



Enhancing User Engagement in Digital Health Data: Factors Affecting the Usage of My Daily Data Repository

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Abstract. In the era of Industry 4.0, data has become a valuable commodity. The continuous growth of data has the potential to be burdensome or rendered useless if not managed effectively. Various sectors of human activity have now become substantial data sources, often called Big Data. Open Science principles, emphasizing transparency in research, have promoted more open data usage. Data utilization has been adopted in various countries, including South Korea, Taiwan, and the United Kingdom, as well as by private companies and insurers who recognize the value of data in decision-making. However, in Indonesia, the use of data to support decision-making is not fully optimized. The study involves 83 SEHARIKU website users and identifies factors influencing user engagement, including data accuracy, relevance, website accessibility, affordability, and data security. The findings show that data accuracy and safety have the most significant impact on user interest. Data relevance and website accessibility also influence user interest, albeit to a lesser extent. Affordability does not significantly affect user interest in utilizing SEHARIKU. This study emphasizes the importance of enhancing the SEHARIKU website for better user-friendliness. It underscores the crucial role of data security in building trust and encouraging participation in the digital healthcare data market.

Keywords: Data Repository, Data Security, Data Relevance, Website Accessibility, Data Accuracy.

1 Introduction

Data has become a precious commodity in the era of the Fourth Industrial Revolution. Similar to oil or coal in previous industrial revolutions, data must be carefully discovered and refined to be optimally utilized or to increase its value. The continuous growth of data every day also has the potential to become a burden or rendered useless if not managed well. Conceptually, data collects information or facts that provide insight into an object or situation (De Vaus and de Vaus, 2013). Currently, various sectors of human activity have become significant sources of data, often referred to as Big Data. This managed data is vital as a foundation for running numerous activities, supporting decision-making, and serving as an evaluative tool. The principles of

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Open Science, which emphasize research transparency, have promoted a more open use of data. Data utilization has also been adopted in several countries, including South Korea, which has employed the Korean National Health Insurance Claims Database to manage healthcare service claims data, including outpatient care, inpatient care, and medications (Choi, 2020). Taiwan has been using data from the Taiwan National Health Insurance Research Database to support decision-making and health research. This has resulted in 2,700 publications since its launch in 2000 (Hsieh *et al.*, 2019). England has also utilized its data to create a machine-learning system that provides insights and encourages healthcare providers to adapt to technology. Apart from these three countries, many private companies and insurance firms have also recognized the value of data in supporting decision-making (McWilliams *et al.*, 2019).

In Indonesia, the use of data to support decision-making hasn't been fully optimized. The Lancet even depicted Indonesia as a mysterious country based on a 2016 study showing a discrepancy between research findings and health issues in Indonesia (Djulbegovic and Guyatt, 2017). Health data has been collected through Sehariku (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) to store, manage, and present health data in the city of Semarang. SEHARIKU has comprehensive features to assist users in searching, viewing, and downloading data and visualizing it through graphs and tables. The Sehariku website can then generate information for the public decision-makers to evaluate and enhance research by higher education institutions or health policy experts/observers in Semarang City.

However, the public's usage of SEHARIKU is still limited. This could be due to various factors, such as users' unawareness of the website's existence, inadequate information presented on the website, or suboptimal features. Hence, there's a need for research to describe the factors influencing individuals to use the SEHARIKU website so that it can be optimized and utilized more widely by the public.

Quality and user satisfaction assessment has become a vital approach in evaluating website performance. Purwandani's study (Purwandani, 2018) emphasizes the importance of comparing expectations and reality in assessing a website. Thus, user satisfaction assessment does not merely measure satisfaction but also serves as a tool to enhance service quality, as aligned with the findings of Wijaya and Suwastika (Wijaya and Suwastika, 2017). System evaluation, as suggested by Sari and Syamsuddin (Henim and Sari, 2020), should be conducted periodically to serve as a basis for future improvements. Furthermore, as explained by Supit and Darma (Supit and Darma, 2018), providing constructive feedback is crucial to developing the relevant company or institution. Consequently, the utilization of quality evaluation and user satisfaction serves as a measuring tool and a foundation for continuous development and improvement.

Therefore, this research aims to identify the factors influencing users using the data repository website (SEHARIKU). The findings of this research are expected to provide a deeper insight into the factors affecting users, enabling more focused development efforts capable of significantly enhancing the use of SEHARIKU.

