ORIGINAL ARTICLE

Assessing Teacher Satisfaction with the *SistaUKS* System: A New Approach to School Health Program Stratification

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Abstract

Background: The School Health Program (UKS) is assessed to enhance its effectiveness in improving students' health levels. SistaUKS, a health information system comprising software and data, facilitates the automation of the UKS stratification assessment process. Evaluating this system is crucial for understanding user satisfaction, which enhances services and the system interface to increase user-friendliness. This study aimed to analyze teacher satisfaction regarding the utilization of the *SistaUKS* stratification system.

Methods: This is a descriptive quantitative study with a survey method. The sampling technique used was convenience sampling, which identified 33 junior high school teachers overseeing UKS in Boyolali Regency, who participated as respondents. Data were collected using a System Usability Scale (SUS) questionnaire, including 10 items. The analysis involved converting the points to a standard scale, summing these points, normalizing the scores, and calculating the final score.

Results: The findings indicate an average satisfaction level of 68.41, placing user satisfaction within the marginally high acceptability range and earning an adjective rating of good. While the *SistaUKS* system is noted for its ease of use, the analysis suggests that improvements are necessary for certain features to further enhance usability, for example, adding a Data Autosave Function. It could ensure that the system automatically saves data when users input it.

Conclusion: *SistaUKS* earns an adjective rating of good. This study underscores the importance of continual assessment and refinement of health information systems like *SistaUKS* to sustain high levels of user satisfaction and system efficiency.

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Introduction

Students' health plays a critical role in shaping their academic performance and overall well-being. According to the World Health Organization (WHO), Health Promoting Schools (HPS) are essential in fostering environments that support physical, mental, and emotional health. The concept aims to extend beyond individual behavior change and encompass organizational and structural modifications, such as enhancing the physical and social environment of the school, refining its curriculum, and adapting teaching

and learning methodologies.[1] Research conducted by Lee et al. (2019) concluded that, based on the degree of school endorsement, significant disparities exist across various indicators of healthy schools, encompassing healthy school policies, networking, physical environment, social environment, competencies for healthy living, and provision of health-promoting services.[2,3] Research undertaken in Taiwan indicated that schools achieving the gold standard exhibited commendable performance. Notably, the weakest performance across the six criteria at each award level was observed in the skills-based health curriculum.[3] Schools characterized by exceptional levels of esteem demonstrated discernible differences in student health, quality of life, and overall well-being compared to institutions with lower levels of recognition.[4]

The concept of a healthy school in Indonesia is implemented through the *Usaha Kesehatan Sekolah* (*UKS*). *UKS* operates under the collaborative management of four ministries in Indonesia (the Ministry of Education, the Ministry of Health, the Ministry of Religion, and the Ministry of Home Affairs). It comprises three primary programs: health education, health services, and the promotion of a healthy school environment, alongside management indicators that must be implemented at elementary, junior high, and senior high school levels.[5] According to the previous research findings, *UKS* yields benefits in enhancing child health, serving as a platform for delivering reproductive health information[6] and addressing obesity concerns.[7-9] A healthy school model has been shown to enhance the student health, well-being, and academic achievement.[10]

To optimize its role in enhancing the health status of students, *UKS* requires regular assessment. This assessment, known as *UKS* stratification, involves categorizing *UKS* based on its ability to fulfill sub-indicators within the primary *UKS* program. *UKS* stratification has traditionally relied on paper-based records from primary healthcare visits to targeted schools, a method fraught with numerous shortcomings, such as prolonged data collection and processing times, and significant resource expenditure. Therefore, the research team has devised a self-assessment information system for schools to be completed by teachers overseeing *UKS*. This system aims to automate *UKS* stratification through a dedicated website called *SistaUKS* (https://*SistaUKS*.net/).[11] This is the first system designed to assess *UKS* and store documentary evidence of its implementation. By automating the assessment process, *SistaUKS* has the potential to significantly improve student health outcomes. It also allows schools to better recognize and solve health issues much quicker and more effectively, as interventions will be timely and appropriate. This system will also enhance the schools' monitoring of their progress in promoting health and will contribute directly to the students' well-being through more informed decision-making and faster responses to health needs (Figure 1).

