Evaluation Of The Implementation Of The Utilization Of The E-Health Center Application At The Periuk District Health Center, Tangerang City

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Article Info	ABSTRACT
	The latest regulation from the Indonesian Ministry of Health stipulates that all health service facilities must organize Electronic Medical Records (EMR). This encourages health centers to apply e-Health Center for the real-time data input process based on the Circular issued by the Tangerang City Health Office. However, based on service monitoring, it is known that not all health centers have achieved the set real-time input target. This study aims to evaluate the utilization of the E-Health Center application in four selected health centers, namely Gembor, Periuk Jaya, Kedaung Wetan, and Cipadu in 2024. The study used a qualitative study design by conducting in-depth interviews, document reviews, and observations of opinions and conditions of the use of the e-Health Center application. The Contextual, Input, Process, and Product (CIPP) process framework and the Edward III implementation framework (bureaucratic structure, resources, disposition, and communication) were used to evaluate the implementation. The study involved 4 persons in charge, 5 users, and 2 decision makers of the information system at the health center. The results of the study show that contextually the e-Puskesmas application only meets the utilization objectives based on the Minister of Health's regulation on electronic medical records. The utilization of e-Puskesmas has not created a digital work culture that accelerates and facilitates the work of health workers and minimizes paper use. This is because the input and process of utilizing e-Puskesmas still have obstacles and do not conform to the expected standards. This study recommends improving the utilization of e-Puskesmas with adequate BLUD budget support and the preparation of uniform standard procedures across all health centers.
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INTRODUCTION

One of the applications used in basic health services to the community in each health center is e-Puskesmas (Haryani & Satriadi, 2019). The e-Puskesmas application is a product produced jointly by PT Telkom Indonesia and PT Infokes Indonesia in 2013 and is a solution that combines web and mobile technology to support services and management in community health centers (puskesmas). E-Puskesmas is designed to assist in recording

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service data ranging from patient information, medical records, medicines, to other medical support services. In addition, e-Puskesmas also includes other features, such as a referral system and reporting to the Health Office. The e-Puskesmas application is a manifestation of the implementation of a health center management information system that is able to make a major contribution to providing excellent service to patients (Dona et al., 2019). e-Puskesmas records and records patients electronically, and makes it easier for the health office to monitor public health data (Putra, 2018).

The benefits obtained by health centers in implementing e-Puskesmas include (1) efficiency in recording and managing service data so that the recording process can be faster and more structured, reducing the risk of errors and data loss; (2) can improve the quality of service to patients, one of which is that health workers can easily access previous patient information with an integrated medical record system, so that health workers can provide more targeted and personalized care; (3) e-Puskesmas supports integration with the Ministry of Health's SIP standards so as to ensure that the data recorded is in accordance with the guidelines and standards set by the government, and facilitates the reporting and data analysis process; (4) health centers can optimize services to patients, improve efficiency and overall service quality.

Tangerang City has a regional health information system managed by the Health Office. In an effort to improve health services, the Health Office has implemented an integrated information system that includes the e-Puskesmas application to monitor and manage health services in all health centers. There are 37 health centers in Tangerang City that are under the supervision and guidance of the Health Office in implementing the ePuskesmas application in real time with a target achievement of 100%. However, based on the results of service monitoring carried out through the e-Dinkes/e-Puskesmas application on the 2022-2023 Health Center Performance Report menu, it is known that several health centers have not achieved the set targets (see table 1).

Table 1. Performance Achievements of Health Centers in Tangerang City that Have Not Reached Real Time Input Targets

NAME OF COMMUNITY HEALTH CENTER	% PERFORMANCE ACHIEVEMENT	
	Year 2022	Year 2023
SANGIANG PUBLIC HEALTH CENTER	100.00%	99.90%
PERIUK JAYA PUBLIC HEALTH CENTER	99.68%	99.87%
GEMBOR PUBLIC HEALTH CENTER	99.10%	99.12%
GEBANG RAYA PUBLIC HEALTH CENTER	98.87%	98.95%

From table 1, it can be seen that the performance achievements of health centers in 2022 and 2023 have not reached the target. The achievement of Sangiang Health Center, although it has reached the target of 100% in 2022, has decreased to 99.90% in 2023. Other health centers, namely Periuk Jaya, Gembor, and Gebang Raya, although they experienced an increase between 2022 and 2023, the percentage is still below the target of 100%. For this reason, further evaluation is needed to determine the causal factors and improvement efforts that can be made to achieve the desired performance target.

