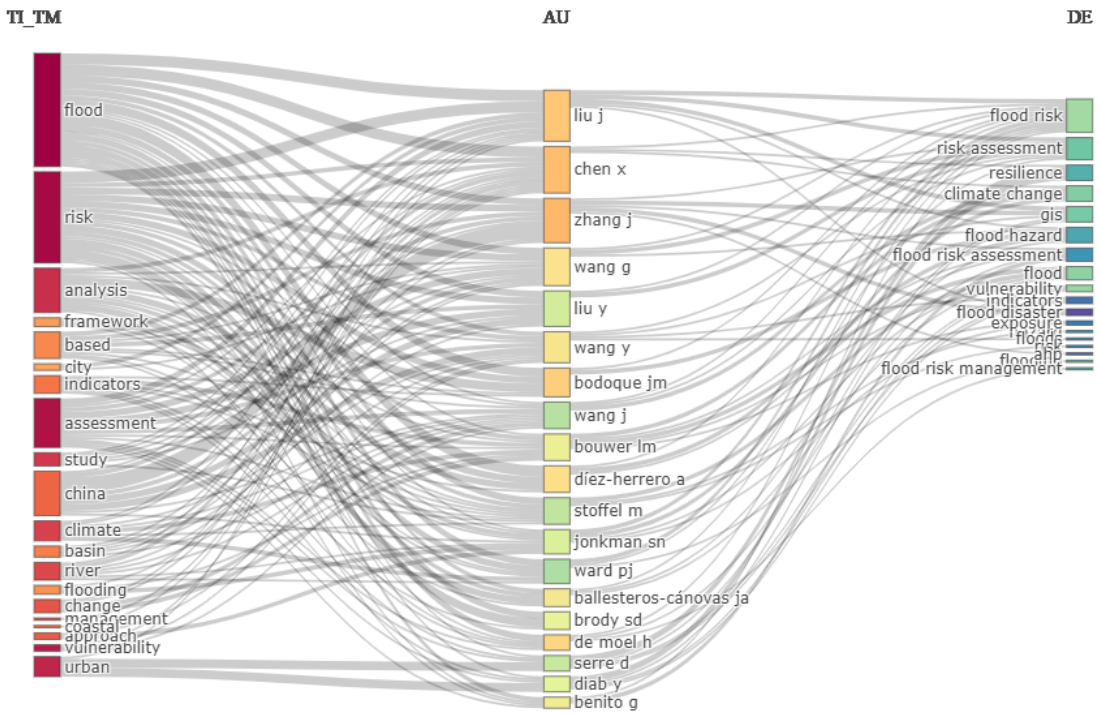

Figure1

Source Impact

This study examined the impact of each journal that published papers on the issue of Flood risk and Indicators by calculating the journal's h-index, which is represented in the bar chart in Fig. 2. This figure, in addition to a numerical depiction of each journal's h-index value, also highlights the influence of each journal in gradations of blue, with darker colour indicating higher-impact journals. With an h-index of 14 and a black colour on the graphic, Natural Hazards ranked first in terms of impact. Three journals had h-indices of 9, on a scale of 8, and three journals had h-indices of 8. The journal Sustainability (Switzerland) has a 6 impact factor, whereas 12 other journals had lower impact measures from 5-3 are coloured light blue on the diagram, indicating their relatively low impact.

