e-ISSN : 2597-6052

MPPKI MEDIA PUBLIKASI PROMOSI KESEHATAN INDONESIA

Review Articles Open Access

The Adoption, Acceptance, and Perceived Usefulness of Health Information Systems: A Scopus-Based Bibliometric Review Using VOSviewer (2014-2024)

Alikha Rahma Aurea[1]*, Firman Pribadi[2]
[1]Master of Hospital Administration, Universitas Muhammadiyah Yogyakarta, Bantul, Indonesia
[2]Master of Management Program, Universitas Muhammadiyah Yogyakarta, Bantul, Indonesia

***Corresponding Author: E-mail:** alikharahmaaurea@gmail.com

ARTICLE INFO

Manuscript Received: 10 Mar, 2025
Revised: 05 Jun, 2025
Accepted: 12 Jun, 2025
Date of Publication: 12 Aug, 2025
Volume: 8
Issue: 8
DOI: 10.56338/mppki.v8i8.7464

KEYWORDS

Health Information System;
Adoption;
Acceptance;
Perceived Usefulness;
Bibliometric Analysis

ABSTRACT

Introduction: The integration of Health Information Systems (HIS) has transformed healthcare by incorporating systems for acquiring, processing, analyzing, and sending critical information, therefore enhancing management efficiency. This study aimed to identify users' adoption, acceptance, and perceived utility of HIS using bibliometric analysis of the Scopus database from 2014 to 2024, concentrating on the literature regarding HIS.
Methods: The present research utilized a bibliometric methodology. This study includes 418 articles from the Scopus database that met the inclusion criteria. Inclusion criteria were limited to English-language articles and review papers published between 2014 and 2024. Duplicate records and non-open-access publications were excluded. The dataset was transformed into RIS and CSV formats and analyzed using VOSviewer, applying clustering, overlay, and density visualization techniques to reveal thematic structure, collaboration patterns, and the temporal evolution of research on HIS.
Results: The United States leads in HIS publications, contributing 137 articles between 2014 and 2024. The Journal of Medical Internet Research is the most prolific journal with 16 articles, and Bates, D.W., is the leading author with 7 publications. Key factors influencing HIS adoption and acceptance include technological infrastructure, user training, and organizational support. Theories such as the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) are commonly applied to explain acceptance by users and managers. Keyword analysis revealed major themes including patient care, telemedicine, mHealth, COVID-19 impacts, acceptance, and satisfaction. Perceived benefits driving HIS utilization involve time-saving, effort reduction, cost efficiency, and overall effectiveness.
Conclusion: The effective implementation of HIS depends on elevated levels of user acceptance and perceived usefulness, which directly affect the purpose of utilizing these technologies. The utilization of HIS enhances satisfaction among healthcare providers and patients, while also reducing healthcare costs and improving clinical procedures and care quality.

Publisher: Fakultas Kesehatan Masyarakat Universitas Muhammadiyah Palu

INTRODUCTION

Healthcare sector is a dynamic sector undergoing significant changes with technological advancements and the necessity for enhanced management efficiency (1). The adoption and application of health information technology (IT) have significantly improved health care delivery, outcomes, and patient participation, enabling patient-centric care. Various regulations and initiatives, including federal legislation and quality improvement efforts focused on value-based care, have supported the growth of health IT (2).

The Health Information System (HIS) is a crucial tool in hospital management. HIS incorporates mechanisms for the capture, processing, analysis, and transmission of critical information within health services. HIS participate in a crucial role in care planning, management, and public health research, therefore facilitating effective and efficient decision-making in healthcare services (3). Efficient healthcare systems necessitate ongoing enhancement of HIS, as hospitals and other medical facilities must employ computerized information systems to handle substantial data volumes(4). The utilization of this approach enhances satisfaction among healthcare providers and patients, while also reducing healthcare costs and improving clinical procedures and care quality(5).

Previous studies indicated that the key factors in the adoption of HIS were the organizational and human dimensions (6). The acceptance or disapproval of the newest technology system by its users significantly impacts its success or failure (7). The adoption of HIS will depend upon employees' perceptions of its ease of use and the integration into existing hospital workflows. Perceived usefulness refers to the extent to which technology enhances productivity. Its acceptability will rise if users perceive the advantages of enhanced productivity and simplified tasks. Conversely, perceived simplicity of use refers to technology that is intuitive and uncomplicated to operate (5,8). Despite the numerous advantages of HIS, concerns persist regarding user acceptance, which is critical for the success of information systems. An example of a barrier to HIS implementation in the health sector is the constrained financial resources, since it necessitates substantial long-term funding, particularly for maintenance, which may not be feasible in some locations. A study explained that some healthcare employees show resistance to the adoption of HIS and express concerns regarding potential job displacement and disruptions to workflow (8). Limited research has examined the reception of HIS within the healthcare sector.

Data mining has broadened the review process in research significantly. The collected data offers valuable insights and facilitates informed predictions(9). Bibliometric analysis fulfils various functions within the research area of expertise, not only summarizing research interests and evaluating academic quality and impact using metrics consisting of publication counts and citations. This analysis aids in identifying and then generating patterns for the development of structured literature reviews that represent relevant information (10). It also assesses relationships and clustering within the field, revealing collaboration among authors, institutions, and countries. Additionally, bibliometric analysis helps the identification of research gaps, delivering important insights for future research and development within the discipline (11). Given the growth of research in HIS, other review methods often face limitations in capturing the emerging trends and complex interrelationships within the field. Therefore, bibliometric mapping offers a novel and timely methodological approach by systematically quantifying and visualizing the knowledge of HIS research. Although bibliometric analyses of HIS have been carried out, there remains a small number of publications addressing HIS adoption, acceptance, and perceived usefulness. This study aims to perform a bibliometric analysis of the current literature on health information systems, focusing on user adoption, acceptance, and perceived usefulness, by using the Scopus database.