2 Materials and Method

This research adopts a user study approach with a descriptive design. Data was collected online using Gform through the following link: <https://bit.ly/PenelitianPenggunaSehariku2023>, which was disseminated to respondents or users of the SEHARIKU website via private messages. The sample for this research consists of 83 respondents who are users of the SEHARIKU website. The study was conducted for 4 months, from April to August 2023. Sampling was done using a purposive sampling technique, allowing the selection of respondents specifically relevant to the research objective - in this case, users of the SEHARIKU website with relevant experience and knowledge related to its usage. This research has obtained approval from the Research Ethics Committee of Dian Nuswantoro University with number 626/EA/KEPK-Fkes-UDINUS/VIII/2023.

The stages in this research are as follows:

- Reviewing literature related to factors influencing the usage of the data repository website (SEHARIKU).
- Conducting validity tests for the questionnaire intended for research purposes.
- Collecting data from SEHARIKU users regarding factors influencing the usage of the data repository website (SEHARIKU) through an online survey.
- Analyzing the collected data.

3 Results and Discussion

3.1 Results.

The research results consist of 7 questions about factors influencing using the data repository website (SEHARIKU). These questions encompass data accuracy and completeness, relevance of available data, accessibility of the data repository website, affordability, affordability's impact on interest, data security, and how data security affects interest in using the data repository (SEHARIKU). A detailed breakdown of the research findings can be seen in Table 1.

Table 1. Factors influencing the use of data repository website (SEHARIKU)

Statement	f	%
To what extent does the accuracy and completeness of data on a website affect your interest in utilizing it?		
Not Influential	1	1,2
Slightly Influential	23	27,7
Moderately Influential	42	50,6
Highly Influential	17	20,5
How relevant is the data in the data repository website to your research or work needs?		
Not relevant	2	2,4
Slightly relevant	52	62,7
Highly relevant"	29	34,9

Statement	f	%
To what extent does the ease of accessibility of the website data repository affect your interest in using it?		
Not influential at all	1	1,2
Not influential	6	7,2
Slightly influential	46	55,4
Highly influential	30	36,1
How affordable are the costs required to use the website data repository?"		
Unaffordable	6	7,2
Slightly affordable	36	43,4
Affordable	14	16,9
Very affordable	27	32,5
To what extent does the affordability of costs affect your interest in using the website data repository?"		
Not influential at all	6	7,2
Not influential	36	43,4
Slightly influential	14	16,9
Highly influential	27	32,5
To what extent does trust in data security affect your interest in using the website data repository?"		
Not influential	1	1,2
Neutral	28	33,7
Highly influential	54	65,1
Do not trust at all	7	8,4
Trust completely	76	91,6

The presented data shows that users' interest in utilizing the SEHARIKU data repository website is influenced by various factors. Trust in data security offers the highest value, with 91.6% of respondents stating they have a high level of confidence in the data security within the website. On the other hand, the irrelevance of the data to research or work needs is the lowest value, with only 2.4% stating that the data is irrelevant.

3.2 Discussion

The research findings indicate that the accuracy and completeness of data on a website significantly impact users' interest in utilizing it. Most respondents, accounting for 50.6%, stated that the accuracy and completeness of data greatly influence their interest in using the website. Furthermore, 20.5% of respondents also expressed that this factor has a very substantial influence on affecting their welfare. This suggests that to enhance user interest, ensuring the accuracy and completeness of data provided in a data repository website is crucial, thereby better meeting users' needs and expectations. Previous studies have demonstrated that the accuracy and completeness of data on a website significantly affect users' interest in utilizing it. Data accuracy, measuring how healthy data reflects actual values, and data completeness, measuring the extent to which data has adequate coverage and relevance, are two aspects of data

quality that play a pivotal role in determining the time users are inclined to use the website (Izham Jaya *et al.*, 2017) (Wang and Strong, 1996).

The research results also indicate that the majority of respondents, about 62.7%, stated that the data available within the SEHARIKU data repository website had a slight relevance to their research or work needs. Only about 34.9% of respondents considered the data to be highly relevant. Conversely, only 2.4% deemed the data to be irrelevant. This shows challenges in optimizing the relevance of the data available within SEHARIKU to meet user needs. Therefore, there is a need for improvements in the quality and relevance of the data provided in the repository to meet the broader needs of users. This is related to previous research that suggested data repository websites should be utilized by users for their research and work needs (Aripin and Somantri, 2021) (Sunyianto and Barus, 2023).

