TASHKENT UNIVERSITY OF
INFORMATION TECHNOLOGIES
NAMED AFTER MUHAMMAD AL-KHWARIZMI

MUHAMMAD AL-XORAZMIY NOMIDAGI
TOSHKENT AXBOROT TEXNOLOGIYALARI
UNIVERSITETI

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Elmira Nazirova, Shokhrukh Erkinov, Hajiyev Sukhrob № 3(25)2024

INSTRUMENTAL TOOLS OF THE PLATFORM FOR DETERMINING THE H-INDEX OF SCIENTIFIC JOURNALS

DSc, prof, Elmira Nazirova
Dean,*Tashkent university of information technologies named after Muhammad al-Khwarizmi* Tashkent, Uzbekistan
e.nazirova@tuit,uz

PhD, Shokhrukh Erkinov
*Researcher,Digital technologies and artificial intellect developresearch institute*Tashkent, Uzbekistan
sherkinov@tuit.uz

Sukhrob Khojiyev,
PhD student, *Tashkent university of information technologies named after Muhammad al-Khwarizmi*
Tashkent, Uzbekistan

***Abstract*—** The h-index has emerged as a pivotal metric for evaluating the scientific impact and productivity of journals, authors, and institutions. In the context of scientific journals, the h-index is instrumental in determining their influence and standing within the research community. This paper explores the critical tools and platforms available for calculating the h-index of scientific journals, emphasizing their methodology, accessibility, and accuracy. Prominent tools, including Web of Science, Scopus, and Google Scholar, are analyzed for their strengths and limitations in h-index determination. We highlight the role of citation databases, their indexing algorithms, and coverage of disciplines in influencing the h-index calculation. The study also examines open-access platforms and emerging AI-powered tools, which aim to democratize access to bibliometric analysis. Through a comparative analysis, the paper identifies key considerations for selecting the appropriate platform based on journal scope, citation frequency, and data granularity. Furthermore, challenges such as data incompleteness, citation biases, and variations in calculation methodologies are discussed. By synthesizing insights on available tools and their applications, this paper provides a comprehensive guide for researchers, editors, and policymakers to assess and leverage the h-index effectively in the realm of academic publishing.

***Keywords*—** *h-index, scientific journals, bibliometric tools, citation analysis, academic publishing, impact metrics, research evaluation, bibliometrics.*

1. INTRODUCTION

In the rapidly evolving landscape of scientific research, the evaluation of a researcher's scientific productivity and impact is of paramount importance. Bibliometric indicators provide a quantitative means to assess research performance based on citation data, helping to identify influential contributions and track academic achievements. Among the most widely used metrics are the H-index, G-index, i10-index, A-index, M-index, E-index, AR-index, and Hm-index, each offering unique insights into various aspects of scholarly productivity and influence

2. RELATED WORKS

Bibliometric indicators have become a cornerstone in assessing the scientific impact of research and publications. Over the years, a variety of these indicators have been developed to evaluate academic contributions quantitatively. Among the most well-known is the **H-index**, introduced by Hirsch [1], which balances productivity and citation impact. Despite its popularity, the H-index has limitations, as it does not account for the unequal distribution of citations [2].

To address this, alternative metrics such as the G-index [2] and R-index [3] were proposed. The G-index emphasizes highly cited papers, while the R-index considers the excess citations contributing to a researcher's impact. Other advancements, such as the AR-index, further refine the measurement by including temporal dynamics of citations [4].

Google Scholar metrics like the i10-index also provide accessible alternatives, catering to wider audiences [5]. However, critics argue these metrics often lack precision and consistency across different fields [6], [7].

The role of integrated impact indicators, such as those developed by Leydesdorff and Bornmann, is gaining traction. These indicators combine multiple bibliometric measures to provide a more holistic view of research output [8]. Furthermore, recent works emphasize the importance of aligning bibliometric indicators with peer judgment to ensure fairness in research evaluations [9].

As digital technologies expand, the focus on newer classification systems, like Waltman and van Eck's publication-level classification, is becoming essential for identifying citation patterns [10]. Comprehensive tools like these pave the way for more nuanced insights into the dissemination and influence of scientific knowledge [11].

