

Evaluation of the implementation of Health Information System (*Sistem Informasi Kesehatan Desa-SIKD*) for Cadres in Penadaran Village, Grobogan Regency 2023

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ABSTRACT

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Background: Health data reported by health cadres in villages is still done manually. Grobogan Regency needs to receive attention in health development in Central Java. Grobogan Regency's HDI in 2020 was 69.87, which was below the achievement of Central Java Province, namely 71.87 and National, 71.92. **Method:** This study aims to maximize the SIKD (Sistem Informasi Kesehatan Desa) which was a website-based data collection system developed by researchers to make it easier for village cadres to record health data. **Results:** This research was a descriptive analytic research with a qualitative approach with the aim of getting a picture or description of an actual situation. SIKD was tested for User Experience. This study took place in Penadaran Village, Gubug District, Grobogan Regency. It could be concluded that based on the results of the tests that have been carried out, the design that has been made has received a positive response and is worthy of being developed. SIKD is feasible to be developed. It was hoped that in the future, **Conclusion:** SIKD can be used as a data center that integrates all information systems and applications into a centralized database, so that it can be used by the wider community.



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Introduction

Health data was something that is very important in health development in a region. Health data and information are very strategic resources. Especially as input in policy making. The availability of accurate, precise, fast and up-to-date data and information describes an organization's management performance. The data that is processed and processed will be very meaningful for the data recipient. This is what becomes the real value or is understood in policy making actions [1]. Health data collection was a form of health surveillance. Implementation of health surveillance must be carried out by certified and experienced health workers to obtain quality data. Data quality was influenced by the knowledge and skills of data takers, data collection techniques, and data availability as needed. Until now, most health data collection at the village level is still carried out manually by health cadres at the village level. The role of Posyandu cadres in the village in health development includes Maternal and Child Health service activities, Family Planning services, Immunization services, Nutrition services, and Diarrhea and other infectious disease control services, this can be seen from

the level of activity and targets the program. The obstacles experienced by cadres in carrying out development activities are that the majority of cadres have a low level of education and have not received maximum training for their duties as Posyandu cadres. [2] [3].

Health cadres synergize with PKK activities at the RT/RW level, requiring integrated recording and reporting. Health cadres need to be equipped with the ability to collect health data. This was important because the health data produced by cadres through Posyandu or Posbindu activities will determine policies related to health at the village level. Data that is still manual actually burdens cadres because of the large amount of data that must be recorded and reported. Apart from that, the data available was still manual which will hinder the validity of the data. Energy and time are also needed when cadres have to recapitulate data from all hamlets if reporting is requested from the Puskesmas [4]. There is a need for information technology to help collect health data. The application of information technology in collaboration with government programs has been proven to facilitate various aspects in the health sector, such as information systems for the health of infants and toddlers. [5], *Smart Village* Indonesia [6], Health service recording and reporting system [7], and so forth.

A preliminary study conducted by researchers obtained several data. Grobogan Regency needs to receive attention in health development in Central Java. Grobogan Regency's HDI in 2020 was 69.87, which was below the achievement of Central Java Province, namely 71.87 and National, 71.92. Compared with the HDI of districts in the area around Grobogan, Grobogan District shows the lowest position. Gubug District has taken strategic and bold steps, namely allocating 10% of the Village Fund budget to deal with health problems in the Gubug District area, Grobogan Regency. Compared with urban residents, rural residents have lower access to health information. Research finds that rural residents with limited levels of health literacy have lower access to mass media [8].

Then researchers carried out a digital health literacy survey for citizens which was conducted in December 2022 among cadres. The survey results found that only 21% of cadres had digital health literacy skills with "expert" status.[9]. Then the researchers also conducted interviews with cadres and the village government and found that health cadres did not have sufficient village health data to process and utilize. Health cadres are unable to access health data from the health service. Penadaran Village is one of the villages in Grobogan district. In 2023, cadres in Penadaran village will use the village health information system (SIKD) which is used for the recording process at posyandu and posbindu. When implementing a new system in an area, an evaluation needs to be carried out to assess the effectiveness of the system for the purposes of further system development [10–12]. Information system evaluation is a process for exploring and finding out about the extent of an information system implementation activity, both from the perspective of perception, users, organizations, and in terms of the information system technology system [13]. The aim of this study is to evaluate the implementation of the village health information system (sikd) among cadres in Penadaran village, Grobogan district.

