



Analysis of the Implementation of Electronic Medical Records in Efficiency, Productivity, and Performance of Health Services at the Sriamur Bekasi Health Center with the Wellbeing Method

Himas W.D.1*, Jenni Ria Rajagukguk, Ayub Muktiono

Magister of Management Technology, Faculty of Engineering, Krisnadwipayana University, Jakarta, Indonesia

*Corresponding author Email: hmswidiarto@gmail.com

The manuscript was received on 17 March 2024, revised on 28 April 2024, and accepted on 28 September 2024, date of publication 18 October 2024

Abstract

The application of digital technology in health services has significantly improved efficiency and service quality. Electronic Medical Record (E.M.R.) is a technology implementation that records, stores, and manages patient medical data electronically. This study aims to analyze the impact of using E.M.R. on the productivity and efficiency of health services at the Sriamur Bekasi Community Health Center. This research uses the Wellbeing method with a qualitative approach. Primary data was collected through in-depth interviews and questionnaires distributed to the medical and administrative staff of the Sriamur Community Health Center. Secondary data on the number of patients before and after E.M.R. implementation was also analyzed. The leading indicators measured include service time, quality, error rate, and human resource utilization. The research results show a significant increase in productivity and efficiency after E.M.R. implementation. The number of patients served per day increases, and the time required for recording and retrieving patient data is reduced. Respondents indicated high satisfaction with using E.M.R., with the majority assessing that the system helps speed up administrative processes and improve the accuracy of medical data. Implementing E.M.R. at the Sriamur Bekasi Community Health Center has increased the medical staff's operational efficiency and productivity. This technology makes it easier to access and manage patient data and reduces the administrative burden so that medical personnel can focus more on health services. To maximize the benefits of E.M.R., ongoing training and regular evaluation of existing systems and procedures are required.

Keywords: *Electronic Medical Record, Productivity, Health Services, Community Health Center, Digital Technology.*

1. Introduction

Electronic Medical Records, Productivity, Efficiency, Health Services, Community Health Center, Digital Technology [1]. Digital technology has helped improve access to health services, improve the quality of care, and reduce costs. In recent years, Indonesia has seen significant developments in digital health technologies, such as telemedicine services, online registration, and hospital management information systems (SIMRS).

Implementing digital technology requires a significant investment in infrastructure, training, and system maintenance [2]. Implementing digital health technology has helped overcome some of the problems faced in healthcare, such as limited storage space, limited access to information, and limited efficiency. The SIMRS system has helped manage patient data more effectively and efficiently, allowing quick and easy access to patient information. Telemedicine services have helped improve access to health services, especially for areas with limited access to health facilities. Online registration has helped reduce the buildup of queues at hospitals and allowed patients to register faster and more efficiently.

While digital technologies have helped improve healthcare, some issues still need to be addressed. An important issue is the limited infrastructure and resources in some areas, which may hinder the implementation of digital health technologies. In addition, some doctors



still do not fully understand and use digital health technologies effectively, which may impair the use of these technologies to improve health services.

Primary health care is an essential health service to address public health problems. It is generally accessible to individuals and families in the community at a minimal cost without compromising the quality of care provided [3]. Digital technology has helped increase access to health services and improve care quality. For example, online registration systems have helped reduce queue buildup at health centers and allow patients to register faster and more efficiently. Telemedicine services have helped improve access to health services, especially for areas with limited access to health facilities.

While digital technology has helped improve primary health care, some issues still need to be addressed. One crucial issue is the limited infrastructure and resources in some areas. This can hinder the implementation of digital health technology. In addition, some doctors still do not fully understand and use digital health technologies effectively, which may impede the use of these technologies to improve primary health care. In analyzing user experience related to the implementation of Electronic Medical Records (E.M.R.) at the Sriamur Bekasi Health Center, this study aims to find out how E.M.R. implementation can help improve the quality of health services and increase efficiency in managing patient data. In addition, this study also aims to determine how the use of E.M.R. can help increase productivity in health services.

The formulation of the problem is how the implementation of Electronic Medical Records (E.M.R.) has an impact on efficiency at the Sriamur Bekasi Health Center based on the wellbeing approach, how service productivity at the Sriamur Bekasi Health Center changes after E.M.R. implementation and how the interaction between the E.M.R. system and user wellbeing affects service performance at the Sriamur Bekasi Health Center. The objectives of the study were to analyze the effect of Electronic Medical Record (E.M.R.) implementation on efficiency at Puskesmas Sriamur Bekasi using the wellbeing approach, measure changes in service productivity at Puskesmas Sriamur Bekasi after E.M.R. implementation through data analysis of the number of patients three months before implementation and three months after E.M.R. system implementation and identify the relationship between E.M.R. user wellbeing and health service performance at Puskesmas Sriamur Bekasi.

The benefit of the study is that it contributes to academic knowledge. This study can contribute to a deeper understanding of the implementation of Electronic Medical Records (E.M.R.) in the context of health services at the health center level, can be used as a basis for further research on the same problem, the research carried out is expected to help contribute to the development of science and technology that is specifically related to health services and broadening insight and experience in the health sector, especially in the experience of Electronic Medical Record. Practical benefits are increasing operational efficiency, and this study can be used to identify specific ways in which E.M.R. improves operational efficiency in Health Centers, such as reducing the time required for recording and retrieving patient data, and improving the productivity of medical staff, helping to improve the productivity of medical staff by reducing administrative burdens, allowing them to serve more patients more effectively.

The benefits of research are that it contributes to academic knowledge. This research can contribute to a deeper understanding of the implementation of Electronic Medical Records (E.M.R.) in the context of health services at the health center level, can be used as a basis for further research on the same issue, the research carried out, is expected to help contribute to the development of science and technology specifically related to health services and broadening the horizons and experience in the health sector, especially in the experience of Electronic Medical Record. Practical benefits are increasing operational efficiency, and this research can be used to identify specific ways in which E.M.R.s improve operational efficiency at Puskesmas, such as reducing the time required for recording and retrieving patient data, and improving medical staff productivity, helping to increase medical staff productivity by reducing administrative burdens, allowing them to serve more patients more effectively.

2. Literature Review

Electronic Medical Record (E.M.R.) is an electronic system that improves the quality of care, ensures the quality and convenience of information, and enhances the quality of patient satisfaction [4]. It is a computerized system that records, stores and manages patient medical information electronically. It replaces conventional paper-based medical records with a system that allows medical information to be accessed and shared more efficiently by healthcare professionals.

Electronic Medical Records include various medical information, such as a patient's medical history, laboratory test results, radiology data, drug prescriptions, surgery records, and patient contact information. The system has significant advantages in terms of accessibility, speed, and accuracy of information, which can improve the overall quality of healthcare. The benefits of using Electronic Medical Records include:

1. **Accessibility and Completeness of Information:** Patient data can be accessed anywhere with appropriate security. All relevant medical information is available in one centralized location.
2. **Efficiency and Productivity:** Electronic medical records enable faster data storage and retrieval, saving time and increasing the productivity of medical staff.
3. **Improved Quality of Care:** Healthcare professionals can make better decisions and provide more appropriate care with faster and more complete access to patient information.
4. **Better Coordination of Care:** Electronic Medical Records allow more accessible information sharing between doctors, specialists, and other healthcare facilities, improving care coordination.
5. **Security and Compliance:** Electronic Medical Records often have robust security features to protect patient medical information and comply with applicable health privacy regulations.