While bibliometric methods evolve, they face ongoing scrutiny regarding their reliability and bias in representing real-world scientific contributions [12], [13]. As Andersen et al. highlight, research evaluation demands a balanced approach that considers both quantitative and qualitative measures [14].

In this study, we focus on applying these bibliometric indicators to evaluate the scientific impact of local journals and researchers. By leveraging modern algorithms and artificial intelligence, we ai*m to enhance the accuracy and reliability of bibliometric analyses, contributing to the global discourse on research evaluation.

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3. METHODS

3.1 Database of Scientific Journals and Its Structure

A Database is a collection of data organized and managed in a systematic way within a system. Among the most widely used database management systems is MySQL.

MySQL is an open-source and highly utilized database management system, primarily in web applications. It enables data management using the SQL (Structured Query Language) standard.

MySQL Database Structure

In MySQL, a database consists of several primary components:

- Table: The main element of the database. It comprises rows and columns where data is stored.
- Column: Designed to store a specific type of data, such as username, email, or password.
- Row: Represents a single record in the database.
- Primary Key: A unique identifier for each record in a table, ensuring no duplicates.
- Foreign Key: Connects a column in one table to a primary key in another, establishing relationships between tables.

4.1. RESULTS This paragraph presents 10 facts about the MySQL database. Through these facts, additional insights about MySQL can be gained: MySQL is a relational database management system primarily designed to facilitate data handling via a server. It operates on numerous platforms, including UNIX and UNIX-like operating systems, Windows, and macOS. Compared to other database systems, MySQL stands out for its simplicity, speed, and processing efficiency.

The **IDEF1X model** is a technical modeling approach used to describe the structure of a database, showcasing data elements and their relationships. The IDEF1X model is utilized to represent the structure of a database, including tables, attributes, and their interconnections within relational databases.

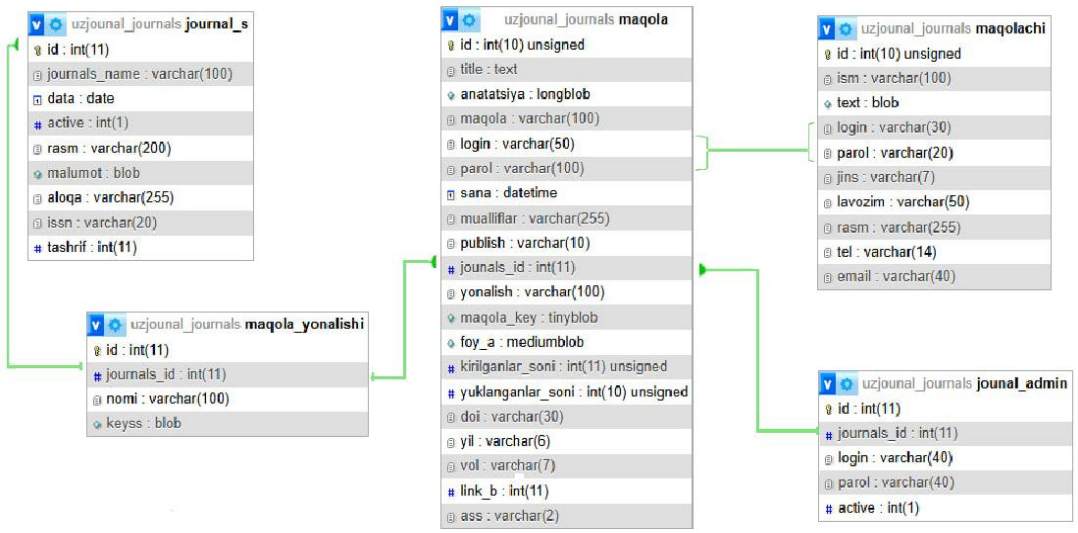


Fig.1. The IDEF1X model for the registration and article submission process on the Uzjurnal platform