METHOD

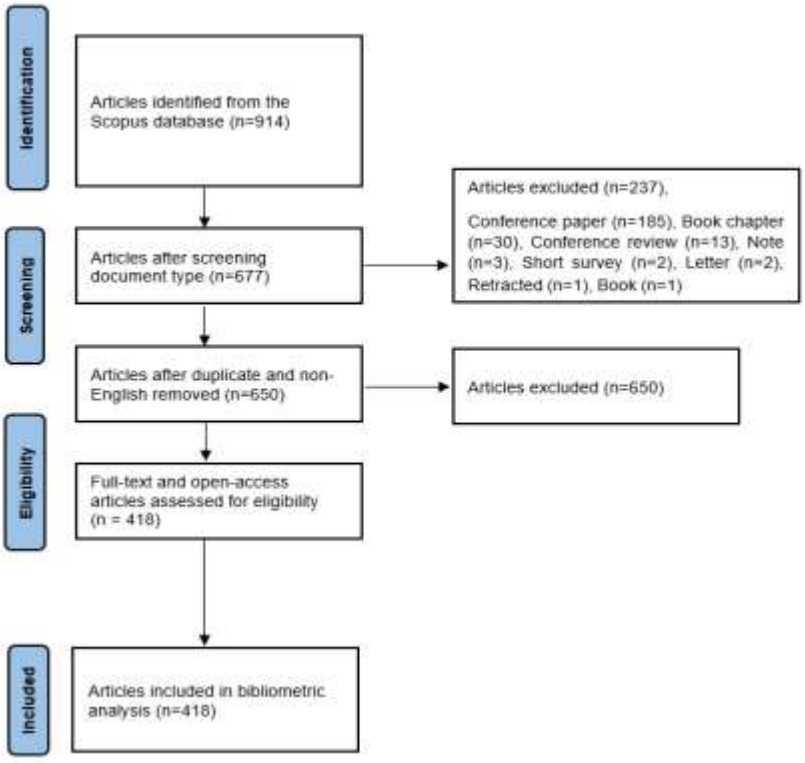
The present research utilized a bibliometric methodology that integrates quantitative techniques (12). The method begins with collecting article data pertaining to "Health Information System" OR "Hospital Information System" OR "Health Management Information System" OR "Hospital Management Information System" AND "Acceptance" OR "Adoption" OR "Perceived Usefulness" from the Scopus database, which serves as the literature source. The Scopus database was chosen for its extensive multidisciplinary coverage, superior indexing quality, and strong bibliometric analytic assistance, making it suitable for identifying comprehensive trends in Health Information Systems literature relative to other prominent academic databases (13). The following keywords were used in the formulation of the search strategy:

(TITLE-ABS-KEY ("hospital information system" OR "health information system" OR "hospital management information system" OR "health management information system") AND TITLE-ABS-KEY ("acceptance" OR "adoption" OR "perceived usefulness")) AND PUBYEAR > 2013 AND PUBYEAR < 2025 AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") AND (LIMIT-TO (LANGUAGE, "English") AND (LIMIT-TO (SRCTYPE , "j") AND (LIMIT-TO (OA , "all").

A total of 914 publications were acquired from the result of this search. The search covered publications from January 1, 2014, to December 31, 2024. After screening for relevance and suitability, a total of 418 articles were included in the analysis. The inclusion criteria comprised English-language journal articles and review papers focusing on the adoption, acceptance, and perceived usefulness of Health Information Systems. Exclusion criteria involved duplicate records and non–open–access publications, ensuring both data quality and accessibility for bibliometric processing. This study utilized publicly available bibliometric data and did not involve human participants; thus, ethical approval was not applicable.

The data was stored in RIS and CSV formats, and Vosviewer for Windows was used to examine the gathered data and visualize the most significant keywords identified in the health information system research. Vos Viewer was utilized to extract data regarding the author, title, publication, citation count, affiliations, journal source, references, and keywords. A minimum threshold of 10 keyword occurrences was applied for co-occurrence analysis. The full counting method was used to ensure comprehensive coverage of frequent terms. VOSviewer was chosen for its better capacity to visualise bibliometric networks, providing high-quality graphical representations and a user-friendly interface, which are favourable compared to other tools (14).

VOSviewer provides the visualization of overlays, networks, and densities. Network visualization highlights themes within a study, whereas overlay visualization tracks the progress of research studies. The visualization of density aids in identifying regions of comprehensive research and emerging themes or keywords (15). The interpretive framework focused on identifying core research themes, emerging trends, and collaborative structures within the HIS domain by examining keyword groupings, color gradations, and density concentrations to derive meaningful insights. The flow of the search process is shown in Figure 1.



.

Figure 1. The Process of the Data Collection

Ethical Approval

This study was exempt from ethical approval as it did not engage human beings, animals, or personal data. The employed strategy was bibliometric, utilizing solely secondary data that is publicly accessible via scientific sources.

RESULTS

When designated keywords were applied to the Scopus database, a cumulative sum of 914 publications with HIS-related content were taken from the database. This analysis contained 418 publications that met the criteria. The trends of HIS, acceptance, adoption, and the perceived usefulness publications within the Scopus database over the past decade are illustrated in Figure 2.

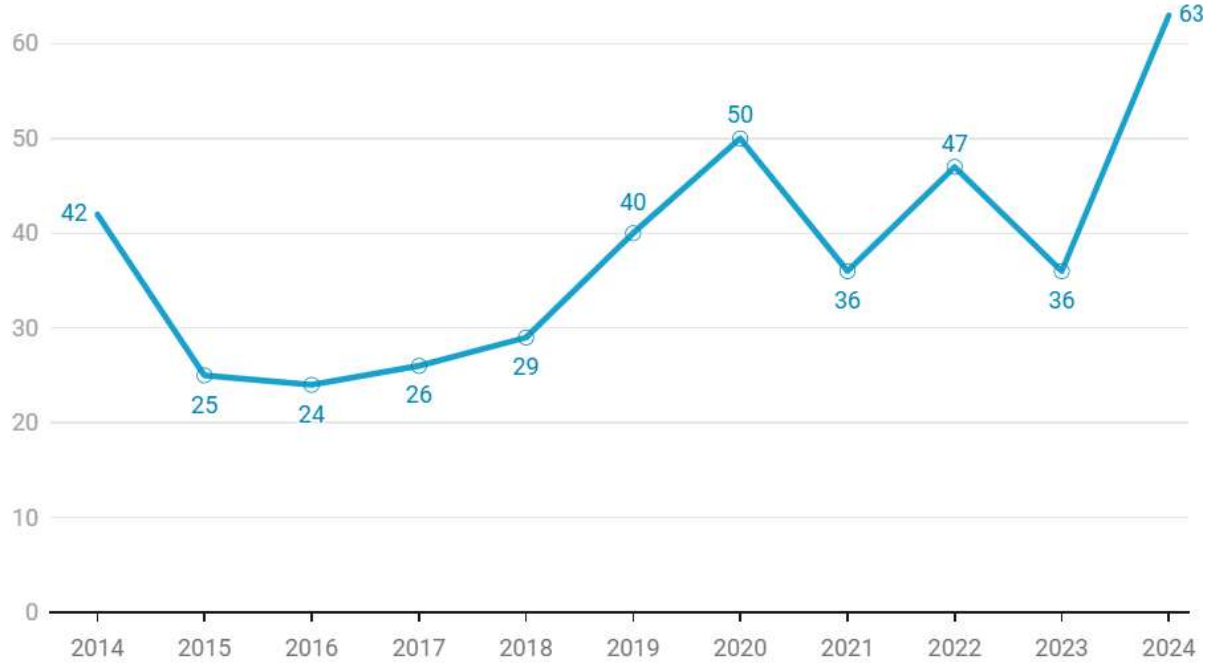


Figure 2. The Number of Total Articles per Year

In 2014, 42 articles were published; however, the subsequent two years, 2015 and 2016, experienced a decline in publication to 25 and 24 articles, respectively. The annual publication count surged drastically from 2016, yet experienced a gradual decline in 2021 and 2023. The publication attained a maximum of 63 publications annually in 2024. The year with the fewest publications was 2016, which had 24 papers published. The annual growth rate of HIS articles from 2014 to 2024 was almost 4.14%, signifying a consistent rise in research production across the decade. Multiple countries have established national e-health strategies that prioritise the digital transformation of healthcare services. Moreover, in response to global health emergencies like the COVID-19 pandemic have amplified research focus on system deployment, obstacles, and optimisation (16).