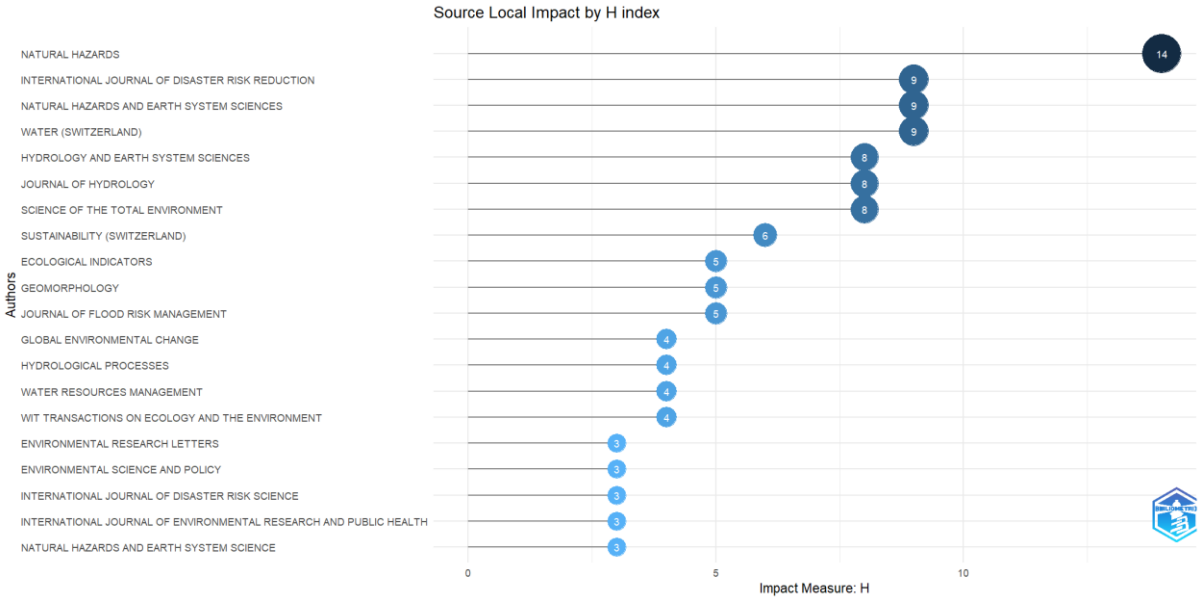

Figure2

WORD CLOUD

The word cloud in Fig. 3 visualizes the words that appeared most frequently in the publications on Flood risk and Indicators. "FLOODS" was the most common word, followed by "flood control" and "climate change" as the second and third most popular words. The magnitude of the words in the word cloud is determined by how many times they appear. The word placement is arbitrary, although the most important words are in the middle to make them more noticeable due to their huge size.

Figure3

THEMATIC MAP

A thematic map based on density and centrality was also created, divided into four quadrants (Fig. 4). This result was produced using a semi-automated method that reviewed the titles of all of the references included in this study, as well as extra relevant keywords (other than the author's key phrases) to capture deeper variations. As evidenced by even density and centre, the quadrant in the top left iche theme displays a distinct issue of "risk assessment and flood control." The "motor" or "driving" themes in the upper right quadrant are indicated by high density and centrality; these topics, which included "urban floods" and to a lesser extent "risk assessment and flood control," should be researched further due to their importance for future research.

"Climate change water management coastal zone" and "flood vulnerability flood damage" are among the themes in the lower left quadrant that have been used but have shown a negative trend, as indicated by low centrality and density. Finally, the lower right quadrant covers fundamental issues, as indicated by even centrality and density; "risk assessment and flood control," for example.