SistaUKS serves as a Health Information System (HIS), involving a collection of software and data designed to automate the *UKS* strata assessment process. The functionality of *SistaUKS* aligns with the core functions of HIS, which include maintaining a shared information space, enhancing record quality, minimizing errors, fostering institutional transparency, and reducing reporting time.[12] Within the broader context, HIS constitutes a fundamental component of a country's healthcare system. Indonesia positions HIS within subsystem 6, "The National Health System, specifically Health Management, Information, and Regulation". HIS plays multifaceted roles, serving as a decision-making tool for health-related issues,[13] facilitating monitoring and evaluation, and serving as a repository of essential data sources to enhance healthcare services.

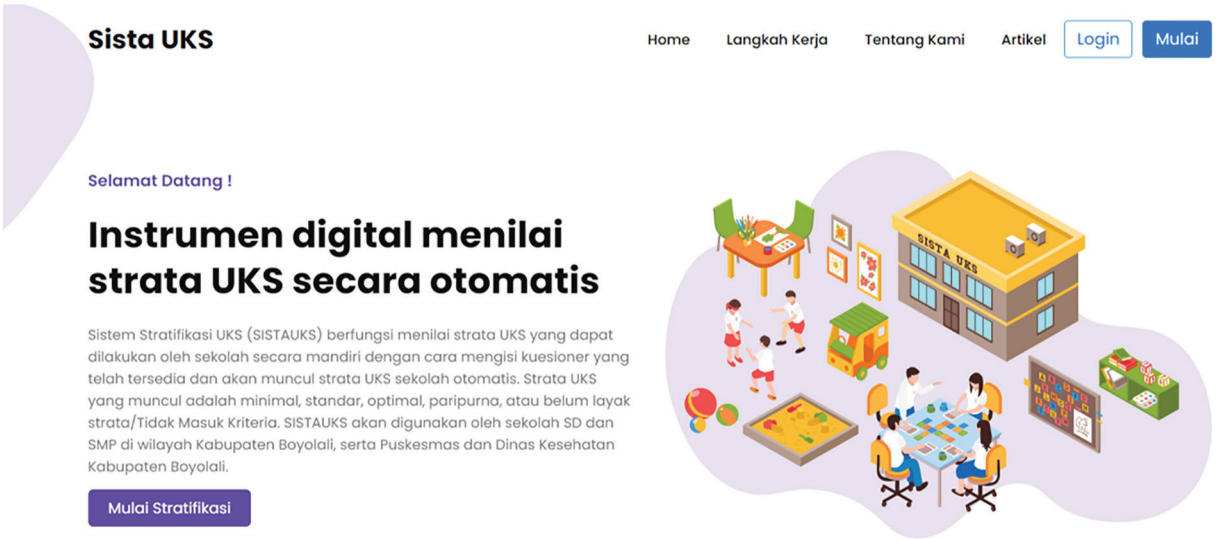

Figure 1: Front Page of *SistaUKS* (Statification System of *UKS*) School Health Program. Featuring the Home, Work Steps, About Us, Articles, and Login menus for easy navigation and access to comprehensive information about the *UKS* program and its implementation. Source: https://sistauks.net/

The selection of this system was not arbitrary but rather based on the pressing need to expedite the data collection process, achieve more accurate analyses, and enable real-time program monitoring. The primary rationale behind the development of *SistaUKS* was to provide a tailored solution to the practical constraints *UKS* practitioners face in the field. By harnessing digital technology, we aimed to enhance the effectiveness and efficiency of managing the *UKS* program and gain deeper insights into the health status of students in schools. Thus, *SistaUKS* represents not merely a technological innovation but also a strategic step towards enhancing the overall quality of the *UKS* program. Through this research, we aspire to offer a more comprehensive understanding of the role and benefits of *SistaUKS* in improving student health within the school environment.

System evaluation is crucial for obtaining insights into user satisfaction, facilitating improvements in services and system interfaces to enhance user-friendliness.[14] The System Usability Scale (SUS) questionnaire has been developed to measure the user satisfaction of the system, demonstrating excellent validity scores.[15] Several studies on school websites have used the SUS to assess user satisfaction.[16-22] Hence, the study aims to implement and evaluate the system using the theory of usability testing, potentially elucidating the perception of system satisfaction among teachers overseeing *UKS*. Based on the literature review, no article has yet examined this system.

