

Methods and Means of Information Search in the Digital Environment

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Abstract

Connecting billions of people around the world, the Internet is the main pillar of the digital society. From the invention of writing to the present day, we are living in a time when information is being produced and used the most in a form never found in history. Undoubtedly, technological factors are more important in creating and spreading information so quickly. For this reason, the 19th century is called the "age of information and technology". Digital technologies, which enable the efficient production and distribution of information, also ensure that information is accessible to every individual. In modern times, the fact that a significant part of the world's population has access to the Internet and the time spent in the virtual space is increasing year by year, it is clearly seen that the Internet plays a key role in providing information. As we know, the printing press was invented in the 15th century. In other words, printing information on paper has been used as a standard form of knowledge and information delivery for over 500 years. In modern times, we are witnessing the change of an era that has existed for centuries. Thus, the information registered with the invention of writing has been delivered to users in many different ways throughout history. However, the point that is important to focus on is the level of scientific research in the background of the fact that information carriers have changed and will continue to change. Thus, information carriers are also material carriers that reflect social content. Today, we live in an era where there are more mobile phones than there are individuals. In McLuhan's terminology, phones have become a part of people's bodies. At the same time, based on research, it was determined that individuals spend about 7 hours online on the Internet during the day. In this regard, the rapid development of information technologies shapes all areas of human life, as well as the process of information provision.

Keywords: Digitization, Databases, Bibliographic database, Web search engines, Web of Science (WOS), popular analytical search platform, Legal basis of digitization, information search, digital environment, Digital databases for academic research

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Методи та засоби пошуку інформації в цифровому середовищі

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Анотація

Поеднуючи мільярди людей у всьому світі, Інтернет є головною опорою цифрового суспільства. Від винаходу писемності до наших днів ми живемо в час, коли інформація виробляється та використовується найбільше у формі, якої ніколи не було в історії. Безперечно, технологічні чинники важливіші для такого швидкого створення та поширення інформації. З цієї причини XIX століття називають «століттям інформації та технологій». Цифрові технології, які дозволяють ефективно виробляти та розповсюджувати інформацію, також забезпечують доступність інформації для кожної людини. У наш час той факт, що значна частина населення світу має доступ до Інтернету, а час, проведений у віртуальному просторі, з кожним роком зростає, чітко видно, що Інтернет відіграє ключову роль у наданні інформації. Як відомо, друкарський верстат був найважливішим у XV столітті. Іншими словами, друк інформації на папері використовується як стандартна форма передачі знань та інформації вже понад 500 років. У наш час ми спостерігаємо зміну епохи, яка існувала століттями. Таким чином, інформація, зареєстрована з винаходом писемності, доставлялася користувачам різними способами протягом історії. Проте важливо звернути увагу на рівень наукових досліджень на тлі того, що носії інформації змінювалися і будуть змінюватися. Таким чином, носії інформації є також матеріальними носіями, що відображають соціальний зміст. Сьогодні ми живемо в епоху, коли мобільних телефонів більше, ніж людей. За термінологією Маклюєна, телефони стали частиною людського тіла. Водночас на основі досліджень встановлено, що протягом дня люди проводять в мережі Інтернет близько 7 годин. У зв'язку з цим стрімкий розвиток інформаційних технологій формує всі сфери життя людини, а також процес інформаційного забезпечення.

Ключові слова: оцифровка, бази даних, бібліографічна база даних, веб-пошукові системи, Web of Science (WOS), популярна аналітична пошукова платформа, правові основи оцифрування, інформаційний пошук, цифрове середовище, цифрові бази даних для академічних досліджень

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Introduction

It should be noted that only in 2007, 161 billion gigabytes of digital content were created and the circulation of that content all over the world is an indispensable example for the expression of the observed increase in the amount of information on the Internet. This number is 3 million times more than the knowledge and information in all the books written so far. So, this indicator means that 6 million books fall for each person who makes up the world's population. In the half-thousand years since the invention of the printing press, counting every language and copy, approximately 100 billion books have been published. Today, the volume of this information is even less than the amount of content uploaded to the Internet in a month. In this sense, it is very important to pay attention to the extraordinary growth of information in both examples. As the object of discussion, these examples point to the inevitable increase in the amount of information, as well as the change of knowledge and information delivery methods.

The purpose of the research

The main purpose of the research is to reveal and compare modern methods of information search in the digital environment.

Discussion of the issue

The most distinctive feature of the digital age is the accompanying abundance of information. In an era of accelerated information flow, many criteria have been defined for obtaining the best knowledge. As a reason for this process, it can be shown that the content that is created by whom and by whom in the digital environment, on various platforms, is increasing day by day. Plagiarism, similes, manipulation, and disinformation are the most common forms of misinformation. In many cases, users consider the information consisting of one sentence to be sufficient and consider the time spent on searching for detailed knowledge as a waste of time.

According to the "Digital 2022 - Global overview report", 12 trillion hours were spent online in 2021, the latest and record (and rapidly rising) level of internet access and social media use (Klaus, 2016, p. 71).