In the Implementation of Electronic Medical Records in Health Services, seen in Permenkes No. 24 of 2022 [5], every Health Service Facility must implement Electronic Medical Records (E.M.R.). Electronic Medical Records (E.M.R.) originated from patient medical records maintained in physical form, which were time-consuming, error-prone, and difficult to share between healthcare providers. The development of information technology has brought about major changes in the storage and management of medical information, including in health centers such as Puskesmas or equivalent health facilities.

In a P.H.C. or equivalent facility, E.M.R. implementation may be challenging due to limited resources, budget, and level of I.T. expertise. However, over time, there are several stages of development in implementing E.M.R. in the environment, as follows:

1. Introduction and Preparation: The initial stage involves understanding and assessing the need for this technology. The health center evaluates the available infrastructure, human resources, and patient-specific needs.
2. Selection of an Appropriate E.M.R. System: This process involves researching and selecting an E.M.R. platform that suits the needs and financial capabilities of the health center. The platform should integrate with existing systems and can be operated easily by medical staff.
3. Phased Implementation: Health centers may adopt a phased approach in E.M.R. implementation. For example, start with a particular department or function before expanding to other areas. This helps reduce risk and facilitates the adaptation of medical staff to change.
4. Training and Mentoring: Medical staff require intensive training using the E.M.R. system. In some cases, additional support from I.T. experts or consultants can help address technical issues and provide mentoring during the transition process and
5. Valuation and Adjustment: E.M.R. implementation is a dynamic process. Periodic evaluation is required to ensure that the system is working as expected. Changes and adjustments are made to improve effectiveness and adherence to user needs.

Work production is defined as a person's ability to produce goods and services with the help of labor, machinery, or other components, calculated based on the average labor time used in the production process [6]. Work productivity measures the efficiency of a worker or group of workers in completing specific tasks within a set time.

Productivity in E.M.R. implementation is operational efficiency, critical to improving access and quality of healthcare services. Service quality, accessibility, and sustainability of the health system are strongly influenced by operational efficiency and productivity [7]. The use of Electronic Medical Records (E.M.R.) can provide significant improvements in productivity and efficiency for medical personnel and administrative staff in managing data and administrative processes: (1) Increased Productivity in Patient Care to implement Electronic Medical Records (E.M.R.) in Puskesmas is to increase the productivity and efficiency of health services. One crucial indicator of the successful use of E.M.R. is to assess productivity based on the number of patients served. This should be recorded both before and after E.M.R. implementation, and it is also necessary to calculate the number of patients served and the average service time per patient. E.M.R. systems allow medical personnel to serve more patients simultaneously as the time required to record, access, and update medical records becomes faster and more accurate. In addition, E.M.R. systems automate many administrative processes, such as medical records and insurance claims processing, thereby reducing staff workload and speeding up workflow. Provide thorough training to employees on E.M.R. usage and develop effective standard operating procedures to improve productivity.

Efficiency is one of the performance parameters that theoretically underlies the entire performance of an organization [8]. Efficiency generally refers to the ability to do something using optimally available resources to achieve desired results with minimal cost or effort. In healthcare efficiency, efficiency refers to operational costs, time, and reduction of paper use. In an economic context, efficiency often refers to the maximum level of production that can be achieved by optimally using available inputs. In a technical context, efficiency can refer to the performance of a system or process in achieving its goals without wasting resources.

In most cases, efficiency can be divided into two main categories: (1) Technical Efficiency is the ability to maximize output (health services) from a given amount of input (resources such as medical personnel, medical devices, and drugs). A health facility is considered more technically efficient if it can provide more services or treatments with the same resources as other facilities, and (2) Allocative Efficiency, also called allocative efficiency, refers to the appropriate use of resources to produce the combination of services most desired by society. It indicates that resources are allocated in a way that benefits patients and society the most. To ensure that each unit of resources is used where it is most valuable, allocative efficiency considers how resources are distributed and allocated.

Efficiency in health services is essential because efficiency is related to cheap and appropriate services that do not require excessive diagnosis and therapy [9]. Efficiency in health services has a vital role because it directly impacts various operational, financial, and quality aspects of services provided by health facilities. According to [9], an information system can be created to improve hospital operations. This system is a subsystem of the overall hospital technical system, which consists of all information processing systems used by each person according to their operational tasks. The purpose of using this system is to improve patient services, from patient management to financial and legal issues related to them.

Health Service Work Performance can be understood as the contribution made by employees/employees to the progress and development of the institution where they work. Public service performance follows the Decree of the Minister of Administrative Reform Number 26 of 2004 concerning Technical Guidelines for Transparency and Accountability in the Implementation of Public Services [10]. Service performance refers to the ability of an organization or individual to provide services to customers or users effectively and efficiently. It includes various aspects, such as perspective, participation, and acceptability. The performance of health workers is the level of success of a person in carrying out his duties compared to various possibilities, such as standard results, patient service, and targets or criteria set following professional obligations [11]. Health service work performance refers to the effectiveness and efficiency of health service provision in achieving predetermined goals. These objectives generally focus on improving the quality of public health, accessibility of health services, and patient satisfaction.

Wellbeing Methodology Basic Rules: "Mixed Method," based on the basic framework for thinking and measuring the public benefit index, is a result of public discourse, including "Thesis" and "Antithesis," then analyzed and produced "Synthesis." Several stages or processes of the method or method are referred to as Wellbeing Methodology (W.M). W.M., In principle and with originality, uses Islamic epistemological references. The essence of W.M was first introduced in the form of the theory of the concept of the framework and methodology of the Tauhidi String Relation (T.S.R) [12], so it has developed the idea of T.S.R into a kind of methodology with the approach of "Uma's Welfare" to be implemented empirically, then [13] elaborated further as a public research model of Wellbeing Methodology [13], in this case the application of W.M to public research with public issue-based topics. W.M. is suitable for public research in academic studies and empirical studies in the field empirically.

To obtain the truth, W.M. adopts several premises of a general rule whose level of truth has been recognized and understood by the community. Undoubtedly, this premise becomes important in quantifying qualitative data into qualitative data in the "Sociometry" stage. there are 3 main premises are Premise 1#: Complexity and Endogeneity: Basically, the Xi variable in the object of study (S) in Wellbeing Methodology (W.M.) follows the premise of Complexity and Endogeneity, which reflects the complex and dynamic nature of the public issue under study. The following is some evidence that W.M. variables follow the premise of complexity and endogeneity as follows:

1. Complex and dynamic: Xi variables in W.M. cover various aspects of complex public life that are most related to the public issue under study and tend to involve multiple factors and dimensions that change over time to affect the level of public benefit,

2. Strong relationship patterns in all directions in WM Xi variables can have complex and mutually influencing relationship patterns reciprocally, meaning that the variables interact with each other in a complex and mutually influencing manner,
3. Simultaneous equations in W.M., when many variables interact and influence each other, research often has to face a system of simultaneous equations. This means that the variables are one connected and must be calculated simultaneously to understand their relationship in place fully and
4. Many alternatives and possibilities exist due to the complexity of the public problem being studied. W.M. helps identify various options and solutions to improve the public good.

