Evaluation of Environmental Health Information System Using Context, Input, Process and Product (CIPP) Model

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Abstract: The Primary Health Centers (PHCs) and District Health Office (DHO) of Banyumas as the provider of environmental health services and information systems, is obliged to provide data and information in a systematic, informative, complete and timeline. The implementation of the environmental health information system in Banyumas Regency has problems, namely low accuracy and completeness. The study was to evaluate the environmental health information system in The Banyumas District using the CIPP model. Types of qualitative research with applied qualitative research methods. The informants of 16 people included Sanitarians (10 people), the Head of the PHCs (4 people), the Coordinator of Environmental Health in DHO of Banyumas (1 person), and the Coordinator of Health Human Resources in DHO of Banyumas (1 person). Data collection techniques through documentation studies and in-depth interviews. Evaluation of environmental Health information system includes aspects of context, inputs, process, and product. The data that has been collected then analyzed through stages: data reduction, data presentation, and conclusions. The results of the study show that there were problems in the environmental health information system in Banyumas District, including: limitations of sanitarian, errors/*maintenance* applications, unintegrated system, uncomprehensive applications and weak of monitoring. The completeness and timeliness of reporting were 47.5% and 57.5%. The environmental health information system in Banyumas District has some problems that have an impact on the low quality of data and information.

Keywords: System Information, Environmental Health, CIPP, Banyumas District

INTRODUCTION

The implementation of health services can be implemented effectively and efficiently through health information systems. Health Information System is a system that integrates the various stages of processing, reporting, and using information needed to improve the effectiveness and efficiency of health delivery and direct actions or decisions that are useful in supporting health development. The implementation of the information system involves central and local governments, health service facilities, and the community and in its implementation must ensure reliability which includes: availability, security, maintenance, and integration (Presiden RI, 2023).

The Primary Health Centers (PHCs) and District Health Offices (DHO) have an important role in health development to realize the highest possible healthy community. To achieve this goal, the

government implements integrated and comprehensive health services in the form such as: 1) Individual Health Efforts which are promotive, preventive, curative, rehabilitative, and/or palliative health efforts that affect only individuals; and 2) Public Health Efforts which are promotive, preventive, curative, rehabilitative, and/or palliative health efforts that have an impact on the community (Presiden RI, 2023) (Kemenkes RI, 2015).

The environmental health services are public health efforts that aim to realize healthy environmental quality, both physical, chemical, biological, and social to prevent diseases and/or health problems caused by environmental risk factors (Kemenkes RI, 2015) (Nuryanto et al., 2024). The Primay Health Centers and DHO as providers of environmental health services have the responsibility to provide data and information to the community in a relevant, accurate, timeliness and efficient which is used as a basis for decision making regarding environment-based disease prevention and control (Presiden RI, 2023) (Janati et al., 2015). The implementation of environmental health information system still found several problems. The results showed that there are challenges that cause the level of information accuracy to be lacking, among others: there is a gap in the distribution of human resources, uneven infrastructure, and errors both intentional or unintentional in recording and reporting (Sari et al., 2023) (Chima et al., 2024). The national report mentions an increase in the completeness and speed of reports nationally, but in quality, there is a decrease (Djasri et al., 2023)

The implementation of the environmental health information system in Banyumas District involves PHCs and DHO. Efforts to strengthen the service reporting system have been carried out through the use of information technology to improve the quality of data and information. However, there are still obstacles, among others: limited resources, not yet integrated, still manual, incomplete, and delays. This condition has an impact on the low quality of data and information that affects program policy-making. The Information systems are essential to assist in strategic decision-making and health management by providing accurate information about public health issues, trends, and health needs (Chioma Anthonia Okolo et al., 2024) (Gunawan, 2023) .

Based on these problems, it is necessary to conduct research related to the evaluation of environmental health information systems in Banyumas Regency using the CIPP (Context, Input, Process and Product) model. According to Stufflebeam, the CIPP model is an evaluation model that aims to assist in decision-making for the improvement of health programs (Winaryati et al., 2021). Through this research, it can provide recommendations to improve the quality of data and information on environmental health services in Banyumas District.