The report shows that this statistic is rapidly increasing in most countries of the world due to pandemics. So, the number of social media users is increasing rapidly. Youtube, Instagram pages are making huge financial gains. New concepts about the world's social media options have started to emerge. Social commerce is on the rise, and there is a significant increase in the cost of social media advertising. According to the data of January 2022, the world population is 7.91 billion people. According to the data of 2022, the number of global Internet users has increased to 4.95 billion. So, according to Search statistics (Infographic) in 2022, we can say that Google processes more than 99,000 search data every second. More than 1 billion questions have been asked to Google Lens. 84% of users make 3 or more queries per day. It can be said

that Internet users use the digital environment to meet their information needs on various topics. References to reliable and complete sources are rapidly increasing to meet the information needs that arise on a more scientific level.

At the same time, new operating models are developing rapidly in modern times

about capability and culture within the context of new skill requirements and the need to acquire and maintain an important type of human capital reveals that it needs to be reconsidered. All of the information at the heart of decision-making and operational models in sectors in the current era, the modern skills of the workforce there is a greater need to win, renew processes and develop information culture.

As we mentioned earlier, all fields of activity should adopt the concept of "skills". This concept is the most important of world competitiveness is one of the driving forces. Information bases of management structures in a world where skill is the decisive form of strategic advantage should be reconsidered. Flexible hierarchies, new forms of performance measurement and reward, and experienced talent attraction and retention strategies in terms of organizational success will rise to a decisive position. As far as the possibility of flexibility is concerned with employee motivation and communication, the determination of work priorities and physical assets management.

Successful organizations increasingly have hierarchical structures it is expected to be directed to network-based cooperation models. Internal motivation, professionalism of employees and managers, more within the framework of the desire for independence and cooperation on content will be very prominent. This is more distributed groups of organizations, within remote workers and dynamic collectives and means management based on continuous exchange of information and innovation about things and tasks being worked on (Kusserow, 2014).

So, there are different types and means of information search on the Internet.

1. Databases

Databases are a collection of information that can be accessed quickly based on any query. Databases are designed to facilitate information storage, modification, search and deletion. The database management system retrieves appropriate responses to queries from the database. A database organizes records and files to enable information retrieval. Information queries are the main way users access database information.

2. Bibliographic database

Databases used for searching academic publications often require bibliographic information (title, authors, abstract, keywords, etc.), so they are often called bibliographic databases. A bibliographic database may be general in scope or cover a specific academic discipline like computer science. (Kusserow, 2014).

In the database, which includes academic publications, we can get reliable sources of guaranteed quality, mainly research articles, as well as international conference materials, academic books and chapters from manuals.

The most common search engine for academic publications is Google Scholar (GS), which aggregates and makes available millions of academic publications. However, GS does not have its own quality assurance system, the risk of being found is greater.

3. Web search engines

Although search engines are programmed to rank websites based on some combination of their popularity and relevancy, empirical studies indicate various political, economic, and social biases in the information they provide and the underlying assumptions about the technology. (Jansen, 2010).

Web search engines compile a list of files of "pages" that contain the "keywords" required in any query over the Internet. Many search engines allow users to refine their queries and identify terms (or synonyms). At the same time, Web search engines are disorganized. The information it reflects includes a wide variety of qualitative sources, including various commercial data, national databases, and collections of personal materials. To overcome these challenges, search engines use the following criteria to uncover and measure the quality of reliable sources of information:

- Measure and rank trusted pages by the number of other pages referring to them;
- To determine the reliability of information based on the "authoritative" sources referred to by those pages.

Although the application of these methods determines the reliability of information obtained on the web, the user's ability to correctly define search terms, that is, keywords, is one of the main factors affecting the results of information search.

Search engines follow hypertext links from page to page to create indexes, and use crawlers, programs that crawl the web by marking everything on a page (caching) or parts of a page. So, websites typically insert their own tags into pages retrieved by search engines to determine relevance between search queries and related sites. Abuse of this voluntary tagging, if not taken into account when designing the search engine, the search results will be distorted.

The most common web search engines

Even the largest general search engines, such as Google, Yahoo!, Baidu, and Bing, cannot keep up with the rapid increase in the variety of web pages.

As the number of library resources available electronically increases, libraries today use a variety of tools to make it easier for users to use these resources and answer their queries. These tools can search multiple e-resources from a single search box. In many cases, search services are provided only for paid subscriptions, and there is also extensive access to resources that the library allows to use through open access licenses or

public domain. As of January 2022, Google is by far the world's most used search engine, with a market share of 92.01%, and the world's other most used search engines were Bing, Yahoo!, Baidu, Yandex, and DuckDuckGo. (Levitsky, 2012).

Digital databases for academic research

When writing any scientific research work (thesis, scientific article, dissertation, etc.), researching previously existing scientific literature and research results is one of the main processes that must be carried out. Of course, choosing the most reliable among these sources is one of the most urgent issues of modern information search processes. Academic databases make it easy to identify the scientific literature we are looking for in any field. The best and most cited academic databases are the following:

1. Scopus is one of the two largest bibliographic databases covering scientific sources on any field of science. This database, which has a coverage of 71 million, not only provides a search for scientific research articles, but also provides academic journal ratings and a citation calculator (statistics of the number of views and citations to the source). Billion references have been provided. The database is viewed free of charge, and full access is provided by subscription.

