Objective. The article aims to highlight the essence and possibilities of biobibliometrics in determining the scientific productivity of scientists, in particular, the scientific achievements of one of the most outstanding researchers in librarianship V. Ilhanaieva. Methods. Bio-bibliometric analysis was the main method used in the study to determine the current state of science and technology in the field of social communications. The methods of analysis and synthesis were also used. Results. The results of the bio-bibliometric analysis of the scientific activity of the leader of modern domestic librarianship V. Ilhanaieva are presented by characterizing her general scientific productivity and defining the features of achievements at individual stages of the research activity in the field of social communications. Conclusions. It has been proven the dependence of developing science and technology on scientists' research activity and their social connections, as well as functional connections between elements of biographical information and bibliographic data. Wherein the prospects of biobibliometrics as a special scientific tool for such studies are determined. Keywords: bio-bibliometric analysis; biobibliometrics; bibliographic data; scientific activity; scientific productivity; social communications

Introduction

The name of Valentyna Oleksandrivna Ilhanaieva, doctor of historical sciences, professor, is well known to specialists in the social and communication sphere not only in Ukraine but also abroad. The result of the fruitful 45-year scientific activity of V. O. Ilhanaieva is her significant contribution to the study of problems of social interaction, the theory of social communications in their epistemological, ontological and phenomenological aspects, social information technologies, knowledge management, medialogy, theoretical and methodological problems of modern librarianship, upbringing and education. As a result of V. O. Ilhanaieva's powerful scientific explorations new scientific concepts, based on universal approaches to detecting proportionality and harmony in the process of development in the single system "Nature–Man–Society" have emerged. In particular, it concerns the concepts of social interaction as a system-forming element in the basic components of human life, activity and cognition, as well as media space as an integrative, ultimate state of the communication subsystem of society. In her works, V. O. Ilhanaieva consistently develops the integrative methodological principles of librarianship, the theory of social communications and social interaction. On her initiative in 2007 a new scientific field called "social communications" was launched, the nomenclature of its scientific specialties, formulas, passports, and directions of scientific research were developed, and PhD exam programs were created. The new scientific direction and the developed teaching
and methodical materials were approved by the Higher Attestation Commission and the Ministry of Education and Culture of Ukraine (Davydova, 2019). In the context of the current anniversary date of the scientist, all the above-mentioned provide reasons to turn to the analysis of her scientific output, based on the use of the possibilities of biobibliometrics.

**Literature review**

Bio-bibliometric research helps to analyze the profiles of individual scientists over many years, which makes it possible to use the cycle of generation and development of knowledge at different stages. (Dutta, 2019; Osorio & Slutsky, 2012).

The results of the analysis of V. O. Ilhanaieva’s scientific achievements are presented primarily in a number of reference and encyclopedic publications (Davydova, 2019; Kanistratenko, 2011; Wikipedia, 2023), where it is also possible to find basic biographical data of the scientist. It should be especially noted that Valentyna Oleksandriivna Ilhanaieva’s publications were also studied within the bibliometric analysis of developing Ukrainian librarianship (Kobieliiev, 2001a). In particular, the monograph *Library Education: A New Paradigm of Development* (Ilhanaieva, 1996) was of particular interest because its study (together with other domestic monographs) made it possible to determine the outline of the cognitive structures of Ukrainian librarianship in 1980–1990 (Kobieliiev, 2000). In domestic science, there are also examples of using bibliometrics and biobibliometrics to analyze the scientific work of famous scientists (Voitsekhivska, 1999; Kobieliiev, 2010).

Taking the above-mentioned into account, we believe that the objective of the article is the study of Valentyna Oleksandriivna Ilhanaieva’s scientific activity through the prism of bio-bibliometric research itself.