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The failure to achieve the 100% real-time target in managing medical record data has several significant impacts, including (1) Incomplete or out-of-date patient medical records, resulting in inaccurate or incomplete medical information. As a result, the effective diagnostic and patient care process is hampered, and the inability to accurately track the patient's medical history as a basis for making appropriate medical decisions; (2) The potential for creating a less than satisfactory patient experience because they have to wait longer to get the care they need or face discomfort due to inaccurate medical information; (3) Less precise and targeted medical decision-making that poses a high risk to patients. Better decision-making can lead tomore effective and efficient care, reducing medical errors, and improving overall patient health outcomes; (4) Performance Based Capacity (PCC) figures are not achieved, thus reducing the Additional Capitation Value.Based on the problems mentioned above, the researcher is interested in evaluating the implementation of the use of e-Puskesmas in health centers in the Periuk sub-district work area in 2024.

This study attempts to evaluate the implementation of the e-Puskesmas application using the Context, Input, Process, and Product (CIPP) evaluation model, an evaluation approach that focuses on decisions and emphasizes the provision of systematic information for program management and operations. In addition, this implementation evaluation will be framed with the Edward III model (1980) in implementing public policies that include aspects of communication, resources, disposition/response and bureaucratic structure. These findings are expected to provide significant implications, especially in the context of information systems in health centers in the Periuk sub-district. Evaluation of the use of the E-Puskesmas application in health centers is focused on the crucial stage, namely planning. Careful and targeted planning will ensure that the application can be utilized optimally and provide a significant positive impact on the provision of health services at health centers. Careful evaluation will help identify areas that need to be improved, ensuring that the application can provide maximum benefits to the community served by the Health Center.

RESEARCH METHODOLOGY

This study uses a qualitative method with a case study approach. The case study approach is part of a qualitative method that aims to explore a particular case in more depth by involving the collection of various sources of information. CIPP Evaluation Modeldeveloped by Daniel Stufflebeam and his colleagues in 1960 which consists of four components, namely Context (contextual), Input (input), Process (process), and Product (result). The evaluation approach with the CIPP model emphasizes the importance of providing systematic information to support effective program management and operations.
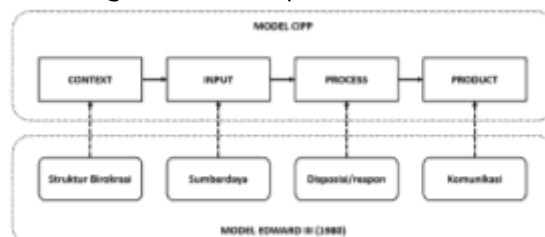

Figure 1. Research Concept Framework

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The informants in this study were selected using purposive sampling based on criteria set by the researcher, namely officers or parties who are considered to be most knowledgeable about the use of e-Puskesmas in each Puskesmas. The types of data to be collected consist of (1) Primary data sourced directly from informants in the form of in-depth interview results and observations of the implementation of the use of the e-health center application in the field; and (2) Secondary data that does not come directly from informants in the form of reports and documents related to the implementation of the use of the e-Health Center.

The collected data is then processed before being analyzed further. The stages in data processing are as follows: Data Input, Data Storage, Data Codification (coding), Data Organization. The data is analyzed using thematic analysis techniques obtained from the results of in-depth interviews with informants. The themes obtained from the results of in-depth interviews are then confirmed with the results of observations and document reviews to see the suitability or alignment of the two.

