

Analysis of Barriers Implementation Health Information Technology Using Vosviewer: A Bibliometric Study

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INDEXING

Keywords:

Barriers;
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ABSTRACT

Information technology is growing rapidly in various fields, especially in health services. The development of information technology in health services is e-health, which aims to improve public health, expand and reach health services, and manage patients in real-time. This study aims to determine the publication trend of articles on barriers to medical technology implementation from 2015 – 2022. The publications were retrieved through a search through the Scopus database and obtained 422 publications. This study analyzed the number of publications per year, document type, most contributing countries, subject area of publication, influential authors, number of article citations, and contributing search sources. This study also analyzed and collated documents with Vos Viewer. The results showed that the trend of publications has increased the number of publications from year to year. The types of papers published with the highest number were articles (322 publications) and reviews (90 publications). The most contributing country was the United States, with 191 reports. The dominant subject area was medicine, at 66.23%. The publication with the most citations was an article by Scott Kruse et al. entitled "Evaluating Barriers to Adopting Telemedicine Worldwide: A Systematic Review" from the Journal of Telemedicine and Telecare, with the subject area of medicine having 413 citations. Researchers with the highest number of publications (3) were ten authors. The study was limited by the search for literature from a single database, which allowed the literature to not cover all of the literature on barriers to medical technology implementation.

Kata kunci:

Hambatan;
Penerapan;
Teknologi Informasi
Kesehatan

Teknologi informasi kini berkembang sangat pesat diberbagai macam bidang khususnya dibidang layanan kesehatan. Pengembangan teknologi informasi di layanan kesehatan adalah e-health yang bertujuan meningkatkan kesehatan masyarakat, memperluas jangkauan layanan kesehatan, dan mengelola pasien secara real time. Studi ini bertujuan untuk mengetahui tren publikasi artikel mengenai barriers medical technology implementation dari tahun 2015 – 2022. Publikasi diambil melalui pencarian melalui database Scopus dan didapatkan sebanyak 422 publikasi. Studi ini menganalisis jumlah publikasi pertahun, tipe dari dokumen, negara yang paling berkontribusi, subjek area publikasi, penulis yang berpengaruh, jumlah sitasi artikel, dan sumber pencarian yang berkontribusi. Studi ini juga menganalisis dan koling dokumen dengan Vos Viewer. Hasil studi didapatkan tren publikasi mengalami peningkatan jumlah publikasi dari tahun ke tahun. Tipe dokumen yang dipublikasi dengan jumlah terbanyak berupa artikel (322 publikasi) dan review (90 publikasi). Negara yang dominan berkontribusi adalah United States dengan 191 artikel. Subjek area yang dominan adalah subjek medicine sebesar 66,23%. Publikasi dengan sitasi terbanyak adalah artikel dari Scott Kruse et al dengan judul "Evaluating barriers to adopting telemedicine worldwide : A systematic review" yang berasal dari Journal of Telemedicine and Telecare dengan subjek area medicine memiliki 413 sitasi. Peneliti yang memiliki jumlah publikasi terbanyak (3 publikasi) yaitu 10 penulis. Studi yang dilakukan dibatasi oleh pencarian literatur yang masih berasal dari database tunggal yang memungkinkan literatur yang didapatkan tidak mencakup semua litelatur mengenai barriers medical technology implementation.

INTRODUCTION

The evolution of Information Communication Technology (ICT) has brought about considerable changes in people's lives. Information communication technology is used to run a business, build a network, and contribute to health services (Haque et al., 2019). One of the evolutions in the health sector is e-health. E-health is an innovation in improving health services by utilizing information technology, which is growing rapidly (Rhoads et al., 2017). E-health aims to advance health care locally, regionally, and globally through information and communication technology (Haque et al., 2019).

E-health can benefit health workers by increasing health coverage without being in a hospital, increasing decision-making abilities, and managing chronic patients more efficiently and in real time (Rhoads et al., 2017). E-health can also improve access to health services; patients can choose a visit schedule freely and save time during visits (Clemens Scott Kruse et al., 2018).

The World Health Organization (WHO) recognizes that e-health prioritizes human resource improvements in the health sector (Clemens Scott Kruse et al., 2018). E-health has several factors that can encourage e-health, such as performance expectations, social influence, facilitating conditions, effort expectations, and threat assessment. Besides the factors that support its implementation, e-health cannot be separated from several aspects that may hinder the process of implementing e-health itself. Aspects that might hinder e-health include economic resources, far from good infrastructure, unaffordable usage costs, income disparities, high costs even for primary health information systems, lack of trained human resources, inadequate government policies, cultural aspects, and some conflicts in the use of computers for the treatment process (Haque et al., 2019).