One approach that can be used is a public good index (P.P.P.) model comprising various relevant indicators or variables. A simple example of a public benefit index module can be expressed as follows:

$$IKP = (K1 * X1) + (K2 * X2) + (K3 * X3) + \dots + (Kn * Xn) \dots\dots\dots (1)$$

Where: I.K.P. is the Public Welfare Index to be measured, K1, K2, K3, ..., Kn the weight of each variable in its contribution to public welfare. And X1, X2, X3 ..., Xn the variable value each indicator measures.

Premise 2#: Participatory Among Agents: In the Wellbeing Methodology (W.M), the premise of Participatory Among Agents relies on the participation of various parties or stakeholders involved in the public issue being studied. Some points related to Participatory Among Agents in W.M are as follows:

1. Equation model with all variables involved: this method retains all variables that are relevant and contribute to the public issue under study and
2. Simultaneous equation model: This method uses the model developed in W.M. simultaneously with interconnected variables that influence each other. This approach shows the complexity of the relationship between variables. By adopting the premise of Participatory Among Agents, W.M. combines a participatory approach with sophisticated statistical analysis to achieve a deeper understanding of public issues and improve the quality of policies and interventions to improve welfare. This approach recognizes that cooperation and participation from various stakeholders are essential to finding practical and sustainable solutions to the complexity of public problems.

Premise 3#: Wellbeing Function: At this stage, the Wellbeing Methodology (W.M.) concludes the premises of Complexity, Endogeneity, and Participatory Among Agents. Wellbeing Function contains the following points: (1) Wellbeing Function: A comprehensive concept used to measure and evaluate the quality of life of a person or population. This concept includes various aspects of wellbeing, such as subjective wellbeing, physical health, mental health, economic stability, social relationships, education, environmental quality, and social wellbeing. Physical health includes things like disease prevalence and life expectancy. In contrast, mental health includes things like stress levels and quality of life, and (2) Wellbeing is an idea used to measure and evaluate the wellbeing or quality of life of a person or population as a whole. Wellbeing includes various aspects of wellbeing, such as physical health, mental health, economic stability, social relationships, education, environmental quality, and subjective wellbeing. Physical health includes disease prevalence and life expectancy, while mental health includes mortality rates.

Pearson correlation is a correlation coefficient, a measure that shows the closeness of the relationship between two or more variables. It does not indicate a causal relationship between these variables but only shows a linear relationship. This is known as correlation [14]. Pearson correlation is used to determine the closeness of the relationship between the dependent and independent variables. Pearson correlation is between -1 and 1, where if it is positive, the relationship shows a unidirectional and increasing nature, and vice versa; if it is negative, it shows a unidirectional and decreasing relationship. The degree of closeness can be described in the following table:

Table 1. Person correlation table. [14]

No	Coefficient interval	Relationship level
1	0,00-0,199	Very weak
2	0,200-0,399	Weak
3	0,400 -0,599	Medium
4	0,60 – 0,799	Strong
5	0,80 -1,00	Very Strong

Preliminary Study of Variable Determination: Based on the results of the initial study (P.S) and then conducted Expert Group Discussion (E.G.D.), with the results of determining variables from experts as follows: Service Time aspect as a variable (X1); Service Quality aspect as a variable (X2); Error Rate spec as a variable (X3); and Human Resource Utilization spec as a variable (X4);

In healthcare, service time efficiency is a critical component that contributes directly to the quality of care, patient satisfaction, and optimal use of resources. "time efficiency" refers to a health facility's ability to deliver care promptly while minimizing delays at each stage of the service process. Here are some essential elements related to time efficiency in healthcare: Implementing Electronic Medical Records (E.M.R.) can improve the time efficiency of healthcare services. According to [15], hospital waiting time is a critical factor affecting patient experience and overall healthcare efficiency. Patient waiting time is the time the patient spends from when the patient arrives at the health facility to when receiving the required medical services or treatment [16]. Some of the main benefits of time efficiency in implementing electronic medical records (E.M.R.) are reduced documentation time, interdepartmental coordination, and improved accuracy and safety. Some critical aspects related to time efficiency in Health services are as follows [17]: (1) Reducing patient waiting time One of the indicators of service quality in hospitals is how satisfied patients are with the services they receive from doctors, nurses, health workers, and other support staff. Waiting time, which is a factor that can affect patient satisfaction, is the time it takes for a patient to go from registration to getting medication and going home.

Accelerating the diagnostic and treatment process is Communication essential to collaborative patient care, including formal and informal Communication between providers and patients and their families [18]. There seems to be a need for more clarity regarding how each individual contributes professionally to the team and how to delegate work and direct team members more efficiently. Others stated that the lack of Communication in their workplace would hinder service delivery.

Service quality is an essential aspect of healthcare. Good service quality can increase patient satisfaction, encourage loyalty, and deliver a positive image for healthcare providers. The main dimensions of service quality include reliability, responsiveness, confidence, empathy, and tangibility. Factors influencing service quality include resources, management, culture, technology, and policy. Efforts to improve service quality include measurement and evaluation, implementation of a quality management system, staff training, good communication with customers, a customer-focused work culture, technology utilization, a comfortable service environment, and rewards for outstanding staff. Healthcare providers should be able to consider good service standards. Health workers must be able to provide high-quality services because this is one of the benchmarks of the success of public services and community satisfaction [19].

Quality of healthcare also includes acceptability, which is the extent to which the services provided are acceptable to patients regarding effective communication, trust, and compatibility with their cultural values. Good quality of care impacts individual health outcomes and contributes to overall patient satisfaction. This satisfaction can influence patients' adherence to treatment, trust in the health system, and their perceptions of their care experience as a measure of the success of public services and the satisfaction of their communities. To improve the quality of health services, various measures need to be taken, including investment in the education and training of medical personnel to improve their skills and knowledge, the development of infrastructure that supports the provision of quality health services, and the formulation of policies that help close supervision and regular assessment of the quality of services provided. Collaborative efforts between the government, health institutions, and communities are also needed to create an enabling environment for high-quality health services for all.

Error rates in healthcare performance are a significant issue as they can seriously impact patient safety, quality of care, and healthcare costs. These errors include medication, diagnostic, procedural, nosocomial infection, and administrative errors. The leading causes of such errors include the complexity of the healthcare system, high workload and stress, lack of training and education, communication errors, and ineffective technology. These errors can lead to serious patient injury or death, increased cost of care, decreased patient satisfaction, as well as lawsuits and damage to the healthcare facility's reputation. In the Criminal Law (KUHP), the factor of error or negligence that causes the death of another person is a criminal offense [20]. This is regulated in Article 359 of the Criminal Code, which reads: "Any person whose fault (negligence) causes the death of another person shall be punished by a maximum imprisonment of five years or a maximum light imprisonment of one year." For this reason, some errors that often occur in health services are as follows: (1) Diagnostic Error: Nursing practice sometimes finds that errors or omissions in medical actions performed by doctors and nurses cause concern to the public for treatment. This is because there are errors or omissions in each medical action doctors and nurses perform [21]. (2) Administrative Error: Based on Law Number 36 of 2014 concerning Health Workers, health workers must carry out their rights and obligations to avoid errors or omissions that can result in recipients of health services requesting compensation [22].

