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Implementation of Hospital Management Information System (HMIS) in Improving the Quality of Health Services at the BLUD Konawe Utara Regional Hospital

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A B S T R A C T

This study examines the implementation of a Hospital Management Information System (HMIS) in improving healthcare service quality at North Konawe Regional Hospital. A descriptive qualitative approach was employed using unstructured interviews, observations, and documentation involving key and general informants. Data were analyzed using the Miles and Huberman model with NVivo support, and validity was ensured through source and technique triangulation. The findings indicate that HMIS positively improves service quality by enhancing responsiveness through faster service processes and reduced waiting times, increasing reliability via improved data accuracy, strengthening assurance through data security, supporting empathy by reducing administrative workload, and improving tangibles through information technology utilization. Nevertheless, optimal implementation requires improved infrastructure, enhanced human resource competencies, and continuous management support

INTRODUCTION

Hospitals play a strategic role in accelerating the improvement of public health. The new paradigm in healthcare requires hospitals to provide high-quality services that meet patients' needs and expectations while continuing to adhere to professional and medical ethical codes. Information technology has developed rapidly in recent years (Huebner & Flessa, 2022). In various sectors such as finance, education, and commerce, information technology has clearly improved work efficiency and service quality. For example, in the financial industry, the application of information technology has enabled faster and more secure services through internet-based networks. In healthcare services, information technology has great potential to improve service quality. The utilization of information technology in hospitals can cover various aspects, ranging from patient data management and electronic medical record management to the implementation of telemedicine (Stoumpos et al., 2023) Entering the digital era, technological development has accelerated across many fields, including the health sector. Information systems play a significant role in determining organizational success (Mauro et al., 2024).

In this era of rapid information technology advancement, the ability to deliver accurate and up-to-date information quickly is essential, particularly in the healthcare sector. Currently, almost all healthcare services are required to use computers as data-processing tools in order to generate comprehensive, accurate, and timely information that can enhance patient care (Yogesh & Karthikeyan, 2022)

Rapid technological advancement and increasing competition compel hospitals to improve the quality of their services. Quality is crucial for the sustainability of an organization. The quality revolution movement through a total quality management approach is an unavoidable requirement for organizations that wish to survive and continue to grow. In today's increasingly competitive environment, service providers are expected to consistently satisfy customers with the best possible services. Consumers seek products and services from organizations that can deliver superior service quality. As healthcare organizations, hospitals face the primary challenge of an increasing number of competitors. Therefore, hospitals must improve service quality to enhance customer satisfaction and maintain consumer trust (Kruk et al., 2018).

It is widely recognized that differences in perception often exist between patients and service providers regarding service quality. When services are comfortable and pleasant, staff are friendly, and patients leave with a sense of satisfaction, patients tend to interpret the quality and effectiveness of the service positively. Service quality can be assessed by comparing public perceptions of the actual services received with the services and characteristics that are expected or desired from hospitals. Service quality is perceived as good and satisfactory when the service received or perceived (perceived service) meets expectations. When the service received exceeds consumer expectations, service quality is perceived as very good and of high quality. Conversely, when the service received is worse than expected, service quality is considered poor (Nguyen et al., 2021)

Previous studies indicate that some healthcare facilities remain in a state of unpreparedness. Readiness for the implementation of electronic medical records still needs to be improved, particularly in terms of management capability, financial and budgetary capacity, operational readiness, technology, and organizational aspects (Yilma et al., 2023). Other studies show that the overall implementation of electronic medical records is relatively well prepared; however, several shortcomings remain, such as the absence of Standard Operating Procedures (SOPs) for electronic medical records in primary healthcare centers and the need for further training of medical record officers to enhance their knowledge and skills (Weka Santi et al., 2025).

Based on preliminary interviews, the BLUD North Konawe Regional Hospital began implementing a Hospital Management Information System (HMIS) at the end of 2023 as part of the implementation of the Regulation of the Minister of Health (Permenkes) No. 24 of 2022. Prior to the implementation of HMIS, patient data management was conducted manually, which required more time and resulted in increased service waiting times, averaging up to 45 minutes per patient. In addition, the error rate in manual data recording reached 15%, posing risks to clinical decision-making and potentially having serious implications for patient safety. These conditions affected the efficiency of healthcare services, patient comfort, and had the potential to reduce the quality of services provided.