Clemens Scott Kruse et al. explained that the obstacles can be divided into 3 points of view: from the organization, the patient, and the programmer sides. There are 14 obstacles organizations face, 5 of which are high costs, payments to third-party application providers, legality, the confidentiality of information, and data security. There are 11 barriers faced by patients, 5 of which are age, lack of exposure and training in the use of information technology, limited literature, low bandwidth, and low awareness of the importance of information technology (Clemens Scott Kruse et al., 2018).

A bibliometric review is an option for reviewing scientific literature because bibliometric analysis is a method that can analyze and describe large amounts of data or literature. In addition, bibliometrics can describe the trend of article publication, starting from the number of publications each year, the type of published document, the most contributing countries, the subject area of the published document, influential authors, the number of article citations, and contributing search sources. Bibliometrics will be material for other researchers in developing a particular subject area or field (Donthu et al., 2021).

This study aims to find out how and what are the obstacles that may occur in the implementation of a health management information system/E-Health. So far, much research on e-health has been carried out. However, interesting aspects remain, like focusing on the obstacles in implementing health management information systems/e-health.

RESEARCH METHOD

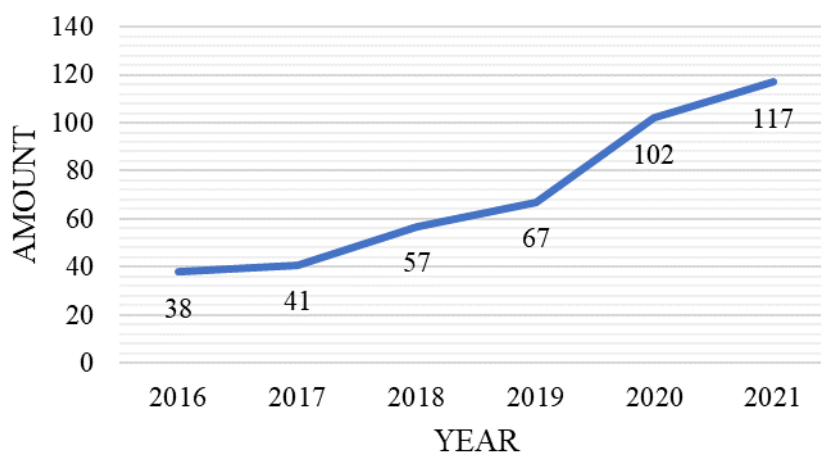
This review aims to review articles and scientific journals published in one of the leading journal publishers by discussing the obstacles in implementing medical technology. The review of articles in this study has several explanations obtained through several questions: What are the inhibiting factors for applying health information technology?

This study has several processes: identifying articles using data from the Scopus database. The keywords used were “Barriers,” “Medical Technology,” and “implementation,” with a publication year limitation between 2015 and 2022. These keywords obtained data according to the needs and could indirectly produce verified data. Data was collected on March 19, 2022, and resulted in 422 articles using the Your query strategy: ((TITLE-ABS-KEY(barriers) AND TITLE-ABS-KEY(medical technology) AND TITLE-ABS-KEY(implementation)) AND PUBYEAR > 2015 AND PUBYEAR < 2022 AND (LIMIT-TO (OA, “all”)) AND (LIMIT-TO (SUBJAREA, “MEDI”) OR LIMIT-TO (SUBJAREA, “ENGI”))).

The search results were then analyzed according to trend, document type, country, subject, year, author, and source. The analysis used the Scopus tool for bibliometric analysis and visualization using the VOS-Viewer application (version 1.6.17). The findings were analyzed descriptively based on the visualization of the data obtained.

RESULTS AND DISCUSSION

The search results for articles that Scopus has indexed are 422 articles from 2016 – 2021. From these 422 articles, the publication trend is increasing yearly. The increase occurred from 2016 to 2017 by 7.31%, from 2017 to 2018 by 28%, from 2018 to 2019 by 14.92%, from 2019 to 2020 by 34.31%, and from 2020 to 2021 by 12.82%.