The results of the data analysis are reported based on the specific objectives of the study which are arranged based on the components of the CIPP model and the Edward III model. From each component, the researcher conveys themes that are considered significant and important in the use of e-Puskesmas. These themes are then analyzed based on lessons learned, suspected causes, and potential impacts that arise if not corrected.

RESEARCH RESULT

Contextual e-Puskesmas Application

Based on in-depth interviews about the contextual application of e-Puskesmas, it can be concluded: The use of e-Puskesmas is considered to have achieved the expected goals, especially in three aspects, namely 1) as an electronic medical record according to the mandate of the Minister of Health Regulation on Medical Records, 2) supporting the paperless and go green movement, namely reducing the use of paper, and 3) facilitating work because of the speed in supporting the tasks of health workers. In its implementation, there are still technical and managerial obstacles that must be considered even though it has been able to replace manual data entry.

Input for Utilization of e-Puskesmas Application

According to informants who use the application from Gembor, Periuk Jaya, and Cipadu health centers, not all units/sections have a special Standard Operating Procedure (SOP) for data input such as in the KIA Polyclinic and at the registration counter. So far, the registration section still refers to global general service standards, and in general polyclinics it refers to the SOP for filling in medical records. Gembor Health Center proposed that the SOP for inputting e-Puskesmas be prepared by a joint team of health center units, for example from Personnel, Polyclinics, and so on. Meanwhile, in the registration section of Cipadu Health Center, there is already an SOP and there are no problems with e-Puskesmas. From the results of in-depth interviews, the following conclusions can be drawn:

a. Human resources (HR) are considered sufficient in quantity but there is no PJ structure in each section or polyclinic. In terms of quality, HR still needs further technical guidance

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because not all health workers and staff have the ability and expertise to use information technology. However, training is not needed by the health center which considers it sufficient and only needs to strengthen coordination.

b. There is no specific SOP for inputting e-Puskesmas in the four health centers. So far, inputting e-Puskesmas still refers to the general service SOP. For example, using the Minister of Health Regulation on Medical Records as a reference in inputting patient data. However, the Cipadu health center has guidelines in case of e-Puskesmas troubleshooting, although it is only limited to the registration section.

c. The internet network is considered good, but in other health centers sometimes there are disruptions, especially in remote areas. Although efforts have been made to improve by increasing quotas and changing providers, there are still disruptions due to building structure problems, and internet quota restriction policies from the local government so that bandwidth cannot be increased. All health centers respond to internet problems by using personal internet hotspots and modems.

d. Laptop facilities are generally complete or sufficient and of good quality, but it is necessary to pay attention to the condition of laptop and computer facilities that are old and need routine repairs. The Health Center has carried out control of laptop facilities and received support for replacement of facilities from the treasurer of goods and service costs if they require replacement and repair.

Process of Utilizing the e-Puskesmas Application

The problem with the e-Puskesmas application itself is the problem of data concurrency, namely the consistency of data display when the application is used by many users. Based on in-depth interviews about the process of utilizing the e-Puskesmas application, it can be concluded as follows:

a. The application input process is generally easy to do, but there are obstacles in the display of service clusters that are not user friendly, digital signatures, and there is no awareness of HR to input more detailed data recording such as nursing and midwife care.

b. Interoperability of e-Puskesmas applications can help health workers focus on patient services rather than administration so that the quality of health services increases. However, in reality, interoperability and integration of e-Puskesmas with other information systems is not yet optimal, such as with P-Care, surveillance systems, and pharmacy. Not all direct reports are accommodated in the e-Puskesmas application so that work must be done twice. So far, e-Puskesmas has only directly accommodated LB1 reports and the top 10 disease diagnoses.

c. In the input process, the e-Puskesmas application itself has several weaknesses, including inconsistent data problems that appear between units (data concurrency), servers that are sometimes down, and too many features that are not needed by all health centers.