Utilizing human resources (H.R.) in the healthcare sector is essential for effectively implementing Electronic Medical Records (E.M.R.). E.M.R. is a digital system that replaces paper health records and offers many advantages, such as improved data accuracy, ease of access, and operational efficiency. However, the success of E.M.R. implementation largely depends on how human resources (H.R.) are organized and engaged. As the transition from conventional medical records to electronic medical records (E.M.R.) is still in its early stages, many obstacles may occur, such as human resource issues, financial issues, and equipment issues [23]. Several essential aspects exist in utilizing H.R. for E.M.R. implementation: (1) Training and Education are critical in successfully implementing Electronic Medical Records (E.M.R.) in the healthcare sector. The process begins with a training needs assessment to understand the medical staff's knowledge and skill levels, which is then used to develop appropriate training modules. These modules should cover essential aspects of E.M.R. use, such as system access, patient data entry, and utilization of special features, with diverse formats, including face-to-face and e-learning training. Initial training provides basic orientation and practical scenarios to familiarize staff with the system. In contrast, ongoing training and refresher sessions are scheduled regularly to introduce updates and improve advanced skills. (2) In the implementation of Electronic Medical Records (E.M.R.), clear assignment of roles and responsibilities for each team member is essential to ensure efficiency and accuracy in its use. Each healthcare professional should know their specific duties related to the E.M.R. system. For example, doctors are responsible for entering diagnoses, treatment plans, and critical clinical notes, while nurses may be responsible for entering vital signs, daily care records, and medication administration. Administrative staff should handle patient registration, appointment scheduling, and demographic information updates. With this clear division of duties, duplication of work can be avoided, and each team member can focus on their specific tasks, thus improving workflow efficiency and the accuracy of data entered into the E.M.R. system.

Process and conditions are the most critical factors in conducting measurement activities in a system. Several things need to be further clarified about the essence of measurement to make it easier to understand. In the wellbeing method, the point of view or perspective of assessment includes the perception of variables (Xi.1), participation in variables (Xi.2), and acceptability of variables (Xi.3). How are the instruments and scales used? Assessment using a score scale of 1 to 9 as follows: 1 = It means the worst / lowest / strongly disagree at all, 2 = It means very bad / very low / strongly disagree, 3 = It means terrible/low/disagree, 4 = It means rather bad/somewhat low/somewhat disagree, 5 = It means neutral/middle value/so-so, 6 = It means rather good/somewhat high/somewhat agree, 7 = It means good/high/agree, 8 = It means very good/high/strongly agree and 9 = It means best/most high/strongly agree. The next step was to create a tool for the e-survey. Scale 9 allows respondents to provide more precise, easy-to-understand assessment scores with an easy-to-understand numerical scale, no need to change values, and offers graphical data that can be visually analyzed. Public research will be packaged with applied research and follow several steps and procedures according to rational and academic rules.

3. Research Methods

This research will be conducted at the Sriamur Bekasi Health Center. The Sriamur Bekasi Health Center was chosen because it is a health center in the Bekasi district that has implemented an Electronic Medical Record (E.M.R.). The use of electronic medical records at the Sriamur Bekasi Health Center has been running for about one year, starting on January 1, 2023, so research is needed to determine the effectiveness of implementing electronic medical records. This research paradigm will use the postpositivism paradigm to analyze the implementation of electronic medical records (E.M.R.) in terms of efficiency, productivity, and performance of health services at the Sriamur Bekasi Health Center. This paradigm recognizes subjectivity in research but still seeks to achieve objectivity through quantitative and qualitative methods. The research objective is to evaluate the impact of E.M.R. implementation on efficiency, productivity, and health service performance using primary and secondary data.

Primary data will be collected using the wellbeing method through interviews and questionnaires to health center staff, including doctors, nurses, administration, and other staff. Wellbeing indicators include service time, quality, error rate, and human resource utilization. Secondary data will be the number of patients per day for three months before and three months after E.M.R. implementation, taken from the health center's medical record or health information system.

Primary data analysis will be done qualitatively by identifying critical themes from interviews and questionnaires, while secondary data will be analyzed narratively to compare changes before and after E.M.R. implementation. The study will also ensure validity and reliability through data triangulation and pilot testing of questionnaires. In addition, the study will be conducted following research ethics, including obtaining informed consent from participants and maintaining data confidentiality. The conclusion of this study will determine whether the E.M.R. implementation has improved the efficiency, productivity, and performance of health services at the Sriamur Bekasi Health Center, as well as provide recommendations for further improvement based on the research findings. Postpositivism recognizes that knowledge cannot be completely objective because it is always influenced by human perception and interpretation. However, this approach still tries to achieve objectivity through rigorous scientific methods and data triangulation. In this study, the wellbeing method was used as one of the qualitative approaches to measure the subjective wellbeing of the Sriamur Bekasi Health Center staff after implementing the Electronic Medical Record (E.M.R.).

Masudul Choudhury, a scholar, has built the concept and developed the Tawhid String Relation (T.S.R), defining the concept and framework where the essence or terminology of "Tawhid," created in the implementation of economic and financial perspectives of Islam based on the rules of phenomenology. Suryadi grounded the understanding of T.S.R. phenomenological phenomena in the form of public issues and then quantified numerically using a sociometric approach as an "index of public benefit" (I.K.P). based on the postpositivism approach to public problems focusing on the perspective of what will be quantified, this issue is approached with sociometric rules consisting of 3 things, namely: (1) Perception of officers on variables (Xi.1), (2) officer participation on variables (Xi.2) and (3) officer acceptability on variables (Xi.3). The three points of view in the form of perception of participation and acceptability will then be used as the primary material for survey instruments in conducting postpositivism quantification.

The research philosophy in the ontological aspect of Puskesmas Sriamur is a puskesmas that provides essential health services, including medical examinations, general treatment, immunizations, dental care, and maternal and child health services. It is in the Sriamur sub-district, Bekasi district, West Java, Indonesia. The Puskesmas is open weekdays from 8 am to 3 pm and Saturdays from 8 am to 12 pm. They also have a 24-hour emergency service that can be contacted at a specific number outside of operational hours. The development of the sriamur health center in the implementation of the Electronic Medical Record began in early 2023 in January now, using the e-puskesmas application, so there have been changes in services after the implementation of the Electronic Medical Record from productivity, efficiency, and in-service performance, but there is no data to assess.

In the Epistemology Aspect, To find out changes in services in scientific studies, there needs to be research to see changes in efficiency, productivity, and service performance. It is necessary to analyze the productivity of health center services, the efficiency of health services, and the performance of participation services based on the involvement of electronic medical record users. In the axiological aspect, after analysis in scientific studies, knowing the productivity, efficiency, and performance of services in the sriamur health center will benefit operational efficiency, such as reducing the time required for recording and retrieving patient data. Improved productivity of medical staff, helping to increase the productivity of medical staff by reducing administrative burdens, allowing them to serve more patients more effectively. Approach This study uses a qualitative approach to explore and understand the subjective experiences of individuals related to the implementation of Electronic Medical Records. Although the Wellbeing method is considered a symbol or indicator, a qualitative approach requires in-depth analysis to find hidden meaning in the numerical data collected. Research Design Thinking Framework, Implementation This research will be carried out namely:

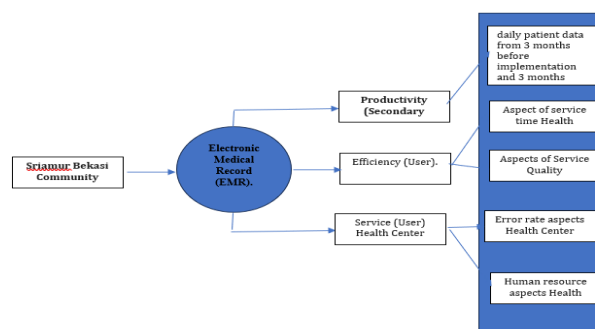


Fig 1. Thinking Framework

Data Collection: at this stage, researchers are looking for data and information needed by: (1) Primary data: Primary data is obtained by the wellbeing method of distributing e-questionnaires to health center staff who interact directly with the Electronic Medical Record system. (2) Secondary Data: Secondary data is obtained by taking data from 3 months before E.M.R. implementation and three months after E.M.R. implementation to get a comparison.