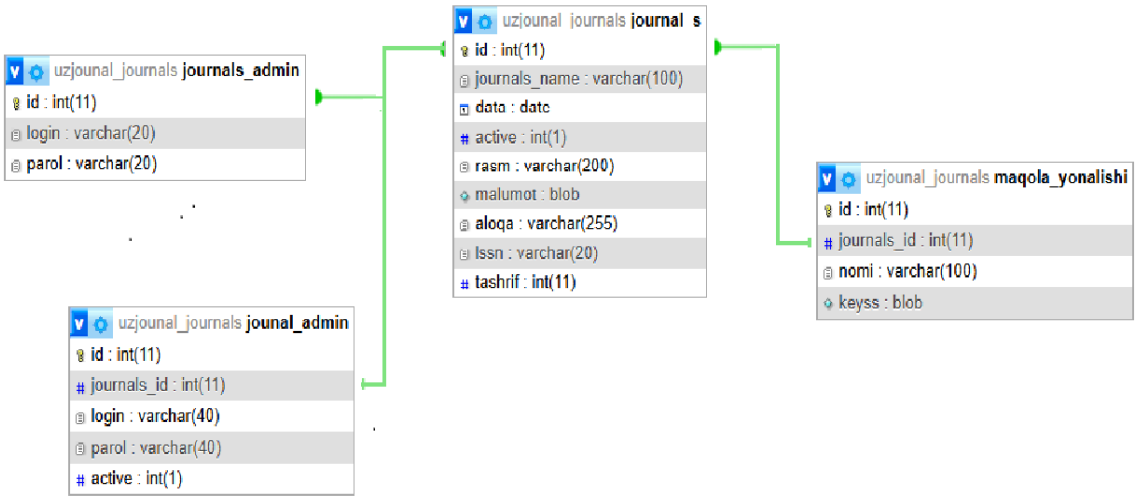


Fig.2. The IDEF1X model for the tasks of the Main Administrator on the Uzjurnal platform