METHOD

Types of qualitative research with the design of applied qualitative research methods. The purpose of the study was to evaluate of environmental health information system in Banyumas District using the CIPP Model. The study was conducted from February to May 2024. The sampling technique used *in purposive sampling*. The informants of 16 people included Sanitarians (10 people), the Head of the PHCs (4 people), the Environmental Health Coordinator in DHO of Banyumas (1 person), and Health Human Resources in DHO of Banyumas (1 person). Data collection techniques through independent interiew and documentation studies. The information collected is about informant knowledge related to the information system in Banyumas District. Evaluation of environmental health information system includes aspects of contect, inputs, process and product. The data that has been collected and analyzed through the following stages: 1) Data reduction. At this stage, the data that has been collected was carried out sorting/selection, making themes, categorizing and grouping according to the problem under study and describing in sentence form to obtain a complete picture of the research problem; 2) Presentation of data. At this stage, presenting data in the form of narratives sequentially and systematically; and 3) Drawing conclusions. At this stage, draw conclusions with inductive techniques based on the evidence of data obtained accurately and factually (Harahap, 2020).

RESULTS

Contect

Information system are very important to supporting environmental health services in Banyumas District. The background of the environmental health information systems are the data of environmental health service are large and needs to be manage. If the data is not managed properly, the planning process will not be on target, which will have an impact on service quality. The availability of an environmental health information system can facilitate and minimize errors by program managers in the process of recording, processing and analyzing data. This can be known from the following informant's narrative:

"....The Data of environmental healthh service are very large. If the data is not managed properly, it can cause difficulties in the planning process. This condition has an impact on environmental health services to be of poor quality. In addition, through information it can reduce the level of errors in data processing and analysis that is carried out manually. Environmental health information systems are very helpful for program managers". (Coordinator of Environmental Health Service of DHO).

The objectives of the environmental health information system in Banyumas District have been achieved, including: 1) As information and education materials to community about environmental health problems that are at risk of environment-based diseases; 2) As information on the performance achievements of environmental health services at the sub-district level; 3) As material for the creation of Health Profile of banyumas District which is disseminated through the website of DHO Banyumas; 4) As input to policy makers in the preparation of environmental health service planning at the Banyumas District Level, Province and Ministry of Health of the Republic of Indonesia. This can be known from the following informant's narrative:

"…. Environmental health service information is very important to educate community who do not know the importance of environmental health. With this information, the community can play an active role in the prevention and control of diseases caused by the environment". (Sanitarian of PHC 1)

".... Environmental health service reports at the PHC are informed regularly through meetings that invite FORKOMPIMCAM and related stakeholders. In the meeting, it was conveyed the achievements of service performance, including environmental health". (Head of PHC 1)

".... The DHO of Banyumas District routinely reports environmental health services in the form of health profiles. The profile is disseminated through the DHO Banyumas District website and can be downloaded by all levels of society". (Coordinator of Human Resources of DHO Banyumas)

*".... At the district level, environmental health service reports are used as material in the preparation of planning to support the Vision and Mission of Local Governments (Regencies and Provinces) and RPJMN (National Medium-Term Long Term Plan) at the national level". (*Coordinator of Environmental Health Service of DHO).

The existence of strengths, weaknesses, threats and opportunities in the environmental health service information system in Banyumas District can affect service performance. The strength of information system includes the commitment and support of the DHO Banyumas District to improve the quality through the fulfillment of resources such as competent officers, budgets and facilities/infrastructure (data processing tools, IT-based applications and networks/internet). The weakness of information system is that it has not been integrated and some services for reporting are still manual. The threat of information system is that the result of data input on the application owned by the Indonesian Ministry of Health cannot be accessed by the DHO of Banyumas. The opportunity of information system is the support of a website-based environmental health information system application from the Indonesian Ministry of Health and The Indonesian Ministry of Environment and Forestly. This can be known from the following informant's narrative:

"…. The District Health Office of Banyumas is always committed and supports the implementation of environmental health information systems by fulfilling adequate resources such as the availability of sanitary personnel , budget and facilities/infrastructure (laptops, computers, printers and networks). In addition to this, there is support from the Indonesia Ministry of Health and The *Indonesian Ministry of Environment and Forestly through the provision of an environmental health*

*information system application. However, the information system has not been integrated, some services for reporting are still manual and environmental health service data reported directly by PHC through the application owned by the Indonesia Ministry of Health cannot be accessed by DHO of Banyumas". (*Coordinator of Environmental Health Service of DHO).