Operational Definition: In this study, the operational definitions of the variables studied are as follows. Electronic Medical Record (E.M.R.) is a digital system used to manage patient medical data electronically, with the leading indicator being the use of the e-puskesmas application for medical records that has been running since January 2023. Productivity is defined as the level of work achieved by medical personnel within a certain period after E.M.R. implementation, as measured by the number of patients served per day and the change in the number of patients before and after E.M.R. implementation. Service performance is defined as the effectiveness and efficiency of health services provided by Sriamur Health Center, with indicators of service quality measured through staff questionnaires, error rates in medical services, and utilization of human resources. Efficiency is defined as the optimal use of resources to achieve maximum results in health services, which is measured through service time, i.e., the duration required for each service and the reduction in administrative time due to the use of E.M.R. These operational definitions will guide the measurement and

analysis of data in the study to evaluate the impact of E.M.R. implementation on efficiency, productivity, and performance of health services at the Sriamur Bekasi Health Center.

Business Process System: Effective and efficient business processes are critical in delivering health services, especially in primary healthcare facilities such as health centers. As one of the community health centers, Puskesmas Sriamur has a vital role in providing medical services that include handling emergency cases, childbirth services, and other general and special health services. Sriamur Health Center implements a structured business process flow to ensure timely services and compliance with patient needs. This flow covers all stages from patient arrival, registration, examination, and further treatment or referral to a more complete health facility. The following is the flow of the business process system that runs at puskesmas sriamur Bekasi:

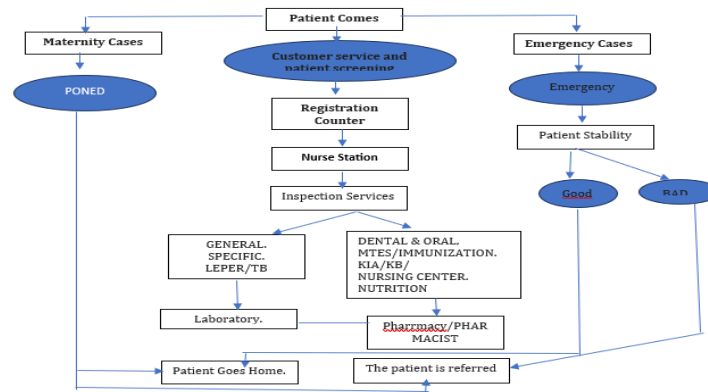


Fig 2. System Business Process

Data analysis in this study will be carried out through primary data processing and secondary data. Primary data will be collected using the wellbeing method through interviews and questionnaires to the staff of Puskesmas Sriamur Bekasi, including doctors, nurses, administration, and other staff who interact with the E.M.R. system. Primary data analysis will be conducted qualitatively by identifying key interview and questionnaire themes. A narrative approach will be used to describe and understand staff experiences and perceptions of E.M.R. implementation and evaluate its impact on productivity, efficiency, and performance of health services. Secondary data will be obtained from the number of patients per day for three months before and after E.M.R. implementation, taken from the health center's medical records or health information system. The secondary data will be analyzed narratively by comparing changes in the number of patients before and after E.M.R. implementation.

Data Analysis Procedures, Data analysis procedures include: (1) Data collection: (a) Distribute wellbeing questionnaires to health center staff who interact directly with the E.M.R. system. (b) Collecting data on the number of patients per day from the health center's medical record or health information system. (2) Data Processing: (a) Analyzing the questionnaire by identifying critical productivity, efficiency, and service performance themes. (b) Comparing patient count data before and after E.M.R. implementation narratively to see the changes. (3) Interpretation of Results: (a) Conclude from the results of qualitative and narrative analysis; (b) Assess whether E.M.R. implementation has improved efficiency, productivity, and performance of health services at Sriamur Health Center. (c) Provide recommendations for further improvement based on the research findings. With this data analysis approach, this study is expected to provide a comprehensive picture of the impact of E.M.R. implementation on the efficiency, productivity, and performance of health services at the Sriamur Bekasi Health Center

4. Result and Discussion

The mean number of patients before implementation was 2015 ± 779 , and the mean number after implementation was 2531 ± 366 . These two numbers show that the average number of patients after implementation is more than those who came before implementation. However, to see whether this value is significantly different, the following Paired Sample T-test was conducted: Before the data is tested hypothetically, the data must be tested for prerequisites or assumptions. The normality test was carried out using the Shapiro-Wilk test. The normality test aims to determine whether the data is usually distributed, provided that if the significance/probability > 0.05 , then the data is generally distributed. Based on the normality test results, the significance value for the Number of Patients data before and after implementation is 0.182 and 0.167, respectively. Both values are more significant than 0.05, so it can be concluded that the number of Patients' data before and after implementation is usually distributed and fulfills the normality assumption.

Based on the results of the assumption test, it is obtained that the data meets the assumption of normality. So, the test is continued using the paired sample t-test. The Paired Sample T-test test aims to see if there is a significant difference in the number of patients before and after implementation. The hypothesis for testing this research data can be written as follows: H_0 : There is no significant difference in the number of patients before and after implementation; H_1 : There is a substantial difference in the number of patients before and after implementation. The hypothesis test provisions are if the significance value < 0.05 , then H_0 is rejected, and H_1 is accepted. Based on the paired sample t-test test, the significance is 0.516, where this value is greater than 0.05, so the hypothesis decision is H_0 accepted and H_1 rejected. This means no significant difference exists in the number of patients before and after implementation.

The validity test of the research instrument can be "declared valid" if each question item in the questionnaire can be used to reveal something that the questionnaire will measure. Statistically, the indicators in the questionnaire can be said to be valid if the r-count value is greater than the r-table. This validity test uses tabulations and formulations calculated using the Microsoft Excel formula. The goal is to get an understanding of the flow and mindset of how to calculate in more detail and quickly by following several steps: (a) Open the Excel spreadsheet form to enter the data to be tested and arrange the data in Excel, (b) Arrange neatly the rows of values assumed as Xi and sum them to the right (assumed as Y), (c) The validity test is measuring the correlation (Pearson correlation) of the arrangement of

Xi values against the arrangement of Y values, (d) If done quickly, the formula in excel (=correl;array1;array2). Select array1 is Xi lane data, and array2 is Y lane. Then, the calculated R-value will appear (from the existing data). The validity test data obtained is 50 data, four variables, and 12 sets of data on the assessment score of Perception of Participation and Acceptability (P.P.A.) of Puskesmas officers, and then processed data from Excel. From the calculation: There are a total of 12 r-calculations, with scores of 0.770-0.921, the r-table value with a significance level of 5% (or 95% confidence), r-table = 0.278 and all instrument indicators based on the data are declared "Valid."