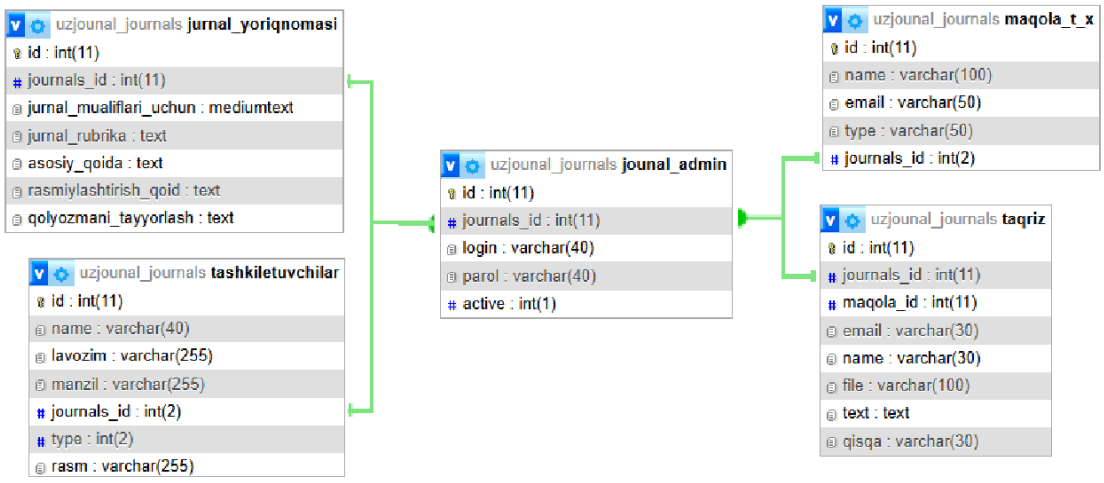


Fig.3. IDEF1X model of journal admin tasks from the Uzjurnal platform

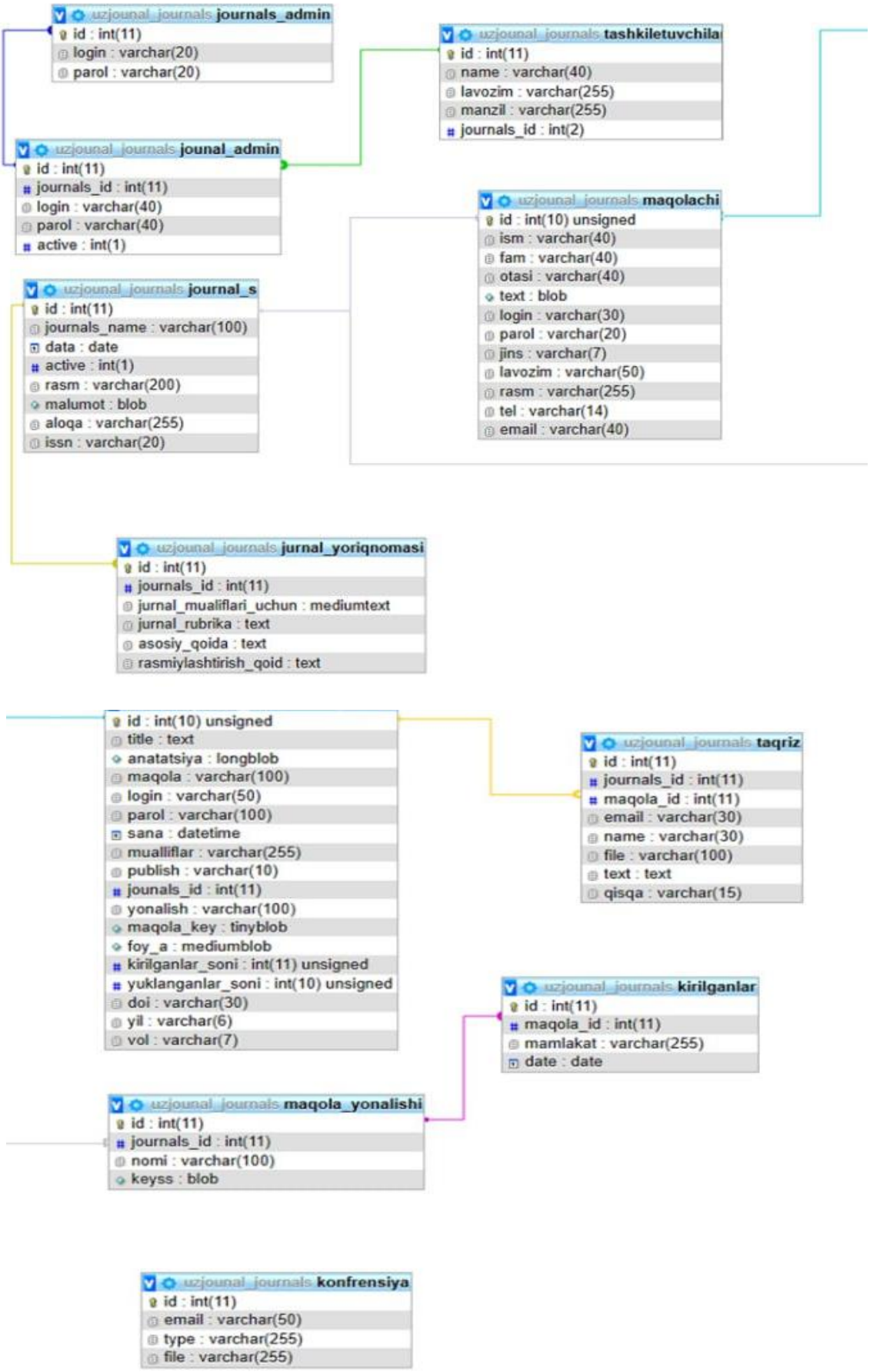


Fig.4.1. IDEF1X model of the process of receiving and publishing scientific articles