However, following the implementation of HMIS, BLUD North Konawe Regional Hospital successfully reduced patient waiting times by up to 30% and increased the accuracy of medical data to 98%. These improvements provided significant benefits for healthcare professionals by enabling faster and more accurate decision-making. Furthermore, HMIS implementation also contributed to operational cost savings of approximately 20–25%, particularly in the management of physical medical records and information distribution. Overall, the implementation of HMIS has improved the quality of healthcare services at the hospital.

In addition, based on preliminary observations conducted at BLUD North Konawe Regional Hospital, several issues were identified in the implementation of the Hospital Management Information System (HMIS). These issues include limited digital infrastructure, with only 60% of facilities supporting HMIS implementation, as well as relatively long system loading times. Moreover, frequent power outages in the area surrounding the hospital further hinder the patient data input process. Although the hospital has provided a generator as a backup power source, this solution has not been fully effective, as data entry failures still frequently occur, requiring staff to re-enter patient data. These conditions further exacerbate the situation and pose challenges to efforts to improve efficiency and accuracy in medical data management at the hospital. Based on the above background, the researcher is interested in conducting a study entitled "Implementation of the Hospital Management Information System in Improving the Quality of Healthcare Services at BLUD North Konawe Regional Hospital.

LITERATURE REVIEW

Donabedian's Healthcare Quality Theory

Donabedian's model explains healthcare quality through three interconnected components: structure, process, and outcome. In hospital settings, the implementation of a Hospital Management Information System (HMIS) represents a structural element that supports service processes by improving efficiency, accuracy, and coordination, which ultimately leads to better service outcomes.

Technology Acceptance Model (TAM)

The Technology Acceptance Model emphasizes perceived usefulness and perceived ease of use as key factors influencing users' acceptance of information systems. In healthcare organizations, HMIS adoption is more likely when the system enhances work performance, accelerates services, and is easy to operate.

Service Quality (SERVQUAL) Model

The SERVQUAL model measures service quality using five dimensions: responsiveness, reliability, assurance, empathy, and tangibles. HMIS implementation directly influences these dimensions by streamlining service delivery, improving data reliability, strengthening service assurance, supporting patient-centered care, and enhancing physical service facilities.

Overall, these theoretical perspectives provide a comprehensive framework for understanding how HMIS implementation contributes to improved healthcare service quality.

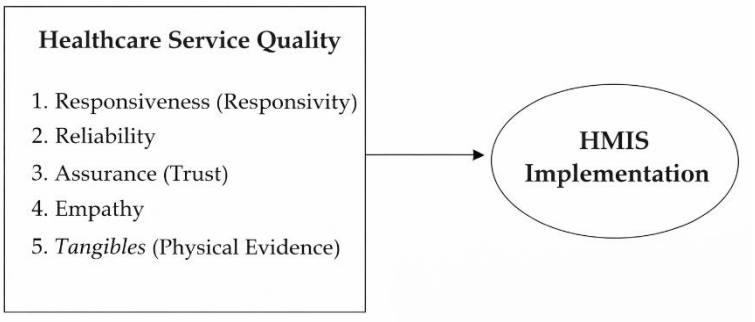

Figure 1. Conceptual Framework

METHODOLOGY

This study employed a descriptive qualitative approach to examine the implementation of the Hospital Management Information System (HMIS/Electronic Medical Records) in improving healthcare service quality at BLUD North Konawe Regional Hospital. A qualitative design was selected to capture the meanings, processes, and experiences of actors directly involved in HMIS implementation within its natural setting, with the researcher serving as the main research instrument while adhering to ethical principles.

The study was conducted at the Medical Records Unit from January to May 2025, as this unit plays a strategic role in patient data management and is directly affected by HMIS use. The research focused on service quality

dimensions, namely responsiveness, reliability, assurance, empathy, and tangibles.

Informants were selected through purposive sampling and included key informants the Head of the Information Technology Division and the Head of the Medical Records Unit as well as general informants consisting of administrative and registration staff. Data were obtained from primary sources through unstructured interviews and observations, and from secondary sources through documentation studies. Data analysis followed the Miles and Huberman interactive model, and data credibility was ensured through source and method triangulation.

RESEARCH RESULT

This section presents the results and discussion of the analysis on the implementation of the Hospital Management Information System (HMIS) in improving healthcare service quality at BLUD North Konawe Regional Hospital. The analysis employed a qualitative approach supported by NVivo software to identify and map themes and subthemes based on key service quality dimensions: responsiveness, reliability, assurance, empathy, and tangibles. A visual representation of node relationships is provided to illustrate the interconnections between HMIS implementation and healthcare service quality indicators. This visualization helps reveal patterns, key findings, and the overall contribution of HMIS to enhancing healthcare service quality.