The reliability test is carried out to see the extent of the consistency of the results of a study when carried out repeatedly. The higher the level of reliability, the more reliable the research. The indicator of reliability is the Cronbach's alpha value. If $\alpha > 0.90$, then the reliability is perfect. If alpha is between 0.70 - 0.90, then reliability is high. If alpha is 0.50 - 0.70, then reliability is moderate. If $\alpha < 0.50$, then low reliability. Likert Scale Instrument Reliability Test with Alpha Cronbach method via Excel Item variance data and total variance were then entered into the formula. The formula calculation is carried out, and the result is ri (as Cronbach's alpha). The result is a very high and perfect reliability test. The assessment of variables or main components includes an assessment point of view on (1) Officer perceptions, which indicate the level of knowledge, understanding, and awareness of officers of variables (Xi). This perception is focused thematically on improving service efficiency and performance. (2) Officer participation shows how much officers contribute and play a role in the variable (Xi) discussed. And (3) Officer acceptability reflects team member acceptance based on the reality of the current conditions in the field.

To obtain more accurate data, the three components of perceived participation acceptability (P.P.A.) of officers were used as the main components of the health center. A 9-point numerical scale was used for the following reasons: 1 = It means most poor/least low/strongly disagree at all, 2 = It means very poor/low/strongly disagree, 3 = It means poor/low/disagree, 4 = It means somewhat poor/somewhat low/somewhat disagree, 5 = It means neutral/middle value/so-so, 6 = It means somewhat good/somewhat high/somewhat agree, 7 = It means good/high/agree, 8 = It means very good/high/strongly agree and 9 = It means best/most high/strongly agree.

As a result, the (9) scale allows for visual analysis, which means that data on the distribution or spread of assessment sectors can be displayed well in graphical form. In other words, the image will be easy to read. Nine scales that can be packaged into questionnaires or e-surveys are easily created using free or open-source software. An example is as follows: The study focuses on determining the coefficient of the variable to determine the dependent-independent correlation of the variable, and the significance of several values is determined and compared. Several values of variable Xi or I.K.P. As a result, the size/index of relevance is determined by the numerical scale used, namely scale 9, as follows: The reference limit of significance is the middle value (5). The target value is a score of 6.5.

The assessment of variable X1, "Service Time Aspects," is (1) the data results in an average score of 8.42 out of 9.0. In the general category, (7.50-9.00) is included in the excellent, and (2) the highest score value (mode) is 9.0. (3) The middle score, median 9.0 (scale contains ratings 4;5, 6;7, 8;9), and (3) Standard deviation, recorded in the data 0.73. The Officer Participation Assessment Score is (1) The data results in a mean score of 8.38 out of 9.0. In the general category (7.50-9.00), it falls into excellent. (2) The most common score (mode) is 9.0. (3) The middle score, median 8.2 (scale contains ratings 4, 5;6, 7;8, 9); and (4) Standard deviation, recorded in the data 0.73.

The result was a mean score of 8.44 out of 9.0. In the general category (7.50-9.00), it is considered excellent, (2) the most frequent score (mode) is 9.0, (3) the middle score, median 9.0 (scale containing ratings 4;5;6;7;8;9) and (4) standard deviation, recorded in the data 0.70. Assessment of Variable X2, "Service Quality Aspects," is (1) Average Score: The average score obtained is 8.34 out of 9.0. In the general category (7.50-9.00), this score falls into the excellent category. (2) Mode (Most Scored Value): Respondents' most common score is 9.0. (3) Median: The middle or median value of the assessment is 9.0. The rating scale range used is (4; 5; 6; 7; 8; 9), and (4) Standard Deviation: The standard deviation was recorded as 0.70.

The Officer Participation Assessment Score is (1) Mean Score: The mean score obtained was 8.34 out of 9.0. In the general category (7.50-9.00), this score falls into the "excellent" category. (2) Mode (Most Scored Value): The most common score respondents gave was 9.0. (3) Median: The middle or median value of the assessment is 9.0. The rating scale range used is 4, 5, 6, 7, 8, 9, and (4) Standard Deviation: The standard deviation was recorded as 0.69.

The Officer Acceptability Assessment scores are (1) Mean Score: The mean score obtained was 8.34 out of 9.0. In the general category (7.50-9.00), this score falls into the "excellent" category. (2) Mode (Most Scored Value): The most common score respondents gave was 9.0. (3) Median: The middle or median value of the assessment is 9.0. The rating scale ranges used were 4, 5, 6, 7, 8, 9, and (4) Standard Deviation: The standard deviation was 0.77.

The assessment of variable X3, "Error Rate Aspect," is (1) Average Score: The average score obtained is 8.36 out of 9.0. In the general category (7.50-9.00), this score falls into the excellent category. (2) Mode (Most Scored Value): Respondents' most common score is 9.0. (3) Median: The middle or median value of the assessment is 9.0. The rating scale ranges used were 4, 5, 6, 7, 8, 9, and (4) Standard Deviation: The standard deviation was 0.72. The Officer Participation Assessment Score is (1) Mean Score: The average score obtained was 8.34 out of 9.0. In the general category (7.50-9.00), this score falls into the excellent category. (2) Mode (Most Scored Value): Respondents' most common score is 9.0. (3) Median: The middle or median value of the assessment is 9.0. The rating scale range used is 4, 5, 6, 7, 8, 9, and (4) Standard Deviation: The standard deviation was recorded as 0.74.

The Officer Acceptability Assessment scores are (1) Mean Score: The mean score obtained was 8.36 out of 9.0. In the general category (7.50-9.00), this score falls into the excellent category. (2) Mode (Most Scored Value): Respondents' most common score is 9.0. (3) Median: The middle or median value of the assessment is 9.0. The rating scale range used is 4, 5, 6, 7, 8, 9, and (4) Standard Deviation: The standard deviation was recorded as 0.75. The assessment of Variable X4, "Human Resource Utilization Aspects," is (1) Average Score: The average score obtained is 8.30 out of 9.0. In the general category (7.50-9.00), this score falls into the excellent category. (2) Mode (Most Score Value): The most common scores given by respondents were 8.0 and 9.0. (3) Median: The middle or median value of the assessment is 8.0. The rating scale ranges used were 4, 5, 6, 7, 8, 9, and (4) Standard Deviation: The standard deviation was 0.76. The Participation Assessment Score is (1) Average: The average score obtained was 8.28 out of 9.0. In the general category (7.50-9.00), this score falls into the excellent category. (2) Mode (Most Score Value): Respondents' most common score is 9.0. (3) Median: The middle or median value of the assessment is 9.0. The rating scale ranges used were 4, 5, 6, 7, 8, 9, and (4) Standard Deviation: The standard deviation was 0.75.

The Acceptability Assessment Score is (1) Average: The average score obtained was 8.30 out of 9.0. In the general category (7.50-9.00), this score falls into the excellent category. (2) Mode (Most Scored Value): Respondents' most common score is 9.0. (3) Median: The middle or median value of the assessment is 9.0. The range of the rating scale used is 4, 5, 6, 7, 8, 9, (4) Standard Deviation: The

standard deviation was recorded at 0.76. The data shows the distribution of answers, with most respondents giving high scores (8 and 9), indicating a positive assessment of using E-Puskesmas to improve human resources.