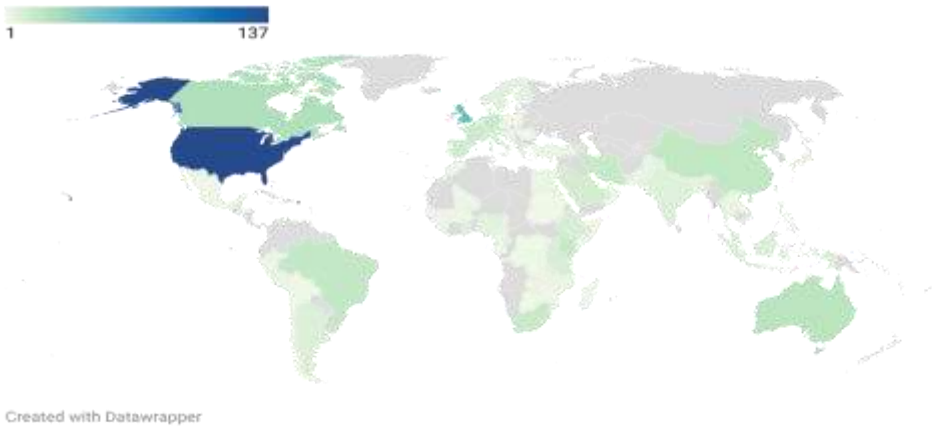


Figure 3. Geographical Distribution of Articles by Nations

The geographical distribution of articles by country illustrates the dispersion of scientific production among various nations, as displayed in Figure 3. This analysis highlights each nation's contribution to the subject and offers insights into global research trends, national participation, and comparative research performance. These are the top ten countries that contributed the most to the published article. The United States ranks first with 137 papers on HIS, focusing on acceptance and adoption, and perceived usefulness. The United Kingdom had 53 publications, Canada 26, Australia 22 publications, China 19, Brazil, South Korea, Switzerland each 18, Kenya 17, and Germany 16. The publications published by the ten countries accounted for almost 50% of the total articles utilized in this study.

To improve the clarity of global research contributions, publication numbers were normalized according to national population sizes and Gross Domestic Product (GDP), utilizing World Bank 2023 data (17). The analysis indicated that Switzerland held the greatest publication-per-capita rate, about 2.05 publications per million inhabitants, succeeded by Australia (0.83), the United Kingdom (0.78), Canada (0.66), and South Korea (0.35). This suggests that whereas nations like the United States excelled in total publication volume, smaller countries such as Switzerland had comparatively greater research productivity in Health Information Systems (HIS) when normalized for population size. When adjusted for GDP, Kenya had the highest publishing intensity at 154.55 publications per trillion USD, followed by Switzerland at 19.78, the United Kingdom at 15.92, Australia at 13.10, and Canada at 12.26. The findings indicate that both high-income and lower-middle-income nations display considerable academic engagement in HIS, with certain smaller economies showing disproportionately elevated research output in relation to their resources.

Table 1. Top 10 Journals with the Most Number of Publications

No	Journal Title	Number of Publications	Percentage (%)
1	Journal of Medical Internet Research	16	3.82
2	BMC Medical Informatics and Decision Making	15	3.58
3	Applied Clinical Informatics	12	2.87
4	BMC Health Services Research	11	2.63
5	International Journal of Medical Informatics	11	2.63
6	JMIR Medical Informatics	11	2.63
7	Plos One	10	2.39
8	JMIR Formative Research	9	2.15
9	Journal of the American Medical Informatics Association	9	2.15
10	Malaria Journal	8	1.91

All 418 articles were released across many journals. Table 1 outlines the top ten foremost journals with the highest quantity of papers about HIS, adoption, acceptance, and the perceived usefulness. From 2014 to 2024, the Journal of Medical Internet Research published the most numbers of articles, totaling 16 articles. The predominance of this journal may indicate its thematic connection with digital health and informatics, hence attracting more submissions related to HIS issues. Subsequently, BMC Medical Informatics and Decision Making published 15 articles, which reflect its established reputation and focus on health information systems and decision support research, making it a preferred outlet for HIS scholars. Furthermore, Applied Clinical Informatics with 12 articles, BMC Health Services Research with 11 articles, International Journal of Medical Informatics 11 articles, JMIR Medical Informatics with 11 articles, Plos One 10 articles, JMIR Formative Research 9 articles, Journal of the American Medical Informatics Association 9 articles, and Malaria Journal with 8 articles. The ten journals with the highest number of publications are predominantly focused on medical informatics.

