Analytical Approach of Quantum Computing based on Thematic Studies

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The concept of quantum computing is characterized by the use of its new analysis and its results. On the other hand, this concept requires critical content of the asset and remains multifaceted research and authoritative field. In the field of quantum computing, bibliometric analyses were developed to identify the underlying impacts and to obtain a systematic review of structures and spaces and spaces during this field of research. This paper focuses on the Quantum circuit model, Alan Mathison Turing device, Adiabatic quantum computer, Unidirectional quantum computer and, multiple quanta mobile automata. This last learning space has recently taken a high position in quantum computing studies. The most important indicators date back to the early years. It can be concluded that there can be a large number of integrated subjects in the field of quantum computing, as the guidelines of the various authors represent about three-quarters of all subjects. In addition, analysis in the field of quantum computing is characterized by a wide range of multidisciplinary and thematic studies. The shift away from technological features to more personalities is seen as a marked change in research focus. Gaps in various titles between authors, countries, and organizations have begun in this paper.

Keywords: Quantum Computing, Comprehensive, Advanced, Technology.

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1 Introduction

Quantum computing is that the most rising and currently a heat subject material on that several new types of research on created daily and other people who pursue physics wished to take care of with quantum computing[1].The records once are regarded upon indicates however a forceful modification is being introduced on this topic's studies. Bibliometric analysis has been applied on this paper to the sphere of studies on quantum computing, the thought became remarked from 1999 [2]. Quantum computing is based on two-dimensional structures called qubits. Recent proposals for quantum computing combined with nuclear spin 0.5 such as qubits and the use of various quantum algorithms have been validated in the form of liquid-kingdom magnetic resonance [3]. Quantum computing offers a proposal for a brand new technology that is clearly not feasible: convert magnetic charging into charging, and speed. From here on the idea of making a computer began. The clinical and engineering challenges facing the quantum computer event, significant improvements are being made in the use of generation in business packages. Including these as samples of combinatorics problems, for example in their application in four areas of trading: cybersecurity, prescription drugs, banking and finance, and advanced production is the ongoing research in quantum computing ongoing. Quantum computing is a growing technology that can perform the in-depth computer functions required in specific areas next to the information available in the archives, prime factorization, various theories, cybersecurity, polynomial testing, translation, AI information acquisition device, and many additional programs. In the tons of that problematic terminology, quantum computing is strongly linked to network security where distribution and management are the key factors that are determined to be used with a variety of capabilities. [4] Quantum Computing is connected to a memory tool. Local kelvin probe force research has shown that the configuration/reduction of house value will represent the device's memory path. A number of studies have been conducted announcing its relationship to the bosonic band gauge gap as the quantum version created the use of two-degree atoms within the photonic band-gap fabric, as well as the interaction of single-photon mode under the conditions appropriate for the uneven boundary. Not simplest this however in addition quantum computing relations with chromodynamics conjointly emerged. The study of quantum chromodynamics (QCD) remains one in all the utmost arduous topics in straightforward particle physics. The lattice method of QCD, during which the reference system is treated as a four-dimensional hyper cubic grid of factors, provides the strategy for a numerical answer from initial principles but makes severe demands upon machine performance [5]. The purpose of this descriptive paper is to produce a general macroscopic test of what 'quantum computing and its methods' of miles about our daily lives are based on bibliometric experiments. The data provided in this paper provide a clear picture of the development of completed analysis in the field of quantum computer studies, and will assist researchers and staff in distinguishing the primary impact on authors, journals, countries, institutions, references and course studies [6].