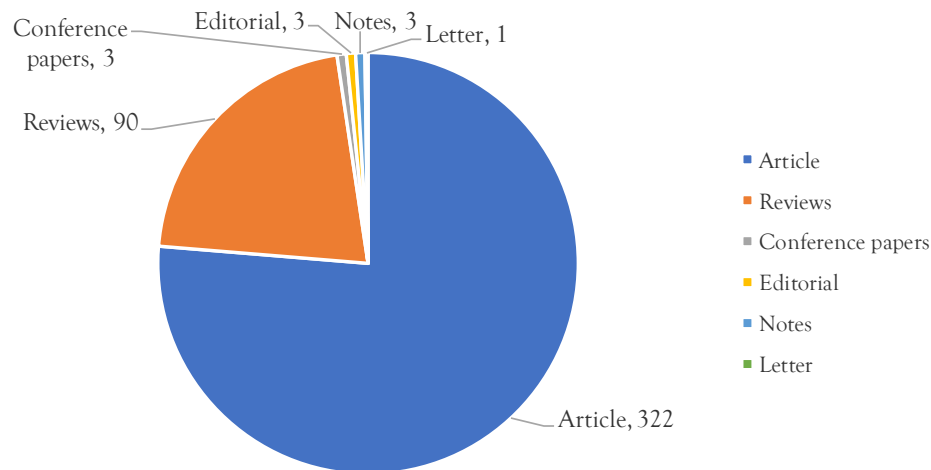


Picture 1. Publication Trend on Medical Technology

Source: Scopus database

The search results were obtained from 422 publications, with the highest number in articles and reviews, while the number < 5 were conference papers, editorials, notes, and

letters. The number of article is 322 publications, reviews with 90 publications, conference papers 3 publications, editorial 3 publications, notes 3 publications, and letter 1 publication.



Picture 2. Document Type

Source: Scopus database

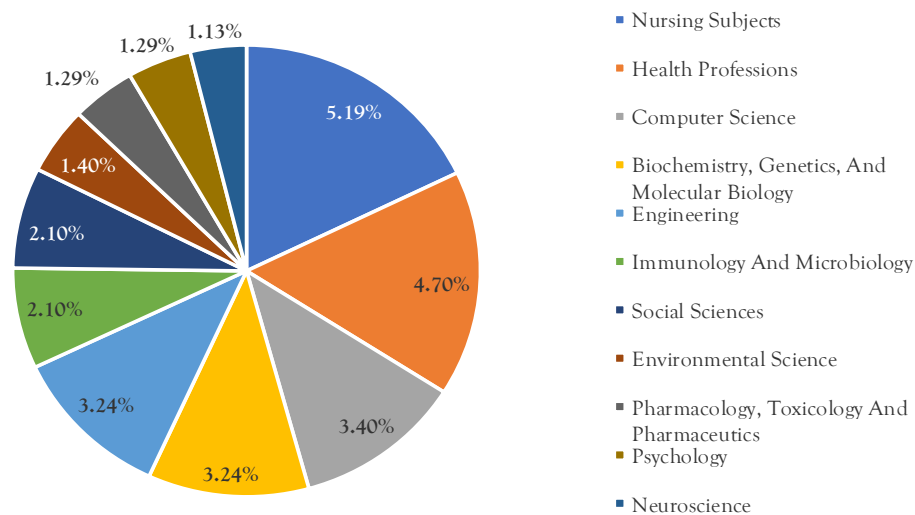
Articles that Scopus has indexed found that 78 countries contribute. Of the 78 countries that contributed, there were six countries with more than 20 articles, such as the United States (191 articles), United Kingdom (74 articles), Canada (46 articles), Netherlands (38 articles), Australia (37 articles), and Germany (27 articles). The data shows that the United States dominates publications, followed by the United Kingdom.



Picture 3. Geography Distribution by Document

Source: Scopus database

Articles about medical technology published from 2016 – 2021 are the most dominant subject of medicine, with 66.23%. The next percentage with more than 1% are nursing subjects (5.19%), health professions (4.7%), computer science (3.4%), biochemistry, genetics, and molecular biology (3.24%), engineering (3.24%), immunology and microbiology (2.1%), social sciences (2.1%), environmental science (1.4%), pharmacology, toxicology and pharmaceuticals (1.29%), psychology (1.29%), and neuroscience (1.13%).



Picture 4. Document by Subject Area

Source: Scopus database

Table 1 illustrates the five articles with the highest number of citations—the highest citations by subject area. Of the five articles in Table 1, all have subjects and areas around medicine. A large number of citations will make an article meaningful. Some articles with the highest citations by subject area are in Table 1.