**Methods**

Scientists’ activity and their social relationships can be revealed using bio-bibliometric analysis of functional relationships between elements of biographical information and bibliographic data. This work presents the results of a partial bio-bibliometric analysis of V. O. Ilhanaieva’s scientific activity. The research based on publications of 1975–2023 includes the following information: a list of biographical information about Prof. V. O. Ilhanaieva in chronological order, a bibliography of publications and a bibliography of materials about her life and activities. The volume of the article did not allow the authors to conduct a detailed bibliometric analysis of publications by Professor V. O. Ilhanaieva, but a species analysis of publication composition was carried out and the main stages of scientific and practical activity during 1975–2023 were allocated. At the same time, achieving the specified objective of considering Professor V. O. Ilhanaieva’s scientific activity through the prism of bio-bibliometric research requires a preliminary brief consideration of the essence of biobibliometrics, the possibilities of its application in the research of the scientific creativity of outstanding scientists. That is why the authors selected two subsections in the «Results» section such as «The essence of biobibliometrics» and «The results of partial bio-bibliometric analysis of V. O. Ilhanaieva's scientific activity». 
Results and Discussion

The essence of biobibliometrics

The analysis of the existing interpretations of the concept of bibliometrics proved that one of its most successful definitions belongs to R. Broadus who considers bibliometrics as «a method of quantitative research of printed documents that exist in the form of material objects or bibliographic units, as well as substitutes for both» (Broadus, 1987, p. 377). This definition covers any quantitative means that can be applied such as the number of different items including volumes in a library collection or publication titles (bibliographic units); publications in journals; chapters in monographs published, for example, by one author; articles published in a certain subject area during a certain period.

Various forms of publication analysis and, especially, citation analysis are the most important components of bibliometrics. The reliability of these methods is determined by the tradition of science as a social institution. The notification of a scientist about the results of his work in the form of a publication, as well as the phenomenon of citation, is undoubtedly not only an important ethical norm in science but also a general scientific regulator and a means of scientific communication that has been emphasized by researchers repeatedly. Moreover, according to T. Kuhn (Kuhn, 1970, p. 12), changes in the citation of special literature in scientific publications can be considered a possible indicator of scientific revolutions, because each of them changes the historical perspective of the scientific community, which should affect the structure textbooks and research papers after this scientific revolution. The importance of bibliometrics as a research toolkit is determined by the fact that publications and bibliographic references to them are at the intersection of two systems – cognitive (conceptual) and the system of scientific recognition. Moreover, in each individual act of citation, the influence of the above-mentioned systems is always present. The first (cognitive) creates the necessary conditions for citation. The publication as a whole should have scientific meaning: the ideas presented should be relevant to the needs of a certain audience, logically connected and convincing (Kuhn, 1970). The text of a scientific publication is an author’s attempt to place ideas in some context that may affect readers in different ways. Bibliographic references are the first and most important fragment of the text of a scientific publication, which carries a certain "energy" of influence on the reader. Both systems – conceptual and scientific recognition – need bibliographic references to implement two tasks:

- transmitting the exact content of the cited publication, the exact set of concepts revealed by accurate citation;
- providing an accurate list of cited documents.

It is bibliometrics that allows to get the results which can be the basis for further, more detailed, study by the methods of traditional substantive analysis of science, within the limits of various modern scientific concepts and models aimed at researching the subject of scientific activity, which creates scientific knowledge, socio-cultural factors, etc. For example, J. Holton in *Thematic Analysis of Science* (Holton, 1974, 1975) notes that the way to reveal the process of the emergence of new knowledge is to consider each event in the history of science as the intersection of three "trajectories":

- the individuality of the scientist;
- the state of science, general scientific knowledge in the researched period;
- features of social factors, taking into account the general cultural context of the era.

J. Holton uses the principles of traditional meaningful study. But to study the above-mentioned "trajectories" (or factors), it is possible to effectively apply various methods of quantitative analysis of the development of science, which determine the intensity of scientific
communications, in particular the growth of the number of scientific publications, as well as the dynamics of various social factors (the number of scientific personnel, the amount of funding, etc.).

Thus, bibliometric indicators, primarily the number of publications and the level of citations, are the basis for studying the individuality of a scientist (the first factor), characterizing his scientific status, determining his level, authority, etc.