Methods

Research Design

This research uses descriptive quantitative research to describe the variable being studied. The research variable is user satisfaction, which is measured using SUS. Descriptive quantitative research is a methodological approach to thoroughly explain the variables under investigation.[23] This method provides detailed information about the teacher's perspective of satisfaction in using *SistaUKS* system.

In the context of this study, the approach was conducted by a survey. The survey method allows researchers to collect quantitative data directly from participants,[24] typically through structured questionnaires. Using surveys, researchers can systematically gather data from a sample population, enabling them to quantify various attributes or responses related to the research topic. The collected data was analyzed using statistical methods to generate descriptive statistics such as means.[25]

Research Subject

This research was conducted on the implemented *SistaUKS* system and evaluated using the usability testing theory. The object of the research is the perception of system satisfaction held by the teachers overseeing *UKS*. The study was conducted from October to December 2023 in Boyolali Regency. There were 50 junior high schools that have used *SistaUKS*. The sample minimum number required for SUS testing is 12 participants.[26] The number of respondents obtained from this research was 33 teachers from 33 junior high schools in Boyolali Regency.

The sampling technique used was convenience sampling. This technique entails sample selection based on availability and ease of access.[27] The convenience sampling technique used in this research provided a practical means to collect data from teachers overseeing the *SistaUKS* system. It carries the potential for bias due to the non-random selection of participants. This limitation could affect the study's generalizability, as the sample may not accurately represent the larger population of schools utilizing the system. Therefore, the results may reflect specific characteristics or preferences of the sampled group, rather than broadly applicable to all users of the *SistaUKS* system. The inclusion criteria were as follows: (a) teachers overseeing *UKS*, (b) teachers who have utilized *SistaUKS*, and (c) teachers who are willing to complete the research questionnaire. The exclusion criteria are the teachers who have significant missing data and are sick for the research period.

Research Instrument

This research used a SUS questionnaire consisting of 10 questions as follows, with a rating scale of 1-5:

1. I think that I would like to use this system frequently.

2. I found the system unnecessarily complex.

3. I thought the system was easy to use.

4. I think that I would need the support of a technical person to be able to use this system.

5. I found the various functions in this system were well integrated.

6. I thought there was too much inconsistency in this system.

7. I would imagine that most people would learn to use this system very quickly.

8. I found the system very cumbersome to use.

9. I felt very confident using the system.

10. I needed to learn a lot of things before I could get going with this system.

According to previous research, the System Usability Scale (SUS) questionnaire is a valid and reliable tool for measuring usability, with key

psychometric findings:[15]

a. SUS correlates strongly with other usability metrics (r=0.806), proving its concurrent validity. It is also sensitive enough to detect usability differences between the systems.

b. The overall SUS shows high internal consistency (α=0.91), with its two subscales, Usability (α=0.91) and Learnability (α=0.70), also demonstrating good reliability.

Data Collection and Analysis

Data were collected by distributing questionnaires to teachers and filled out by the participants. This study was conducted in accordance with ethical guidelines, ensuring the confidentiality of participants' responses. Informed consent was obtained from all participants before data collection. Then, the researcher checks the answers, anticipating if there are still empty answers. The data were entered into Excel and analyzed descriptively with the Data Analysis ToolPak in Excel.

The following steps to analyze the data:

1. Point Conversion

a. In statements with odd numbers (1, 3, 5, 7, 9), subtract the user's answer value by 1.

b. In statements with even numbers (2, 4, 6, 8, 10), subtract five from the user's answer value.

The point conversion process ensures that higher scores consistently reflect higher levels of satisfaction and usability across both positive and negative questions, preventing confusion caused by reverse-worded items.

2. Point Summation: Summing the scores across all items provides a comprehensive measure of overall user satisfaction and system usability. This ensures that both positive and negative aspects of the system are captured by summing all points generated from the first step.