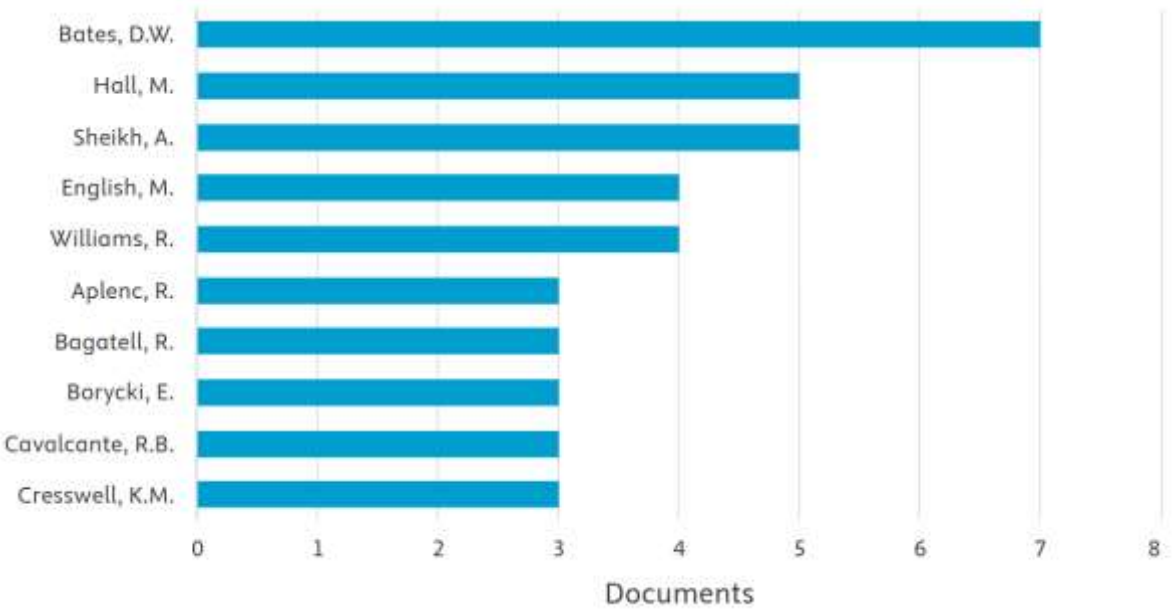


Figure 4. Top 10 Most Productive Authors

Examining author contributions yields insights into individual influence on the scientific literature, collaboration patterns, and trends in research production. Figure 4 shows ten productive authors in the area of HIS focusing on the adoption, acceptance, and perceived usefulness. The authors with the highest publication frequency are Bates, D.W, with seven articles, followed by Hall and Sheikh, each contributing five articles. David W. Bates, with more than 1,200 publications and an h-index of 147 in Scopus, a prominent author in the field of health information systems, has made significant contributions to important HIS topics like patient safety and clinical decision support. His impactful research output, which is well-represented in leading journals like the Journal of Medical Internet Research and BMC Medical Informatics and Decision Making, the most productive journals identified in this study, is supported by his affiliation with esteemed institutions such as Harvard Medical School and Brigham and Women's Hospital (18). In 2017, Bates highlighted a specific type of health information system, namely, Hospital electronic prescribing (ePrescribing) systems. These systems provide numerous patient safety advantages, however, their implementation may also introduce unintended safety risks if the system design is suboptimal, if there is inappropriate usage, or if adequate training is lacking (19).

Table 2. The Top Ten Articles with the Most Frequently Cited

No	Year	Article Title	Journal	Authors	Total Citations	Mean Citation
1	2018	A systematic review of the technology acceptance model in health informatics	Applied Clinical Informatics	Rahimi et al (20)	385	55
2	2015	Rare diseases in ICD-11: Making rare diseases visible in health information systems through appropriate coding	Orphanet Journal of Rare Diseases	Aymé et al (21)	104	10.4
3	2016	Entangled stakeholder roles and perceptions in health information systems: A longitudinal study of the U.K. NHS N3 Network	Journal of the Association for Information Systems	Pouluri et al (22)	68	7.56
4	2024	Role of perceived ease of use, usefulness, and financial strength on the adoption of health information systems: the moderating role of hospital size	Humanities and Social Sciences Communications	Luo et al (23)	49	49
5	2018	Factors affecting acceptance of hospital information systems based on extended technology acceptance model: A case study in three paraclinical departments	Applied Clinical Informatics	Nadri et al (24)	48	6.86
6	2017	Is there evidence of cost benefits of electronic medical records, standards, or interoperability in hospital information systems? overview of systematic reviews	JMIR Medical Informatics	Reis et al (25)	46	5.75
7	2021	A model for examining challenges and opportunities in use of cloud computing for health information systems	Applied System Innovation	Al-marsy et al (26)	37	9.25
8	2014	The clinical adoption meta-model: A temporal meta-model describing the clinical adoption of health information systems	BMC Medical Informatics and Decision Making	Price & Lau (27)	35	3.18
9	2016	Understanding Technology and People Issues in Hospital Information System (HIS) Adoption: Case study of a tertiary hospital in Malaysia	Journal of Infection and Public Health	Zakaria & Mohd Yusof (28)	31	3.44
10	2019	Adoption of hospital information system among nurses: A technology acceptance model approach	Acta Informatica Medica	Barzekar et al(29)	27	4.50

Table 2 lists the top 10 articles with the highest number of citations within the study period. The article "A systematic review of the technology acceptance model in health informatics", which was published in 2018, received the most citations, totaling 318. This study examines publications that involve the utilization of the Technology Acceptance Model (TAM) in HIS, including electronic health records (EHR), mobile applications, and telemedicine. According to the findings, the original TAM has been adjusted to accommodate changes in health services by incorporating planned behaviour theory, acceptance theory, and the utilization of technology (20). This article is predominantly theoretical, as it concentrates on the evaluation and advancement of theoretical models such as TAM. The substantial number of citations indicates its significant contribution to establishing the groundwork for research on HIS adoption.

Followed by an article by Aymé et al with "Rare diseases in ICD-11: Making rare diseases visible in health information systems through appropriate coding" with 104 citations. This research aims to establish a classification system for rare diseases, as they are currently underrepresented in the health information coding system. By implementing improved coding, HIS may record cases of rare diseases that were previously undetected in the system, thereby leading to more precise data (21). This article is mostly practical, focusing on enhancing coding standards and suggesting modifications. Its impact underscores the necessity for improved representation of uncommon diseases within health information systems.

The third article with the most citation count was by Pouluri. the study explores the roles and perceptions of stakeholders (Government, IT Team, health workers, System consumers, Technology vendors, and Hospitals/clinics) in the United Kingdom concerning HIS. Whereas the application of HIS demands an exceptionally complex and dynamic relationship in the form of coordination, communication, and a clear comprehension of roles to facilitate the implementation of this system (22). Luo et al surveyed 602 healthcare employees from 20 hospitals in Pakistan, and the study concludes that the adoption of HIS is positively and significantly influenced by perceived usefulness, the ease of use, also the financial strength (23). The subsequent most referenced paper is authored by Nadri et al., whose research seeks to determine the factors affecting the adoption and utilization of HIS across the department of radiology, laboratory, and nutrition, employing the extended TAM. The findings indicated that user behavioural elements are crucial for the effective utilization of the system. At the same time, cognitive instrumental processes (job relevance, output quality, demonstrated results, and perceived ease of use) are major predictors of the intention to use (24). The citation impact of leading papers is evaluated using the mean citations per yearly. The most frequently referenced article, published in 2018, garnered 385 citations over seven years, for an annual citation rate of 55.00. A recent article from 2024 attained a citation rating of 49.00 within a single year. Conversely, certain older papers exhibit diminished annual citation rates, specifically 3.18 (2014) and 3.44 (2016).