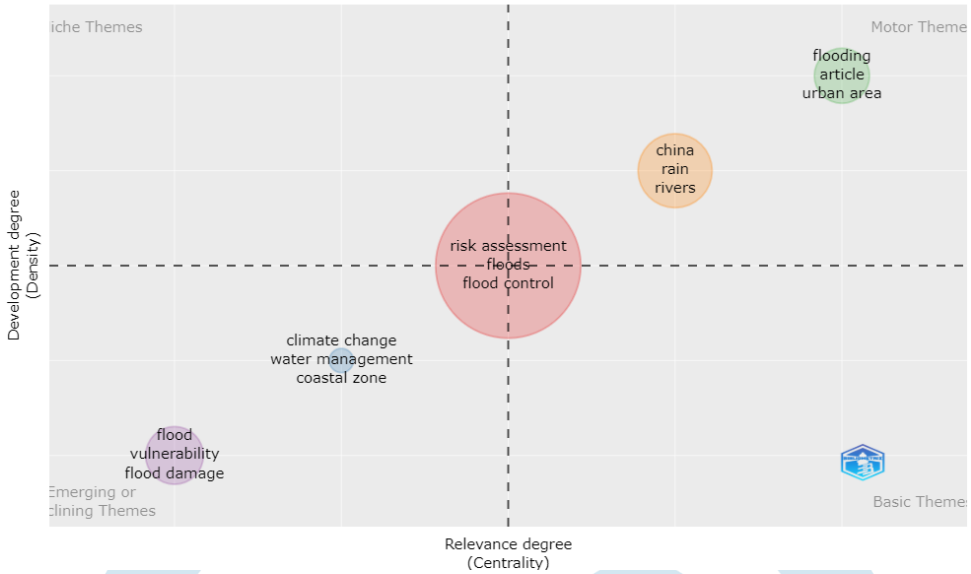

Figure 4

TIME SLICE ANALYSIS

In a timeline, authors, journals, and keywords relating to each period's time slice were examined. The time slice depicts five intervals, such as a red network that implies a risk assessment that is depicted with greater weight. Flood, flooding, Europe, rivers, flood damage, and climate change are some of the other focused channels. In figure 5, Floods and climate change were the primary concerns of the time slice depicted in blue; other features include paleo flood, flood, flood danger, flood control, and governance discourse. Flood control is indicated by the green network, flooding is indicated by the purple network, and flood damage and flood danger are indicated by the orange network. Correspondingly from 1990-2022 the concerns of time slice is represented