Product Utilization of e-Puskesmas Application

The reports generated by e-Puskesmas are good but still not optimal in terms of speed and completeness. Based on interviews with application users at Gembor Health Center,

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reports on programs and services at the Health Center have mostly used data from the application, for example, in the KIA polyclinic, 80-90 percent of data is used from the application. While in general polyclinics, all reports have used the application, but it would be better if it were directly automatic from e-Puskesmas. Based on the results of in-depth interviews about the product utilization of the e-Puskesmas application, it can be concluded:

a. The e-Puskesmas application has produced the information system needed, especially patient medical records. However, there are still technical constraints as well as discipline and compliance in inputting, so that patient data is still lacking, especially patient telephone number data, as well as detailed nursing and midwifery care data.

b. The e-Puskesmas application has also produced the required reports even though the bridging system function is not yet optimal and integrated with the health office report so that most reports need to be inputted into another system. Only the LB1 report and the top 10 disease diagnoses can be directly generated from the e-Puskesmas application. The ILP screening process is also not specific to the village level so that it does not match the wishes of the health center.

c. The e-Puskesmas application can provide data and information in order to make managerial and medical decisions by the head of the health center and doctors properly. For example in evaluating the achievement of KBK.

Communication on Utilization of e-Puskesmas Application

According to informants who use the Gembor health center application, there have been no routine coordination meetings between units in the health center that discuss obstacles to the use of e-Puskesmas. So far, application input problems have been resolved more often through communication between personnel, not resolved in one meeting with the entire team. As a result, the resolution of application utilization problems is inconsistent between personnel. At the Gembor health center, there is no control book that functions to record problems in the use of the e-Puskesmas application that can be used for monitoring. From in-depth interviews regarding communication regarding the use of the e-Puskesmas application, it can be concluded:

a. The e-Puskesmas developer often provides application updates, but there are too many and they are updated too often so that health center officers often do not understand them.

b. There have been no special efforts to monitor and evaluate the e-Puskesmas application, for example recording in a logbook, or forming a team or carrying out special coordination through meetings to discuss application problems at the Puskesmas level.

c. New monitoring and evaluation coordination has only been carried out by forming a WA Group across health centers to resolve technical application issues. In one health center, the e-Health Center issue is often discussed in leadership meetings.

d. Health centers that have achieved 100% real-time data targets such as Cipadu and Kedaung Wetan always carry out routine control of e-Health Centers every day. This is in accordance with the policy that completion of e-Health Center input must be done every day.

e. Efforts to overcome application troubleshooting between health centers vary

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depending on the initiative of the person in charge of the SIK.

E-Puskesmas Application Utilization Resources

The budget for the use of the e-Puskesmas application is good because it already knows the set ceiling. However, the management of facilities has not been fulfilled because the budget is minimal to meet the needs of facilities and improve the quality of human resources. Meanwhile, according to the informant Periuk Jaya, the budget to produce a good internet network is considered inadequate. The results of the document review at the Gembor Health Center show that the absorption of e-Puskesmas is good in paying for applications and the internet, but in facilities it is still lacking, there is no BLUD budget for HR training.

From in-depth interviews on resources for the use of the e-Puskesmas application, it can be concluded that the budget is available and well managed, but the amount is still lacking, especially for HR training and maintenance or replacement of old computers and repair of the internet network.

Disposition/response of Utilization of E-Puskesmas Application

The response and support for cooperation between units within the health center when utilizing the application has been good in all health centers interviewed. For example, the KIA polyclinic at the Gembor health center according to application users has made efforts to cooperate in reminding each other of deficiencies in data input. Such as between the KIA polyclinic and the clinical laboratory reminding each other of the status of their services whether they are "urgent" or not urgent. Likewise, the KIA unit with the registration and pharmacy sections remind each other of the completeness of the data.

From in-depth interviews on the disposition/response to the use of the e-Puskesmas application, it can be concluded that cooperation between units within the Puskesmas has so far been good, especially in reminding each other of the lack of data input and complementing each other's filling.