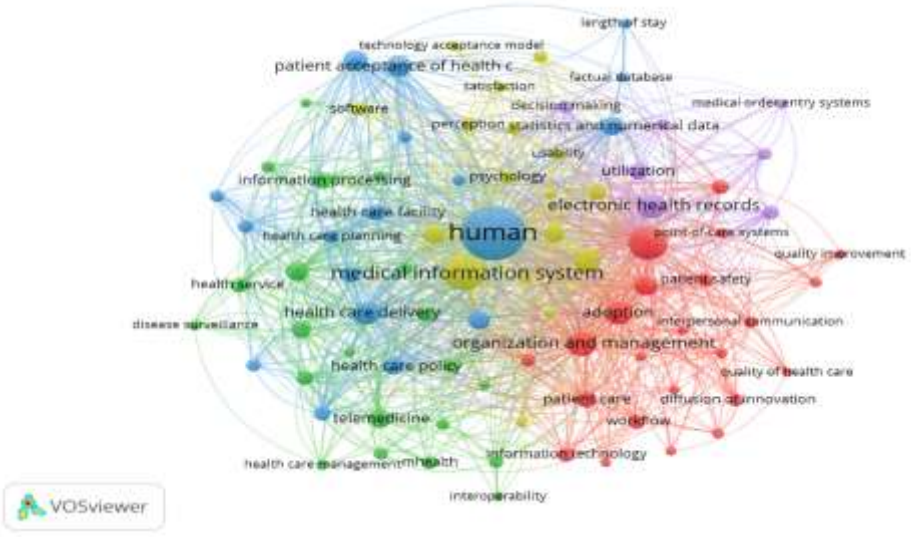


Figure 5. Visualization of the HIS topic area using Network visualization

Before visualization, the keywords were refined and standardised to ensure uniformity in the analysis. Synonyms and abbreviations such as "HIS" for "Hospital Information System" and "EMR" for "Electronic Medical Record" were integrated and represented by a singular term to guarantee that similar concepts were categorised collectively and not redundantly counted. The more descriptive form, such as “Hospital Information System,” was preserved for clarity. A minimum threshold of ten occurrences was established to incorporate only the most pertinent and reduce the impact of less significant terms.

Keyword co-occurrence analysis defines main themes and subjects within the HIS literature. Keyword co-occurrence analysis often detects co-occurring terms in the titles, abstracts, and indexes of papers from the database (30). The co-occurrence visualization of keywords is illustrated in Figure 5. The colour of the keywords indicates the integration within the bibliography and clusters, while the line lengths indicate the intensity of the connections. The visualization demonstrates five distinct groupings with distinct colours: Cluster 1, highlighted in red, with keywords “patient care”, “hospital information systems”, “adoption”, and “health care quality”. Cluster 2 (Green): Includes keywords such as “health care organization”, “public health”, “satisfaction”, “telemedicine”, “mHealth”, followed by “digital health”. Cluster 3 (Blue): Consisting of the keywords "human," "patient acceptance of health care," and "factual database." Cluster 4 (Yellow): Consisting of the keywords perception, technology acceptance model, and satisfaction, and finally, cluster 5 is highlighted in purple and includes the terms “Utilization”, "electronic health record" and "decision support system." These clusters are indicative of topics that are frequently discussed together in the literature and reflect groups of related entities based on their co-occurrence patterns.

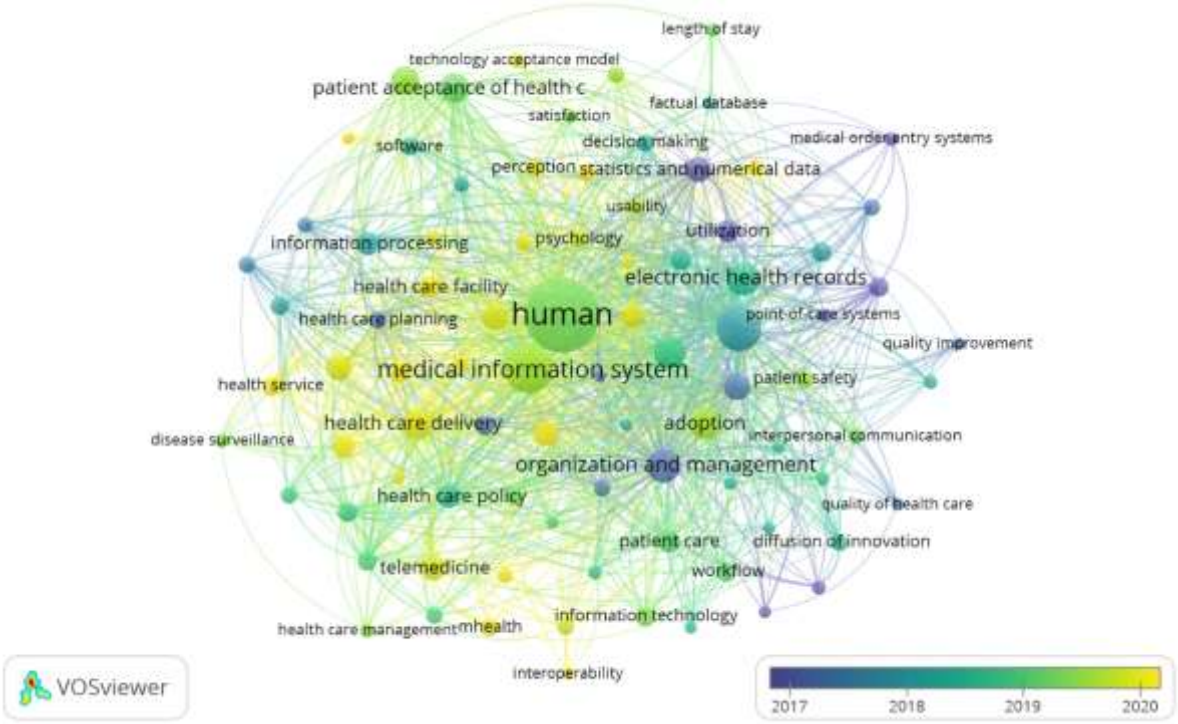


Figure 6. Visualization of the HIS topic area using overlay visualization

Overlay visualizations provide additional insights into publication attributes over time, highlighting how research trends evolve. By applying overlay visualization by year, we can observe how networks have emerged or developed during specific periods. Topics that were prevalent in previous periods are represented by purple or denser colors. Conversely, the latest subject in this research, are shown in Figure 6, is represented by yellow or brighter-shaded colors. Some big bubbles of keywords such as “human”, “medical information system”, and “adoption” have greenish or lighter color, which indicates the keywords were popular keywords in recent years which increasing after 2019 in topics of HIS literature. Recent topics among scholars are keywords such as “Covid-19”, “telemedicine”,

"mHealth", "clinical decision support system", and "interoperability". These results demonstrate that the COVID-19 pandemic, a recent public health outbreak, has significantly increased the utilization and application of health information systems worldwide, particularly telemedicine and m-Health.