Table 1. The highest citations by subject area

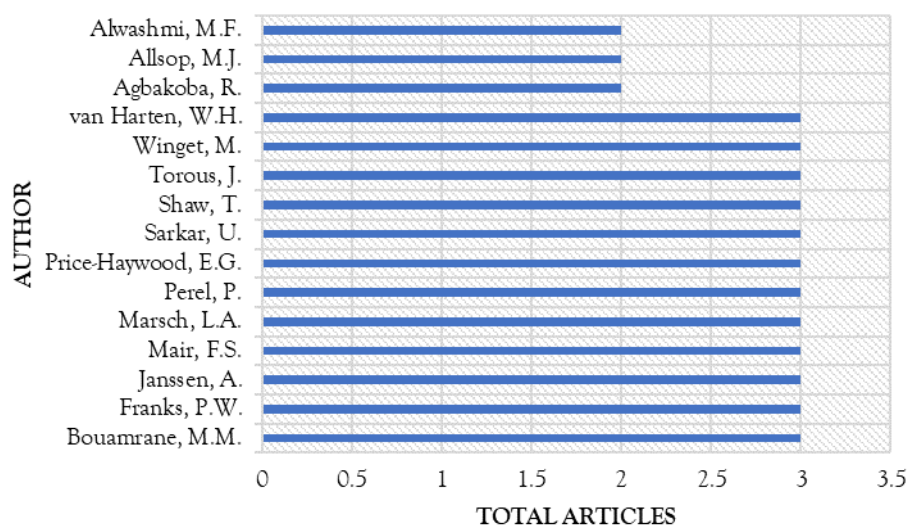
Document Title	Authors And Year	Sources	Subject and Area	Cite By
Evaluating Barriers to Adopting Telemedicine Worldwide: A Systematic Review	(C Scott Kruse et al., 2018)	Journal of Telemedicine and Telecare 24(1), pp. 4-12	Medicine	413
Achieving Change in Primary Care-Causes of the Evidence to Practice Gap: Systematic Reviews	(Lau et al., 2016)	Implementation Science 11(1),40	Medicine	214
Understanding Factors Affecting Patient and Public Engagement and Recruitment to Digital Health Interventions: A Systematic Review of Qualitative Studies	(O'Conn or et al., 2016)	BMC Medical Informatics and Decision-Making 16(1),120	Medicine	202

Table 1. The highest citations by subject area (cont')

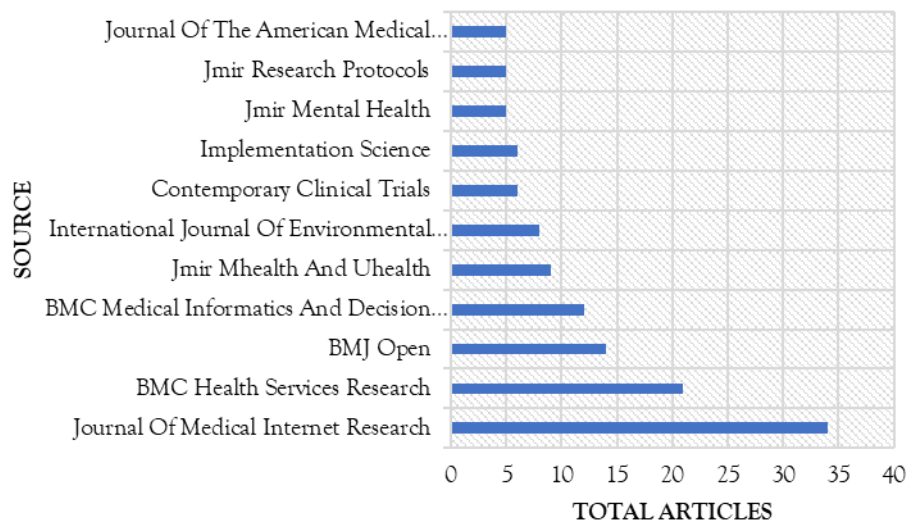
Document Title	Authors And Year	Sources	Subject and Area	Cite By
Making Sense of Big Data in Health Research: Towards an EU Action Plan	(Auffray et al., 2016)	Genome Medicine 8(1),71	Medicine Biochemistry, Genetic, and Molecular Biology Engineering	156
Attitudes towards Digital Treatment for Depression: A European Stakeholder Survey	(Topooco et al., 2017)	Internet Interventions 8, pp. 1-9	Medicine	111

Source: Scopus database

The data above describes several authors who have the highest number of published journals: Bouamrane, MM, Franks, PW, Janssen, A., Mair, FS, Marsch, LA, Perel, P., Price-Haywood, EG, Sarkar, U., Shaw, T., Torous, J., Winget, M., and van Harten, WH. The second highest number with two publications is Agbakoba, R., Allsop, MJ, and Alwashmi, MF. Search results based on publications Source search has 160 types of sources.