2. Web of Science - unites quantitative and qualitative original scientific articles dedicated to methodological problems in various directions of scientific activity (for example: law, politics, philosophy, psychology, and linguistics, etc.). These articles define new directions for the study of a wide range of scientific topics. Although Web of Science was previously developed by the Institute of Scientific Information, it is currently owned by Clarivate. Clarivate is an British-American publicly traded analytics company that operates a collection of subscription-based services, in the areas of bibliometrics and scientometrics; business / market intelligence, and competitive profiling for pharmacy and biotech, patents, and regulatory compliance; trademark protection, and domain and brand protection (Marydee, 2017).

Connecting similar research materials in any field of science, this website covers relevant and related scientific literature (e.g., journal articles, conference proceedings, abstracts). In addition, its greatest scientific importance is that scientific information in a field can be easily accessed through citations can be obtained. With this tool, conditions are created for the evaluation of current trends, research results and innovations. The citation index lists the cited sources and identifies their source.

With this, new sources of information are obtained, additional sources are found based on any query.

In order to be included in the Web of Science database, the author must consider several important issues. Thus, the content considered acceptable for this database goes through the evaluation and selection process is done. Web of Science consists of six different scientific databases. The importance of digital information in modern scientific research is undeniable. Thus, there are enough websites that provide

subscription-based access to numerous databases that provide comprehensive information on various fields of science. The website Web of Science, founded by the Institute of Scientific Information, consists of 6 online databases with all rights reserved and includes about 34 thousand leading scientific journals. It hosts databases of scientific literature and patents. Some of the publications are simultaneously indexed and fully expanded the scope of selection and balancing of the world's leading scientific research. It provides access to a wide range of scientific information, from daily searches by Web of Science and content created by researchers worldwide, to the supply of analytical data collections, performs many processes. At the same time, the professional implementation of these processes creates conditions for closer cooperation with bibliometric groups worldwide. It should be noted that the Web of Science data gave impetus to the development of elomometrics. Thus, the dynamics of references to articles in the Web of Science database determines the relevance of the topic. This ranking, which performs a monitoring function for the evaluation of research activity, also studies the history of the development of science, its sociological aspects.

Quantitative analysis determines the development and trajectory of the global science system as a result of the significant penetration of technological innovation into the fields of science.

3. PubMed is an indispensable database for those looking for sources of scientific information on medical and biological sciences. PubMed, a free access option, includes abstracts and bibliographic features of more than 30 million scientific articles, and provides publisher sites with links to sources in PDF format free of charge.

4. ERIC - this database, which contains literature related to education and provides access free of charge, has a coverage of 1.3 million. This database, whose supply center is the US Department of Education, is considered the first-class digital database in the field of education.

5. IEEE Xplore - access is free of charge and is considered the main important database in the field of engineering and computer science. This scientific base, which has a scope of 5 million, contains not only scientific journal articles, but also books on the field, conference materials, and standards.

6. ScienceDirect - a database published by Elsevier that provides free access to millions of scientific-level

academic articles covering various fields of science. 2,500 magazines and more than 40,000 e-books can be searched in this database with a scope of 16 million items.

7. Catalog of Open Access Journals (OAJ) - access to all articles of this special database is free. It covers various fields of science and has a reach of about 4.3 million.

Web of Science:

1. It covers more than 7800 journals in all disciplines (Emerging Sources Citation index)

2. Science Citation Index Expanded covers more than 9200 journals in 178 scientific disciplines.

3. Social Sciences Citation Index covers more than 3400 journals

4. Arts and Humanities Citation index – covers more than 1800 journals.

5. Book citation index – covers more than 116,000 books.

6. Conference materials index (Conference Proceedings Citation index) – covers more than 205000 conference materials.

Conclusion. Legal basis of digitization - according to the legislation of many countries, works are subject to both copyright and property rights. According to the right of ownership, the author has the right to distribute and sell his work, to sell or distribute any copy over the Internet. It is prohibited to distribute and multiply any work without the permission of the author. At the same time, it should be noted that this restriction automatically disappears 50 years after the author's death (75 years in some countries) and 75 years after the publication of the book (95 years in the USA). In Russia and many republics of the former USSR, works published before 1971 are not subject to property rights. The reason for this is the accession of the USSR to the "International Copyright Convention" in 1971. Works published in the USA before 1924, and in European countries before 1932, do not have ownership rights. Digitization of copyrighted works is legal. The Law of the Republic of Azerbaijan "On Copyright and Related Rights" (June 5, 1996) applies to all existing intellectual property objects (handwritten, typewritten, oral, video, etc.) sound, image, etc.) applies.

At the same time, the Law of the Republic of Azerbaijan "On Protection of Intellectual Property Rights and Combating Piracy" (May 22, 2012) provides protection of intellectual property rights according to Article 94 of our Constitution (Levitsky, 1964).

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