3. Score Normalization: Multiply the number of points of the second step by the correction factor, which is 2.5. The System Usability Scale (SUS) is designed to produce scores comparable to a percentage scale, and multiplying by 2.5 ensures that the final score falls within this 0 to 100 range, which is easier to interpret and analyze in terms of usability performance.

Results

Implementation of SistaUKS System

SistaUKS system is developed to assess the performance of *UKS* by their school. Each school has four steps to complete *SistaUKS*.

1. Each school is registered in *SistaUKS*.net.

2. After completing the registration, they have to wait for approval from the system administration. This step ensures that the user is from the school delegation.

3. After the admin approval step, each school can start to complete the form.

a. The first form is about *UKS* administration and infrastructure.

b. The second form is about health education in their school.

c. The third form is about health services in their school.

d. The fourth form is about school health environment development in their school.

e. The fifth form is about *UKS* management in their school.

4. After completing the form, an achievement certificate based on the *UKS* stratification guideline and recommendations for improving it will appear. Each school can print the certificate and request a confirmation signature from the Public Health Center and Public Health Office.

Demographics of Respondents

The respondents in this research were from the following subdistricts (Figure 2).

The respondents came from 17 out of 22 districts in Boyolali Regency. The subdistricts with no representative were Juwangi, Ngemplak, Selo, Tamansari, and Wonosamodro. The majority of respondents came from Ampel, Boyolali, and Kemusu.

The respondents' Demographic data in the Table 1 reveals an interesting profile of the participants in this research. The group consists of 33 individuals, with a slight majority being female (55.0%) compared to male (45.0%). What's particularly striking is the professional composition of the respondents: an overwhelming 97.0% (32 out of 33) were teachers overseeing *UKS*, while only one respondent (3.0%) was identified as a health worker.

The age distribution of the respondents indicates a relatively young group, with a median age of 29 years. However, age varies considerably, ranging from 22 to 55 years old. This wide span suggests a mix of early-career and more experienced professionals. Regarding their experience as *UKS* teachers, the median tenure is just 1 year, but the range extends from 1 to 20 years. This broad range of experience levels could provide diverse insights into the *UKS* program, combining fresh perspectives and long-term observations.

Evaluation of SistaUKS System

(1) Results of SUS Analysis on *SistaUKS* System

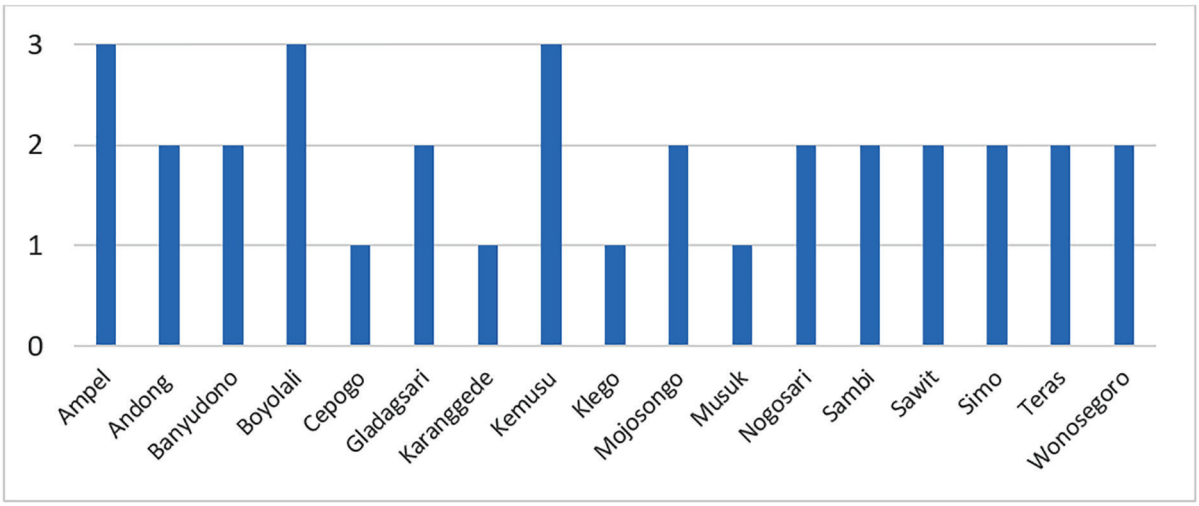

Figure 2: The Distribution of Respondent's Subdistrict

Table 1: Demographic features of respondents

Categorical	**n**	**%**
Sex		
Female	18	55.0
Male	15	45.0
Role		
Health worker	1	3.0
Teachers overseeing *UKS*	32	97.0
Numerical	**Median**	**Min-Max**
Age	29 years	22 – 55 years
The time period becomes *UKS* teacher	1 year	1 – 20 years