Materials and Method

This type of research was descriptive analytical research with a qualitative and quantitative approach with the aim of getting an overview or description of an actual situation [14]. The type of research design was cross sectional. Cross sectional research was research that collects data only at that time [15]. This research was carried out in Penadaran Village, Gubug District, Grobogan Regency, the research period carried out by the researchers was July to September 2023. Technique Sampling was carried out by purposive sampling [16]. Purposive sampling was sampling based on certain considerations made by the researcher himself, based on previously known characteristics or characteristics, namely 16 people consisting of 1 Head Village, 1 Chair of Empowerment of Family Welfare, 1 Village Health Forum Chair, 2 Integrated Service Post members, 3 Integrated Development Post members, 6 Cadres, 1 Village Midwife and 1 Village Apparatus. The data collection technique used was interviews where the researcher obtains verbal information or information from the target person of the research, observation, and the User Experience Questionnaire instrument. Data collection techniques for input variables use observation and interviews with 1 Village Head, 1 Chair of Empowerment of Family Welfare, 1 Village Health Forum Chair, 1 Chair of Integrated Service Post,

1 Chair of Integrated Development Post, 1 Cadre, 1 Village Midwife and 1 Village Apparatus. System use process variable using observation techniques carried out by researchers, data completeness and accuracy variables using data verification techniques and experience variables using the system using question and answer techniques using the UEQ questionnaire. User experience is an experience related to the user's reactions, perceptions, behavior, emotions and thoughts when using the system [17]. Sampling for the UEQ survey was carried out using accidental sampling. The number of samples in this research was 16 residents in Penadaran Village. The researcher explained the details of the research carried out using informed consent and the respondent signed a consent form. The inclusion criteria are that the respondent was a health cadre in Penadaran Village and is willing to be a research respondent. Observation where the researcher sees, hears and records a number and level of certain activities or certain situations that are related to the problem being researched, documentation studies and source triangulation, the results of the observations carried out by researchers for human activities and data entry was in accordance with standard procedures, organization, namely using existing document searches, and technology, namely information about computers. Documentation was a way of collecting data with documentation using existing documents. This research uses a check list to find out evaluations in the organization regarding policies and standard operational procedures and source triangulation according to Mamik (2015), namely exploring the truth of certain information through various methods and sources of data acquisition. For example, apart from interviews and observations, researchers can use participant observation, written documents, archives, historical documents, official records, personal writings, drawings or photos. The results of data analysis are presented in the form of tables and narratives with complete descriptions so that the evaluation results can be known. This research uses data analysis, namely descriptive qualitative by describing completely and precisely the data obtained from interviews, observations and documentation studies, then the results of the evaluation of the implementation of SIKD according to the hotfit method can be seen [18]. This research has been submitted to and passed the research ethics committee with No:000460/UNIVERSITAS DIAN NUSWANTORO/2023.

Results and Discussion

Results

Table 1 shows the educational background of the respondents. As many as 68.75% of respondents had a final educational background, namely high school. Meanwhile, 31.25% of respondents had a diploma/bachelor's degree. Table 2 shows that the majority of respondents were of productive age (81.25%). Meanwhile, only 18.75% are elderly. Based on the results of interviews with respondents, all respondents were housewives.

Table 1. Education Background

Education	n	(%)
Senior High School	11	68.75
Higher Education (D3/S1)	5	31.25

Table 2. Age

Age	n	(%)
(20-59 years)	13	81.25
(≥ 60 years)	3	18.75

Based on the results of an interview with the Penadaran village head regarding the urgency and benefits of the village health information system that has been implemented in Penadaran village, the village head fully supports the organized method of recording and reporting posyandu and posbindu data through the system. The Village Head said that with the existence of a village health information system, health data in the village could be described well so that villages could clearly know the health conditions of the people in their area. Likewise, the results of an interview with the

head of the PKK, who said that before there was a village health information system, they had started to use Google forms to collect data on self-awareness surveys, so that with the existence of a village health information system, the need for recording, data collection and reporting would be reduced. easier. The use of the village health information system was considered easy by village health forum, posbindu and posyandu cadres. They said that the features used in the system were not difficult for them and the data displayed after inputting made it very easy for them to read and interpret. It's just that there were several obstacles presented, including cadres not being able to directly input posyandu and posbindu data during implementation. It was stated that mobility during the implementation of posyandu and posbindu activities was very fast, so they chose to continue writing data in the ledger, after the activities were finished they entered the data in the village health information system. This reduces the effectiveness of the system that was created with the aim of replacing the recording previously carried out in the posyandu and posbindu ledgers.