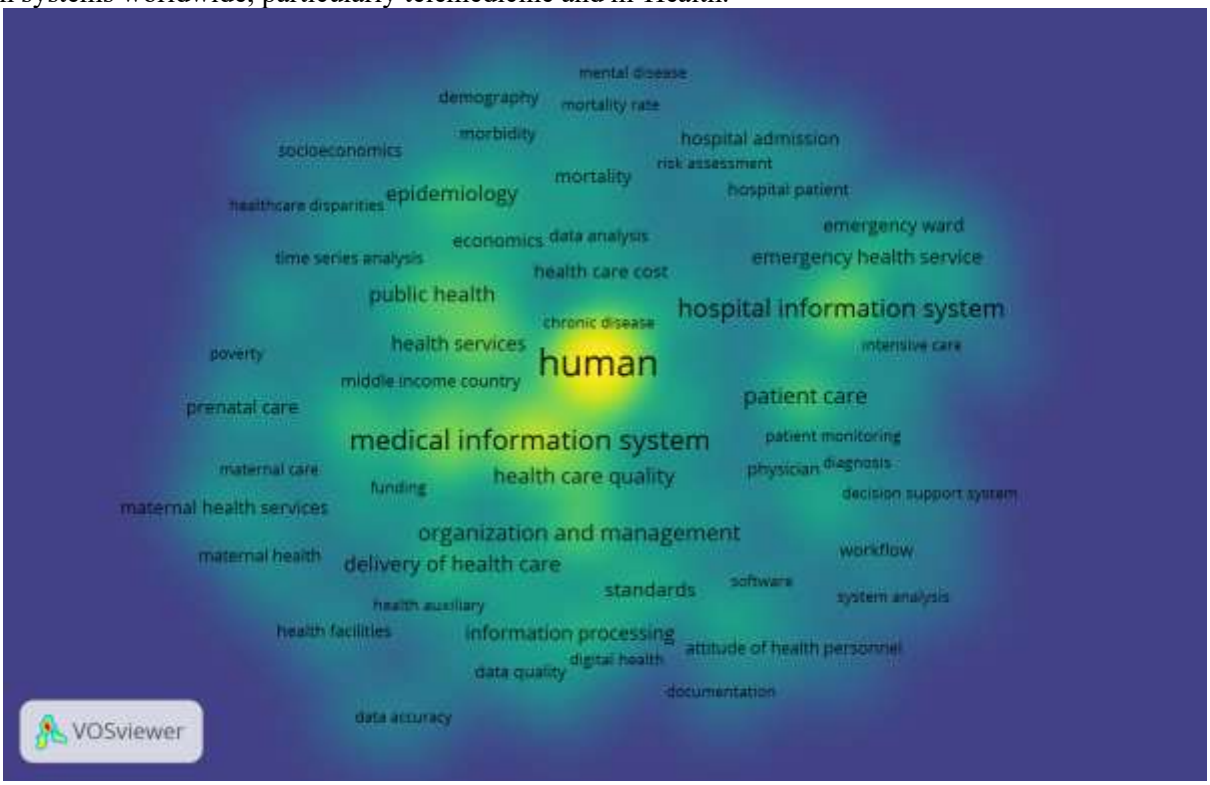


Figure 7. Visualization of the Keywords with density visualization

Figure 7 shows the density visualization from the most occurring keywords, with brighter colors indicating heavily researched areas and dimmer colors highlighting opportunities for new research. Studies on "human" (293), "medical information systems" (129), "hospital information systems" (108), and "electronic health records" (62) are well-covered. These most prevalent keywords provide insight into the subjects of studies that identify the HIS utilization in the past decade. However, topics such as patient acceptance of health care (47) and satisfaction (12) have lower research density, suggesting topics for future research.

DISCUSSION

This study analyzes the current knowledge of health information systems, focusing on the acceptance, adoption, and perceived usefulness worldwide by using a bibliometric method. 418 documents from Scopus published between 2014 and 2024 were found and included in the study. The growth rate of the publications on this topic significantly increased over the last 11 years, as shown in Figure 2. This reflects the growing consumer interest in high-quality health care support and digital transformation by using health information systems (30). Evaluating and examining HIS is essential, as the findings can provide recommendations to improve user acceptance. Research in this area typically explores the adoption of HIS, the impact, factors influencing acceptance, barriers, and the perceived usefulness that may affect the intention to use this technology.

Geographically, as illustrated in Figure 3, the United States dominates with 137 publications in HIS-related research. Since 2009, there has been a tenfold rise in the utilization of HIS in healthcare providers such as hospitals and a fivefold increase among healthcare workers in the United States. As of 2023, 70% of hospitals achieved interoperability by incorporating into EHR. More than 90% of pharmacies and prescribers will possess electronic prescribing capabilities, reflecting an 85% growth since 2008 (2). The implementation of electronic public health reporting by hospitals and physicians has revolutionized public health surveillance and response, primarily influenced

by legislative measures such as the Health Information Technology for Economic and Clinical Health (HITECH) Act and supported by the Centers for Medicare and Medicaid Services (CMS) Promoting Interoperability (PI) Programs. Federal mandates, together with the Health IT Certification Program that standardizes procedures across various health IT systems, have markedly expedited electronic reporting (2,31).

The growing adoption of Health Information Systems is undoubtedly set to enhance healthcare services. A study that took place in a US hospital shows that the implemented HIS not only mitigates confusion and disruption in the outpatient surgical units but also diminishes delays in patient service flow, in addition to costs, resulting in increased profit margins for the hospital (32). Meanwhile, research performed in Pakistan revealed distinct outcomes. The study's findings indicated that Pakistan's health information system is substandard. The HIS is implemented in the city offices, but is entirely lacking at tertiary, secondary, and primary healthcare levels. Employees are also discontented with the services given. The limited utilization of health IT systems in medical institutions may primarily result from insufficient human resources and constrained budget allocations for health in Pakistan (33).

The acceptance of users and management about the utilization of HIS is essential, as it can determine the success of any new technology, such as HIS, in a development and deployment project inside the healthcare sector. Many theories have been developed to measure the level of user acceptance of a technology-based system. Two well-known and frequently used theories are the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). The TAM theory aims to determine what factors influence the acceptance of a new system, including assessing the perceived usefulness and perceived ease of use of the system (20,24). Another study in Iran examined the implementation of HIS utilizing TAM theory. This study revealed that cognitive factors exert a more significant influence than social factors in the implementation of HIS as perceived by its users. Conversely, human and behavioral factors may lead to system failure if the system is not utilized correctly. Moreover, considering social and psychological variables in government hospitals can influence the utilization of systems within the hospital department (24).

The UTAUT framework emphasizes several key factors, including performance expectations, effort, social influences, and supporting elements. The interplay of these factors, alongside gender, age, and professional experience, significantly influences technology usage behavior (34). A previous study in Ghana found that the primary determinants of nurses' behavioural intention to utilize HIS were social influence, attitude towards the use of technology, and facilitating conditions. The fundamental concepts of social influence were imagery and subjective norms. Individuals' actions or behaviours in their immediate surroundings are fundamentally determined by the above-mentioned factors, which significantly impact their decisions and actions. Consequently, attitude towards the use of technology assesses users' perceptions of the system's quality and its impact on the engagement of their job. Facilitating conditions for HIS necessitate the provision of appropriate technological resources and comprehensive training, otherwise, adoption may decline. Research conducted at a teaching hospital in India indicated a favourable acceptance level among nurses, despite encountering challenges such as slow networks. Overall, they effectively utilized the HIS, which facilitated their work, demonstrating ease of use and flexibility, ultimately enhancing their productivity (35).