Therefore, the development of biobibliometrics as a special tool for such studies in recent years is indicative. According to S. Sen and Sh. K. Gan (1990), biobibliometrics is based on the fact that the state of science and technology in a certain organization or subject area can be better understood through the sociohistoriography of science by studying the lives and activities of the most prominent researchers. Scientists’ activities and their social relationships can be revealed using bio-bibliometric analysis of functional relationships between elements of biographical information and bibliographic data. Biographical information should include data on the social origin and family, educational speciality, professional level, academic degrees and awards, promotion, leisure activities, etc. Bibliographic information includes data on the nature and number of publications, co-authored works, information on various editions with a scientist's publications (periodical, etc.), analysis of citations and references, new ideas, etc. S. Sen and Sh. K. Gan (1990, p.15) emphasize that the need for the emergence of biobibliometrics is caused by the fact that within scientometrics and bibliometrics, models or concepts where a central place in the research belongs to an individual scientist have not been developed yet. Models, means and tools of scientometrics and bibliometrics consider a group of individuals and their joint activity, in units of measurable output, as a statistical population.

The basis for bio-bibliometric analysis is the currently formed system of bibliographic information. Together with the disciplinary departments of the general registration bibliography, abstract information, critical review and historiographical activities, and pre-book bibliography the system not only reflects the development processes and the current state of scientific knowledge but is also the most important mechanism of scientific reflection, self-awareness of science, (primarily: sectoral and problem-thematic indexes, abstract publications and historiographic studies).

Thus, biobibliometrics was created on the basis of the well-known concept of «biobibliography» in the social sciences (it is considered, as a rule, as a comprehensive, annotated list of publications of a specific scientist with a list of his biography and other published materials on any aspect of his life and work), using some approaches of scientometrics and bibliometrics for designing sufficiently representative databases of individual specialists with the purpose of producing scientific and technical indicators based on them. Because the biobibliography as an attempt to create the most complete portrait of the personality and give information about the personality across the entire spectrum of life, remains a simple list of documents with all the possibility of completeness.

According to S. Sen and Sh. K. Gan (1990), a set of biobibliographies of scientists engaged in a certain field can be used for comparative analytical and quantitative studies of these specialists, as a result of which important regularities can be retained. Therefore, biobibliometrics is growing as the application of bio-bibliometric concepts and methods to the analysis of bibliographic data, with biobibliometrics being seen as more than just bio-bibliographic data or bio-bibliographic selection. Information about the citation of each publication is added to the bio-bibliographic characteristics of a particular scientist, which facilitates the conduct of full bio-bibliometric studies. Therefore, the bio-bibliometric analysis of the scientist's activity provides an opportunity to assess the interested activity, scientific productivity, dispersion of publications, citations, the
THE CONTRIBUTION OF THEORY AND RESEARCH TO THE TRANSFORMATION OF LIBRARIES

versatility of interests, various types of social and intellectual influence of the scientist, the role of individuals in the created organizational structures, etc. According to S. Sen and Sh. K. Gan (1990), a complete bio-bibliometric analysis should include the following components:

1) a list of all scientist’s biographical data in a chronological order;
2) a complete bibliography of a scientist’s publications;
3) a complete bibliography of materials about a scientist’s life and activities;
4) a complete list of materials cited or used by a scientist in his works;
5) a complete list of references to a scientist’s works given by other authors.

A comprehensive bio-bibliometric analysis should be based on all five given points, and a partial analysis can be based on the data of only points one and two or include one or more such points. If it is necessary to study in aggregate, the activities of sufficiently representative scientists from a certain geographical area for a known period or persons working in a specific organization (for example, in a scientific and research institution), a volume bio-bibliometric analysis is possible, as noted, based on partial information. With the help of such incomplete data sets, it is possible to conduct comparative studies of the activities of scientists in certain aspects.

Results of a partial bio-bibliometric analysis of V. O. Ilhanaieva's scientific activity

The research based on the data given in scientific publications (Davydova, 2019; Kanistratenko, 2011; Wikipedia, 2023; Slobodianyk & Politova, 2010; Ilhanaieva, Google Scholar, 2023) covers a list of biographical data of Prof. V. O. Ilhanaieva in chronological order, a bibliography of publications and a bibliography of materials about her life and activities. First, the total number of publications (168) of V. O. Ilhanaieva for 1975–2023 was revealed, the dynamics of which during this period are presented in Fig. 1.