2 Data and Methods

The research data was accessed from the science web site on May 7, 2021. The science web site was selected as a program because of its widely used and frequently used information to analyze scientific publications. The term "Quantum computing" has been used as a search term. This search term refers to the "Quantum Computing" keywords known between title, abstract, keywords and journals. Duration is set from 1999 to 2021 inclusive. In Fig.1: A search method will be found. If the correct search strategy is done on a different date, it can be achieved that the results are slightly different. This variation is due to the fact that the scientific network is constantly updated - in addition to being viewed backward - which may cause minor changes over time. In total, 2086 books on quantum

computing were identified. Every type of publication is included in the search. To view text types, bulk is an article (n = 1198) and process paper (n = 644).[7] Different types of documents, which remind us of meeting summaries and editing materials, are limited by numbers (all less than a hundred). Each Science net publication contains a number of details, including year of publication, authors, authors' addresses, title, abstract, handout, subject classes and references. This information for 2086 books stored in the net of science has been exported to Excel, CSV, Bibtext and TXT. They were all accustomed to analyzing the following topics:

(1) Publishing and growth,
(2) authors and their collaborations,
(3) quantum computing journals,
(4) distribution and collaborative distribution of sites and institutions,
(5) quoted quotes
(6) integration,
(7)subject categories, and
(8) terms.

The freely accessible computer code system VOS viewer (www.vosviewer.com) (van Eck and Waltman, 2010) was used to analyze and visualize relationships between authors, countries, co-citing and terms. The VOS (Visualization of Similarities) mapping method is used to calculate and find the whole topic between a two-dimensional map in such a way that the space between the two objects shows the similarities or connections of objects as accurately as possible. The VOS bulk method was applied to compound themes in different groups, wherever each collection was marked with a different [8]. Interpretation of ideas is well defined within the results category. Generally, the translation is as follows: the size of the circles and therefore the label font represents the number of events, the colors represent the collections, and the distance between the two circles reveals the correlations and similarities between them. The coordinate axis and coordinate have no special meaning; maps are also freely rotated and rotated [8].

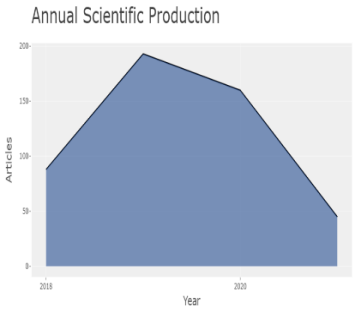

Fig. 1. Annual Scientific Production Graph

3 Results

A. Annual scientific production and quotes/citations

As seen in Fig 2, the scientific production annually since year 1999 was very less approximately 20 per year and the trend was slightly increasing but as 2018 year started the production increased rapidly starting from 100 productions per year but this trend did not go the same after the maximum production of 200 publications in 2019 the trend again steeped down to the production even less than 100 which was in 2018. The production rate declined by 53.98% and came down to 50 publications in

2020. If the same decline trend in annual production continue it will lead to stop the discoveries in research domain of quantum computing. The following table shows how it declined drastically [9].

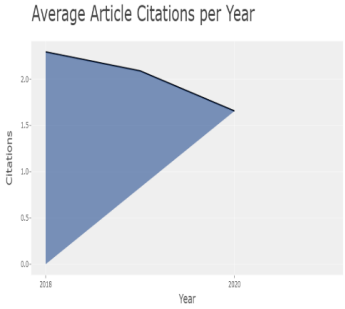

Fig. 2. Average Article Citations per Year

In reference to the average annual article citation per year same trend is seen from 1990 to 2018 the trend was increasing but slightly but as in 2018 the trend was very at its peak but after 2018 the trend till 2019 declined at a rate of 35.08% while by 2020 it declined by more than 37%. The number of citations declining has also been a major cause of the decline in the research domain because of which new discoveries are decreasing a Lot. The table below shows the citation data and its decline:

B. Authors and Citations

2086 books were written by more than 100 different authors. The vast majority of authors (25.417%; n = 3,838 / 151) are included in the single issue of quantum computing. 1.8145% (n = 274/151) is said to have a minimum of 3 publications, and 0.05% (n = 9/151) was included in 10 or more studies.

