



Website User Behavior at the Semarang Health Data Repository - Udinus Campus (SEHARIKU)

Haikal ^{a,b}, M. G. Catur Yuantari ^a, Enny Rachmani ^{b,c},
Amelia Devi Putri Ariyanto ^d, Jaka Prasetya ^c
and Slamet Isworo ^{e*}

^a Department of Public Health, Faculty of Health Science, Universitas Dian Nuswantoro, Semarang, Indonesia.

^b Asian Health Literacy Association (AHLA) CO., Universitas Dian Nuswantoro, Semarang, Indonesia.

^c Department of Medical Records and Health Information, Faculty of Health Science, Universitas Dian Nuswantoro, Semarang, Indonesia.

^d Faculty of Nursing, Business and Technology, Universitas Widya Husada, Semarang, Indonesia.

^e Department of Environmental Health, Faculty of Health Science, Universitas Dian Nuswantoro, Semarang, Indonesia.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background and Objectives: Efforts to use data to aid decision-making have not yet realized their full potential. The Faculty of Health, Dian Nuswantoro University (Udinus), has launched Semarang Health Data Repository - Udinus Campus (SEHARIKU) as a health data storage website in Semarang City. However, the public's use of SEHARIKU remains restricted, probably due to a variety of causes such as a lack of awareness of the presence of this site, a lack of information available on it, or features that are not optimal. The purpose of this study is to investigate user behavior on data storage websites.

*Corresponding author: E-mail: slametisworo512@gmail.com;

Methods: This research uses a user study approach with a descriptive research design using an online survey of SEHariku website users. The survey contains a series of questions regarding user behavior when using the SEHARIKU site, for 83 users on the SEHARIKU website.

Results: The research results show that the majority of users have a low frequency of use, of which 51.8% of them 'rarely' access the SEHARIKU website, but the majority of respondents consider the search feature easy to use. Satisfaction with the graphic visualization features in SEHariku is high, with 92.3% of respondents stating they were satisfied or very satisfied. The majority of users also found the platform convenient for finding the data they needed, with 80.7% finding their searches easy. To increase the use and benefits of SEHARIKU, and overcome the low frequency of use, it is necessary to improve existing features such as the search feature, and intensify promotional efforts along with increasing awareness about the benefits of the website.

Suggestion: Motivating users to actively provide input and recommendations for future development of SEHARIKU is very important.

Keywords: Semarang health data repository - Kampus Udinus (SEHARIKU); data repository; user website behavior.

1. INTRODUCTION

Data is the new raw material in the era of the Fourth Industrial Revolution. Just as oil or coal was in the previous industrial revolution, data also needs to be mined or refined in order to be utilized or enhanced in value. The rapid growth of data every day also has the potential to become a burden or be of no use if one cannot manage that data. By definition, data is a collection of information or facts that provide a description of an object or a situation [1]. Various fields of human activities have now become sources of data with significant data production, commonly referred to as Big Data. The managed data will serve as the foundation for conducting activities, supporting decision-making, and as evaluation material. The concept of Open Science, which emphasizes scientific transparency, has also promoted greater openness in data utilization. The application of data utilization has also been implemented in various countries, such as South Korea, Taiwan, and the United Kingdom. South Korea, through the Korean National Health Insurance Claims Database, has utilized data for the needs of outpatient, inpatient, and medication service claims data [2]. Taiwan, through the Taiwan National Health Insurance Research Database, has utilized data to support healthcare decision-making and research (2700 publications since its launch in 2000) [3]. In English, data has also been utilized and transformed into machine learning that can provide insights and enhance the ability of healthcare providers to adapt to technology. In addition to these three countries, several private companies or insurance providers have also leveraged data as a valuable source to support decision-making.

In Indonesia, the utilization of data to support decision-making is still not optimized. The

Lancet, through its editor-in-chief, even referred to Indonesia as a mysterious country based on a study conducted in 2016 that revealed a discrepancy between research findings and real health issues in Indonesia [4].

