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# **Comparative Biometric Analysis of Scientific Studies in The Field of Graphic Novel in Different Databases**

Grafik Roman Alanındaki Bilimsel Çalışmaların Farklı Veritabanlarındaki Karşılaştırmalı Bibliyometrik Analizi

### **ABSTRACT**

A graphic novel is a type of comic book that combines words and images to express a complete story, usually presented in book format. This study aims to examine the place and impact of graphic novels in academic literature. In the study, academic publications in the field of graphic novels between 1990 and 2024 were analyzed. Scopus and Web of Science (WoS) databases were used in the data collection process and the studies obtained because of searches with the keyword "graphic novel" were evaluated by bibliometric methods. In the bibliometric analysis, metrics such as number of citations, average number of citations per article, author collaborations and impact level of publications were used. Research performance analysis and scientific field mapping techniques were employed, utilizing various bibliometric analysis methods such as citation analysis, co-citation analysis, bibliography match analysis, co-author analysis, and common word analysis. The study provides a quantitative assessment of academic productivity and impact in the field, highlighting the development and evaluation of graphic novel studies on an international scale. The findings offer insights for future research and a comparative bibliometric analysis of scientific studies in the graphic novel field across two databases, enhancing understanding of scientific contributions in this area.

Keywords: Comic Books, Gender, Graphic Novel, Multimodality, Narrative

Grafik roman, genellikle kitap formatında sunulan, tam bir hikâyeyi ifade etmek için sözcükleri ve görüntüleri birleştiren bir çizgi roman türüdür. Bu çalışmanın amacı, grafik romanların akademik literatürdeki yerini ve etkisini incelemektir. Çalışmada, 1990-2024 yılları arasında grafik roman alanında yapılan akademik yayınlar analiz edilmiştir. Veri toplama sürecinde Scopus ve Web of Science (WoS) veri tabanları kullanılmış ve "grafik roman" anahtar sözcüğüyle yapılan aramalar sonucu elde edilen çalışmalar bibliyometrik yöntemlerle değerlendirilmiştir. Bibliyometrik analizde atıf sayısı, makale başına ortalama atıf sayısı, yazar iş birlikleri ve yayınların etki düzeyi gibi metrikler kullanılmıştır. Atıf analizi, ortak atıf analizi, bibliyografya eşleşme analizi, ortak yazar analizi ve yaygın kelime analizi gibi çeşitli bibliyometrik analiz yöntemlerinden yararlanılarak, araştırma performans analizi ve bilimsel alan haritalama teknikleri kullanılmıştır. Çalışma, alandaki akademik üretkenliğin ve etkinin nicel bir değerlendirmesini sunarak, uluslararası ölçekte grafik roman çalışmalarının gelişimini ve değerlendirilmesini vurgulamaktadır. Bulgular, gelecekteki araştırmalar için öngörüler sunmakta ve iki veri tabanında grafik roman alanındaki bilimsel çalışmaların karşılaştırmalı bibliyometrik analizini yaparak, bu alandaki bilimsel katkıların daha iyi anlaşılmasını sağlamaktadır.

Anahtar Kelimeler: Çizgi Roman, Cinsiyet, Grafik Roman, Çok Modluluk, Anlatı

### Introduction

In American and British usage, a graphic novel is a type of text combining words and images, a comic book, but the term most often refers to a complete story presented as a book rather than a periodical (Phoenix, 2020). The term graphic novel is highly controversial. Since the 1970s, when the field of comics studies first emerged as an academic discipline, scholars and others have attempted to define the word comics and to establish a critical terminology to support that definition (Boerman Cornell, 2016).

In the early years of comics, the creators of comics were not considered artists and had no copyright over their works. Even later, they faced difficulties in publishing their works due to profit-oriented publishing policies, as they were strongly tied to the printing press as the main medium of their manifestation. With few exceptions, only the most popular works had the chance to be published in volumes. However, more and more graphic designers have embraced this serious, mature, and liberal form of expression and their creations have been published by alternative independent publishers and then reissued by reputable publishers while enjoying success.