**Picture 5. Publication by Authors***Source: Scopus database*

Search sources with more than ten publications are the Journal of Medical Internet Research, with 34 publications; BMC Health Services Research, with 21 publications; BMJ Open, with 14 publications; and BMC Medical Informatics And Decision Making, with 12 publications.



Picture 6. Publication by Source Search

Source: Scopus database

Vosviewer is an analytical application that can assist in analyzing the scope of data from articles collected. Vosviewer can also read the themes contained in collecting articles. The Vosviewer analysis illustrates that 7 clusters map the topics of medical technology research. The clusters obtained have several different topics: cluster 1 has 36 items, cluster 2 has 28 items, cluster 3 has 13 items, cluster 4 has nine items, cluster 5 has nine items, cluster 6 has 9 items, and cluster 7 has 5 items.

Table 2. Cluster

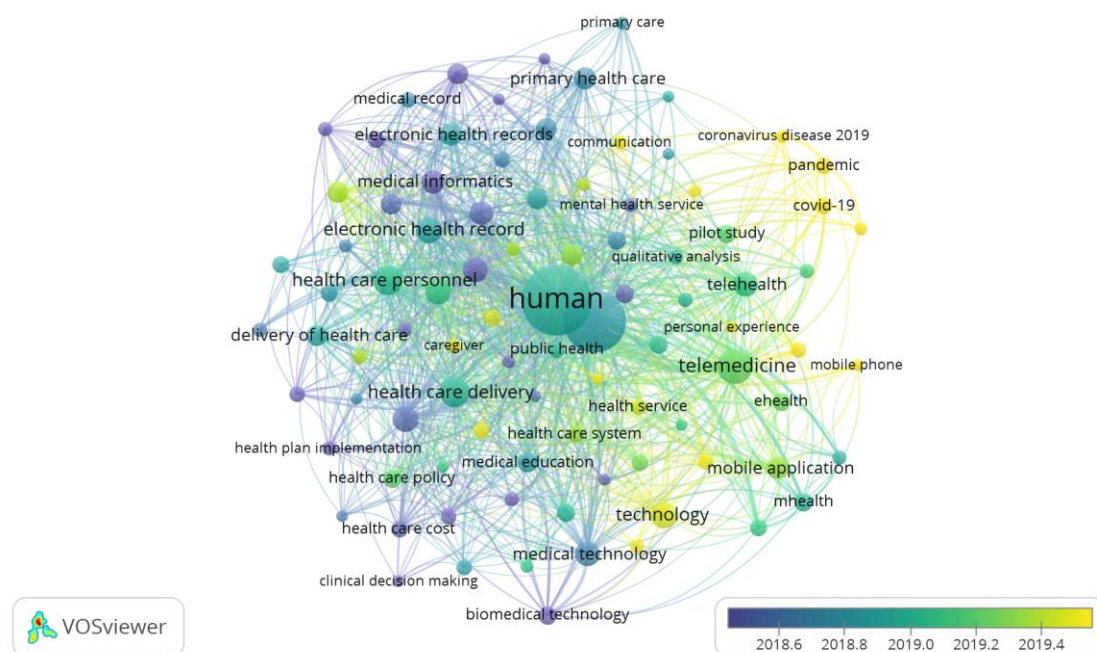
CLUSTER	DESCRIPTION	TOTAL
CLUSTER 1	Digital Health, Health Information Technology, Telehealth, implementation barrier	36
CLUSTER 2	Health care provider, Smartphone, Mobile health,	28
CLUSTER 3	Electronic health records, patient care, Health information, electronic	13
CLUSTER 4	ICT, medicine, paramedic	9
CLUSTER 5	Attitude, healthcare worker, video telehealth	9
CLUSTER 6	Pandemic, satisfaction, telemedicine	9
CLUSTER 7	New technology	5

Source: Vosviewer

The topics in Cluster 1 are Digital Health, Health Information Technology, Telehealth, and Implementation barriers. Cluster 2 contains Health Care providers, smartphones, and Mobile Health topics. Cluster 3 contains Electronic Health Records, Patient care, and Electronic Health Information. Cluster 4 contains Information and communication technologies, medicine, and paramedic topics. Cluster 5 contains Attitude, Healthcare workers, and Video telehealth. Cluster 6 contains Pandemic, Satisfaction, and Telemedicine

topics. Cluster 7 contains new technology. This cluster grouping will help analyze related concepts.