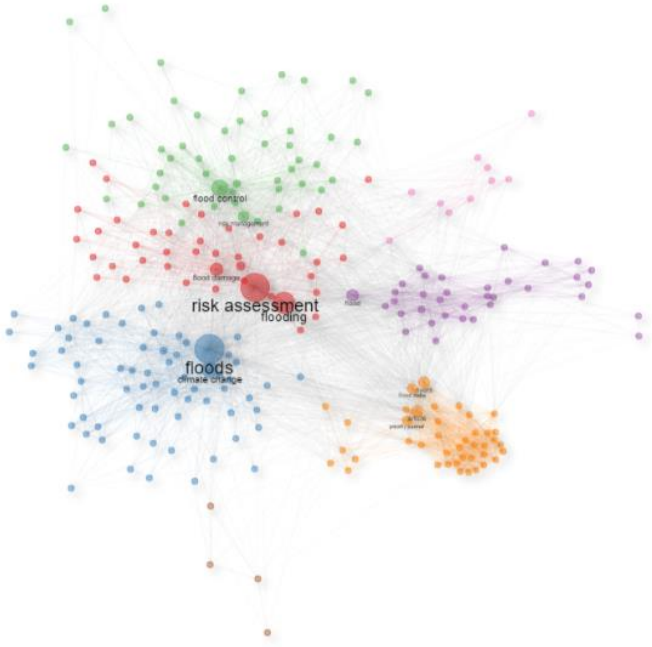

Figure 5

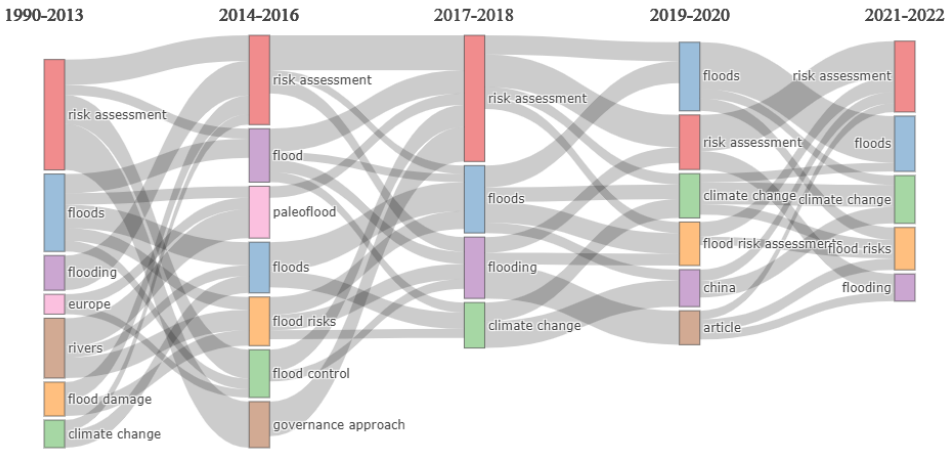

Figure 6

CONCEPTUAL STRUCTURE MAP

By mapping the relationship between one term and another by regional mapping, a conceptual structure map was created, providing a visualisation of the contextual structure of each word that appeared frequently in research articles on the topic of Flood risk and indicators (Fig. 5). Each word is put based on the values of Dim 1 and Dim 2, Dim being a specific term in bibliometric science, resulting in a mapping between words whose values do not differ significantly