Bureaucratic Structure of Utilization of E-Puskesmas Application

According to the Gembor Health Center, there is no problem of bureaucratic structure in utilizing the e-Health Center application, but it is very dependent on personnel who are computer literate. However, informants from the Periuk Jaya Health Center are of the opinion that the absence of an official PJ SIK structure in the Health Center for each section or polyclinic is a structural and bureaucratic obstacle. The results of the document review at the Gembor Health Center show that the structure and job descriptions already exist, but the person in charge of e-Health Center in each polyclinic has not been included in the job description. From in-depth interviews about the bureaucratic structure of utilizing the e-Health Center application, it can be concluded that there are no bureaucratic obstacles from the perspective of the leader, but from the perspective of the supervisor, the absence of PJ in each section hinders the utilization of the e-Health Center application.

Discussion

The research results explained in the previous chapter produced four themes and seven sub-themes that will be discussed in this chapter. The themes of the research results are as follows: (1) Bureaucratic structure that strengthens the contextuality of information systems; (2) Resource support for adequate and quality information system input; (3) Internal

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organizational support to optimize information system processes; and (4) Effective communication to strengthen information system products.

Bureaucratic Structure Strengthens the Contextuality of Information Systems

The results of the study indicate that the e-Puskesmas information system has achieved the goal of contextual utilization, namely changing work behavior to be all digital and producing electronic medical records, resulting in a paperless work culture and easier and faster reporting and decision-making processes. In its implementation, technically there are still obstacles so that not all application features are in accordance with the needs of the health center. The bureaucratic structure plays an important role in achieving the expected utilization goals. However, the health center bureaucratic structure for implementing e-Puskesmas is still less supportive.

Digital working behavior is the main purpose of utilizing the e-Puskesmas application. However, changing manual working habits to digital requires strong efforts. A study on the adoption of health information technology by university health service nurses in the Netherlands who are "technologically illiterate" shows that the perception of working digitally is identical to doing unpleasant activities, fake world activities, full of stress, and disturbing(De Leeuw et al., 2020).

However, the main purpose of e-Puskesmas as a means of getting used to working digitally has not been considered and most health centers consider it identical to electronic medical records (EMR). The strength of EMR lies in its ability to search and compare clinical data. However, this advantage is not utilized properly, thus reducing the role of EMR, for example in the United States it is often found that health workers prefer to scan printed documents.(Janett & Yeracaris, 2020).

The use of health information systems for good decision making requires regular monitoring and feedback support, as well as personnel who have good skills and motivation and have received training. Meanwhile, almost 60% of respondents stated that the health information system of public health facilities in health care facilities in Southwest Ethiopia has good utilization.(Kanfe et al., 2021). However, the utilization of health data through health information systems and management in Tanzania is still poor, related to data management skills, weak supervision and feedback, inadequate resources, and inadequate training.(Mboera et al., 2021).

To achieve the utilization of e-Puskesmas as an effective electronic medical record, resource support is needed, one of which is adequate personnel. In order for RME to function well and be integrated in health services, support from a multidisciplinary team is needed.(Janett & Yeracaris, 2020). In addition, a study on the readiness of hospitals to become paperless in England in 2012 showed that the change to become paperless requires a long time so that some documents related to RME are still in the form of physical paper.(Waterson et al., 2012). Thus, to realize a paperless work environment by implementing e-Puskesmas requires strong human resource support.

The utilization of e-Puskesmas in the Tangerang city work area has not been fully achieved, both in getting used to digital work and producing complete electronic medical records. It is suspected that this is related to the lack of human resources responsible for e-

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Puskesmas. In each health center there is only one person in charge of e-Puskesmas but is not supported by a team that is formally formed to control and evaluate e-Puskesmas.

It can be concluded that to achieve the goal of utilizing e-Puskesmas as a tool to cultivate digital and paperless work and produce electronic medical records that are in accordance with the needs of the health center, support from various parties is needed. Each health center should form a cross-disciplinary and professional team so that the use of e-Puskesmas for the purpose of a digital and paperless work environment and producing complete EMR can be achieved.