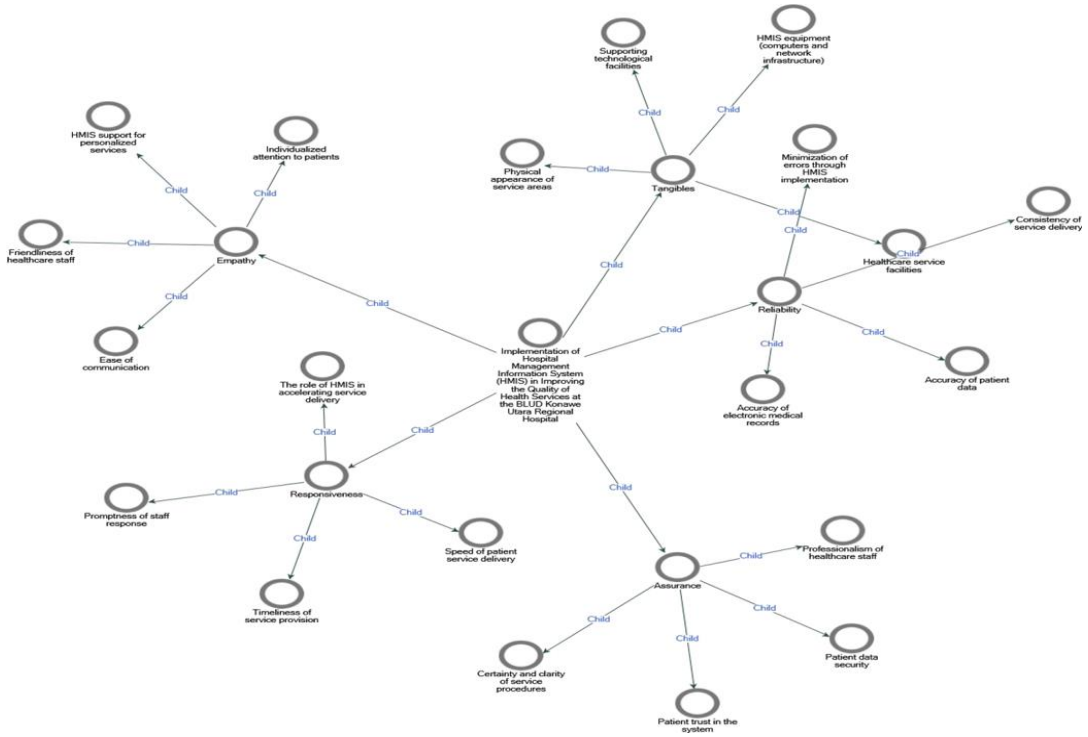

Figure 2. Implementation of Hospital Management Information System (HMIS) in Improving the Quality of Health Services

The implementation of the Hospital Management Information System (HMIS) at BLUD North Konawe Regional Hospital plays a strategic role in improving healthcare service quality, particularly in patient administration, electronic medical records, and inter-unit coordination. The findings indicate that HMIS has been implemented in accordance with hospital policies and standard operating procedures, although several practical challenges remain.

Informants consistently reported that HMIS accelerates service workflows and improves the accuracy and availability of patient data by reducing reliance on manual records. Electronic medical records enable faster data retrieval, minimize recording errors, and support both clinical and administrative decision-making. Administrative and registration staff also noted shorter patient waiting times and more orderly service processes. However, system performance is highly dependent on network stability; technical disruptions and slow access during peak hours can hinder services and affect patient satisfaction.

Observations revealed that while supporting infrastructure such as computers and internet access is available, its quality and stability are not yet optimal. HMIS has improved administrative orderliness and reporting efficiency, but its use as a tool for continuous service quality evaluation and managerial decision-making remains limited. This gap reflects insufficient integration between system implementation and quality-based performance evaluation.

Overall, triangulation results confirm that HMIS positively impacts service speed, data accuracy, and coordination. Nevertheless, its effectiveness is constrained by infrastructure limitations, human resource readiness, and partial utilization of system data. These findings align with the Donabedian structure–process–outcome model and the Technology Acceptance Model, reinforcing that HMIS functions as a structural component that enhances service processes and outcomes, provided it is supported by adequate infrastructure, competent human resources, and strong management commitment.