The graphic novel played an important role in the process of gaining the status of a recognized cultural object for comics, adding intellectual value to the medium (McGrath, 2004). Although graphic novels are less textually demanding than traditional texts, graphic novels should not be considered as easy to read as the sentence and word structure in graphic novels is complex and readers need to make sense of the visual clues and text presented (Frey, 2010). The graphic novel has become a unique format in the last thirty years. In the words of Will Eisner, who wrote the first graphic novel and coined the term for the format, the mode of creation has evolved from a work written and drawn by a single person to a marriage between writer and artist. This has created a creative process that utilizes the skills of a successful writer and a very sophisticated artist (Eisner, 2003). Graphic novels, with their roots in serialized comics, began to take on a more literary tone during the 1970s and 80s, with many publishers moving away from serialization of short comics and focusing on more complex book-length titles, and as a result, the readership of comics expanded from children to young adults and adults who saw their preferred format maturing with them. The move away from serialization also meant that the desired book was much more likely to be in stock in bookstores rather than only in local comic shops (Weiner, 2001). It could be said that 1986 was the year of the graphic novel. It saw the publication of the first volume of Maus, the first issue of Watchmen and the complete series run of The Dark Knight Returns. Although none of the works were published as graphic novels, it would be hard to ignore the impact they had on the medium, so all three were serialized before being collected and reissued. Since 1986, graphic novels have grown significantly in both sophistication and popularity to the point of deserving attention in higher education (Ellis et al., 2000).

A graphic novel is a long, sequential work of art. Unlike serialized traditional comic books, which are often serialized in periodicals, graphic novels are often published as complete works. They can cover a wide range of genres and themes, and the term is often used to describe works that are more complex or mature in content compared to

traditional comics. Graphic novels and graphic novels push the boundaries of picture books to the point where illustrations and text are equivalent, each driving the other, rather than illustrations supporting or attempting to explain the text. Unlike a comic strip or graphic novel, a graphic novel is complete, revealing the beginning, middle and end of the story or information it puts before the reader. While the most common term used today is "graphic novel", other suggested terminology includes graphic album, graphic installation, graphic narrative, and serial art.

Graphic novels are also often categorized as a "genre", but everyone in the industry and fans of graphic novels will quickly correct this. Graphic novels are a medium, and within that medium there are many different genres. While the definition and categorization of graphic novel genres is likely to continue to evolve as the medium grows, in 2007 Pawuk identified nine genres within the comics medium: Superheroes, Action and Adventure, Science Fiction, Fantasy, Crime and Mysteries, Horror, Contemporary Life, Humor, and Nonfiction (Pawuk, 2007). The debate on socalled graphic novels also emphasizes this complex situation. For many people, the word comic book refers to a periodical for children, published weekly or monthly, sold on newsstands or in specialized comic bookstores, often with pages devoted to advertisements and, when aimed at younger readers, to contests and puzzles (Gall et al., 2015). In contrast, a graphic novel usually refers to a long comic book narrative for adult readers, published in hardcover or paperback and sold in bookstores, with serious literary themes and sophisticated illustrations. However, these distinctions are somewhat controversial, as graphic novels come in all shapes and formats, appeal to many different groups and age ranges, and cover a wide range of genres and styles (Chase et al., 2014).

Moreover, graphic novels are often not original publications but repackaged collections of serialized comics. This debate is further complicated by the fact that the supposed need for the term graphic novel stems from American and British cultural biases. There is no need for an equivalent term in continental Europe or Japan, where the acceptance of comics as both an art form and a literary genre is unproblematic (Guérin et al., 2017). In Europe, and especially in France, comics, or bande dessinée ("drawn strips"), have long been collected in high-quality albums, their theme and style suitable for a mature audience (Orbán, 2014). This adult comics culture has coexisted very comfortable with comics for children, without any contradiction. In Japan, a large part of the population routinely reads comic books (called manga), which have reached a dizzying variety of genres and themes. The emergence of the term graphic novel should therefore be viewed in terms of the cultural attitudes that shaped it (Watts, 2015). Graphic novels engage readers,

and indeed research has shown that graphic novels are useful literacy tools, exposing readers to twice as many words as the average children's book (Weiner, 2001). Reluctant readers may not be able to perceive certain literacy elements such as tone, mood, theme and foreshadowing from text alone. Visuals in graphic novels present these elements at a level that is more accessible to many readers (Sullivan, 2002). The rise in popularity and complexity of the graphic novel has also caught the attention of the educational community. Educators recognize that today's students are constantly visually stimulated by the media and have a strong impatience to sit and scroll through dense text. Graphic novels cater to young people's growing interest in visual rather than written media (Bucher et al., 2004). Graphic novels offer a means to represent complex material in ways that reduce the cognitive demand of reading dense text while depicting complex concepts. Therefore, graphic novels have been touted as a useful tool for engaging reluctant and difficult readers (Sullivan, 2002).