Health students play an important role in the production process, this is in line with the increasingly modern development of the health education sector. This period became the basis for the creation of health student education (knowledge-based) which focused on information technology. The Information System-based Data Repository is useful as a storage location for various types of data simultaneously but separated by a database or other container. A data repository is a data store also known as a data library or data archive. A data repository is a large database architecture used to collect, manage, and store data sets for analysis, sharing, and reporting [5,6].

Health data has been collected in one place through the Sehariku website (Semarang Health Data Repository - Udinus Campus). The Semarang Health Data Repository - Udinus Campus (SEHARIKU) is a data repository website developed by the Faculty of Health at Dian Nuswantoro University (Udinus) with the aim of storing, managing, and presenting health data in the city of Semarang. SEHARIKU features a comprehensive set of tools to facilitate users in searching, viewing, and downloading data, as well as visualizing data in the form of graphs and tables. The Sehariku website can then be utilized to generate information that can be used by the public, decision-makers, for evaluation purposes, and for enhancing research by higher education institutions or by health policy experts/observers in the city of Semarang [7,8].

However, the use of SEHARIKU by the public remains limited. This may be due to several factors such as users' lack of awareness of the website's existence, insufficient information provided on the website, or suboptimal features. Therefore, research is needed to analyze the user behavior of the SEHARIKU website so that it can be optimized and used more widely by the public.

This research aims to analyze user behavior on a data repository website. The specific objectives include analyzing the characteristics of users of the data repository website, examining user preferences in utilizing the website's features, investigating the factors influencing the usage of the data repository website, and assessing the impact of using the data repository website on academic and research activities. The method employed in this research involves conducting an online survey among SEHARIKU website users. This survey will be administered through an online form containing questions related to user behavior when using the website. The data obtained will be analyzed using statistical techniques and data processing to identify the factors influencing website usage.

2. METHODS

This research adopts a user study approach with a descriptive design. Data collection is carried out online using Google form through the following link: <https://bit.ly/PenelitianPenggunaSehariku2023>, which is distributed to respondents or SEHARIKU website users through personal messages.

The sample for this research consists of 83 respondents who are users of the SEHARIKU website. This research will be conducted over a period of 4 months, starting from April to August 2023. The sampling is done using purposive sampling technique. Purposive sampling allows for the specific selection of respondents who have particular relevance to the research objectives, in this case, SEHARIKU website users with relevant experience and knowledge related to its usage.

The stages in this research are as follows :

- a) Conducting a literature review related to data repository websites, user behavior on websites, and health data analysis.
- b) Conducting validity testing for the questionnaire that will be used for research purposes.
- c) Collecting data from SEHARIKU users regarding user behavior through an online survey.
- d) Analyzing the collected data.result

3. RESULTS

Based on the literature review point of view, the results of the questionnaire related to user behavior on the website [9-12]. After conducting various reviews in this research, the following framework has been developed.

The results of the questionnaire validity test are as follows in Table 1.

Table 1. Questionnaire validity test results

No	Statement	Sig. Value	Description
1	How often do you visit the data repository website in the last month?	0,000	Valid
2	Do you find the data search feature on the data repository website easy to use?	0,000	Valid
3	Are you satisfied with the visualization graph features provided by the data repository website?	0,047	Valid
4	How easy is it for you to find the data you need on the data repository website?	0,000	Valid
5	Have you ever provided feedback or suggestions to the data repository website administrators?	0,015	Valid
6	To what extent does the SEHARIKU website assist in supporting your research activities?	0,001	Valid
7	Do you feel that the data repository website provides relevant and up-to-date health data in Semarang City?	0,042	Valid
8	To what extent does the use of the data repository website impact your understanding of health issues in Semarang City?	0,000	Valid
9	Have you ever recommended the data repository website to others?	0,005	Valid

Based on the validity test, it was found that all nine questionnaire items are considered valid, and you can proceed with data collection for your research.