The TAM and the UTAUT framework have considerable limitations in healthcare contexts. Both frameworks frequently overlook significant elements, including cultural diversity, attitudes, and domain-specific obstacles, such as clinical decision-making processes and regulatory limitations. The TAM framework overlooks some critical external aspects essential to the industry, including social impacts and organizational support. Conversely, UTAUT fails to address the particular intricacies of the healthcare sector, including clinical decision-making processes and regulatory mandates (36,37).

Perceived usefulness and ease of use also significantly positively influence end-users' acceptance and utilization of the technology. A study by Addo & Agyepong demonstrates that the positive emotions of users and their perspective on the system’s utility exerts nearly identical effects on their attitudes about the system, which subsequently significantly influences their acceptance behaviour (38). The critical indicators for the perceived usefulness of technology are its influence on task performance duration, minimization of effort, cost efficiency, also the overall utility. If the personnel of a healthcare institution see that the information system will decrease task duration, minimize effort, lower costs, and be generally beneficial, their disposition towards adoption will be

favorable (8). This supports a prior study utilizing the Technology Acceptance Model, which posited that when end-users perceive the installed system as user-friendly, they anticipate it will enhance their everyday routines(39).

Many of the keywords revealed in this study are directly linked to elements from the TAM and the UTAUT framework. Keywords like "Medical Information System" and "Decision Support System" exemplify the constructs of perceived usefulness and perceived ease of use in the TAM, suggesting that a significant portion of the literature emphasises how digital health systems enhance task efficiency and integrate into routine hospital clinical workflows. Furthermore, the "Workflow", "Standard", "Software", and "Organization and Management" are related to the effort expectancy and facilitating conditions in the UTAUT framework, highlighting the role of system usability and institutional support in technology acceptance. Meanwhile, the keyword "Attitude of Health Personnel" shows the influence of social norms aligning with the social influence component from UTAUT. Themes indicate that digital health research is significantly shaped by human, organisational, and technological factors as delineated in recognised technology acceptance models.

Visualization tools such as VOSviewer reveal trends in Health Information System research over time. Early in the decade, the focus was on the utilization, organization, and management of HIS. Over time, the trend shifted to HIS acceptance, the inclusion of features like electronic health record (EHR), disease surveillance, and the rise of telehealth and telemedicine. Recent years have seen continued interest in system interoperability. Underexplored topics, such as Artificial Intelligence (AI), user satisfaction with the system, and data security present opportunities for future HIS research. Addressing these aspects will be essential for enhancing system adoption, performance, and trust within healthcare settings.

This review exhibits multiple limitations, such as selection bias, as it includes solely English publications sourced from the Scopus database and perhaps omit pertinent studies from other databases or in different languages. The literature search is restricted to the year 2024, potentially diminishing the citation counts for certain papers, particularly those published recently. Moreover, reliance solely on the Scopus database may lead to discrepancies in citation counts when compared to alternative databases. Future research should employ a multi-database and multilingual methodology to facilitate a more thorough and equitable study.

CONCLUSION

The effective implementation of HIS depends on elevated levels of user acceptance and adoption, perceived usefulness, also ease of use, which directly affect the intention to utilize these technologies. The utilization of HIS enhances satisfaction among healthcare providers and patients, while also reducing healthcare costs and improving clinical procedures and care quality. The enhancement of HIS has resulted in increased research and publications in this domain. This bibliometric synthesis, derived from a decade of Scopus-indexed literature, delineates significant advancements in the adoption, acceptance, and perceived use of Health Information Systems HIS through VOSviewer analysis. By identifying dominant research trends and emerging topics, our findings provide strategic guidance for future investigation. Policymakers ought to promote user-centered design, training programmes, and implementation strategies that align with the genuine requirements of healthcare workers. Future research should the impact of organizational support on sustained adoption, and the effective integration of emerging technologies like Artificial Intelligence (AI) into health systems to improve user experience and system performance and the data security to ensure system trustworthiness. This study highlights the strategic importance of bibliometric evidence in influencing health informatics research and guiding long-term planning.

AUTHOR'S CONTRIBUTION STATEMENT

Author 1 was primarily responsible for the conception and design of the study, data collection, data analysis, and the drafting of the manuscript. Author 2 supervised the research process, provided critical revisions and feedback throughout the development of the manuscript, and ensured the overall academic integrity of the work.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this article.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors acknowledge the use of Grammarly, an AI-assisted writing and grammar enhancement tool, during the preparation of this manuscript. The tool was employed to improve grammar, punctuation, and overall language clarity. All suggestions provided by the tool were carefully reviewed and verified by the authors to ensure accuracy and maintain the integrity of the content.

SOURCE OF FUNDING STATEMENTS

This research did not receive any specific grant or financial support from funding agencies in the public, commercial, or not-for-profit sectors.

ACKNOWLEDGMENTS

The authors would like to express their sincere gratitude to Universitas Muhammadiyah Yogyakarta for the support, facilities, and resources provided throughout the research and writing process.

BIBLIOGRAPHY

1. Odunayo Josephine Akindote, Abimbola Oluwatoyin Adegbite, Adedolapo Omotosho, Anthony Anyanwu, Chinedu Paschal Maduka. Evaluating the Effectiveness of It Project Management in Healthcare Digitalization: a Review. Int Med Sci Res J. 2024;4(1):37–50.
2. Barker W, Chang W, Everson J, Gabriel M, Patel V, Richwine C, et al. The Evolution of Health Information Technology for Enhanced Patient-Centric Care in the United States: Data-Driven Descriptive Study. J Med Internet Res. 2024;26:e59791.
3. Teixeira L, Cardoso I, Oliveira e Sá J, Madeira F. Are Health Information Systems Ready for the Digital Transformation in Portugal? Challenges and Future Perspectives. Healthcare (Switzerland). 2023;11.
4. Ismail NI, Abdullah NH, Shamsuddin A. Adoption of Hospital Information System (HIS) in Malaysian Public Hospitals. Procedia - Soc Behav Sci. 2015;172:336–43.
5. Alipour J, Mehdipour Y, Karimi A. Factors Affecting Acceptance of Hospital Information Systems in Public Hospitals of Zahedan University of Medical Sciences: A Cross-Sectional Study. J Med Life. 2019;12(4):403–10.
6. Handayani PW, Hidayanto AN, Pinem AA, Sandhyaduhita PI, Budi I. Hospital information system user acceptance factors: User group perspectives. Informatics Heal Soc Care. 2018;43(1):84–107.
7. Alipour J, Karimi A, Ebrahimi S, Ansari F, Mehdipour Y. Success or failure of hospital information systems of public hospitals affiliated with Zahedan University of Medical Sciences: A cross sectional study in the Southeast of Iran. Int J Med Inform. 2017;108(October):49–54.
8. Luo J, Ahmad SF, Alyaemeni A, Ou Y, Irshad M, Alyafi-Alzahri R, et al. Role of perceived ease of use, usefulness, and financial strength on the adoption of health information systems: the moderating role of hospital size. Humanit Soc Sci Commun. 2024;11(1):516.
9. Kow RY, Mohamad Rafiai N, Ahmad Alwi AA, Low CL, Ahmad MW, Zakaria Z, et al. COVID-19 Infodemiology: Association Between Google Search and Vaccination in Malaysian Population. Cureus. 2022;14(9):5–11.
10. Joshi M V, Kulkarni CA, Wadhokar OC, Wanjari MB. Growing Trends in Scientific Publication in Physiotherapy Treatment of Knee Osteoarthritis: A Bibliometric Literature Analysis. Cureus. 2023;15(11):e48292.
11. Nizam Siron K, Kow RY, Md Amin NAN, Low CL, Wahid AN, Jasni F, et al. Shoulder Arthroplasty: A Bibliometric Analysis Using the Scopus Database. Cureus. 2024;16(6).
12. Donthu N, Kumar S, Mukherjee D, Pandey N, Lim WM. How to conduct a bibliometric analysis: An overview and guidelines. J Bus Res. 2021;133(March):285–96.
13. Pranckutė R. Web of Science (WoS) and Scopus: The Titans of Bibliographic Information in Today's Academic World. Publications. 2021;9.