A detailed literature review is needed to obtain detailed information about scientific studies in the field of graphic novel, which improves visual literacy and vocabulary, inspires creativity and thinking, improves social and emotional learning, helps to understand literary themes and supports individuals with learning difficulties, to follow the development of the studies, to see which studies come to the fore and to predict the trends of research on the subject in the coming years, as well as to determine which topics require more attention and research in the field of graphic novel.

In the literature, there are no studies in which scientific research on graphic novel studies in the field of graphic design is evaluated in terms of bibliometric characteristics other than traditional literature reviews (Aria et al., 2017). While there are two bibliometric processes, performance analysis and science mapping, to determine the research area of a scientific research (Gutiérrez Salcedo et al., 2018; Herrera Viedma, 2016; Tam et al., 2012), within the scope of science mapping, analysis and visualization of the networks obtained because of these analyses.

- Citation Analysis,
- Co- Citation Analysis,
- Bibliographic Coupling Analysis,
- Co-author Analysis,
- Co-word Analysis

In this context, it is aimed to examine the bibliometric characteristics of graphic novel studies as an alternative to traditional literature reviews. In the light of the results that emerge according to the evaluations, both the contribution of the research subject will be provided, and the repetition of the research will be prevented.

In this study, out of a total of 7784 academic publications in the field of graphic novel between 1993 and 2024, a total of 7103 were analyzed and grouped according to bibliometric indicators in line with the relevant filtering processes, and the trends in the field of graphic novel in recent years were tried to be revealed. It is thought that the results to be obtained at the end of the analysis will contribute to the subjective evaluation of the research field.

Considering that the research will make a significant contribution to the literature, answers to the following research questions were sought:

- Which author(s), institution(s) and country(ies) have the most scientific studies in the field of the relevant research?
- What is the network of relationships between the most cited authors, studies, and journals?
- What is the network of relationships between authors, studies, journals, institutions, and countries that cite the same works together?
- What is the network of cooperation between authors, institutions, and countries?
- What is the network of relationships between the most studied topics/concepts in a research area?

# Methodology

In the field of social sciences, various research methods are used by researchers to examine a particular issue or problem in depth. In this research, case study was preferred. A case study is based on a qualitative research design that involves a detailed examination of a single event, individual, group or organization. Case studies are widely used in various fields of social sciences and have emerged as a powerful tool to help understand and analyze complex issues. As a powerful qualitative research method to provide a comprehensive and contextualized understanding, case study provides researchers with great flexibility in understanding specific situations and going beyond general rules.

### **Data Collection and Analysis**

The bibliometric analysis study, which was carried out on 20.03.2024 based on the keyword "graphic novel", was carried out on data sets taken from WoS and Scopus databases. While Scopus database is more preferred for Social Sciences and Humanities, WoS database is used for Science and Engineering, and both databases are among the popular databases that index academic publications with a wide and comprehensive content and provide citation searches.

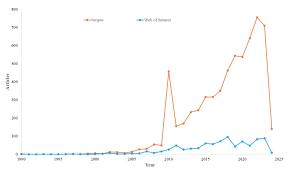
In the study, searches were made in WoS and Scopus databases using the keyword "graphic novel", and the queries related to the searches are given below.

The data set of the study, which was based on all fields, was taken in '.txt', '. bib' and '.csv' formats, and 854 and 6249 studies were accessed in WoS and Scopus databases, respectively (because of relevant filtering processes) (Table 1).

### **Ethics Committee Permission Information**

Since no data were obtained from any living creature in any way during the data collection phase of the article, ethics committee permission is not required.

Figure 1 shows a comparison of how academic production in the field of "graphic novel" has changed over the years through two different databases.