Input

The implementation of the environmental health information system requires adequate resources, including: officers, budgets and facilities/infrastructure. The officer in charge of the information system is Sanitarian. The results showed that the distribution of sanitarians in PHCs was not evenly distributed (there was 1 person or even more) and double jobs. A considerations in the placement of the number of sanitarian is workload of sanitarians. This can be known from the following informant's narrative:

".... Sanitarian there are 3 people, the number is sufficient but we often double job, even triple job. Sometimes we do programs that are not environmental health" (Sanitarian of PHC 1)
".... Here, sanitarians are only one. not worth the work*, it should be at least two. Because we have to keep running, we usually cooperate with cross-programs. Often with health promotion, I ask for help to inspection activities, then I process the inspection data for reports"* (Sanitarian of PHC 3)
".... The distribution of the number of sanitarians in PHC is uneven, some are only 1 person and some are more. One of the considerations in the placement of sanitarians is the workload of sanitarians " **(**Coordinator of Health Human Resources, DHO**)**

The implementation of environmental health information system in PHCs shows that there is no division of duties. In its execution, all officers are involved and work together. This can be known from the following informant's narrative:

".... The division of tasks is usually in the implementation of environmental health activities, for example the schedule of who is assigned today who is out of inspection or who is counseling and so on. For reporting, anyone can do it. No sharing of report preparation" (Santarian of PHC 1)
".... Environmental health service activities are carried out by sanitarians, in their implementation must cooperate between personnel, including in making activity reports" (Head of PHC 1)

Education and training activities on environmental health information systems for sanitarians have never been implemented. However, in the implementation of technical training on environmental health services by DHO of Banyumas and the Indonesia Ministry of Health, the material presented included the use of the application and its reporting system. This can be known from the following informant's narrative:

*".... There is no specific training about environmental health information system, but it is usually one package with technical training. For example, yesterday we trained on medical waste management of health facilities, the material presented included how to reported by application" (Sanitarian of PHC 3)***.**
".... So far, there has been no specific training on environmental health information systems. In the implementation of technical training such as medical waste management that we organize,

including discussions on recording and reporting through the SIKELIM application" (Coordinator of Environmental Health Services of DHO)

The availability of budgets for environmental health information systems are adequate. The budget is needed for office stationery, laptops/computers, printers, internet and maintenance. The source of the budget comes from APBD and BOK funds. This can be known from the following informant's narrative:

".... So far, there is no problem with the budget. The Head of PHCs supports the fulfillment of the budget for the environmental health information system. The budget is needed for office stationery, laptops/computers, printers, internet and maintenance. This year,we proposed a laptop, hopefully, it can be realized next year" (Sanitarian of PHC 5)
"....Our budget are 2 sources, namely APBD and BOK. The use of the supporting the implementation of environmental Health information systems. As much as possible, we meet the needs in the program" (Head of PHC 2).

The availability of facilities and infrastructure, especially data processing equipment (laptops/computers) shows that there are PHCs whose use is shared with other programs and some use personal inventory. This can be known from the following informant's narrative:

".... To make a report, I usually use computers shared with other programs at the PHC (Sanitarian of PHC 2)
".... For the support of facilities and infrastructure, like a stationery and the network is adequate. But the availability of computers is still limited, I use a personal laptop" (Sanitarian of PHC 6)

Guidelines and Standar Operating Prosedures (SOP) of environmental health information system are available. This can be known from the following informant's narrative:

".... Actually, the application already exists, how do we record and report. If we forget, we can look at the application" (Sanitarian of PHC 4)
".... When PHC accreditation, we make SOPs for the implementation of environmental health activities including the flow for recording and reporting" (Sanitarian of PHC 9)
".... The PHC has SOPs for recording and reporting. SOPs can be a sanitarian guide in carrying out activities, ranging from collecting data to reporting the results of activities" (Head of PHC 4)

Process.