The village midwife is one of the key persons who accompanies cadres in measuring and inputting data at posyandu and posbindu. The village midwife in Penadaran said that the measurement and recording data for cadres in the village is indeed not good and not neat, so that the existence of a village health information system becomes a problem. which is very useful, especially for village midwives when they need measurement results data. Village government staff are set as village health information system admins whose job is to enter resident data. The village health information system is designed to be able to store a database of residents' family card data by importing village residents' data into the village health information system. Apart from that, sIKD is also facilitated with a menu to add manual citizen data so that babies who are new born or have not been recorded in the database can still be input into the system.

HOT-FIT Framework

Human

Based on the results of observations and interviews, the human aspect is very important in implementing the system in villages. The differences in education levels between people in villages and cities make this one of the obstacles in implementing the system. The presence of assistance in every posyandu and posbindu activity is considered to be very helpful for cadres in inputting measurement results data. Cadre readiness in accepting a new system is also very important so training is needed from a technical and non-technical perspective.

Organization

The full support of the village head, chair of Empowerment of Family Welfare, and Head Village secretary is a very important and influential factor in implementing the village health information system. The Head Village has approved the use of SIKD for Integrated Service Post and Integrated Development Post activities so that the community supports and implements the policies that have been conveyed by the village head.

Technology

The technological aspect is assessed using the UEQ questionnaire so that the user experience can be quantitatively depicted when using the village health information system as listed in table 2. There were 16 cadres filling out the UEQ Questionnaire. This questionnaire is a questionnaire to look at the user's experience of a product. In this research, cadres evaluated user experiences with SIKD. Cadres were asked to answer spontaneously with a total of five minutes for 26 questions. Table 1 can be seen that as many as 81.3% of cadres rated SIKD as enjoyable and as many as 62.5% as enjoyable. As many as 62% of respondents also considered SIKD to be understandable, although there were still 6 respondents who considered SIKD difficult to learn. As many as 50% of respondents felt that SIKD was useful for them. Almost all respondents (87.5%) rated SIKD as Good. Almost all respondents also considered that SIKD was simple (62.5%), enjoyable (68.8%), advanced (62.5%), efficient (62.5%), comfortable (68.8%), practical (68.8%), user friendly (68.8%), and innovative (68.8%).

Table 3. Evaluasi *User Experiences* Dengan UEQ

		1		2		3		4		5		6		7		
		f	%	f	%	f	%	f	%	f	%	f	%			
1	Troublesome					1	6.3			1	6.3	1	6.3	13	81.3	Pleasant
2	Incomprehensible			1	6.3	3	18.8					2	12.5	10	62.5	Understandable
3	Creative	8	50	1	6.3	2	12.5			1	6.3	3	18.8	1	6.3	Monotonous
4	Easy to learn	6	37.5	3	18.8	2	12.5			1	6.3	3	18.8	1	6.3	Difficult to learn
5	Beneficial	8	50	3	18.8			3	18.8			2	12.5			Less useful
6	Boring			1	6.3	1	6.3	1	6.3	2	12.5	1		10	62.5	Exciting
7	Not attractive	1	6.3	1	6.3	1	6.3					2	12.5	11	68.8	Interesting
8	Unpredictable	2	12.5	1	6.3	1	6.3	1	6.3			2	12.5	9	56.3	Predictable
9	Fast	11	68.8	2	12.5	1	6.3			1	6.3					Slow
10	Inventive	8	50	1	6.3	2	12.5			3	18.8	2	12.5			Conventional
11	Obstruct					1	6.3			1	6.3	4	25	10	62.5	Support
12	Good	14	87.5	1	6.3							1	6.3			Bad
13	Complicated			2	12.5	1	6.3			2	12.5	1	6.3	10	62.5	Simple
14	Dislike			1	6.3	1	6.3	1	6.3	1	6.3	1	6.3	11	68.8	Exhilarating
15	Common			1	6.3	1	6.3	1	6.3	2	12.5	1	6.3	10	62.5	Front
16	Uncomfortable							1	6.3	2	12.5	2	12.5	11	68.8	Comfortable
17	Safe	9	56.3	4	25	2	12.5			1	6.3					Not safe
18	Motivating	12	75	3	18.8	1	6.3									Not Motivating
19	Meets Expectations	11	68.8	2	12.5	1	6.3			1	6.3			1	6.3	Doesn't Meet Expectations
20	Not efficient	1	6.3			1	6.3					4	25	10	62.5	Efficient
21	Clear	9	56.3	4	25	1	6.3	2	12.5							Confusing
22	Impractical							1	6.3			4	25	11	68.8	Practical
23	Organized	11	68.8	2	12.5	2	12.5	1	6.3							Untidy
24	Attractive	10	62.5	3	18.8			2	12.5	1	6.3					Not Attractive
25	User Friendly	11	68.8	2	12.5	1	6.3					1	6.3	1	6.3	Not Environmentally Friendly
26	Conservative	1	6.3					1	6.3			3	18.8	11	68.8	Innovative