**Figure 1.**Annual Scientific Production "Graphic Novel"

Among the studies conducted between 1990 and 2024, the oldest publication in the WoS database is from 1993, whereas the oldest study in the Scopus database is from 1990. Figure 1 shows that there is an increasing interest in academic studies with the keyword "graphic novel" in the academic literature. The fact that the graph shows an upward trend indicates that "graphic novel" is attracting more attention in academic circles and researchers are paying more attention to this subject. This increase shows the importance of and interest in the literary, cultural, artistic and educational study of graphic novels. The fact that the graph shows a fluctuating course in certain periods suggests that research in the field of "graphic novels" may change depending on certain trends or events. For example, the publication of a popular "graphic novel" work or the emergence of a controversy in a certain year or period may cause fluctuations in academic production. In periods when the graph shows a decline, it can be thought that the interest of researchers in the field of "graphic novel" has decreased or they have shifted to other subjects. This can also be interpreted as a decline in the popularity of "graphic novel" studies in certain periods or that alternative media and literary forms attract more attention. In conclusion, the annual scientific production "graphic novel" graph was used to visualize the changes in the academic production in the field over time, to understand the trends in this field and to provide clues for future research, and it was seen that the place and importance of related academic studies in the literature increased (Figure 1).

The term "Authors of single-authored docs" refers to the number of papers in a research or review study to which only a single author contributed. Papers contributed by only one author can often be interpreted as reflecting that researcher's individual expertise or original ideas in the field of study. On the other hand, this metric also indicates the level of collaboration in a particular field. For example, if the value of "Authors of single-authored docs" in a field is high, it can be interpreted that researchers in this field generally work independently and collaborate little with other researchers. In this context, in Table 1, 6249 articles published in 'graphic novel' studies were accessed from the Scopus database and the study continued and it was seen that 2877 out of 7250 authors contributed to the field as single authors. Similarly, it was seen that 1045 authors were included in 854 articles in the WoS database, and 505 of these authors contributed to the field as single authors.

**Table 1.** *Main Information* 

Description	Results	
Description	Scopus	WoS
Documents	6249	854
Sources (Journals, Books, etc)	2832	454
Keywords Plus (ID)	3747	350
Author's Keywords (DE)	9821	1954
Timespan	1990:2024	1993:2024
Average citations per doc	4,819	2,471
Authors	7250	1045
Authors of single-authored docs	2877	505
Single-authored docs	4217	628
Co-Authors per Doc	1,64	1,5

While the number of co-authors of publications in journals indexed by WoS is 1.5 articles per article, this ratio is 1.64 in journals indexed by Scopus (Table 1). When the documents related to "graphic novel" in WoS and Scopus databases are analyzed, it is seen that article-type publications rank first in both databases. In the WoS database, the first three ranks are article, book chapter and book review, respectively, while in the Scopus database, the order is article, book chapter and book, respectively.

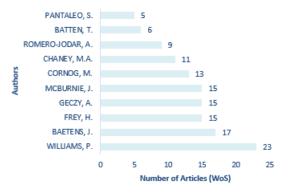
Table 2 lists the most common sources of academic publications on 'graphic novels' and shows the journals, publishing houses or sources through which the related research is published, so that the concentration of academic outputs in this field can be determined in detail. In the Scopus database, the journal "JOURNAL OF GRAPHIC NOVELS AND COMICS" ranked first with 598 publications, while in the WoS database, the journal "CAMBRIDGE HISTORY OF THE GRAPHIC NOVEL" came to the fore with 37 publications. These journals publish the works of researchers from various disciplines related to 'graphic novel' and offer a wide range of academic discussion on 'graphic novel'.

**Table 2.** *Top 10 Sources that Involve "Graphic Novel."* 

Scopus Sources	Articles
Journal of graphic novels and comics	598
Encyclopedia of comic books and graphic novels	338
Palgrave studies in comics and graphic novels	134
Journal of adolescent and adult literacy	50
Studies in comics	37
Journal of popular culture	36
The Cambridge history of the graphic novel	36
Cultural excavation and formal expression in the graphic novel	30
Comics grid journal of comics scholarship	29
Handbook of comics and graphic narratives	27

WoS Sources	Articles
Cambridge history of the graphic novel	37
Library journal	30
Studies in comics	29
European comic art	25
Litcomix: literary theory and the graphic novel	15
Cambridge companion to the graphic novel	14
Childrens literature in education	12
Us graphic novel	12
Graphic novel: an introduction	11
Journal of adolescent \& adult literacy	10

Table 2. is an important guide to identify the main focal points of research on 'graphic novel' and which sources are prominent in this field, while being an important reference point for researchers working in the related field and used as a valuable resource to follow the progress in the field.