The accessibility and convenience of the website's data repository also significantly influence users' interest in utilizing it. From the gathered data, the majority of respondents, around 55.4%, stated that accessibility convenience slightly affects their interest in using the website. Furthermore, about 36.1% of respondents expressed that accessibility convenience greatly influences their interest. This indicates that efforts to enhance the accessibility of the SEHARIKU data repository website can be crucial in boosting user interest in leveraging it. While there is a minority of respondents who believe that accessibility convenience doesn't affect their interest (7.2%), the fact that most respondents feel its impact underscores the importance of paying attention to this aspect in developing a more engaging data repository website for users. One component in evaluating a website is its accessibility aspect. In simpler terms, accessibility refers to how easily a website can be accessed by users. The primary focus of website accessibility concepts is to ensure that the pages within a website can be smoothly navigated and read by users, unaffected by various conditions they might experience, as well as other constraints that might hinder their ability to access the website (Ismail and Kuppusamy, 2022). This is also in line with previous research revealing that ease of access to a website or data repository influences the interest in using the website (Ardiansyah, 2023).

Furthermore, the research findings indicate that most respondents consider the costs of using the SEHARIKU data repository website to be quite affordable or very affordable. About 16.9% of respondents stated the prices were affordable, while 32.5% felt they were very reasonable. However, around 7.2% of respondents found the costs unaffordable, and 43.4% considered them slightly cheap. This information indicates that most users tend to see the expenses required to use the SEHARIKU data repository website reasonably accessible. However, there's still a tiny percentage of respondents who might face financial constraints in utilizing it. This is important to consider in the development and marketing strategy of SEHARIKU to ensure wider availability and accessibility for various user groups.

Several aspects need attention in developing open access in an institutional repository, as outlined by Gibbons. According to Gibbons, the seven factors to consider in the effort to create open access in an institutional repository are formulating the reasons for development, establishing the repository's objectives, defining repository services, selecting appropriate software, developing written policies, building a com-

munity, and promoting the storage (Gibbons, 2004). However, it's noteworthy that, in this context, none of these are related to costs. Datasets can be provided for free, so cost issues are not concerning using this repository. This aligns to ensure that data repository websites like SEHARIKU remain affordable for various user groups.

The research results also show that the affordability of costs does not significantly impact users' interest in using the SEHARIKU data repository website. Most respondents (43.4%) stated that cost affordability does not affect their interest in using it, while 32.5% said it dramatically influences their interest. This indicates that the cost aspect is crucial in influencing user utilization of this data repository website. In developing a data repository website, it's essential to consider appropriate strategies to increase user interest in utilizing the data repository.

The research findings also illustrate that the majority of respondents, accounting for 91.6%, express a high level of confidence in the security of the data stored within the SEHARIKU data repository website. This reflects the significance of security factors in influencing user interest in utilizing this platform. The high level of trust may be attributed to the efforts undertaken by SEHARIKU in safeguarding and protecting user data, which in turn can enhance user trust in this platform. Therefore, the data security factor within the SEHARIKU data repository website can be considered a positive aspect supporting the usage of this platform in the context of research and work. These research findings align with other studies indicating that a high level of trust in data security is a critical factor in increasing user adoption (17). This demonstrates consistency in findings across related literature and underscores the importance of data security factors in driving the adoption of data repository platforms like SEHARIKU. In the digital health data market, data security is crucial as health data includes sensitive information that needs robust protection. If health data is not secure, it can jeopardize patient privacy and be used for unintended purposes. Therefore, enhancing data security is crucial in building patient trust and encouraging participation in the digital health data market (Maher, Khan and Prikshat, 2023).

4 Conclusion

In using the SEHARIKU data repository website, data security and high trust are critical factors in increasing user interest. Research results indicate that users have a high level of confidence in the data security of the website. Additionally, data accuracy and completeness, relevance of data to user needs, and ease of accessibility also influence user interest in utilizing this platform. Although cost isn't the main barrier, ensuring the data repository website remains affordable for various user groups is essential. These research findings underscore the importance of considering these factors in developing a data repository website that appeals to users. Data security and user trust should remain a priority in building trust and increasing participation in the digital health data market.

Declaration

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