The table suggests all business writers of simple writers on the subject of quantum computing. The standard is based entirely on the general type of author's studies and not on the author's program. "Wang y" is one of the many writers you can do with mentioned authors. The main common style of authors accompanying the guide has turned into 3. 3. 44.235% (n = 923/2086) of directors had sole ownership, 19.3% (n = 399/2086) of subjects had two authors, 19.1% (n = 339/1789) had three authors, and 30.2 % (n = 629/2086) has 4 or more authors (with a maximum of 21 authors). It is almost complete that there may be mass collaborative studies within the quantum computer domain, as multitasking publications cover three-quarters of all publications. A relatively large set of collaboratively written guidelines show a better cooling of world science with the number of authors in the same internal space and the increased risk of future collaboration. A sample of the co-operation (i.e., co-writing) of the author's business component in quantum computing was analyzed by VOSviewer. Authors in the community say at least papers about the situation. Invisible authors related to completely different authors within the network are covered. The landmark results of this collaborative network of authors are given in fig.3. Authors with the same decision could not be good at all offers. Also, authors use the same type of words in their publications, e.g., due to marital changes, could not be combined. Encouraged to use the exploitation of others is a necessary provision for a variety of virtual identification and the commercial company is the first paper as a scientist (including orchids), it has to provide its own negative response [9].

Fig. 3. Most cited sing authors

C. Journal and publications

In all, 2086 books were published in 435 different journals. This high diversity reflects the wide range of analytical themes, as well as the character of many quantum computer research disciplines. Of the 435 journals, 324 journals (74.4%) published only one book, while 111 journals (13.6%) published only 2 books on quantum computing. 27journals (3.5%) have published 10 or more books on the topic [10].

The table provides data on all business entries in quantum computing research. 1.3% of all quantum computing journals published more than one-fifth of all quantum computing books (20.8%; n = 435/2086). The most important journals within the forum are 'PHYS REV LETT' and 'PHYS REV LETT', with 1837 and 1642 books per subject, respectively. Most likely, the publication of a single audit and patient rotation will be addressed in these journals.

D. Countries and territories

Quantum computer courses come from countries or specialized regions. Of these 76, 18 are based in Australia, fourteen in Austria, 9 in northern Brazil, 7 in southern America, 5 in Africa, and a pair in Oceania. Figure 8, shows the global distribution of relevant countries and territories. 46 countries or territories (60.5%) have conducted 10 or fewer courses, 21 international places or regions (27.6%) have produced between eleven and 50 studies, and 9 (eleven) countries or regions. Eight%) did more than 50 studies on the subject of quantum computing. The United States produced the best studies (n = 522), followed by Europe (n = 100) and China (n = 130).

Figure 6 shows the top 10 countries and best places in quantum computer research. A sample of G7 governance has occurred in many medical fields, reflecting the excitement of the extreme economic system and the level of learning of these international institutions. It all depends on the nations and regions. Within the expansion of national and regional statistics, geographical differences may be evident when looking at continents [11].

The network of partnerships (i.e., co-ownership) between countries and business areas in quantum computing is analyzed by VOSviewer. Figure 10 represents one outstanding Group that will stand out: one circle around America.

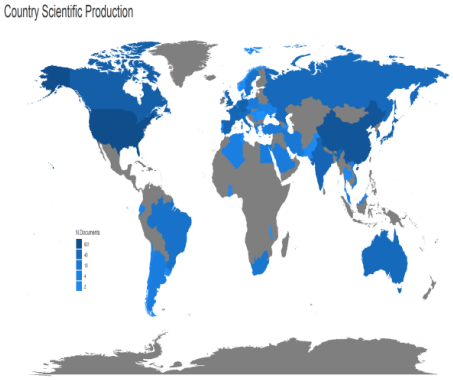

Fig. 4. On World Map counties highlighted with most publications

E. Citations of Organization and Documents

1) Organizations:

The most cited organization includes" Chinese acad sci" with 5 major documents with"Citigroup", "clod par inc" and many others with the same stats as shown in the table.

2) Documents:

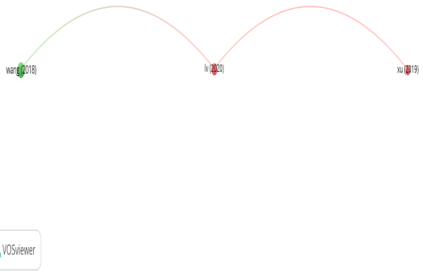

Fig. 5. Most Cited Documents Citation document

F. Co-authorship

The co-authorship data is basically based on how authors, organizations, journals, and allsources collaborate. The following graph Fig 6. shows the trend of co-authorship in all above-listed fields with some tabular data of it.