Based on the results obtained, overlay visualization found that keywords such as health planning, medical informatics, implementation of health plans, biomedical technology, and information processing were most frequently discussed in 2018. Other themes, such as health care delivery, telemedicine, e-health, and health workers care, were most discussed in 2019. The most discussed themes in 2020 until now are mobile applications, technology, digital health, covid 19, the pandemic, health services, and hospitals.



Picture 7. Overlay Visualization

Source: Vosviewer

Factors that can hinder the application of health information technology include high costs, user knowledge of health information technology, uncomplicated system design, user attitudes, user environment, and ethical and legal issues (Akhlaq et al., 2016)(Gagnon et al., 2016). Aspects that might hinder e-health include economic resources, infrastructure that is not yet good, usage costs that are too high, income disparities, high costs even for primary health information systems, lack of trained human resources, inadequate government policies, cultural aspects, and some conflicts in using computers for the treatment process (Haque et al., 2019).

Clemens Scott Kruse et al. explained that the obstacles can be divided into 3 points of view: from the organization, the patient, and the programmer sides. There are 14 obstacles faced by organizations, 5 of which are high costs, payments to third-party application providers, legality, the confidentiality of information, and data security. There are 11 barriers faced by patients, 5 of which are age, lack of exposure and training in information technology, limited literature, low bandwidth, and low awareness of the importance of information technology (Clemens Scott Kruse et al., 2018) because it can increase the user's

workload (Harahap et al., 2021). According to M. Keshvari et.al and Masresha Derese et al., the knowledge factor is indeed a major challenge, but this can still be overcome by recruiting expert resources and conducting user training (Keshvari et al., 2018)(Tegegne & Wubante, 2022).

High costs will be required in applying health information technology. It is the first obstacle encountered because of the initial expenses incurred and additional costs such as maintenance, management, training, and costs used for cooperation with other parties. This is considered not too practical to be applied (Akhlaq et al., 2016)(Harahap et al., 2021).

It is natural that users with inadequate knowledge and abilities will experience difficulties regarding user knowledge. A lack of literacy will lead to errors in interpreting existing data, displaying incorrect data during the entry process, and can create new workloads for users. These issues will be dangerous in delivering health services to patients (Gagnon et al., 2016). Inadequate literacy and skills can create new problems regarding training. Lack of exposure to training on health information technology users exacerbates the problem in the field (Clemens Scott Kruse et al., 2018).

System design of health information technology also has a role in health information technology implementation related to the simplicity of application, the availability of sufficient information, the skills of the existing system, the ease of users in accessing technology, and the dynamism of technology to advance in the digital era. Age groups can hopefully use the current health information technology (Gagnon et al., 2016).

User attitudes in applying health information technology also play a role in creating obstacles. An attitude that is less aware of the benefits of technology will reduce motivation and interest in searching for literature or undergoing technology training. The lack of appreciation for users also increases the barriers in the field (Watkinson et al., 2021)(Lennon et al., 2017). Another challenge faced is a negative attitude from the community towards implementing the system because people who are used to using traditional systems have to change to electronic. Ineffective and optimal communication between health workers, patients, and colleagues can make the information system not optimal because the information obtained is minimal. Health workers have a negative attitude towards the ongoing hospital management information system (Salari et al., 2017)(Farzandipur et al., 2016).

Infrastructure needs to be considered to implement a health information system, such as the availability of electricity, the amount of hardware, and internet connection. Infrastructure problems can hinder the process and can even cause process failure. In addition to infrastructure, implementing a health information system requires IT staff or people skilled in IT. Monitoring, developing, and training HIS users is necessary (Afrizal et al., 2019). With this periodic training, staff will hopefully be aware of possible changes (Turcotte et al., 2018)(Bygholm, 2018).

Communication between system developers and users needs to be well-established and consistent. Otherwise, the system will not suit the patient's needs, making it difficult for users to use. Therefore, the involvement of users and patients is needed in the early stages of development and testing, leading to evaluations that will optimize the system (MacNeil et al., 2019). A design made based on these evaluations can increase success in the long term (Kruse et al., 2019).