3.1 User Behavior

The questionnaire results were then distributed to users of the SEHARIKU website, with a total of 83 website users participating as research respondents. This research employed purposive sampling, a sampling technique specifically relevant to the research objectives, in this case, SEHARIKU website users. Respondents possessed relevant experience and knowledge related to the usage of the SEHARIKU website.

3.2 The Duration of Usage of the SEHARIKU Website in the Last Month

Based on Table 2, it was found that a majority of respondents, specifically 43 individuals (51.8%), admitted that they rarely access the SEHARIKU website. This indicates that the majority of users have a low frequency of usage. A total of 22 people (26.5%) stated that they access the SEHARIKU website several times a month. Although this number is lower than "Rarely," this group still significantly contributes to the website's usage.

Table 2. Duration of Usage

Response	Frequency	%
Rarely	43	51.8
Several times a Month	22	26.5
Several times a Week	15	18.1
Every Day	3	3.6

3.3 The Data Search Feature is Easy to Use

Based on Table 3, the majority of respondents (51.8%) consider the data search feature on SEHARIKU to be easy to use. Some others find it somewhat easy (27.7%), and there are some who find it very easy (19.3%). Only a small number of respondents (1.2%) find the data search feature not easy to use. This data indicates that most SEHARIKU users have a good experience in using the search feature on the platform, but there are still some who face difficulties in its usage.

3.4 Satisfaction with the Graph Visualization Feature

Based on Table 4, in this context, a high level of satisfaction (satisfied and very satisfied), which

accounts for 92.3%, can be considered a positive indication that the graph visualization feature on SEHARIKU is well-received by users. Additionally, 4 respondents (4.8%) expressed dissatisfaction with the graph visualization feature. While the number is limited, it indicates that some users feel there is room for improvement in this regard.

Table 3. Ease of use of the search feature

Response	Frequency	%
Not easy	1	1.2
Somewhat easy	23	27.7
Easy	43	51.8
Very easy	16	19.3

Table 4. Satisfaction with the graph visualization feature

Response	Frequency	%
Very Dissatisfied	1	1.2
Dissatisfied	4	4.8
Satisfied	69	83.1
Very Satisfied	9	10.8

3.5 The Ease of Finding the Required Data

Based on Table 5, it shows that the majority of SEHARIKU website users feel that the platform provides ease in finding the data they need, with most stating that the search is easy. However, there are some respondents who find data searching difficult or very difficult, which may indicate the potential for improving the search feature or providing user guidance for those who may face difficulties.

Table 5. Ease of finding the required data

Response	Frequency	%
Very Difficult	1	1.2
Difficult	6	7.2
Easy	67	80.7
Very Easy	9	10.8

3.6 Feedback to the Website Administrators

Based on Table 6, it shows feedback regarding how often SEHARIKU website users provide feedback or suggestions to the platform. A total of 60.2% of respondents stated that they never provide feedback or suggestions to SEHARIKU. This indicates that the majority of users rarely

participate in giving input or feedback to the platform. About 34.9% of respondents mentioned that they provide feedback or suggestions occasionally, indicating that some users occasionally give input or suggestions, although the percentage is lower than those who never provide feedback. Only a small number of respondents, 2.4%, mentioned that they provide feedback frequently. The results from this table can provide insights into the extent to which users actively participate in providing feedback or suggestions to SEHARIKU. In this context, efforts may be needed to encourage more users to engage in giving feedback because such feedback can be highly valuable for the development and improvement of the platform.

Table 6. Feedback

Response	Frequency	%
Never	50	60.2
Rarely	29	34.9
Frequently	2	2.4
Very Frequently	2	2.4

3.7 Supporting Research Activities

Based on Table 7, a total of 33 respondents (39.8%) stated that they have a neutral attitude regarding the extent to which SEHARIKU supports their research activities. This neutral attitude may reflect the respondents' uncertainty or lack of awareness about the website's contribution to their research. Additionally, 29 respondents (34.9%) mentioned that the SEHARIKU website helps support their research activities. This is a positive sign indicating that the majority of respondents feel that the website provides benefits in the context of research.