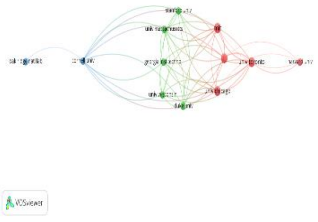

Fig. 6. Co-authorship organizations

G. Source's citations

As disused above sources Fig7 shows the graph and tabular data for it.

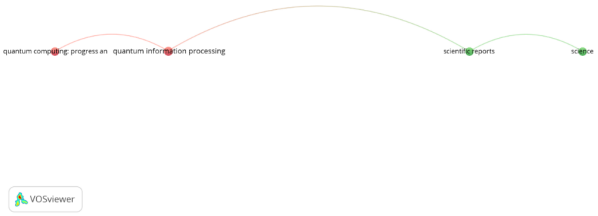

Fig. 7. Source citations

H. Thematic Map & Third Field Plot

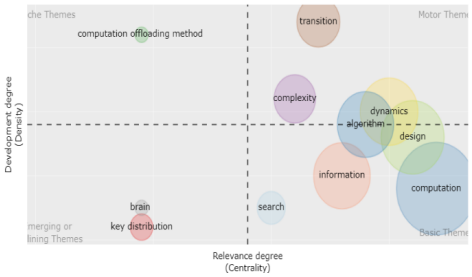

Fig. 8. Thematic Map

The figure 8 shows that how much the cluster is near origin the more was topic researched.

4 Conclusion

In this paper, a concise overview of the development of global analysis in the publication of quantum computing from 1999 to 2021 is presented. The topic of quantum computing has been the subject of major studies for the past 10 years and its folder extraction is evident with the help of the exponential boom. However, modern trends allow for the fullness of the clinical outcome during these behaviors. The next few years may illuminate if this downward trend in the publication of the booklet remains. The globe includes 1789 quantum computer courses covering 100 authors, 435 journals, important countries or territories, and 1866 institutions. Two major analytical regions are often prominent within the quantum computing domain: (1) the quantum circuit version and (2) the quantum turning machine. The research neck of the quantum circuit wood seems to be an additional theory, in which the research space of the quantum conversion machine shows a strong emphasis on performance. The law of power law, which must first be included in bibliometric studies in other fields (li and Zhao, 2015), applies to a few aspects of quantum computer guidelines: - the most important part of the authors (33.6%) is easily found in one very large book, and a relatively small group of wealthy authors

contributed to a large distribution of publications in quantum computer studies (6.0% of all authors advertised as a minimum of three articles). – Of all the journals published on the subject, 79.5% reported only one or more guidelines. The lowest share of journals (1.3%) is responsible for the publication of quantum computing for about one-fifth. - In countries or areas publishing in quantum computing, 60.5% have made 10 or more of the sub-guidelines.11.8% of contributing international sites or sites have produced more than fifty publications on this topic. - 72.9% of institutions that have actively participated in one eBook, and 1.5% of participating institutions have done at least 10 guidelines on quantum computing. Universities (not private or governmental organizations) are key players. - The largest share of quantum computing (42.4%) is no longer clear (but) obvious to individuals, and at best a small subset of subjects (three.6%) is explained fifty times or more.

Analysis to initiate armed records who stand at the border of this analysis area: - asparagusic, Alan are the most successful writers. They are scattered figures within a collaborative network of writers, which means that those different writers are connected (once or indirectly) to each other. All authors are related to us and publish it within the analysis area of fitness care and quantum patient computer. - The most notable paper comes from (Holmes et al., 2020), and the paper with the most common quotes of the year appears (Georgescu, 2020) - the journal 'defense science' that the magazine's most important quantum computing studies. - The United States, England and China are the nations and territories in charge of book production.

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