The implementation of environmental health service reporting system in Banyumas District using several applications from the Indonesian Ministry of Health, including: e-MONEV TFU (Public Facility Place), e-MONEV TPP (Food Processing Place), SISTBM (Community-Based Total Sanitation Information System), SIKELIM (Waste Management Information System), SITKO (Integrated Information System for Occupational Health and Sports). The Indonesian Ministry of Environment and Forestly provides SIRAJA (Application for Reporting Performance of B3 and non B3 Waste Management). The DHO of Banyumas provides *google spreadsheets* for environmental

health information system that do not yet have applications and for monitoring of environmental health service achievements. This can be known from the following informant's narrative:

".... Environmental health information system using applications from the Indonesian of Ministry of Health, there are e-MONEV TFU, TPP, SISTBM, SIKELIM and SITKO. From Indonesian Ministry of Environment and Forestly is SIRAJA. From DHO of Banyumas is google spreadsheets that we must fill in every month" (Sanitarian of PHC 7)
".... Reporting has used applications such as: E-monev TPP for TPP inspection activities, e-Monev TFU for TFU inspection activities, SIKELIM for medical waste management, SISTBM for information system of STBM and SIRAJA for. reporting performance of B3 and non B3 waste management . But existing applications have not facilitated all environmental health activities. so, reporting through google spreadsheets. The use of Google spreadsheets can help the DHO of Banyumas to monitoring of environmental health service achievements" (Coordinator of Environmental Health Service of DHO)

The implementation of environmental health information system in Banyumas District is in accordance with existing flows and SOPs. Sanitarians carry out environmental health services through counseling, inspection and intervention. The results of the activity are reported to the Head of PHCS for approval. Next, do data entry through applications and *google sheets*. The report deadline is the 10th of the following month. This can be known from the following informant's narrative:

".... All environmental health activities that we carry out in one month, we recap and report to the Head of the PHC. After signing, We fill in the data on application and google spreadsheets. The deadline for submitting reports is every 10th of the following month" (Sanitarian of PHC 10)
".... The PHCS are required to report environmental health services every month on applications and google spreadsheets. The deadline is maximum on the 10th of the following month. However, there were puskesmas reporting not on time" " (Coordinator of Environmental Health Service of DHO)

Environmental Health information system has not been integrated, applications experiencing errors/*maintenance*, and pplications have not facilitated all environmental health services so they are carried out manually. The DHO of Banyumas provides *google spreadsheet, if application an error/maintenance* and using for recording and reporting of environmental health service performed manually. This can be known from the following informant's narrative:

".... The application has not been integrated. Not all activities can be reported in the application. Reports that don't have an application, can fill in Google Sheets. Every month, google spreadsheets are filled" (Sanitarian of PHC 9)
"....If the application is under maintenance, reports become untimely. When it's past its date, the app locks. We usually report to the person in charge of the application at the DHO of Banyumas" (Sanitarian of PHC 10)
".... The implementation of environmental Health information system has not been integrated. There is an officer in charge of each application. The problems in reporting sometimes applications that are under maintenance. So sanitarian cannot report in a timely manner. But we have provided

google spreadsheets for filling out the report" (Coordinator of Environmental Health Service of DHO)

Feedback reports by the DHO of Banyumas to the PHCs are carried out every month. The form of feedback is instructions through whatapps group *or letters containing recaps of reporting results from the PHCs.* This can be known from the following informant's narrative:

"…. The DHO of Banyumas provides monthly feedback on the reports we send. Feedback is usually in the form of instructions shared through whatapps groups and letter containing recaps of results of monthly environmental health service reports." (Sanitarian of PHC 8)
"…. For feedback, we do it regularly every month. The form of feedback is instructions in whatapps groups and letters containing recaps of reporting results from the PHCs. From this feedback, the PHCS can follow up if there is a discrepancy" (Coordinator of Environmental Health Service of DHO)