Resource Support for Adequate and Quality Information System Input

a. Budget Support for Human Resource Training

The results of the study indicate that in terms of quantity, the number of human resources is sufficient, but in terms of quality, skills need to be improved. Not all health center staff master and understand the information system well, so training is needed. However, the need for human resource training is not supported by a sufficient budget from the health center. Human resource training for the e-Health Center application has so far been carried out by the health office only to several representative officers from each health center. Training from the e-Health Center developer is no longer carried out, if there is a feature update, it is more often done via chat media and explanations via telephone by the developer's customer service.

A study conducted to determine the minimum health information competencies that must be mastered by health workers at four levels of the health system in 2015 showed that there were a total of 68 types of competencies that must be mastered. Specifically for the health service level, 22 types of competencies are needed which are part of 5 main competencies, namely data processing (searching & retrieving), data generation (collecting, analyzing, managing, and presenting), utilization of health data (data uses) such as for surveillance, and the use of computer and information technology infrastructure such as laptops, internet and so on.(Nouvellet et al., 2021). Thus, the ability of e-Puskesmas users is not limited to just being able to input data but other competencies are also needed.

In this study, information was obtained that not all data required by e-Puskesmas was inputted because the duties of health workers are not only focused on data administration but also health services. This means that even though health workers are given adequate training, it is estimated that it will not solve the problem of completeness of e-Puskesmas data and information if health workers are still required to carry out patient service duties. In this regard, it is interesting to study the health information cadre program in the form of mentoring or internships for new college graduates carried out in Botswana. Health workers in this country are the same as in Indonesia, which have limited numbers so that there is a double workload. New graduates from colleges who are not yet trained and experienced in health information in Botswana are recruited and take part in on-the-job training or mentoring programs to produce health information cadres. It turns out that this program can contribute positively to the health information system in Botswana(Ledikwe et al., 2013).

It can be concluded that the health center needs to propose a health information competency development program for all health workers and staff. Accreditation in health

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services mandates health service institutions to provide electronic medical record training. Another alternative if the duties and responsibilities of health workers in serving patients must be prioritized, then a health information cadre program such as that carried out in Botswana can be implemented. The Tangerang City Health Office can collaborate with universities that have knowledge in the field of information systems. Budget sources can basically be allocated through the Regional Business Service Agency (BLUD) mechanism, but of course this requires support from all parties so that the budget allocation for training can be realized.

b. Stakeholder Support in the Preparation of Standard Operating Procedures (SOP)

The results of the study stated that there is no SOP specifically prepared for the preparation of standard procedures for filling out e-Puskesmas. So far, health workers and health center staff have used general service standards which contain instructions for filling out e-Puskesmas. The health center has a network of stakeholders in various sectors that can be empowered to be involved in preparing the SOP.

The problem of weak SOPs generally occurs in the use of health information systems in developing countries, for example in Tanzania. The application of information systems in Tanzania uses different procedures and processes for receiving reports between health services, resulting in the loss of reports sent from the lowest health services. This causes the process of analyzing and utilizing health data to be weak.(Mboera et al., 2021). This is how research in Indonesia conducted to analyze the completeness of filling out medical records at RSKD Duren Sawit in 2022 and at RS Bhayangkara Pekabaru showed a mismatch in implementation in the field with existing SOPs due to weak socialization to officers.(Basir et al., 2022; Munazhifah et al., 2023). Basically, the completeness of the minimum standard health service procedures such as e-Puskesmas input must consist of three components at different levels, including:

1. The basic policy and legal umbrella that covers e-Puskesmas input activities in this case is Permenkes number 24 of 2022 concerning medical records which has been used as a permanent legal basis. The results of the study show that the health centers involved in this study have referred to the Permenkes on medical records.

2. Standard operating procedures are basically derived from general policies that pay attention to the conditions of the work environment. In the context of e-Puskesmas, SOP is a special procedure for inputting e-Puskesmas that adapts to the conditions of the work environment of the Puskesmas in general. These conditions include health workers and staff, infrastructure and facilities owned, and stakeholders who play a role. The results of the study showed that the SOP for inputting e-Puskesmas has not been prepared specifically. The SOP used as a reference in inputting e-Puskesmas is the general service SOP which contains instructions for inputting data.