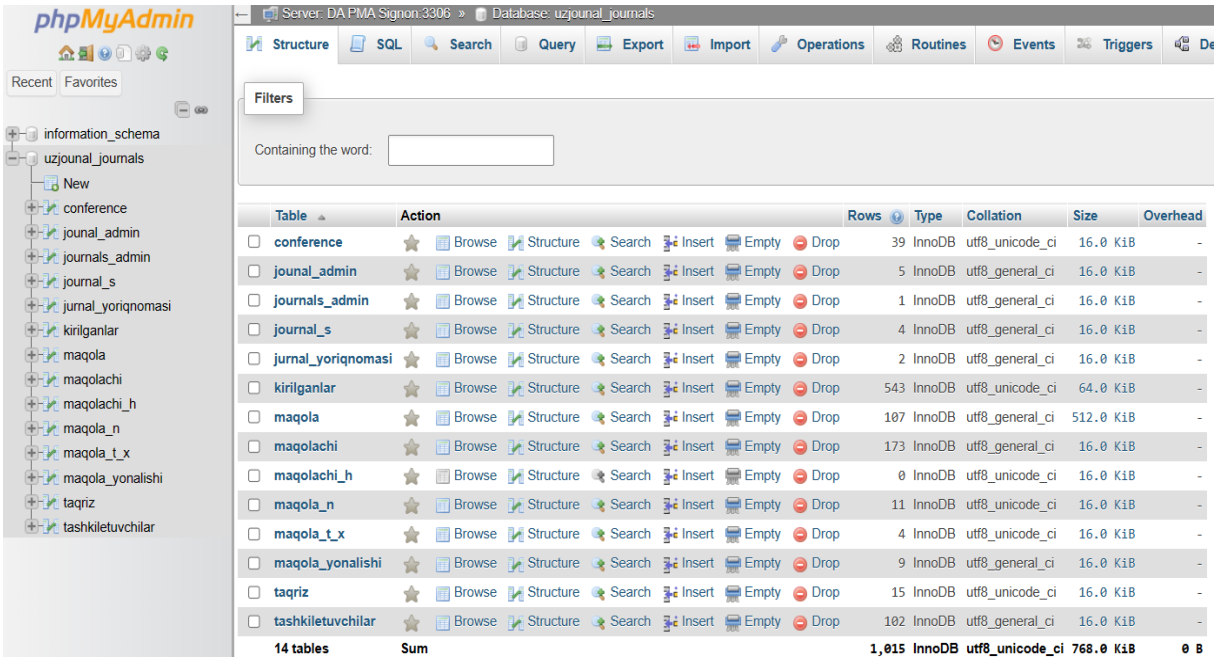


Fig.5. Using the phpMyAdmin panel

MySQL can work with many operating systems. These include: AIX, BSDi, FreeBSD, HP-UX, Linux, Mac OS X, NetBSD, OpenBSD, OS/2 Warp, SGI IRIX, Solaris, SunOS, UnixWare, Windows 95, Windows 98, Windows NT, Windows 2000, Windows XP, Windows Server 2000, Windows Vista, and Windows 7.

MySQL originally belonged to the Swedish company MySQLAB, and later, the SUN company acquired MySQL. A few years ago, one of the giant corporations, Oracle, bought SUN, and now MySQL is a product of Oracle. This, in a sense, makes MySQL a major competitor to Microsoft SQL Server.

MySQL is part of several server packages, such as WAMP, AppServ, LAMP, and Denwer. Clients connect to the MySQL server via certain libraries. MySQL can work with the following programming languages: Delphi, C, C++, Java, Perl, PHP, Python, Ruby, and others.

CONCLUSION

In this study, we explored the application of bibliometric indicators, particularly the H-index, in evaluating the scientific impact of local journals and researchers. By integrating advanced algorithms and artificial intelligence, we aimed to improve the accuracy and reliability of bibliometric analyses. The use of modern database management systems, such as MySQL, allows for efficient storage and retrieval of citation data, providing the necessary infrastructure for our research. Additionally, the implementation of IDEF1X and IDEF0 models facilitated the visualization of the various processes involved in managing and publishing scientific articles on the Uzjurnal platform.

Our findings underscore the importance of adopting a balanced approach to research evaluation that combines both quantitative and qualitative measures. While bibliometric indicators like the H-index offer valuable insights into scholarly productivity, it is crucial to acknowledge their limitations and complement them with other methods of assessment. Future research should continue to refine these indicators, leveraging the potential of digital technologies and AI to enhance their effectiveness. By doing so, we can contribute to more equitable and accurate assessments of academic contributions, ultimately advancing the global scientific community.

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