Monitoring and evaluation of environmental health information system is carried out by PHCs and DHO of Banyumas. Monitoring and evaluation are carried out quarterly and annually. Monitoring and evaluation activities carried out by PHCs through mini workshops involving cross sectors andpPrograms with an agenda of discussing achievements, problems, and follow-up actions to improve services. Monitoring by DHO of Banyumas is carried out through visitation to PHCs and through *WhatsApp groups* to remind sanitarians and the Head of PHCs regarding Reporting. The monitoring carried out is still weak because there are obstacles in verifying the truth of the information submitted by sanitarians through *WhatsApp groups*. The evaluation is carried out in writing and invites sanitarians to attend meetings to discuss achievements, problems, and follow-up to improve the accuracy and completeness of the report. This can be known from the following informant's narrative:

"…. Every month the PHC holds mini-workshops for monitoring and evaluating the achievements of environmental health services. The DHO of Banyumas to monitors reporting through whatapps groups by providing a list names of puskesmas who have reported or not. Every quarterly, the DHO of Banyumas evaluates the achievements of reporting through letters. Every annualy, we are usually invited to a meeting to discuss the achievements of environmental health reporting activities. At the time of the meeting, achievements, problems and follow-up efforts were conveyed" (Sanitarian of PHC 3)
"…. For monitoring, we do through visits to Puskesmas, but monitoring through whatapps groups is more effective and efficient by spreading reporting lists to be filled in sanitarians. Furthermore, the person in charge of the application at the DHO of Banyumas, will record which PHCS have reported. Our problem in monitoring cannot ensure the correctness of the reporting information submitted by sanitarians from whatapps group, because it cannot be checked in the application directly. Evaluation is carried out every annualy by inviting sanitarian puskesmas. Evaluation is carried out per activity e.g. evaluation of STBM, TFU and so on (Coordinator of Environmental Health Service of DHO)

Product

The percentage of achievement of completeness and timeliness of environmental health information system in the period January to December 2023 shows that the trend has decreased. The highest report completeness achievement was in May (80.0%) and the lowest in October (2.5%), while the timeliness of the report was highest in April (90%) and the lowest in October (5.0%) (Figure 1).

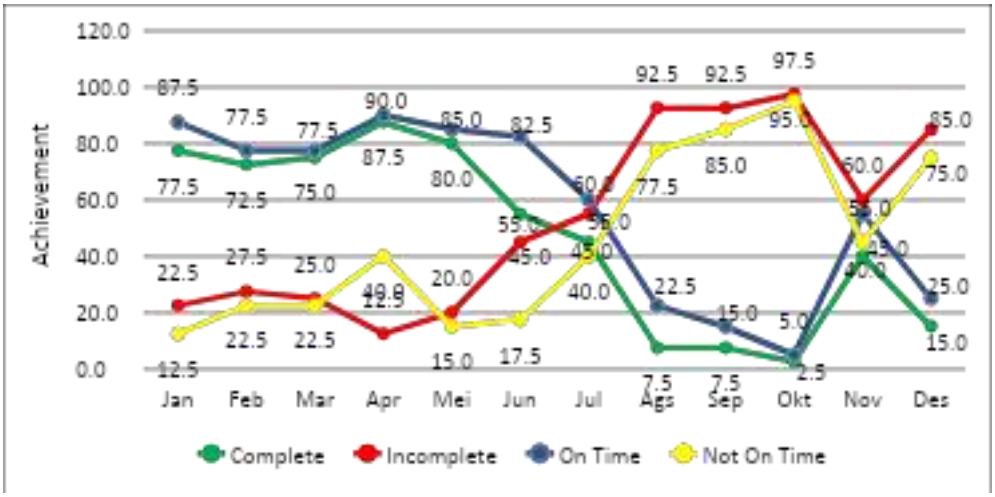

Figure 1. Graph of Completeness and Timeliness of Environmental Health Information System in 2023

The percentage of achievement of report completeness and timeliness in 2023 shows that completeness is 47.5% and timeliness is 57.5%. Based on a quarterly, the highest reporting completeness in the first and second quarters was 75.0%, while the lowest in the third and fourth quarters was 20.0%. The highest timeliness in the third quarter was 85.0% and the lowest in the fourth quarter was 5.0% (Figure 2).