Discussion

Based on the results of observations and interviews with key figures and main users, the village health information system has been proven to make it easier for the community to see a clearer picture of health data in Penadaran Village. [19], Health data obtained from measurements at Posyandu and Posbindu activities consist of body weight, height, arm circumference, head circumference, provision of additional food, administration of vitamins and immunizations. Measurement data can be displayed in graphical form which makes it easier for cadres to monitor children's development per month. SIKD is a web-based system so it does not require cadres to download applications that can burden storage space on smartphones. The SIKD display is designed to be user friendly with simple language that is easily understood by village cadres. The SIKD interface design when opened using a smartphone or on a computer or laptop device is made equally easy so that cadres can input even if they are not using a laptop or computer device. This proves that digital transformation in recording health data is very effective in overcoming the problem of recording time and manual data searching [20]. SIKD is also used to report data from posyandu and posbindu measurements to village midwives and community health centers. Data that has been input by cadres can be directly downloaded and sent to parties who need the data in Ms.Excel form. Cadres can also choose which data to download to report to midwives, community health centers and sub-districts. Based on analysis using the HOT-FIT framework [21] regarding the implementation of SIKD for posyandu and posbindu cadres in Penadaran Village, the human aspect is one of the toughest obstacles that must be resolved so that the system can be realized optimally and in the long term [22]. In terms of knowledge and attitude, cadres know the positive benefits of SIKD and fully support its implementation, but on the other hand, they are not yet accustomed to the changes. It takes a long period of assistance to get used to this system, it is fully realized and embedded in the Penadaran village cadres [23].

Although it cannot be proven statistically in this research, we found that the age and education level of cadres influence their health literacy. The willingness to learn and try new things is an important factor in the success of SIKD implementation. After introducing and teaching SIKD to cadres, the researcher provided an evaluation sheet to see their assessment of their experience using SIKD. The percentage of cadre answers is more positive. The majority of cadres answered that SIKD was fun, interesting, creative, efficient, practical, supportive and innovative. This is proven by the results of the evaluation with UEQ that the cadre evaluation of SIKD has a good assessment. These results are supported by previous research that the health literacy of cadres in Penadaran Village is

good [9]. This is not in line with research by Chen (2019) that rural residents with limited health literacy have lower access to mass media and scientific literature compared to rural residents with adequate health literacy. [8]. Penadaran Village has strong health literacy. Health literacy skills in the form of the ability to access, understand, assess and apply is something that is created in solving health problems well if the information needs are able to know the source.[24]. This can be influenced by the good education of the cadres (having graduated from high school), apart from that, many of the cadres are at a productive age so they are more active in exploring information/learning. [25].

SIKD helps meet community needs in terms of health data administration reports. Incomplete, inconsistent data recording and low accuracy are the main factors in reducing the quality of health care facilities. Complete and standardized data recording can facilitate the preparation of evidence-based policies, preparation of health service facilities to increase competency, and reduce administrative workload [26]. Information technology is currently an important need. Research by Malaquias (2021) emphasizes the importance of Health Information Systems, among others, to address the need to store, process, and extract information from system data to optimize processes, improve services provided, and support decision making. [27].

Research shows that poorly designed systems, lack of user training, and lack of system integration can have negative consequences for the target (society).[28]. An application system must be user-friendly. The user interface is one of the most important parts in a computer system because the user interface is related to the user, can be seen, can be heard, and can be touched [29] [17]. Interface design has an important role in an information system, because a technology must be able to meet user needs. The display or design should have essential consistency in data display, efficient assimilation of information by the user, minimal memory load on the user, compatibility of data display with data entry, flexibility for user control over data display [30]. The strengthless of this study was that research on information systems at the village level is still rarely carried out, this research could be the beginning of the introduction of information technology in village government. The weakness of this study was that assistance in implementing the system to village residents took quite a short time so that the capacity and ability of residents to use information technology independently was still not optimal.

Conclusion

Based on the results of the research that has been carried out, it can be concluded that the SIKD user experience design produces good value. Based on the results of the tests that have been carried out, the design that has been made is suitable for development. It is hoped that in the future, SIKD can be used as a data center that integrates all information systems and applications into a centralized database, so that it can be used by the community at large.

Declaration

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Conflicts of Interest: "The authors declare no conflict of interest.", "The founding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in the decision to publish the results".

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