Table 7. Supporting Research Activities

Response	Frequency	%
Not Helpful	1	1.2
Neutral	33	39.8
Helpful	29	34.9
Very Helpful	20	24.1

3.8 Relevant and up-to-Date Information

Based on Table 8, from the data, the majority of respondents (79.5%) agree that the information provided by SEHARIKU is relevant and up-to-date. Furthermore, a small portion of respondents (16.9%) strongly agree with the relevance and importance of the information presented. Only a small minority (3.6%)

disagrees with this statement. These results indicate that the majority of SEHARIKU website users have a positive view of the quality and relevance of the information provided by the platform. This is a positive aspect that can serve as a basis for further development and optimization of SEHARIKU.

Table 8. Relevant and Up-to-Date Information

Response	Frequency	%
Disagree	3	3.6
Agree	66	79.5
Strongly Agree	14	16.9

3.9 Impact on Understanding Health Issues in Semarang City

Based on Table 9, the majority of respondents, which is 59 people (71.1%), stated that the use of the SEHARIKU website has a significant impact on improving their understanding of health issues in Semarang City. This indicates that most users perceive tangible benefits from this website in terms of enhancing their understanding of health issues.

Table 9. Impact on Understanding Health Issues in Semarang City

Response	Frequency	%
No impact at all	3	3.6
Slightly impactful	12	14.5
Moderately impactful	59	71.1
Highly impactful	9	10.8

3.10 Recommending the SEHARIKU Website

Based on Table 10, it can be concluded that the majority of users have a history of recommending the SEHARIKU website, either regularly or occasionally. However, there is still a small portion of users who may need to be further introduced to the benefits and potential of this website to increase the level of recommendations.

Table 10. Recommending the SEHARIKU website

Response	Frequency	%
Never	28	33.7
Rarely	14	16.9
Sometimes	35	42.2
Frequently	6	7.2

4. DISCUSSION

The research results indicate that the majority of respondents (51.8%) have a low frequency of using the SEHARIKU website, accessing it rarely. This suggests that most users tend not to use this platform frequently. On the other hand, around 26.5% of respondents access the SEHARIKU website several times a month. Although this number is lower compared to the group that accesses it rarely, this group still significantly contributes to website usage. A low frequency of usage can indicate several things. First, users may not have frequent needs or interests in accessing health data, so they only visit the website occasionally [13]. Secondly, this can also indicate that there is potential to increase user awareness of the benefits and relevance of SEHARIKU in supporting academic activities, research, or health policy. These findings are consistent with some previous studies that have shown that the frequency of using a platform or website is often influenced by a number of factors, including user needs [14-16]. Therefore, to increase the frequency of SEHARIKU usage, it is important to better understand user needs and preferences and implement effective promotional strategies to raise awareness of the benefits of this platform [17-19].

Based on the research findings depicted in Table 4, it can be concluded that the majority of respondents (51.8%) consider the search feature on SEHARIKU to be easy to use. This reflects a positive experience from a significant portion of users when using the search feature on the platform. Additionally, some others also find the search feature to be fairly easy (27.7%), while a smaller portion finds it very easy (19.3%). This indicates that, in general, most SEHARIKU users have a good understanding of how to use the search feature. However, it's important to note that there is a small number of respondents (1.2%) who find the search feature not easy to use. Although their percentage is small, it indicates that there are still some users who face challenges in using SEHARIKU's search feature. These challenges may involve issues such as a lack of clear guidance or perhaps the search feature not meeting their expectations. It's important to note that users' perception of an easy-to-use search feature is a positive aspect in the context of using a data repository website. This can enhance users' comfort and efficiency in finding the data they need. Therefore, SEHARIKU can take lessons from this positive

feedback and continue to strive to maintain or even enhance the quality of their search feature. In related literature, it's mentioned that users' perceptions of ease of use are a crucial factor influencing technology adoption and usage [20-22]. In the context of SEHARIKU, positive results regarding the ease of use of the search feature can be considered a supporting factor for the website's adoption by the wider community. Additionally, other research also highlights the importance of factors such as ease of use in the technology acceptance and usage theories [23]. The positive perception of users regarding the easy-to-use search feature can be interpreted as a positive contribution to the acceptance and usage of SEHARIKU as a health data platform.