![Fig. 1. Total Number of V. O. Ilhanaieva's Publications (1978–2023)](https://example.com/fig1.png)

The result of the first analysis of the data presented in Fig. 1 shows the main peaks of Prof. V. O. Ilhanaieva's publishing activity. In particular, the largest number of her publications (15) was in 2008, and 9 papers were published in 2003 and 2004. It is certain that it is very important for characteristics of any scientist’s scientific activity not only the number of publications but also their quality. Wherein the quality reflects different types of published works (monographs, scientific articles, educational publications, abstracts of conferences, etc.) and the citation index of scientific publications. Taking into account the scope of this article, a bibliometric analysis of
references in Prof. V. O. Ilhanaieva’s publications was not carried out. But the results of the study of references in her monograph (Ilhanaieva, 1996) within the scope of relevant research (Kobieliiev, 2000; Kobieliiev, 2001b) show that Ilhanaieva’s monograph is included in the cognitive core of domestic librarianship, which in turn determines its high citation rate, that is confirmed by her Google Scholar profile (Fig. 2.).

Despite the fact that the monography was published as early as 1996, it is second only to the reference dictionary of Social Communications (Ilhanaieva, 2009) in terms of the number of citations, which is a priori designed for a much larger audience of readers.

According to the results of the species analysis of V. O. Ilhanaieva's publications shown in Fig. 3, there are 56 articles, 56 theses and 55 other publications among her 67 works. Among her other publications, collective monographs by V. O. Ilhanaieva and T. O. Kolesnykova (2010, 2016) are worth mentioning – *University Library at a New Stage of Developing Social Communications, University Library: A New Sphere of Information Interaction*, etc. They are devoted to an analysis of theoretical and applied problems of transformational processes both in the field of social communications in general, and library and information studies in particular. They also reflect the system-wide aspects of library activity in the conditions of forming the social communications system and the branch conditions of university library activity, organizational-functional, technological, and managerial aspects, as well as approaches, methods and experience in solving various problems that arise in the process of bringing libraries closer to the requirements of modern education space of the information society. For a complete understanding of the evolution of V. O. Ilhanaieva’s scientific activity Fig.3 and Fig.4 show the species composition and thematic division of her publications in the main stages of scientific and practical activity (1975–2023) accordingly, combined with biographical facts of her life and activities.
It is possible to determine the following stages of Prof. V. O. Ilhanaieva’s scientific and practical activity:

1) 1975–1981. This stage includes the time of acquiring practical work experience by V. O. Ilhanaieva after graduating with honours from the Leningrad State Institute of Culture. In particular, she held the positions of an information engineer, and later – a head of the scientific and technical information department of the Research Institute of Automation of Production and Management. This period ends with defending her candidate's thesis on the topic «Determining service situations for improving bibliographic activities of scientific and technical libraries» and receiving a scientific degree as a candidate of pedagogical sciences. During this period, she had only five publications devoted to the problems of libraries in the socio-cultural dynamics of society and library education. But it is explained with a common editorial and publishing practice in the field of science there, characterized by a small number of publications, and a significant time in their preparation and printing, which led to an increase in the queue for the right of publishing even among well-known scientists, not to mention young scientists like V. O. Ilhanaieva at that time. As an example, at that time there was actually a single scientific and professional library publication for the whole of Ukraine – the interdepartmental scientific and methodological collection «Library Science and Bibliography».
2) 1982–1995. This stage is primarily determined by V. O. Ilhanaieva’s work at the Kharkiv Institute of Culture in 1981 and since 1987 her leadership of the oldest «library» department in Ukraine – library science. At this time, she was involved in the active preparation of her research doctoral dissertation and monograph for publishing. During the period the results of her activity are reflected in her 31 works including 11 articles, 10 scientific-practical and educational-methodological recommendations, which were primarily devoted to the problems of libraries in the sociocultural dynamics of society, 27 publications on library education and 4 on social and communication problems. The researcher managed to do all this, despite a two-year break in her scientific work due to maternity leave.