Responsiveness

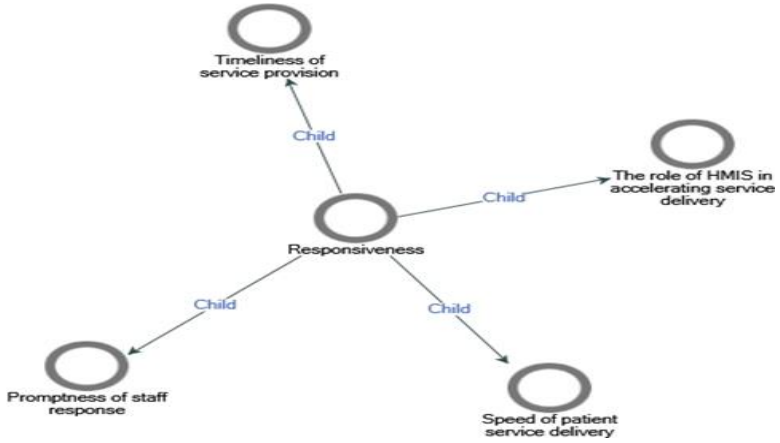

Figure 3. Responsiveness Node

Responsiveness is one of the main dimensions of healthcare service quality that reflects the ability and willingness of healthcare personnel to provide

services promptly, accurately, and responsively to patients' needs(Mirzoev et al., 2025). Based on the NVivo analysis results as shown in Figure 2, the responsiveness dimension in this study was broken down into four main indicators: timeliness of service, speed of patient services, staff responsiveness, and the role of HMIS in accelerating service delivery. This mapping indicates that HMIS implementation has a strong association with improved service responsiveness at BLUD North Konawe Regional Hospital.

The interview results show that HMIS plays an important role in accelerating service processes, particularly at the registration stage and in accessing patient data. Key Informant 1 (Head of the Information Technology Division) stated that since HMIS was implemented, staff have been able to access patient data directly through the system without having to search for records manually, resulting in shorter and more measurable service times.

"With HMIS, patient data are immediately available in the system. Services become faster, and there is no longer a need to search for records manually." (Key Informant 1)

In line with this, Key Informant 2 (Head of the Medical Records Unit) explained that the use of electronic medical records through HMIS greatly helps maintain service timeliness. The informant noted that the process of retrieving patient histories has become faster, allowing staff to continue services promptly without creating long queues.

"*Electronic medical records make services faster because patient data are easy to find, so the service process is not delayed." (Key Informant 2)*

From the perspective of technical implementers, General Informants (Administrative and Registration Staff) stated that HMIS facilitates data input and patient verification processes, enabling them to serve patients more quickly and responsively. According to the informants, the system helps staff respond more promptly to patients, especially during peak service hours.

"When using HMIS, data entry and document printing are faster, so patients do not have to wait long." (General Informant)

Field observations support the informants' statements, showing that the use of HMIS has accelerated the flow of patient administrative services. Registration, data retrieval, and document printing processes are carried out in an integrated manner through the system. However, under certain conditions such as network disruptions or an increased number of patients, system speed may decrease and lead to service delays. In terms of staff responsiveness, HMIS is considered helpful in enabling staff to respond more effectively to patients' needs and questions because the required information is readily available in the system. This facilitates the provision of quick and accurate responses and reduces reliance on memory or manual records.

The results of source and technique triangulation indicate that HMIS implementation at BLUD North Konawe Regional Hospital has improved healthcare service responsiveness, particularly in terms of service speed and timeliness. Nevertheless, the effectiveness of HMIS in supporting responsiveness is still influenced by system stability and the readiness of supporting infrastructure. Although HMIS has contributed positively to the Responsiveness dimension, system optimization and sustained technical support remain necessary to ensure consistently prompt and responsive services.

The findings related to the Responsiveness dimension are consistent with the healthcare service quality concept proposed by Parasuraman, Zeithaml, and Berry in the SERVQUAL model, which positions responsiveness as the ability of service providers to assist customers and deliver services promptly and accurately. HMIS implementation serves as a supporting instrument for service processes by accelerating workflows, increasing information availability, and reducing patient waiting times, thereby strengthening the responsiveness dimension (Msacky, 2024). The results of this study are also consistent with various previous studies demonstrating that the implementation of hospital management information systems and electronic medical records significantly contributes to improved service speed, timeliness, and staff responsiveness in addressing patient needs. These studies emphasize that real-time information availability through digital systems enables staff to work more efficiently and responsively, although effectiveness remains dependent on system reliability, the quality of technological infrastructure, and the competence of human resources in operating HMIS optimally (Kurniawan & Arini, 2024; Ramoo et al., 2023).