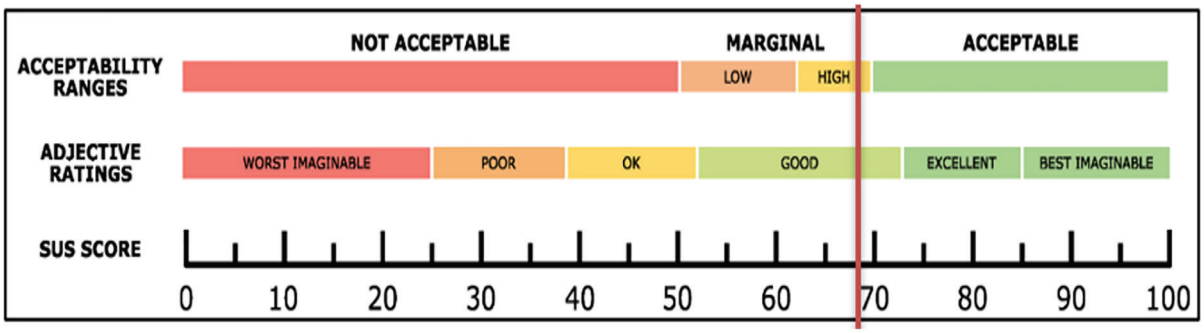

Figure 3: SUS Adjective Ratings, Grade Scale, and Acceptability Ranges. Source: Research by Catalan, et al. (2021)[28]

After implementing this system, teachers answered 10 questions in the SUS questionnaire. The result is an overall average SUS score and an average score on each SUS question for *SistaUKS* (Figure 3).

Based on the results of the SUS, the *SistaUKS* system obtained an average score of 68.41, indicating a good level of usability. A score exceeding 68 in adjective ratings is generally classified as "good". Users typically find the system to be easy to use and efficient. The overall experience is positive, and the system meets basic usability standards. Furthermore, the data also reveals that the Acceptability Ranges suggest a "Marginal-High" positioning. A score in this range indicates that the system is not performing poorly. The usability of the system is on the edge of acceptable, but still somewhat lacking. There may be room for improvement.

(2) Average Score on Each SUS Question

The Table 2 shows the average scores related to each SUS questionnaire item related to the *SistaUKS* system. The SUS includes affirmative and negative statements about the system, the scores of which indicate user consensus. Positive statements like "I think that I would like to use this system frequently" (Item 1), "I thought the system was easy to use" (Item 3), and "I would imagine that most people would learn to use this system very quickly" (Item 7) had relatively high scores with means between 4.06 and 4.09. It indicates that users generally found the system easy to use, learnable, and frequently used.

On the other hand, negative statements included "I found the system unnecessarily complex" (Item 2), "I thought there was too much inconsistency in

Table 2: Average score on each SUS question for *SistaUKS*

SUS Item	Questions	Average Score
1 (positive)	I think that I would like to use this system frequently.	4,06
2 (negative)	I found the system unnecessarily complex.	2,15
3 (positive)	I thought the system was easy to use.	4,09
4 (negative)	I think that I would need the support of a technical person to be able to use this system.	2,48
5 (positive)	I found the various functions in this system were well integrated.	3,84
6 (negative)	I thought there was too much inconsistency in this system.	2,63
7 (positive)	I would imagine that most people would learn to use this system very quickly.	4,06
8 (negative)	I found the system very cumbersome to use.	2,03
9 (positive)	I felt very confident using the system.	3,87
10 (negative)	I needed to learn a lot of things before I could get going with this system.	3,27

this system" (Item 6), and "I found the system very cumbersome to use" (Item 8). These items scored lower, with means ranging from 2.03 to 2.63. This suggests that users did not consider the system overly complex or cumbersome; however, there is room for improvement on consistency and simplicity.