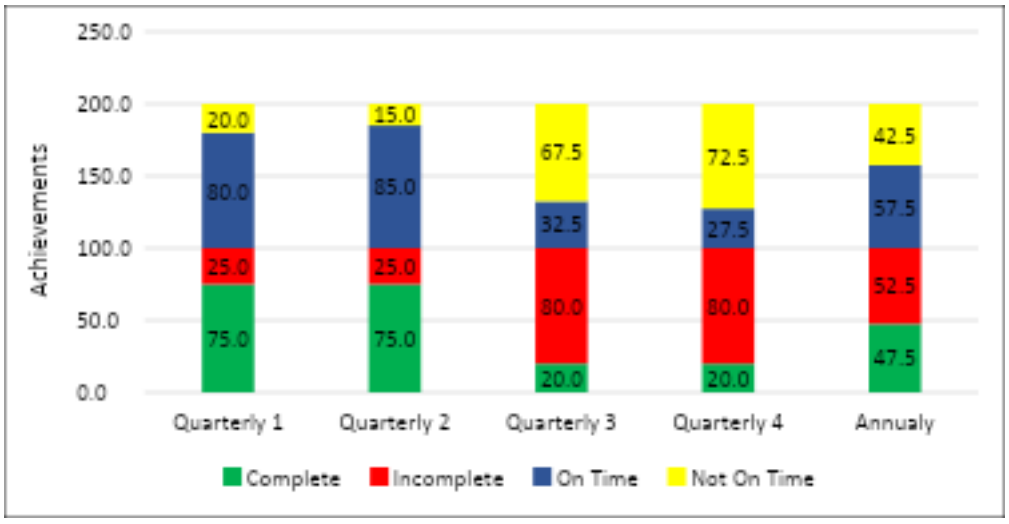

Figure 2. Graph of Completeness and Timeliness of Environmental Health Information System Base On Quarterly In 2023

DISCUSSION

Contect

Context is the current situation or background of environmental health information system. The background of the implementation of environmental health information system is that the data of environmental health services is quite large. If not managed properly, it can cause data and information to become inaccurate and untimely. This condition causes policymakers in preparing planning to be not on target which has an impact on the quality of environmental health services. Health planning is an organized process in the form of decision-making regarding health services to provide quality services to the community through the use of health resources as a whole (R. Hasibuan, 2021) (Gunawan, 2023). To achieve these goals, good planning must be based on the results of data analysis, information and facts so that the implementation is easy and the goals can be achieved (Neelima et al., 2024) (R. Hasibuan, 2021). Furthermore, with the existence of an information system, it can reduce the level of errors in processing and analyzing data that is done manually. Computer-based information systems can help in reducing the risk of errors and improving information accuracy so that healthcare services become more efficient and effective (Haryanto, 2024).

The main purpose of implementing a health information system is to process data into information and as a means to share and disseminate information to information users quickly, accurately, and (Carlof, 2023) The objectives of the environmental health information system in Banyumas district have been achieved, among others: as educational materials to the community in solving environmental health problems, as information on the performance of environmental health services, as material for the creation of Banyumas District Health Profiles and as input materials to policymakers in the preparation of environmental health service planning. Information systems function to collect, process, store and provide information needed for all levels in the organization to solve problems (Kamal et al., 2024). Service results will not be visible and documented and produce good information without an information system to be used as input in decision-making (Ritonga & Mansuri, 2017) (Yamin et al., 2024) (Zain et al., 2024).

The results of the SWOT analysis on the environmental health information system in Banyumas Regency are known: 1) The strength of the system includes the commitment and supported DHO of Banyumas to improve the quality of the information system through the fulfillment of resources such as competent officers, budgets and facilities/infrastructure (data processing

tools, IT-based applications and networks/internet). Support from leaders and organizations to determine direction and goals has proven to be very significant in providing benefits to the success of information systems (Sugiyanto et al., 2024). 2) The weakness of the system is unintegrated. The information system developed is not comprehensive (unintegrated) causing data redundancy and difficulties in accessing consistent information (Iskandar & Hartono, 2024). 3) The threat of information system is that the environmental health service data input in the application cannot be accessed by DHO Banyumas which has an impact on policy making that is not in accordance with the data (*evidence bases).* The existence of limited data causes in making policies based on intuition an impact inaccurate targets, waste of resources and low service quality (Iskandar & Hartono, 2024). 4) The opportunity of information system are supported from the Indonesia Ministry of Health and the Indonesia Ministry of Environment and Forestry in the provision of a website-based information system application. Support and commitment from various parties, including central government leaders, can improve the quality of health data, However, there are differences in policies (Iskandar & Hartono, 2024).