Analysis of the Significance of Respondents' Assessment Scores: Identifying whether the respondents' assessment scores are in the significant category is necessary. In this case, the explanation of "significant" is a measure that indicates an acceptable amount. How big is this limit? In quantitative studies, there is always a quantity with a certain standard, referred to as the Significance Reference Standard (S.A.S.). Guidelines for determining the amount of S.A.S., in general, there are various alternatives. In this study, taking Motivational S.A.S. Setting the S.A.S. value is intended as a form or way to motivate researchers and respondents to be encouraged to achieve a specific value. Generally, the determination of motivational S.A.S. is above the middle S.A.S. value. Motivational S.A.S. with an S.A.S. value of 6.5 (out of 9). This means that values below 6.5 are insignificant and above 6.5 are substantial.

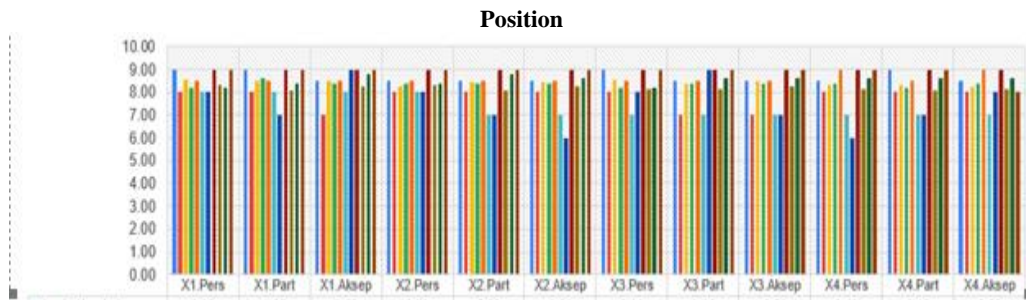


Fig 3. Respondent Position

Figure 3 above shows the average assessment results for various positions in several categories of positions analyzed, including Health Analyst, Pharmacy, Midwife, Doctor, Nutritionist, Head of Administration, Head of Puskesmas, Environmental Health, Nurse, Registration Officer, and Medical Records. The average score for each position ranged from 7.00 to 9.00.

Health Analyst, Doctor, and Nutrition showed consistently high scores between 8.50 to 9.00, indicating that these positions were perceived very well regarding participation and acceptability. This may suggest that the involvement of professionals in these positions is very active and well-accepted by various parties. The Pharmacists and Nurses scores varied between 7.90 and 8.53, indicating that despite the variations, perceptions of participation and acceptability in these positions were still in the excellent category. This variation may be due to differences in how services are delivered or the challenges faced in carrying out daily tasks.

Head of Administration, Head of Puskesmas, and Environmental Health positions showed more significant variation, with scores ranging from 7.00 to 8.50. These scores indicate challenges in participation and acceptability in these positions, possibly related to workload, limited resources, or other factors affecting perceptions of participation and acceptability.

Registration and Medical Records Officers maintained consistent scores between 8.00 and 9.00. This suggests that while they may face particular challenges, their perceptions of participation and acceptability are stable and positive.

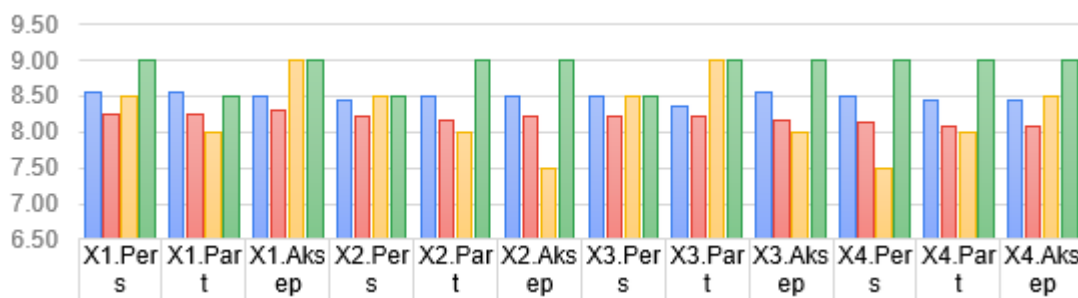


Fig 4. Respondent Education Level

Figure 4 above shows the average assessment results based on the level of education in several categories. The level of education analyzed includes Diploma Pass, S1 Pass, S2 Pass, and SLTA Pass. Generally, the average score for each category and education level ranges from 6.50 to 9.00. Diploma graduates showed consistent scores between 8.45 and 8.55 in almost all categories, indicating that the participation and acceptability of diploma graduates are perceived and stable across categories. Bachelor's degree graduates had a variation in scores between 8.08 and 8.29. These scores indicate good perceptions of participation and acceptability but with slight fluctuations, possibly due to factors such as variations in the quality of study programs or different work experiences. Master's graduates showed scores ranging between 8.40 and 8.60, indicating that master's graduates were generally perceived to have good participation and acceptability and were relatively stable. However, there were some slight variations between categories.

High school graduates had more varied scores between 7.50 and 9.00. The high scores, significantly 9.00, suggest that high school graduates are perceived very well in terms of participation and acceptability in some categories. However, the more significant variation may reflect broader work experience or ability differences among high school graduates.

Overall, this graph shows that graduates with different levels of education generally perform well with high average scores across the various categories. While there is variation in scores among specific categories and education levels, perceptions of participation and acceptability remain positive.

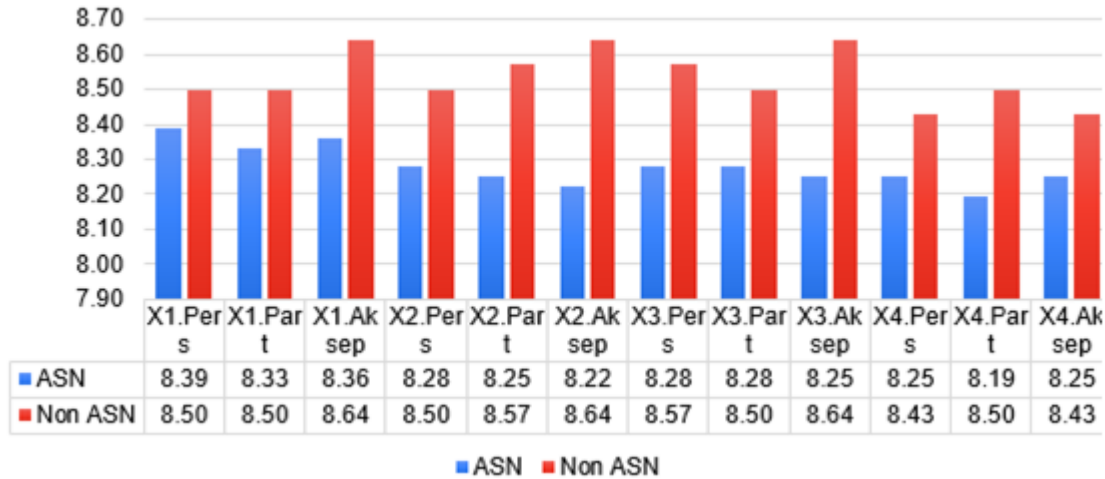


Fig 5. Employee Status Respondents

Figure 5 above shows the average assessment results based on team member status in several categories. The analyzed team member status includes A.S.N. (State Civil Apparatus) and Non-A.S.N. Generally, the average value for each category and team member status ranges from 8.19 to 8.64. A.S.N. employees showed consistent scores between 8.22 and 8.39 in almost all categories, indicating that A.S.N. employees' participation and acceptability are well-perceived and stable across categories. This suggests that A.S.N. employees have stable performance and are viewed positively by various parties. Non-A.S.N. employees have a variation in scores between 8.43 to 8.64. This higher score compared to A.S.N. indicates that the perception of participation and acceptability of non-A.S.N. employees is excellent and may be more recognized in some categories. This may reflect the flexibility or competitive advantage possessed by non-A.S.N. employees. Overall, this graph shows that both A.S.N. and Non A.S.N. employees perform well with high mean scores in various categories. Despite the difference in scores between these two team member statuses, perceptions of participation and acceptability remain positive.