Reliability

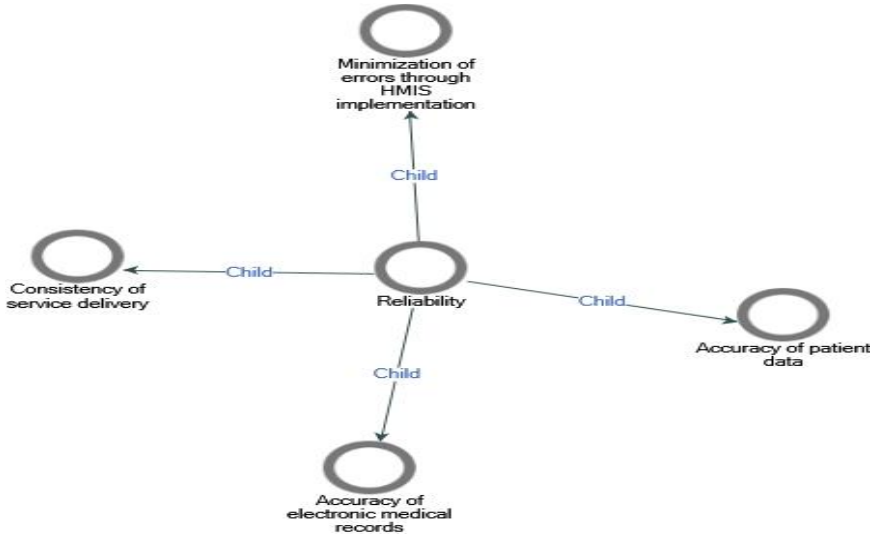

Figure 4. Reliability Node

Reliability is a dimension of healthcare service quality related to a hospital's ability to deliver services accurately, consistently, and reliably in accordance with established standards (Ijadi Maghsoodi et al., 2019). Based on the NVivo analysis results as shown in Figure 3, the reliability dimension in this study comprises four main indicators: accuracy of patient data, consistency of service delivery, accuracy of electronic medical records, and the minimization of service errors resulting from HMIS implementation. This mapping indicates that HMIS plays an important role in supporting service reliability at BLUD North Konawe Regional Hospital.

Interviews with Key Informant 1 (Head of the Information Technology Division) revealed that HMIS is designed to ensure that patient data are stored in a centralized and integrated system, thereby reducing the risk of data

recording errors. The informant explained that the system allows data updates to be performed in real time and accessed by relevant units, ensuring that the information used in service delivery is more accurate and consistent.

"With HMIS, patient data are stored in a single system, so the likelihood of discrepancies between units is minimal." (Key Informant 1)

In line with this, Key Informant 2 (Head of the Medical Records Unit) stated that the use of electronic medical records through HMIS improves the accuracy of patient history documentation. The informant emphasized that errors caused by illegible handwriting or missing files can be minimized, enabling services to be delivered more accurately and continuously.

"*Electronic medical records are more organized and clearer, so recording errors can be reduced and services become more consistent." (Key Informant 2)*

From the perspective of technical implementers, General Informants (Administrative and Registration Staff) indicated that HMIS helps ensure the accuracy of patient data from the initial stage of service. The processes of identity verification, visit recording, and document printing are carried out through the system, thereby reducing the risk of data input errors that could affect subsequent services.

"*Patient data are checked directly in the system, so it is safer and errors rarely occur." (General Informant)*

Field observations showed that the use of HMIS has improved the orderliness and consistency of patient administrative services. Patient data are recorded and stored systematically and can be traced when needed. However, under certain conditions, such as network disruptions or slow system performance, data input processes may be delayed and potentially affect service flow. In terms of minimizing service errors, HMIS is considered helpful in preventing data duplication and patient information errors. The system provides clear service workflow guidance, enabling staff to work in accordance with established procedures. Nevertheless, dependence on the system also requires staff to be meticulous in data entry to ensure that errors are not transferred from manual systems to digital platforms.

The results of source and technique triangulation indicate that HMIS implementation at BLUD North Konawe Regional Hospital has enhanced the Reliability dimension of healthcare services, particularly in terms of patient data accuracy, service consistency, and the reduction of administrative errors. System reliability remains influenced by network stability, infrastructure readiness, and the competence of human resources in operating HMIS optimally. Therefore, system strengthening and capacity building for staff are still necessary to ensure reliable and sustainable healthcare services.