**Figure 2.**Authors Productivity (WoS)

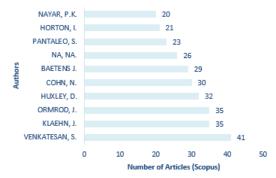
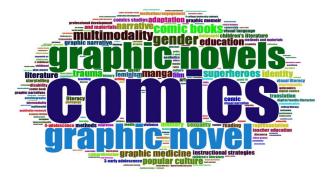


Figure 3.

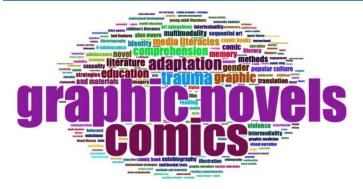
Authors Productivity (Scopus)

Figures 2 and 3 show the productivity of researchers publishing in WoS and Scopus databases respectively. The term "Authors Productivity" refers to the number of articles published by a researcher in the academic community in each period. In addition to being used to assess a researcher's academic productivity, this metric is also used to understand how fast and how often a researcher publishes scientific articles. The "Authors Productivity" value indicates that the researcher has published many articles and thus has a high productivity, but it also emphasizes the researcher's capacity to actively conduct scientific research and his/her work discipline. Considering the evaluation made by considering different databases between 1990 and 2024, it is seen that Venkatesan, S. and Williams, P. are the researchers with the highest number of publications in the field of graphic novel (Figures 2 and 3) Evaluating the productivity of a researcher based only on the number of articles may be an incomplete approach. Because the quality, impact and contribution of the work/published article should also be considered. Therefore, although the "Authors Productivity" metric only considers the number of publications of the researcher in the relevant field, it should be used together with other metrics to assess quality. This metric can only be used to assess the academic performance of researchers, track productivity trends and analyze the working efficiency of research groups. However, it is not sufficient on its own to fully reflect the quality or success of a researcher.

Figures 4a and 4b, word clouds based on data from Scopus and WoS databases, show us the keywords most frequently used by the authors in this study. As the size of the word increases and moves closer to the center, the frequency of use of the word increases. Figures 4a and 4b show that the most used domain-specific words are all centered. According to the Scopus database, the most frequently used terms in relation to each other are "comics", "graphic novels", "graphic novel", "gender", "multimodality", "comic books" and "manga", while in the WoS database, "graphic novel", "graphic novels" and comis are in the top three.



**Figure 4a.**World Cloud "Graphic Novel" (Scopus - Authors Keyword)



**Figure 4b.**World Cloud "Graphic Novel" (WoS - Authors Keyword)

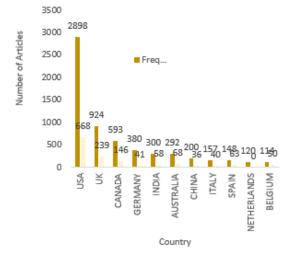


Figure 5.

Total of Articles in The Country (Top 10)



**Figure 6.** *Countries' Scientific Production* 

In this study, to identify the "country" as the source of the articles, the institutions/organizations to which the authors are affiliated were used as indicators. For example, if an article is a collaboration between a UK author and a CANADA author, such an article is counted for both UK and CANADA. In addition, only the top 10 countries in terms of level of contribution to educational research are presented. Figure 5 shows the top 10 countries with the highest number of scientific articles based on the number of academic publications in the field of 'graphic novel' between 1990 and 2024. USA, UK, and CANADA are among the top three countries in both databases, while NEDERLANDS is included

in the Scopus database but not in the WoS database. In addition, articles with no author address were not included in the analysis of country contribution. Figure 6 shows a visual representation of the total scientific contribution of a country based on its research and other academic outputs in the scientific field.

**Table 3.** *Country with Total Citations (Scopus)* 

Country	<b>Total Citations</b>	Average Article Citations
USA	5423	6.70
United Kingdom	1686	5.10
Canada	1271	5.60
Netherlands	516	9.40
China	453	5.80
Germany	380	4.10
Australia	336	3.20
Hong Kong	313	10.10
Italy	298	5.30
New Zealand	166	5.00
France	165	3.90
Indonesia	162	4.00
Japan	156	4.30
India	142	1.00
Spain	118	1.80
Singapore	113	5.70
Israel	104	4.30
Georgia	103	7.90
Malaysia	97	2.40
Sweden	85	1.90
Switzerland	77	9.60
Korea	71	2.60
Belgium	58	1.90
Austria	57	2.50
Denmark	56	5.60