3. The results of the study showed that there were no technical guidelines for inputting e-Puskesmas. This may be due to the dynamic application development process so that there are often new features created by developers. The speed of creating new features is not balanced with the creation of technical guidelines, thus confusing e-Puskesmas users.

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a. Budget Support to Improve the Quality of Internet and Computer Network Infrastructure

The results of the study showed that infrastructure and facilities contributed to the weak utilization of the e-Puskesmas application in the locations involved in this study, including slow or inaccessible internet and computers with old usage ages. Basically, internet problems are more caused by factors that are difficult to anticipate and intervene or modify, such as the structure of the high health center building and many building blocks, applicable policies on bandwidth quotas, and weather such as rain. Meanwhile, computer problems are more related to the age of the machine and administrative procedures for repairing or replacing facilities which turned out to be different in the health centers interviewed.

In this study, the definition of e-Puskesmas infrastructure is applied from a narrow perspective, namely covering internet networks and computer facilities only. If observed, the e-Puskesmas infrastructure actually also includes the digital culture of health workers, and the applicable policies, namely Permenkes 24 of 2022 concerning medical records. Cultural infrastructure and policies are the focus of the central government while internet and computer networks are the focus of health services or puskesmas. As a result, even though the internet and computer network infrastructure are inhibiting factors, puskesmas can overcome them with various initiatives. This is due to the increasingly high digital work culture and the existence of policies that require puskesmas to carry out electronic medical records through the use of e-Puskesmas.

Basically there are four types of information technology budgeting and funding models (including information systems), including: (a) charge-based or service-based model, namely the IT budgeting system in organizations with IT units that rent information system providers and pay for the provider's service fees that have been performed; (b) Lord and Master model, namely the budgeting system in organizations with IT units that have full authority to implement and execute information system services; (c) Revenue percentage, namely the IT budgeting system in organizations with IT units whose budgets are calculated as a percentage of the organization's income or profits; and (d) Absolute outsourcing, which is basically similar to the charge-based model except that the organization does not have an IT unit at all or is completely outsourced(Venkatraman & Shantapriyan, 2015). The results of the study show that the health center implements a charge-based budget system where the control of the information system is by the health service while the infrastructure (internet and computers) is by the health center.

Thus, in essence, the problem of internet and computer networks can be solved by the health center itself by implementing supportive policies and placing it as a budget priority. Based on this, it is recommended that the head of the health center budget the cost of maintenance/repair and replacement/rejuvenation of the internet and computer networks as a financing priority. The budget priority is intended so that the utilization of the e-Health Center application has been optimal from a contextual aspect, namely producing updated electronic medical records and with valid data, as well as accelerating and facilitating the work of health workers and staff in producing reports to the health office.

Team Response to Accelerate the Process of Utilizing E-Puskesmas

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a. Feature Support for Ease of E-Puskesmas Input

The results of the study showed that the level of need for each health center for the application features provided by the e-Puskesmas application varies depending on the level of understanding and needs of health workers and staff. This difference is thought to occur because there is no uniform SOP for all health centers, and there is no update of the e-Puskesmas technical guidelines when features are added. The results of the interview showed that there were features that were considered problematic by one health center, but were considered not a problem by other health centers. Then there was a report feature that was considered important and was not in the application, but for other health centers it was not a problem. If these differences in perception are not resolved, it will lead to differences in the standards of e-Puskesmas utilization by health centers in the city of Tangerang.

Literature study on barriers and features of health information systems in 2021 identified two types, namely sector-specific and general features. The most common features found are treatment records, patient records, and laboratory results, while the most common features found are reports, task management, and reminders/alerts. The least common features found are pain records, lifestyle recommendations, patient and family information, and family planning. Meanwhile, the least common features found are data sharing and to-do lists. There are many health information systems with unique features and there is no agreement in determining the needs and types of health information systems.(Tummers et al., 2021).