Based on the findings of this research, it can also be concluded that the majority of SEHARIKU website users rarely participate in providing feedback or suggestions to the platform. A significant number of respondents, 60.2%, never provide feedback, while 34.9% stated that they do so infrequently. Only a small number of respondents, 2.4%, provide feedback frequently. The results of this research indicate the potential to increase user participation in providing feedback. Feedback and suggestions from users can be a valuable source of information for the development and improvement of SEHARIKU. Therefore, improvement efforts may be needed to encourage more users to engage in providing input. These research findings are consistent with previous findings that suggest the usage of technology and online platforms often depends on user participation in providing feedback [24]. Therefore, it is important for platform providers like SEHARIKU to raise awareness among users about the importance of providing feedback and make it easier for users to do so.

Based on the research findings documented in Table 10, it can be concluded that the majority of SEHARIKU users have a history of recommending this website, either regularly or occasionally. From the data, 42.2% of users have recommended SEHARIKU, while 33.7% have never done so. However, there is also a small portion of users (16.9%) who only do it infrequently, and 7.2% do it frequently. This research can be connected to technology acceptance theories [25]. This theory focuses on factors such as perceived ease of use and perceived usefulness in influencing user behavior in accepting and using technology. The level of recommendation by SEHARIKU users can be understood as one form of user behavior in

accepting and recommending this technology to others. The research can also relate the results regarding the level of recommendation to the concept of "social proof," which is one of the psychological principles in consumer behavior [26]. This concept indicates that people tend to follow behaviors that are perceived as common within a group or society. Therefore, when a significant number of users recommend SEHARIKU, it can be an important factor in encouraging more users to make recommendations.

5. CONCLUSION

The majority of users (51.8%) have a low frequency of using the SEhariku website, rarely accessing it. Most users (79%) found the search feature on SEHARIKU easy to use, reflecting positive experiences with this feature. User participation in providing input or suggestions on this platform is still low, namely 60.2%. The majority of users (76%) have a history of recommending SEhariku to others, either regularly or occasionally. The response results show results of more than 50%, giving a fairly good response

DATA AVAILABILITY

All relevant data has been constructed with supporting file information. This research will help researchers identify critical areas related to Website User Behavior at The Semarang Health Data Repository - Udinus Campus (SEHARIKU).

ETHICAL APPROVAL AND CONSENT

In accordance with international standards or university standards, written consent of respondents has been collected and stored by the author. This research has been approved by the Ethics Committee of Health Research at Dian Nuswantoro University with the number 626/EA/KEPK-Fkes-UDINUS/VIII/2023.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. De Vaus D, de Vaus D. Surveys in social research. Routledge; 2013.
2. Choi E-K. Cardiovascular research using the Korean national health information database. *Korean Circ J.* 2020;50(9):754–72.
3. Hsieh C-Y, Su C-C, Shao S-C, Sung S-F, Lin S-J, Kao Yang Y-H, et al. Taiwan's national health insurance research database: past and future. *Clin Epidemiol.* 2019;349–58.
4. Djulbegovic B, Guyatt GH. Progress in evidence-based medicine: A quarter century on. *Lancet.* 2017;390(10092):415–23.
5. Delahoz-Dominguez E, Zuluaga R, Fontalvo-Herrera T. Dataset of academic performance evolution for engineering students. *Data Br.* 2020;30:105537.
6. Uddin S, Ong S, Lu H. Machine learning in project analytics: A data-driven framework and case study. *Sci Rep.* 2022;12(1):15252.
7. Garau N, Orro A, Summers P, De Maria L, Bertolotti R, Bassis D, et al. Integrating Biological and Radiological Data in a Structured Repository: a Data Model Applied to the COSMOS Case Study. *J Digit Imaging.* 2022;35(4):970–82.
8. Huang Y-H, Rose PW, Hsu C-N. Citing a data repository: A case study of the protein data bank. *PLoS One.* 2015; 10(8):e0136631.
9. Weerakkody V, Kapoor K, Balta ME, Irani Z, Dwivedi YK. Factors influencing user acceptance of public sector big open data. *Prod Plan Control.* 2017;28(11–12):891–905.
10. Kim Y, Adler M. Social scientists' data sharing behaviors: Investigating the roles of individual motivations, institutional pressures, and data repositories. *Int J Inf Manage.* 2015;35(4):408–18.
11. Ho K-F, Ho C-H, Chung M-H. Theoretical integration of user satisfaction and technology acceptance of the nursing process information system. *PLoS One.* 2019;14(6):e0217622.
12. Jeng J. Usability assessment of academic digital libraries: effectiveness, efficiency, satisfaction, and learnability. 2005;
13. Winston S. Health information national trends survey (hints. gov). *Med Ref Serv Q.* 2021;40(2):215–23.