Table 3 shows the total number of citations and average number of citations per article for countries according to the Scopus database. These data allow for a comparison of the scientific productivity and impact levels of countries. According to the table, the USA is by far the leader in the total number of citations with 5423 citations, and it is seen that its scientific studies have a wide impact. The UK (1686) and Canada (1271) are among the countries following the USA. Hong Kong has the highest average number of citations per article with 10.10, followed by Switzerland (9.60) and the Netherlands (9.40). It can be said that the quality and impact of scientific studies of countries with high average number of citations per article are quite high. Countries such as China, Germany and Australia rank high in the total number of citations but have relatively lower values in the average number of citations per article. This shows that these countries publish a high-volume of publications, but the impact of each publication is lower. On the other hand, countries such as India and Spain rank lower in both total citations and average citations per article, suggesting that their scientific work has a more limited impact internationally.

**Table 4.**Country with total citations (WoS)

Country	Total Citations	Average Article Citations
USA	973	3.40
United Kingdom	214	2.10
Canada	211	3.90
Germany	53	2.90
Australia	47	1.70
Belgium	37	1.60
Spain	35	1.30
Italy	31	2.20
China	30	2.70
Chile	26	26.00
South Africa	25	3.10
Israel	22	4.40
Japan	20	5.00
France	17	2.10
Netherlands	17	1.50
Hungary	14	3.50
Malaysia	13	3.20
Ireland	12	2.40
Austria	11	1.60
Singapore	9	4.50
Jordan	6	6.00
India	5	0.20
Norway	5	1.00
Sweden	5	0.80
Finland	4	1.30

Similarly, in Table 4, where the total number of citations and the average number of citations per article are presented according to the WoS database, the USA leads in total citations with 973 citations, while the average number of citations per article is 3.40. The UK (214) and Canada (211) are among the countries that follow the USA in total number of citations. Canada's average number of citations per article is relatively high at 3.90, indicating that scientific studies in Canada are effective. Another country that draws particular attention is Chile. Although Chile has a total of 26 citations, the average number of citations per article is quite high at 26.00. This shows that a small number of scientific works in Chile have had a very high impact. Similarly, Jordan (6.00), Japan (5.00) and Israel (4.40) also stand out with high average citation numbers.

### Conclusion

In this study, a bibliometric analysis of scientific studies in the field of graphic novels was conducted using Scopus and WoS databases. The analyses aimed to comparatively evaluate the place of graphic novels in academic literature, scientific productivity and impact levels. First, it has been determined that scientific productions in the field of graphic novels have increased over the years. Between 1990 and 2024, a total of 7103 studies were analyzed in searches with the keyword graphic novel in Scopus and WoS databases. These data show that graphic novels have received increasing academic attention and how research in this field has evolved over time. Especially since the 1980s, graphic novels have gained a more literary and artistic form, leading to a significant

increase in the number and diversity of academic studies in this field. Citation analysis in the field of graphic novels shows that the US has the highest total number of citations in this field. According to Scopus data, the USA is the leader with 5423 citations, while according to WoS data, it is again at the forefront with 973 citations. In addition, countries such as Hong Kong and Chile have high values for the average number of citations per article. Hong Kong's 10.10 and Chile's 26.00 average number of citations reveal that the studies in these countries have a high impact and are widely recognized internationally. Author collaborations analysis shows that graphic novel studies are generally composed of single-author articles. In the Scopus database, 2877 out of 7250 authors were found to have published single- authored articles. This shows that individual work is common in graphic novel research and that researchers in this field generally work independently. Among the most published authors, names such as Venkatesan S. and Williams P. stand out, indicating the productivity and influence of certain researchers in the field. The results of this study provide a comprehensive assessment of the level of scholarly production and influence in the field of graphic novels. The literary, cultural and artistic value of graphic novels contributes to the increase and wider acceptance of academic work in this field. Bibliometric analyses show on which topics graphic novel studies are concentrated, which authors and countries are prominent, and how collaborative networks in the field are shaped.

In conclusion, this study highlights the importance and impact of graphic novels in the academic literature, provides important clues for future research, and provides a valuable resource for developing science policies and directing research in the field of graphic novels more efficiently. The increasing popularity and academic interest in graphic novel studies will enable the scientific contributions in this field to be evaluated in a broader perspective and contribute to the discovery of new research areas.

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