3) 1996–2001. This period is characterized by defending a doctoral dissertation on Library Education in the Context of the Evolution of the Social Communication System by V. O. Ilhanaieva in 1996 and her obtaining the scientific degree of Doctor of Historical Sciences. In 1997, she headed the Department of Informatics, which was later transformed into one of Ukraine's first Departments of Social Informatics in 2000. During this period, her scientific activity was also marked by training of scientific personnel. In particular, she trained 20 candidates and 4 doctors of sciences and created her own scientific school. In the bibliometric dimension, there were about 15 publications, 6 of which were articles during the period. The topic of publications is expanding significantly, and the researcher's interest is increasingly shifting from purely librarian issues (5) to the study of social communication issues (2), cultural aspects of the development of the media sphere of society (3), the media system as a whole (1) and other problems (4);

4) 2002–2006. This stage of V. O. Ilhanaieva's scientific activity is primarily determined by an increase in her scientific, organizational and managerial workload. In particular, in 2002, she became the dean of the Faculty of Library Science and Informatics and a member of the expert council on the history of the Higher Attestation Commission in Ukraine. V. O. Ilhanaieva began to be actively invited to the editorial boards of the magazines «Library Planet», «Herald of HDAK», «Library Science. Documentary science. Informatology», «Bulletin of the Book Chamber», «Philosophy of Communication: philosophy, psychology, social communication», «Social communications: theory and practice». At the same time, she was an author of many original educational programs in the following disciplines: «Social Communications», «Information Management and Marketing», «Social Informatics», «Information Resource Management», «Intelligent Information Systems», «Information Analytics», and «Technological Management in the Library». In total, during these 5 years, 32 works were published, including 12 articles and 9 educational and methodological publications, some of which are mentioned above. The topic of publications continues to expand, that is shown in Fig. 3. In particular, Prof. Ilhanaieva begins to deal with the problems of the philosophy of science (2 publications), the number of works on social communications (5), cultural aspects of the development of the media sphere of society (4), library education (5) increased compared to previous periods. The problems of libraries in the socio-cultural dynamics of society were also in the sphere of her research. (12). In general, this stage can be considered one of the most successful in V. O. Ilhanaieva's scientific activity;

5) 2007–2010 is primarily characterized by the fact that on the initiative of V. O. Ilhanaieva, a new scientific field «social communications» was launched in 2007, the nomenclature of its scientific specialities, formulas, passports, and directions of scientific studies were developed, as well as candidate exam programs were created. The Higher Attestation Commission of Ukraine and the Ministry of Education and Science of Ukraine approved the new scientific direction and the developed set of teaching and methodical materials. During 2008–2010 V. O. Ilhanaieva was a member of the Expert Council on Social Communications of the Higher Attestation Commission of Ukraine. She was also actively involved in her publishing activities. In
4 years, 29 works were published, including a monograph *University Library on a new stage of social communications development* (2010), and a dictionary reference on social communications (Ilhanaieva, 2009) became a leader in the number of citations (according to V. O. Ilhanaieva’s profile in Google Academy). It should be noted that a significant number of works (20) were dedicated to the educational and methodological support of training specialists in the new scientific field of «social communications» (on the subject of library education and social communications as shown in Fig. 4).

6) 2011–2018. During this period, V.O. Ilhanaieva changed her residence and work. She moved to Uzhhorod where did her best for the Uzhhorod College of Culture and Art to improve the training of bachelors in the speciality 029 «Information, library and archival studies» to align with the accreditation standards. At the same time V. O. Ilhanaieva was a member of the scientific team at the KhDAK, which researched the state theme «Social communications in Ukraine in the context of world science» (2011-2016). She also became a member of the editorial board of the international electronic magazine «Media4u Magazine» (media4u.cz);

During the period, V.O. Ilhanaieva published 32 works, including 13 articles and 3 monographs. The thematic aspects of V. O. Ilhanaieva's research interests were concentrated on the problems of social communications (6), cultural aspects of the development of the media sphere of society (9), medial system (7), and philosophy of science (5);

7) During 2019–2023 V. O. Ilhanaieva as a professor of the humanities department at the Integral World Research Institute (Switzerland) has devoted her scientific research activity to purely theoretical aspects. During this time, despite pandemic restrictions and other negative events, in particular, in Ukraine, the researcher published 22 works, including 8 articles and 13 theses. According to their thematics, there was an evolution of her scientific interests in researching the media system (7), cultural aspects of the development of the media sphere of society (4), philosophy of science (3), and social communications (3).