14. Abraham C, Junglas I, Watson RT, Boudreau M. Explaining the unexpected and continued use of an information system with the help of evolved evolutionary mechanisms. *J Assoc Inf Sci Technol.* 2016;67(1):212–31.
15. Zhang Y, Sun Y, Xie B. Quality of health information for consumers on the web: A systematic review of indicators, criteria, tools, and evaluation results. *J Assoc Inf Sci Technol.* 2015;66(10):2071–84.
16. van der Vaart R, Drossaert CHC, Taal E, van de Laar MAFJ. Patient preferences for a hospital-based rheumatology Interactive Health Communication Application and factors associated with these preferences. *Rheumatology.* 2011;50(9):1618–26.
17. Sun Y, Zhang Y, Gwizdzka J, Trace CB. Consumer evaluation of the quality of online health information: systematic literature review of relevant criteria and indicators. *J Med Internet Res.* 2019;21(5):e12522.
18. Jiang Y, Sun P, Chen Z, Guo J, Wang S, Liu F, et al. Patients' and healthcare providers' perceptions and experiences of telehealth use and online health information use in chronic disease management for older patients with chronic obstructive pulmonary disease: A qualitative study. *BMC Geriatr.* 2022;22:1–16.
19. Burghle A, Abrahamsen B, Lundby C, Rossing C, Hansen RN, Nørgaard LS, et al. Customers' information seeking behavior prior to community pharmacy visits: A community pharmacy survey. *Res Soc Adm Pharm.* 2020;16(10):1442–6.
20. Baabdullah AM, Rana NP, Alalwan AA, Islam R, Patil P, Dwivedi YK. Consumer adoption of self-service technologies in the context of the Jordanian banking industry: Examining the moderating role of channel types. *Inf Syst Manag.* 2019;36(4):286–305.
21. Alam MZ, Hoque MR, Hu W, Barua Z. Factors influencing the adoption of mHealth services in a developing country: A patient-centric study. *Int J Inf Manage.* 2020;50:128–43.
22. Rajak M, Shaw K. Evaluation and selection of mobile health (mHealth) applications using AHP and fuzzy TOPSIS. *Technol Soc.* 2019;59: 101186.
23. Baishya K, Samalia HV. Extending unified theory of acceptance and use of technology with perceived monetary value for smartphone adoption at the bottom of the pyramid. *Int J Inf Manage.* 2020;51:102036.
24. Pushpakumar R, Sanjaya K, Rathika S, Alawadi AH, Makhzuna K, Venkatesh S, et al. Human-Computer Interaction: Enhancing User Experience in Interactive Systems. In: *E3S Web of Conferences.* EDP Sciences. 2023;4037.
25. Venkatesh V, Morris MG, Davis GB, Davis FD. User acceptance of information technology: Toward a unified view. *MIS Q.* 2003;425–78.
26. Talib YYA, Saat RM. Social proof in social media shopping: An experimental design research. In: *SHS Web of Conferences.* EDP Sciences. 2017; 2005.

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