Input

Inputs are various resources needed to implement an environmental health information system. In the evaluation of this input aspect, problems from the resource aspect are identified that can hinder implementation and have an impact on the program objectives to be achieved. Resources needed to achieve program objectives effectively include: Human Resources, budget, and facilities/infrastructure (Rama et al., 2023). The Human Resources have an important role in the implementation of services to achieve maximum goals (Nigenda & Serván-Mori, 2024) (Suzan, 2019). The results showed that the distribution of sanitarians was uneven and there were *double jobs*. This condition has an impact on the reporting performance of environmental health services. Lack of personnel and double jobs affect to service performance (Lagiono et al., 2023). In the implementation of environmental health information system, sanitarians cooperate with each other. The cooperation is carried out to achieve goals efficiently and effectively. This condition is certainly influenced by the role of the Head of PHCs in providing direction and input to improve services through cooperation (I. D. Hasibuan et al., 2024). To improve sanitarian competence in environmental health information system, the DHO of Banyumas has carried out education and training. Although there is no specific education and training on information system, material on how to record and report is delivered at activities. The purpose of education and training is improving the skills of personnel in healthcare data management (Chima et al., 2024). Increasing

sanitarian understanding in reporting environmental health services can be carried out through coaching to sanitarians by the DHO of Banyumas. Regular and repeated training and coaching, for example once a month, aims to improve the understanding of officers (Sari et al., 2023).

Budget is needed to support the implementation of environmental health information system. The results showed that the budget was available in sufficient quantities for the procurement of the office stationery, data processing equipment, internet subscriptions and *maintenance*. Effective budget allocation and utilization have an important role in ensuring the availability, accessibility, and quality of environmental health information system. Efficient and equitable budget allocations can improve health service outcomes (Mwashighadi et al., 2024)

Facilities and infrastructure are essential to support environmental health infomation system. Facilities and infrastructure are needed for activities: data collection, processing, analysis and interpretation. The results showed that facilities and infrastructure, especially data processing equipment (laptops / computers) and printers are still limited. Data processing tools in some PHCs are still limited so they share with other services and use personal inventory. This condition becomes an obstacle in preparing reports, so that it can affect the quality of reporting (completeness and timeliness). Limited facilities and infrastructure can affect services are not carried out properly (Yeni et al., 2024).

Standard Operating Procedure is a written stage for carrying out activities. According to Regulation of the Minister of Apparatus Empowerment and Bureaucratic Reform No. 35 of 2012 concerning the preparation of Government Administration SOPs, it is explained that SOPs are a series of standardized written instructions regarding various processes of implementing organizational activities, how and when they should be carried out, where and by whom they are carried out. The results showed that there are SOPs for recording and reporting. Standard Operating Procedures become an important part of the work process for officers and ensure that operational management is carried out smoothly and controlled (Lubis et al., 2024)

Process

Process is a method of carrying out activities, including the strategies used, activities performed and interactions between personnel to evaluate the strategies and activities used to implemented effectively in achieving program objectives (Rama et al., 2023). Evaluation of this aspect of *the process* is carried out to identify problems from the environmental health service reporting process that have an impact on the program objectives to be achieved. The processes

in the environmental health service reporting system include technical implementation, monitoring and evaluation, and *feedback*.