**Conclusions**

The results of the bio-bibliometric analysis of the scientific achievements of the leader of modern Ukranian librarianship V. Ilhanaieva have demonstrated her thorough contribution to the development of librarianship, social communications, and the media system for a fruitful 45-year path of her forming as a scientist with the breadth of scientific interests. All her scientific activity was reflected in 168 publications. The use of the bio-bibliometric analysis (even in its incomplete form) made it possible to identify the main milestones in V. Ilhanaieva’s scientific activity by tracing the evolution of her scientific interests from the problems of libraries in the sociocultural dynamics of society and library education to the problems of social communications, cultural aspects of the development of the media sphere of society, the medial system, and the philosophy of science.

Thus, it can be stated, that there is a significant unused potential for using bibliometric and bio-bibliometric methods not only in domestic historical-librarian and biographical research but also in the information and analytical activities of libraries aimed at optimizing the management of library processes, which is especially important in modern conditions under the existing financial and material and technical limitations. It can be a perspective for supplementing the initial parameters of library collections’ models with data from bibliometric and scientometric studies of document flows. Besides, biobibliometrics and bibliometric research are necessary components of many information products and services at libraries. Therefore, there is an objective need to have such a research tool at one's disposal, which allows obtaining the results, which can be the basis
for further, more detailed, studies using the methods of traditional content analysis, within the limits of various modern concepts and models, etc.

REFERENCE

Broadus, R. N. (1987). Toward a definition of “bibliometrics”. *Scientometrics, 5*(6), 373-379. (in English)


Holton, G. (1975). On the Role of Themata in Scientific Thought. *Science, 188*(4186), 328-334. doi: https://doi.org/10.1126/science.188.4186.328 (in English)


THE CONTRIBUTION OF THEORY AND RESEARCH TO THE TRANSFORMATION OF LIBRARIES


KOBIELIEV O. M.
Харківська державна академія культури (Харків, Україна), e-mail: k_a_n_@ukr.net, ORCID 0000-0001-8806-0662

KARPENKO O. O.
Державний університет інформаційно-комунікаційних технологій (Київ, Україна), e-mail: karpenko@duikt.edu.ua, ORCID 0000-0002-9922-165X

KOLESNYKOVA T. O.
Наукова бібліотека, Український державний університет науки і технологій (Дніпро, Україна), e-mail: t.o.kolesnykova@ust.edu.ua, ORCID 0000-0002-4603-4375

Науковий доробок лідера сучасного українського бібліотекознавства
В. Ільганаської: біобібліометричний аналіз

Meta. Стаття має на меті висвітлити сутність та можливості біобібліометрії у визначенні наукової продуктивності науковців, зокрема науковий доробок одного з найвидатніших дослідників бібліотекознавства В. Ільганаської. Методика. Біобібліометричний аналіз – основний метод, використаний у дослідженні для визначення сучасного стану науки і техніки у сфері соціальних комунікацій. Також були використані методи аналізу та синтезу. Результати. Представлено результати біобібліометричного аналізу наукової діяльності лідера сучасного вітчизняного бібліотекознавства В. Ільганаської шляхом характеристики її загальної наукової продуктивності та визначення особливостей досягнень на окремих етапах науково-дослідної діяльності у сфері соціальних комунікацій. Висновки. Доведено залежність розвитку науки і техніки від дослідницької діяльності вчених та їх соціальних зв’язків, а також функціональних зв’язків між елементами біографічної інформації та бібліографічними даними. При цьому визначено перспективи біобібліометрії як спеціального наукового інструменту таких досліджень.

Ключові слова: біобібліометричний аналіз; біобібліометрія; бібліографічні дані; наукова діяльність; наукова продуктивність; соціальні комунікації

Received: 29.08.2023
Accepted: 28.11.2023