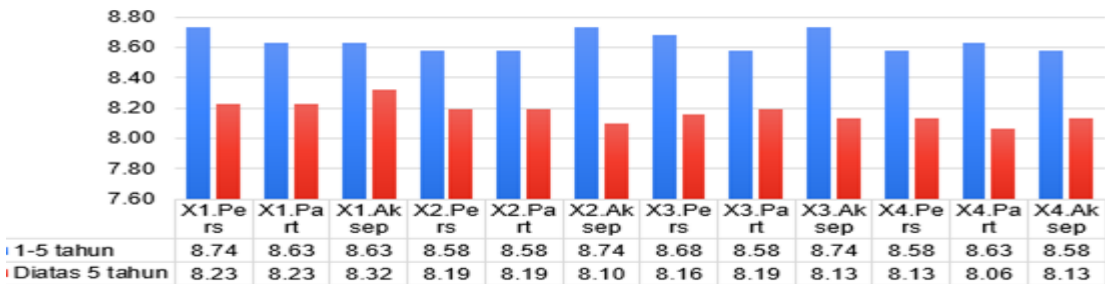


Fig 6. Respondents' Length of Service

Figure 6 above shows the average assessment results based on the length of service in several categories. The length of service analyzed includes 1-5 years and above five years. Generally, the average scores for each category and length of service ranged from 7.60 to 8.74. Employees with 1-5 years of service showed consistently high scores of 8.50 to 8.74 in almost all categories, indicating that the participation and acceptability of relatively new employees are perceived very well. These scores suggest that new employees make significant contributions and are well-accepted by coworkers and superiors.

Employees with more than five years of service have a range of scores between 8.10 and 8.32. These lower scores compared to employees with 1-5 years of service may reflect a decline in perceptions of participation and acceptability over time, resulting from various factors such as burnout, changes in organizational policies, or other challenges faced by longer-serving employees. Overall, this graph shows that employees with 1-5 years of service perform better with higher mean scores across categories than those with more than five years of service. Despite the difference in scores between these two groups, perceptions of participation and acceptability remain positive.

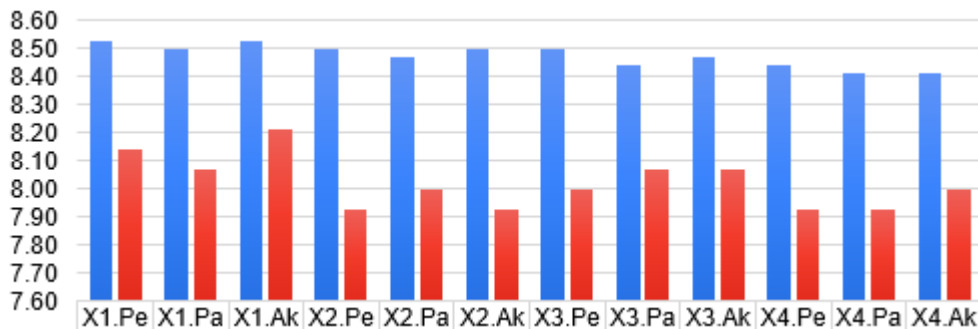


Fig 7. Employee Age Respondents

Figure 7 above shows the average assessment results based on the length of service in several categories. The age of employees analyzed includes the age group of 20-45 years and above 45 years. The mean scores for each category and age group ranged from 7.80 to 8.53. Employees aged 20-45 years showed consistently high scores of 8.42 to 8.53 in almost all categories, indicating that the participation and acceptability of employees in this age group are perceived very well. These scores suggest that young to middle-aged employees typically make significant contributions and are well-accepted by colleagues and superiors.

Employees above 45 years of age have a range of scores between 7.80 and 8.21. These lower scores compared to employees aged 20-45 may reflect a decrease in perceived participation and acceptability, resulting from factors such as changes in organizational policies, generational differences, or other challenges faced by more senior employees. Overall, this graph shows that employees aged 20-45 years perform better with higher mean scores across categories compared to employees aged above 45 years. Despite the difference in scores between these two groups, perceptions of participation and acceptability remain positive. Non-structural data is data obtained from officers in the e-survey in the form of suggestions, suggestions, and criticisms of the implementation of the Electronic Medical Record related to things that have a positive connotation, including (1) What needs to be improved for the theme that is rumored in the implementation of the Electronic Medical Record, (2) The health center, can direct as information on the conditions that exist in the health center, so that it can be well understood, (3) This data is bottom-up, for reference to improvements within the health center

5. Conclusion

Based on the data obtained from the analysis of the previous chapter, the following conclusions can be drawn: (1) Increased Productivity: The implementation of Electronic Medical Record (E.M.R.) at Puskesmas Sriamur Bekasi has shown some significant results. Although there was an increase in the average number of patients after E.M.R. implementation, statistical analysis showed that this increase was not statistically significant. Data on the number of patients before and after implementation were normally distributed, indicating consistency in the data obtained. From an operational perspective, E.M.R. has successfully improved efficiency, especially in reducing the time of recording and retrieving patient data. Further research is needed to evaluate the long-term impact of E.M.R. implementation on productivity (2) Health Service Efficiency: Sriamur Health Center has seen an increase in operational efficiency thanks to the use of E.M.R. This suggests that E.M.R. makes it easier to access and manage. Hence, the overall health services are more efficient. (3) Service Performance: After implementing E.M.R. at Sriamur Health Center, health service performance has improved. These results indicate that E.M.R. makes medical data more accurate and improves the overall patient experience. (4) Officer Perception and Participation: Sriamur Health Center officers strongly support the use of E.M.R. Most officers consider E.M.R. to be very important to improve the quality of care, reduce medical errors, and improve work efficiency. In addition, there is a high level of participation from officers in using E.M.R., with most actively involved in applying it in their daily tasks. (5) Employee Acceptability: E.M.R. is highly accepted by officers. Most of the officers are happy to use it in their daily work, indicating that the system has been successfully integrated into Sriamur Health Center's workflow. (6) Management Support: Continued support from management for using E.M.R. is essential. Management should continuously motivate and encourage staff to utilize the E.M.R. daily. Open Communication to establish open communication channels to share best practices and experiences among staff will increase engagement and inspire further contributions in using E.M.R. (7) It is recommended that additional research be conducted to find out how the use of E.M.R. impacts the quality of health services and patient satisfaction in the long run. This study can also look at the potential of other technological innovations that can improve health services at Puskesmas.

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