In this study, it was found that the features provided by the e-Puskesmas application developer were too many and often changed. The development of application features is basically aimed at making e-Puskesmas provide the functions desired by users. However, in reality, not all Puskesmas interviewed needed the features offered. This condition is further exacerbated by communication patterns and information on feature updates that are not conveyed properly.

Thus, it is expected that e-Puskesmas developers will identify feature needs that involve all application users in the health center. The goal is that there are no features that cannot be utilized by the health center. In addition, every feature update must be informed and communicated well to all users, and equipped with the latest technical guidelines so as not to cause confusion in its use.

b. Collaboration and System Interoperability for E-Health Center Integration

The results of the study showed that there was no integration between e-Puskesmas and other systems or applications used in the health center. As a result, e-Puskesmas data cannot be interoperable with other systems, so bridging or re-inputting of data in other systems must be carried out. The bridging system solution is basically a short-term problem solving. Every time there is an adjustment to the application, the bridging system must also be adjusted. In some cases, system users prefer to re-input rather than bridging.

Based on literature studies, the problem of health information system interoperability has been discussed since 2003 in line with the increasing complexity of the health industry. To overcome this complexity, interoperability plays a role in connecting output and input between operational systems and facilitating data access according to the desired format. So

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system interoperability shows the ability to connect and exchange information with other systems for implementation or access purposes without any significant obstacles. Low data interoperability between health information systems has an impact on the quality of service and waste of resources(Nyangena et al., 2021; Torab-Miandoab et al., 2023). The results of this study indicate the low interoperability of the e-Puskesmas system at the interviewed locations which causes waste of resources. Currently, there are dozens of applications that must be inputted routinely by Puskesmas officers with stand-alone systems, including the system for National Health Insurance (P-Care), the Sehat Indonesiaku Application (ASIK) and the Satu Data Keshetan Application (ASDK) from the Ministry of Health, PISPK, ASPAK, PWS KIA, SIHA, SITB, E-Renggar, LPSE, SIP online, and so on.

Thus, it can be concluded that the maturity level of e-Puskesmas system interoperability is still in the development stage equivalent to Ghana, Kenya and Uganda, so that the interoperability of the e-Puskesmas system with other systems is a priority effort to improve the quality of SIK. This effort is carried out by combining all SIK in one large integrated application. This integration can save resources by simplifying and accelerating input and reporting. The central government and local governments and cross-sectors must coordinate and collaborate to produce a single health information system application in the health center.

Effective Communication for Quality E-Puskesmas Products

The results of the study showed that internally there has been good coordination between personnel to prevent errors in data input. The awareness of health workers and staff in this collaboration shows that there is a high digital work culture. The role of the person in charge of SIK in each health center is very vital in preventing input errors, including by monitoring all data transactions in e-Puskesmas every day.

CONCLUSION

Contextually, the use of the e-Puskesmas application is in accordance with the mandate of the Minister of Health Regulation number 24 of 2022 as an electronic medical record. The use of e-Puskesmas in the context of accelerating and building a digital work culture has not been achieved. This can be seen from the fact that e-Puskesmas has not been integrated with other systems or applications in the health center, as well as reporting that has not been connected so that paper is still needed. From the input side of the use of the e-Puskesmas application, it was found that the bureaucratic structure had not formalized the person in charge of the health center's SIK, there was no resource support to conduct HR training and provide adequate information system infrastructure. From the process side, a special SOP for e-Puskesmas has not been prepared which is used uniformly by health centers. The implementation of the use of the e-Puskesmas application shows: the application features are too many and often experience changes that are not supported by sufficient communication and information, the integration of e-Puskesmas with dozens of other information systems is still less than optimal even though a bridging system has been prepared, the e-Puskesmas application is structured but not documented in the form of a log book and there is no formalized monitoring and evaluation mechanism, and the communication and internal coordination of the Puskesmas team is good in preventing and overcoming errors or mistakes

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when using e-Puskesmas

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