14. Markscheffel B, Schröter F. Comparison of two science mapping tools based on software technical evaluation and bibliometric case studies. COLLNET J Sci Inf Manag. 2021 Jul 3;15(2):365–96.
15. Haris A, Aini Q. Bibliometric Analysis of Electronic Medical Records (EMR) Acceptance and Adoption: Trends, Insights, and Future Directions. J Angiother. 2024;8(5):1–13.
16. Bamgboje-Ayodele A, Boscolo A, Burger M, Hutchings O, Shaw M, Shaw T, et al. Health IT Implementation and the Impact of the COVID-19 Pandemic on Clinician-IT Dynamics: Qualitative Study. J Med Internet Res. 2025;27:e57847.
17. Bank TW. World Bank Open Data [Internet]. 2025 [cited 2025 Jun 3]. Available from: https://data.worldbank.org/
18. Bates DW. Scopus Author Profile [Internet]. 2025 [cited 2025 Jun 3]. Available from: https://www.scopus.com/authid/detail.uri?authorId=57113031900&origin=resultslist
19. Mozaffar H, Cresswell KM, Williams R, Bates DW, Sheikh A. Exploring the roots of unintended safety threats associated with the introduction of hospital ePrescribing systems and candidate avoidance and/or mitigation strategies: A qualitative study. BMJ Qual Saf. 2017;26(9):722–33.
20. Rahimi B, Nadri H, Afshar HL, Timpka T. A systematic review of the technology acceptance model in health informatics. Appl Clin Inform. 2018;9(3):604–34.
21. Aymé S, Bellet B, Rath A. Rare diseases in ICD11: making rare diseases visible in health information systems through appropriate coding. Orphanet J Rare Dis. 2015;10:35.
22. Pouloudi N, Currie W, Whitley EA. Entangled stakeholder roles and perceptions in health information systems: A longitudinal study of the U.K. NHS N3 Network. J Assoc Inf Syst. 2016;17(2):107–61.
23. Luo J. Role of perceived ease of use, usefulness, and financial strength on the adoption of health information systems: the moderating role of hospital size. Humanit Soc Sci Commun. 2024;11(1).
24. Nadri H, Rahimi B, Afshar HL, Samadbeik M, Garavand A. Factors affecting acceptance of hospital information systems based on extended technology acceptance model: A case study in three paraclinical departments. Appl Clin Inform. 2018;9(2):238–47.
25. Reis ZSN, Maia TA, Marcolino MS, Becerra-Posada F, Novillo-Ortiz D, Ribeiro ALP. Is there evidence of cost benefits of electronic medical records, standards, or interoperability in hospital information systems? overview of systematic reviews. JMIR Med Informatics. 2017;5(3).
26. Al-marsy A, Chaudhary P, Rodger JA. A model for examining challenges and opportunities in use of cloud computing for health information systems. Appl Syst Innov. 2021;4(1):1–20.
27. Price M, Lau F. The clinical adoption meta-model: A temporal meta-model describing the clinical adoption of health information systems. BMC Med Inform Decis Mak. 2014;14(1).
28. Zakaria N, Mohd Yusof SA. Understanding Technology and People Issues in Hospital Information System (HIS) Adoption: Case study of a tertiary hospital in Malaysia. J Infect Public Health. 2016;9(6):774–80.
29. Barzekar H, Ebrahimzadeh F, Luo J, Karami M, Robati Z, Goodarzi P. Adoption of hospital information system among nurses: A technology acceptance model approach. Acta Inform Medica. 2019;27(5):305–10.
30. Lwin HNN, Punnakitikashem P, Thananusak T. E-Health Research in Southeast Asia: A Bibliometric Review. Sustain. 2023;15(3).
31. Richwine C. Progress and Ongoing Challenges to Electronic Public Health Reporting Among Non-Federal Acute Care Hospitals. In: ASTP Health IT Data Brief. Office of the Assistant Secretary for Technology Policy, Washington, DC 20201: Office of the Assistant Secretary for Technology Policy; 2012. p. 1–17.
32. Ker JI, Wang Y, Hajli N. Examining the impact of health information systems on healthcare service improvement: The case of reducing in patient-flow delays in a U.S. hospital. Technol Forecast Soc Change. 2018;127(June 2017):188–98.
33. Malik M, Kazi AF, Hussain A. Adoption of health technologies for effective health information system: Need of the hour for Pakistan. PLoS One. 2021;16(10 October).
34. Ljubicic V. Drivers of intentions to use healthcare information systems among health and care professionals. Health Informatics J. 2020;26(1):56–71.
35. Mahla M. The acceptance level of Hospital Information Management System (HIMS) among the nursing officials working in a teaching hospital. J Educ Health Promot. 2021;10(1).

36. Ammenwerth E. Technology Acceptance Models in ealth nformatics: TAM and UTAUT. Stud Health Technol Inform. 2019;263:64–71.
37. Lee AT, Ramasamy RK, Subbarao A. Understanding Psychosocial Barriers to Healthcare Technology Adoption: A Review of TAM Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology and UTAUT Frameworks. Vol. 13, Healthcare. 2025.
38. Addo K, Agyepong PK. Evaluating the Health Information system implementation and utilization in healthcare delivery. Health Informatics J. 2024;30(4).
39. Al-Adwan AS, Berger H. Exploring physicians' behavioural intention toward the adoption of electronic health records: An empirical study from Jordan. Int J Healthc Technol Manag. 2015;15(2):89–111.