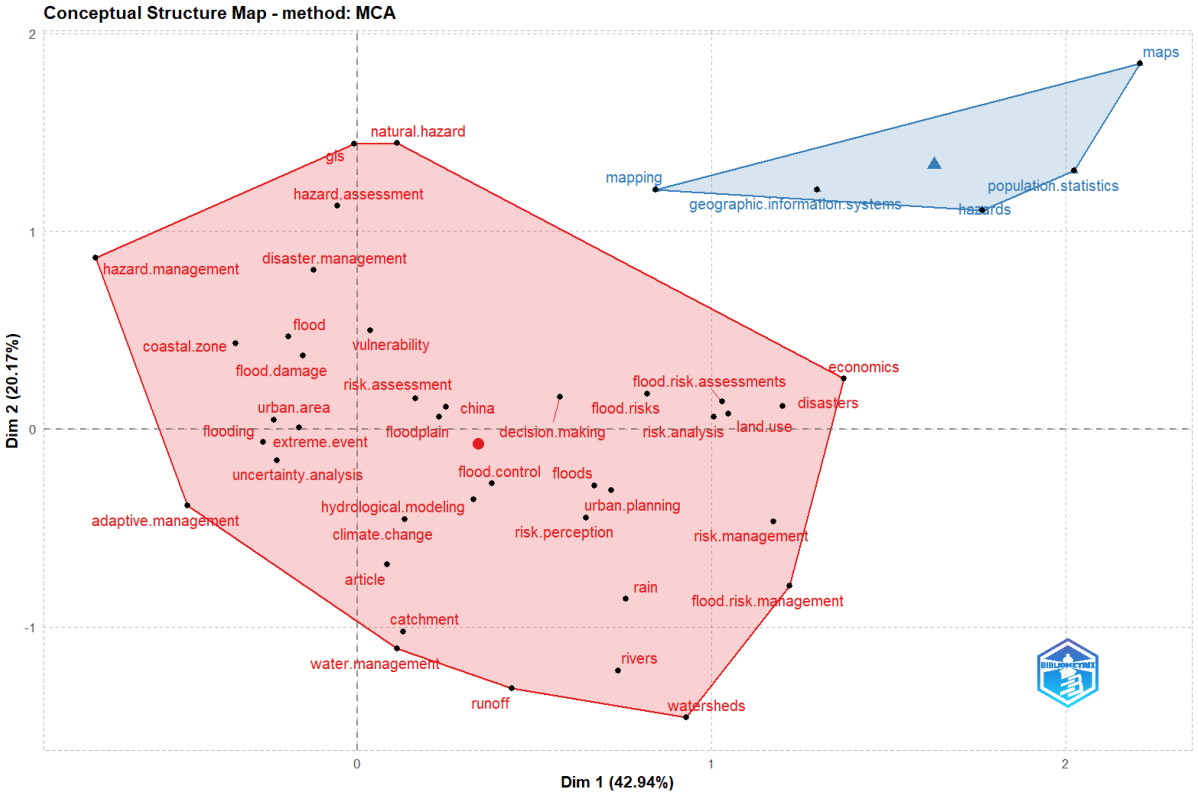

Figure 7

DISCUSSION

Interpretation: This work presents a bibliometric analysis of journal articles having a digital object identifier on the topic of flood and risk indicators by the Dimensions database, carried out using the Biblioshiny app. Since it has a severe disaster problem on a global scale, Flood has drawn the attention of many scholars, particularly those who study disaster management. The literature on flood risk has only started to widely reflect this emphasis on mitigations. Based on the aforementioned findings, it would seem that a wide variety of publications and multiple authors have published a significant amount of research on flood risk and indicators, with a wide range of specialised topics.

The themes discussed by the writers and the journals in which they published their study were displayed in the three fields plot, which exhibited three factors (namely journals, authors, and topics) and allowed their correlations to be analysed. Additionally, this plot showed how much of each component there was, as well as which journals published the most on the subjects at hand and whose authors were the most productively. In the three fields plot, the Flood and Risk words produced the most articles by a search and a large number of authors used it since it focused on risk indicators. It's interesting to note that Natural Hazard was the only high-impact journal, with an h-index of 14 as opposed to the other journals' h-indices, which ranged from h-index 9 to h-index 3. As a result, Natural Hazard Journal has an advantage over other journals in terms of the volume and significance of research on the issue of flood and risk, making it a valuable resource for scholars looking for references on a study on this theme. The phrases that appear most frequently in articles on the topics are flood, risk, and indicators.

Therefore, the majority of the publications prioritised the topic of flooding, with a secondary focus on risk and flood indicators. The talks about flood risk covered a wide range of topics, as seen by the most often used words, which included "vulnerability," "climate change," "risk assessment," "resilience," "GIS" "flood risk management," and "exposure." Therefore, it can be said that this topic's research was quite thorough and covered a variety of industries in terms of flood risk indicators.

It's interesting that a variety of subjects and geographical areas were represented in the word cloud, including the urban area, catchments, water management, and spatial organisation. This fact demonstrates that a variety of different components were frequently studied in flood research. This may indicate a particular focus on the danger. Research on flood risk varies in the region of climatic elements, water management, and spatial geometry associated to urban catalysts that have implemented the risk indicators of the flood.

The conceptual structure map positioned each word according to its Dim 1 and Dim 2 values, in addition to allowing users to see these keywords in the word cloud and thematic map. Using the terms used in the research on the themes of Flood and Risk, two significant clusters of words appeared. In this map, the blue cluster is interested in topography gis and mapping, whereas the red cluster deals with flood, water management, urban planning, and uncertain analyses.

LIMITATIONS

There are a number of restrictions on this study. First, it only looked at articles that were published on the topic of flood risk indicators. This was done through analysis of a three-field plot that depicts the relationships between journals, authors, and the topics used, a source impact analysis that determined which journals had the greatest influence, and the most popular keywords as displayed in a word cloud, thematic map, and conceptual structure map.

The names of the most well-known authors on this subject, the most productive or frequently studied nations in this field of study, the most productive institutions, and so on, are some more themes that could be investigated. The collection of articles was retrieved from the Dimensions database and was only valid through **March 7, 2022**, thus developments and revisions could yet occur. In order to create more thorough results, it is advised that future study do a more thorough bibliometric analysis with additional components.

CONCLUSION

Given the ongoing Flood risk, there are already a sizable number of publications on the topic of Flood and Risk Indicators that have been published in journals of "Natural hazards" and "International journal of disaster risk reduction". This issue featured a number of topics and terms that have the potential for additional exploration, particularly in relation to certain areas of risk indicators and related study characteristics. Researchers working on this issue might also utilize some of the most prolific publications and authors as references.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported

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