Overall, the average scores indicate a generally positive user experience, whereas users have expressed confidence (Item 9, score of 3.87) and perceive the system as integrated (Item 5, score of 3.84). However, the considerably lower scores on specific negative items suggest areas where the system may need to be improved, particularly in reducing complexity and ensuring consistency.

Discussion

Therefore, this research has established that scores above 68 are generally classified as "above average" or "good." Also, from the data, the Acceptability Ranges indicate a Marginal High position. It means that users view the system's usability positively and depict an overall good level of acceptability. These results are in the same line with the findings of a previous study by Welda (2020), where similar averages were reported and fell under the Marginal-High category.[29] Although these scores were above the satisfactory threshold, they were still relatively close to it. It means that even though the system is generally viewed as very effective, there are areas where improvements could be made to further increase user satisfaction.

The first question determines the extent to which users are likely to use the system frequently. Users who have favorable attitudes toward the system will be more likely to continue frequent use of the system in the future.[30] Agree response to this question would indicate that this user considers the system adequately useful and beneficial to justify the routine use. The second question evaluates the user's perception of the complexity of the system. When users find the system too complex, they may face problems using it. An agree response to this question indicates that the user thinks that the system is too complicated to be necessary or has an unnecessarily high level of complexity. It can reduce user's satisfaction and effectiveness.[31] According to this research, the system has significant advantages in its usage. Among the advantages mentioned by the respondents are the ability to determine their proper *UKS* implementation criteria and whether *UKS* are successfully implemented in their schools. The information system is a handy tool that can help promote better decision-making, especially when developing *UKS*.[32]

The third question would assess the degree to which users consider the ease of operating the system. Agreeing to this question would then mean that the users find the interface of the system intuitive, functions can easily be found, and it does not require much effort to learn or use the system.[33] It can also be said that users who find the system easy to use are more likely to experience pleasure from using it again and more frequently.[30] The fourth question explores the users' perception of the need for technical assistance using the system. An agreement response to this question suggests that users perceive the system to possess a level of complexity or difficulty that necessitates supplementary assistance from technical or expert individuals for its effective utilization. Conversely, a disagree response implies that users believe they can operate the system independently, without requiring additional help.[31] Based on the findings of this research, it can be concluded that the system is user-friendly. They also indicated that the registration and login method was uncomplicated, data entry was straightforward, and instructions inside the application were understandable.

The fifth question assesses the extent to which users feel that various functions within the system are well-integrated. Functional integrity refers to how a system's various features and functions are related to one another and work together to provide users with a harmonious and integrated experience.[34] Agreement response to this question shows that users feel the system integrates its various features well, making usage more efficient and less confusing. The sixth question measures the extent to which users perceive that the system has a high level of inconsistency. An agreement response to this question indicates that

the user is having difficulty navigating the system due to inconsistencies in the design or behavior of the user interface.[31] Consistency is an essential factor in usability because users feel more comfortable and accustomed to consistent patterns in the user interface. In this system, registered respondents need to wait for manual validation by the administrator before they can log in and start entering data. It is a security measure within the system, but it does not sufficiently convince users that the system is well-connected and efficient. Therefore, there is a need for faster and automated validation processes. Furthermore, respondents also felt that there was a need for automatic data storage, so that when users engage in prolonged data entry sessions, the initially entered data does not disappear.

The seventh question measures the extent to which users believe most people will learn to use the system quickly. An agree response indicates that the user finds the system intuitive and easy to understand, while a disagree response indicates that the user feels the system may take longer or more effort to learn. This question indicates the level of simplicity of the system and the potential for mass adoption.[35]

The eighth question evaluates how difficult or troublesome users find using the system. Agree response indicates that the user is experiencing difficulties or obstacles in using the system, perhaps due to complexity, an unintuitive interface, or a time-consuming process. Disagree response indicates that users feel the system is relatively easy to use without significant difficulty.[31]

The ninth question measures the users' confidence in their ability to use the system. An agree response indicates that the user feels comfortable and confident using the system, perhaps because the system is easy to understand and use. A high level of trust can positively affect the user experience and increase system adoption.