Ethical and legal issues do not escape being one of the inhibiting factors for applying technology. This problem is closely related to who is given access to technology, the confidentiality of the information entered, and the security of the data recorded in the technology. They must be prioritized to find the best solution (Gagnon et al., 2016)(Bruns et al., 2016). Using an unsecured network, the absence of a password on the device, or no encryption of the existing data will be very dangerous in health information technology because third parties can access it anytime. Accessing data by third parties can be a violation of law and ethics (Clemens Scott Kruse et al., 2018).

CONCLUSION

E-health still has several obstacles that must be properly addressed. Good barrier management will bring optimal health services and decision-making to increase customer/patient satisfaction. The bibliometric results showed trends regarding implementing health information systems in the last five years. Countries that develop these studies range from developing countries to developed countries.

The most research is articles, and the second most is reviews. Mobile apps, technology, digital health, covid 19, pandemic, healthcare, and hospitals are the latest highlights often discussed today. This finding aligns with most subjects and areas, such as the health sector. Research topics like this must always be developed and realized so that it can implement an optimal health information system and increase customer satisfaction.

REFERENCES

- Afrizal, S. H., Handayani, P. W., Hidayanto, A. N., Eryando, T., Budiharsana, M., & Martha, E. (2019). Barriers and challenges to Primary Health Care Information System (PHCIS) adoption from health management perspective: A qualitative study. *Informatics in Medicine Unlocked*, 17(May), 100198. <https://doi.org/10.1016/j.imu.2019.100198>
- Akhlaq, A., McKinstry, B., Muhammad, K. B., & Sheikh, A. (2016). Barriers and facilitators to health information exchange in low- and middle-income country settings: A systematic review. *Health Policy and Planning*, 31(9), 1310–1325. <https://doi.org/10.1093/heapol/czw056>
- Auffray, C., Balling, R., Barroso, I., Bencze, L., Benson, M., Bergeron, J., Bernal-Delgado, E., Blomberg, N., Bock, C., Conesa, A., Del Signore, S., Delogne, C., Devilee, P., Di Meglio, A., Eijkemans, M., Flicek, P., Graf, N., Grimm, V., Guchelaar, H.-J., ... Zanetti, G. (2016). Making sense of big data in health research: Towards an EU action plan. *Genome Medicine*, 8(1). <https://doi.org/10.1186/s13073-016-0323-y>
- Bruns, E. J., Hyde, K. L., Sather, A., Hook, A. N., & Lyon, A. R. (2016). Applying User Input to the Design and Testing of an Electronic Behavioral Health Information System for Wraparound Care Coordination. *Administration and Policy in Mental Health and Mental Health Services Research*, 43(3), 350–368. <https://doi.org/10.1007/s10488-015-0658-5>
- Bygholm, A. (2018). Staff training on the use of health information systems: What do we know? *Studies in Health Technology and Informatics*, 247, 191–195. <https://doi.org/10.3233/978-1-61499-852-5-191>



- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133(March), 285–296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
- Farzandipur, M., Jeddi, F. R., & Azimi, E. (2016). Factors affecting successful implementation of hospital information systems. *Acta Informatica Medica*, 24(1), 51–55. <https://doi.org/10.5455/aim.2016.24.51-55>
- Gagnon, M.-P., Payne-Gagnon, J., Breton, E., Fortin, J.-P., Khoury, L., Dolovich, L., Price, D., Wiljer, D., Bartlett, G., & Archer, N. (2016). Adoption of electronic personal health records in Canada: Perceptions of stakeholders. *International Journal of Health Policy and Management*, 5(7), 425–433. <https://doi.org/10.15171/ijhpm.2016.36>
- Haque, M. E., Ahsan, M. A., Rahman, F., & Islam, A. (2019). Classified Specialist in Radiology and Imaging Combined Military Hospital Dhaka. *IOSR Journal of Dental and Medical Sciences*, 18(3), 2279–0861. <https://doi.org/10.9790/0853-1805124157>
- Harahap, N. C., Handayani, P. W., & Hidayanto, A. N. (2021). Barriers in health information systems and technologies to support maternal and neonatal referrals at primary health centers. *Healthcare Informatics Research*, 27(2), 153–161. <https://doi.org/10.4258/HIR.2021.27.2.153>
- Keshvari, M., Yusefi, A. R., Homauni, A., Omidifar, R., & Nobakht, S. (2018). Barriers for the using of information systems in hospitals: A qualitative study. *Shiraz E Medical Journal*, 19(8). <https://doi.org/10.5812/semj.66180>
- Kruse, C., Betancourt, J., Ortiz, S., Luna, S. M. V., Bamrah, I. K., & Segovia, N. (2019). Barriers to the use of mobile health in improving health outcomes in developing countries: Systematic review. *Journal of Medical Internet Research*, 21(10). <https://doi.org/10.2196/13263>
- Lau, R., Stevenson, F., Ong, B. N., Dziedzic, K., Treweek, S., Eldridge, S., Everitt, H., Kennedy, A., Qureshi, N., Rogers, A., Peacock, R., & Murray, E. (2016). Achieving change in primary care-causes of the evidence to practice gap: Systematic reviews of reviews. *Implementation Science*, 11(1). <https://doi.org/10.1186/s13012-016-0396-4>
- Lennon, M. R., Bouamrane, M.-M., Devlin, A. M., O'Connor, S., O'Donnell, C., Chetty, U., Agbakoba, R., Bikker, A., Grieve, E., Finch, T., Watson, N., Wyke, S., & Mair, F. S. (2017). Readiness for delivering digital health at scale: Lessons from a longitudinal qualitative evaluation of a national digital health innovation program in the United Kingdom. *Journal of Medical Internet Research*, 19(2). <https://doi.org/10.2196/jmir.6900>
- MacNeil, M., Koch, M., Kuspinar, A., Juzwishin, D., Lehoux, P., & Stolee, P. (2019). Enabling health technology innovation in Canada: Barriers and facilitators in policy and regulatory processes. *Health Policy*, 123(2), 203–214. <https://doi.org/10.1016/j.healthpol.2018.09.018>
- O'Connor, S., Hanlon, P., O'Donnell, C. A., Garcia, S., Glanville, J., & Mair, F. S. (2016). Understanding factors affecting patient and public engagement and recruitment to digital health interventions: A systematic review of qualitative studies. *BMC Medical Informatics and Decision Making*, 16(1). <https://doi.org/10.1186/s12911-016-0359-3>
- Rhoads, S. J., Serrano, C. I., Lynch, C. E., Ounpraseuth, S. T., Gauss, C. H., Payakachat, N., Lowery, C. L., & Eswaran, H. (2017). Exploring Implementation of m-Health

- Monitoring in Postpartum Women with Hypertension. *Telemedicine and E-Health*, 23(10), 833–841. <https://doi.org/10.1089/tmj.2016.0272>
- Salari, R., Salari, R., & Medicine, C. (2017). Challenges Of Using Hospital Information Systems By Nurses: Comparing Academic And Non-Academic Hospitals. *Electronic Physician*, 9(January), 3592–3597.
- Scott Kruse, Clemens, Karem, P., Shifflett, K., Vegi, L., Ravi, K., & Brooks, M. (2018). Evaluating barriers to adopting telemedicine worldwide: A systematic review. *Journal of Telemedicine and Telecare*, 24(1), 4–12. <https://doi.org/10.1177/1357633X16674087>
- Tegegne, M. D., & Wubante, S. M. (2022). Identifying Barriers to the Adoption of Information Communication Technology in Ethiopian Healthcare Systems. A Systematic Review. *Advances in Medical Education and Practice*, 13(August), 821–828. <https://doi.org/10.2147/AMEP.S374207>
- Topooco, N., Riper, H., Araya, R., Berking, M., Brunn, M., Chevreul, K., Cieslak, R., Ebert, D. D., Etchmendy, E., Herrero, R., Kleiboer, A., Krieger, T., García-Palacios, A., Cerga-Pashoja, A., Smoktunowicz, E., Urech, A., Vis, C., Andersson, G., & consortium, O. behalf of the E.-C. (2017). Attitudes towards digital treatment for depression: A European stakeholder survey. *Internet Interventions*, 8, 1–9. <https://doi.org/10.1016/j.invent.2017.01.001>
- Turcotte, L. A., Tran, J., Moralejo, J., Curtin-Telegdi, N., Eckel, L., & Hirdes, J. P. (2018). Evaluation of a staff training programme to reimplement a comprehensive health assessment. *BMJ Open Quality*, 7(4). <https://doi.org/10.1136/bmjoq-2018-000353>
- Watkinson, F., Dharmayat, K. I., & Mastellos, N. (2021). A mixed-method service evaluation of health information exchange in England: technology acceptance and barriers and facilitators to adoption. *BMC Health Services Research*, 21(1). <https://doi.org/10.1186/s12913-021-06771-z>

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