The implementation of the environmental health service reporting system using several web-based applications from the Indonesian Ministry of Health including e-MONEV TFU, e-MONEV TPP, SISTBM, SIKELIM and SITKO and from The Indonesian Ministry Environment and Forestly is SIRAJA. The existence of the web-based application helps officers in reporting. Web-based applications greatly support the performance of information system to be more effective and efficient (Setiawan et al., 2024) (Putra et al., 2020). The Problems on the application often experience *error/maintenance*. the application that often fail or error can be an obstacle in implementation of information system (Hendry et al., 2024). To solve the problem, The DHO of Banyumas provides *Google Spreadsheets*. *Google Spreadsheets* facility is also used for reporting that has not been facilitated in applications. *Google Spreadsheets* can help a manual record and reporting (Pesik et al., 2024). However, Google spreadsheets has a disadvantage because it is not automated to recapitulate reporting data, so data processing is done manually. This condition causes the risk of errors in reporting and takes a long time (Parada et al., 2023) (Dogan, 2023)

The implementation of a good information system is in accordance with the existing flow. With a clear flow, the preparation of environmental health service reporting becomes more focused. The results showed that the implementation of environmental health service reporting activities was in accordance with existing flows and SOPs. Sanitarians carry out environmental health services through counseling, inspection, and intervention efforts (Kemenkes RI, 2015). The results of these activities are then reported to the Head of the PHCs for approval. Furthermore, it is reported through web-based applications and *Google Spreadsheets*. The report deadline is every 10th of the following month.

Monitoring and evaluation is the process of collecting and analyzing information regarding the implementation of environmental health informaion system, whether it has been implemented according to plan and how it is implemented, so that problems can be found, discussed and solved together. Monitoring and evaluation is part of supervision that functions as data management to ensure the achievement of reporting system objectives. Supervision that is not carried out effectively, then the achievement of goals becomes not optimal (Syahputri et al., 2024) The results showed that monitoring and evaluation activities were carried out by the PHCs and the DHO of Banyumas regularly every quarter and annual. Monitoring and evaluation activities by the PHCs through mini workshops involving cross-sectors/programs and related stakeholders, while by the

DHO in writing (letters), *whatapps groups*, visit and invite sanitarian officers to report evaluation meetings. However, the supervision carried out by the DHO is still weak because there are problems, especially in verifying the correctness of filling out lists in *whatapps groups* by sanitarians who have collected reports in the application provided. Such weak supervision leads to low quality of services which results in weak evidence in decision making for planning and implementation (Gulo et al., 2024) (30).

The feedback is a response from the DHO to the environmental health service reporting submitted by the PHCs. The results showed that *feedback* reports by the DHO of Banyumas to the PHCs were carried out quarterly and annually through letters. Feedback from the reporting system is very important to increase officers' awareness regarding the quality of reporting (completeness and timeliness) submitted. By doing feedback, if problems are found, alternative solutions can be immediately given for improvement. Feedback reports refer to the monitoring and reporting of key indicators used to assess services carried out on a regular and continuous basis (Bascom et al., 2024) (Lyon & Lewis, 2016). According to Brunsveld-Reinders et al., (2016) there are 5 feedback models for reporting systems, namely: 1) *Bounce back* (information to the whistleblower); 2) Quick response (actions in the local work system); 3) Increase risk awareness (information for all front-line personnel); 4) inform staff of actions taken (information to whistleblowers and the wider reporting community) and 5) improve the security of work systems (actions within local work systems) (Aisyiah et al., 2024)

Output

The quality of a good and accurate environmental health service reporting system can support decision making. The quality is measured from the output aspect. The quality of the resulting data refers to completeness and timeliness which are the most important parts of data governance. Improving the quality of the reporting system greatly impacts the government and the community that uses it to achieve the goals to be achieved (Siregar & Nasution, 2024).

The results showed that the quality of the environmental health service reporting system in 2023 was low, namely completeness by 47.5% and timeliness by 57.5%. Low completeness of reporting is based on data collection operations that cause less or only partial data to be collected, while low timeliness is based on data that is needed in time, but not available (Hendry et al., 2024). The low completeness and timeliness are due to limitations of sanitarian, errors/*maintenance* applications, system are unintegrated system, uncomprehensive applications for environmental health service and weak of monitoring in the implementation of informatio system.

CONCLUSION(S)

The Problems in the environmental health information system in Banyumas District included: limitations of sanitarian, errors/*maintenance* applications, system are unintegrated system, uncomprehensive applications for environmental health service and weak of monitoring in the implementation of informatio system. This problem has an impact on the low achievement of information system which includes completeness and timeliness. There is a need for an application that can facilitate all web-based environmental health services, meet the needs of data processing tools, and strengthen monitoring to improve the quality of environmental health information system.

Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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