The tenth question evaluates how much users feel they need to learn before they can use the system. An agree response indicates that users feel there is much to learn before using the system effectively. Conversely, a disagree response indicates that users feel they can start using the system quickly without the need for deep learning.[31] The respondents expressed that the system is relatively easy to use; however, they felt that it is important to learn certain aspects before entering the data, specifically, which documents the need to be prepared as evidence for the independent assessment of the implementation of *UKS* in schools.

Based on the average results of each question, it is evident that there is a predominantly positive perception of the *SistaUKS* System. Questions 1, 3, and 7 obtained an average score of more than 4 on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). However, some values fell below 4, specifically for questions 5 ("I found the various functions in this system were well integrated") and 9 ("I felt very confident using the system"). Conversely, the negative perception of the *SistaUKS* System is relatively low. Questions 2, 4, 6, and 8 received an average score of less than 3 on the same scale. Nevertheless, there was still a value exceeding 3 for question 10 ("I needed to learn a lot of things before I could get going with this system"). Bangor argues that a system can be feasible if it has an average SUS score of at least 70. Systems that can be categorized as very good have an average SUS score above 90. Systems with an average SUS score below 70 can be considered as the systems that must be monitored for further development.[36, 37] The enhancement planned for the *SistaUKS* system is Data Autosave Function so that when users are engaged in prolonged data entry sessions, the initially entered data does not disappear.

One limitation of this study is using a convenience sampling method to gather data from teachers using the *SistaUKS* system. While this approach allowed for efficient data collection, it may have introduced sampling bias, as participants were selected based on availability rather than through random sampling. This non-random selection might allow for some domination of voices in the sample, which could again lead to a biased outcome in the direction of the experiences of those users. Hence, the findings cannot be completely generalized to the larger population of users in the teachers and schools using the system; therefore, the conclusions that could be drawn from it would be limited. Further studies should employ more representative sampling methods, such as random or stratified sampling, so that the sample is better balanced and more inclusive in its makeup, truly representing the diversity within the *SistaUKS* user base. This weakness aside, the results from this study are a good starting point for grasping the system' usability and improvements it requires.

Conclusion

Summary Findings

SistaUKS is an online-based system for the independent assessment of the *UKS* stratification, which applies in educational institutions. Currently, the system has assigned fifty junior high schools in the District of Boyolali, while thirty-three junior high schools have submitted the assessment of user satisfaction. From the analysis, the average score was 68.41, indicating that the range of acceptability in the category of "marginal-high" with an adjective rating of "good". The *SistaUKS* system is user-friendly, according to the results of the analysis. Future research may focus, apart from extracting the overall information about the satisfaction perceptions, on

the satisfaction perceptions based on the age of the respondents, devices used, and level of education.

Areas for Improvement

The system still needs some specific features to make it easier to use, such as automatic validation and data autosave function.

Call to Action for Stakeholders

The introduction of the *SistaUKS* system offers a significant opportunity to enhance the understanding of *UKS* position. This system empowers stakeholders to make informed, data-driven decisions and implement targeted improvements by providing valuable insights and a comprehensive overview of the current status. Embracing this system will facilitate better management and strategic planning, ultimately contributing to school health initiatives' overall effectiveness and success.

Limitation

The limitation is the sampling technique, which was convenience sampling. This non-random selection process could lead to an overrepresentation of particular perspectives, potentially skewing the results toward the experiences of a specific subset of users. As a result, the findings may not be fully generalizable to the broader population of teachers and schools using the system, limiting the applicability of conclusions.

Future Research

The next research project can identify areas for improvement, and the future research should aim to utilize more representative sampling methods, such as random or stratified sampling, to ensure a more balanced and inclusive sample that accurately reflects the diversity of the *SistaUKS* user base.

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Authors' Contribution

AKU and MRR contributed to the design and implementation of the research. JBN, MKK, SK and BMK conducted the data collection and analysis. AKU, MRR, JBN, MKK, SK and BMK were involved in manuscript preparation, content, and administration. All the authors discussed the results and contributed to the final manuscript.

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Conflict of Interest

None declared

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