These findings are consistent with the concept of reliability in the SERVQUAL service quality model proposed by Parasuraman, Zeithaml, and Berry, which emphasizes the ability of service providers to deliver services accurately, consistently, and in accordance with promised or established standards(Islam et al., 2016). In the context of healthcare services, reliability is highly dependent on the accuracy of clinical and administrative information used in each service process. The implementation of HMIS and electronic medical records plays a crucial role in enhancing service reliability through the provision

of integrated, accurate, and easily traceable patient data. The results of this study are also supported by various previous studies showing that the implementation of hospital information systems significantly reduces documentation errors, improves service consistency, and strengthens continuity of patient care(Chishtie et al., 2023; Javaid et al., 2024). These studies emphasize that the digitalization of health information systems directly contributes to improved service reliability, although its effectiveness remains influenced by the quality of technological infrastructure, network reliability, and the competence of human resources in operating the system correctly and sustainably.

Assurance

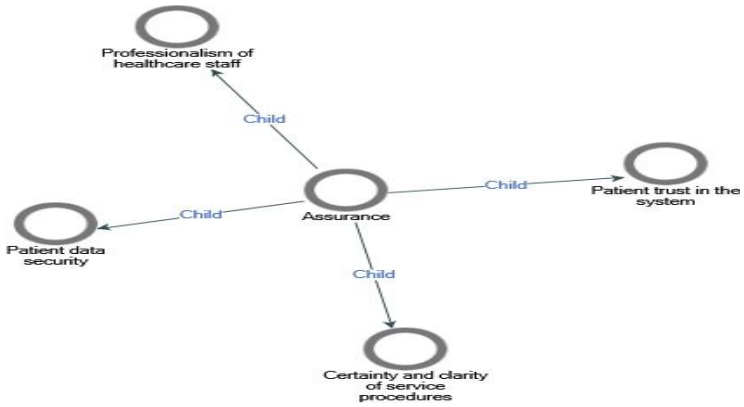

Figure 5. Assurance Node

Assurance is a dimension of healthcare service quality related to the ability of personnel and systems to provide a sense of safety, trust, and certainty to patients(Al-Assaf et al., 2024) . Based on the NVivo analysis results as shown in Figure 4, the assurance dimension in this study comprises four main indicators: patient data security, staff professionalism, certainty of service procedures, and patient trust in the system. This mapping indicates that HMIS implementation plays an important role in strengthening assurance and trust in healthcare services at BLUD North Konawe Regional Hospital.

Interviews with Key Informant 1 (Head of the Information Technology Division) revealed that HMIS has been equipped with user access control settings, so not all staff members are able to access or modify patient data. The informant explained that data security is a primary concern in system implementation, although in practice, ongoing supervision and periodic system updates are still required.

"Patient data in HMIS are regulated through access rights, so not everyone can access or modify the data." (Key Informant 1)

In line with this, Key Informant 2 (Head of the Medical Records Unit) stated that the use of HMIS enhances the certainty of service procedures because every stage of service delivery is recorded within the system. The informant noted that electronic documentation helps staff follow standardized workflows and reduces procedural ambiguity that often occurs in manual systems.

"With HMIS, service workflows are clearer because everything is recorded in the system, so staff follow the same procedures." (Key Informant 2)

From the perspective of technical implementers, General Informants (Administrative and Registration Staff) expressed that the presence of HMIS helps them work more professionally because every service-related action can be traced through the system. The informants stated that the system encourages staff to be more cautious in delivering services, as all data are recorded and subject to evaluation.

"When using the system, we are more careful because everything is recorded, so services must follow procedures." (General Informant)

Field observations indicate that HMIS implementation has created a sense of security in patient data management, although patients' understanding of the system remains limited. Some patients do not fully understand how their data are managed within the system; however, in general, they entrust the service process to healthcare personnel and the hospital institution. In terms of trust, HMIS is considered capable of enhancing patients' confidence in healthcare services because service delivery becomes more orderly and professional. Nevertheless, this trust is highly dependent on staff competence in operating the system and the hospital's ability to maintain system stability and security.

The results of source and technique triangulation indicate that HMIS implementation at BLUD North Konawe Regional Hospital has contributed to strengthening the Assurance dimension, particularly with regard to data security, procedural certainty, and staff professionalism. However, continuous efforts to enhance system security, improve patient socialization and education, and strengthen staff competencies are still required to ensure that assurance and trust in healthcare services are maintained sustainably.

The findings related to the assurance dimension are consistent with the concept of assurance in the SERVQUAL model proposed by Parasuraman, Zeithaml, and Berry, which emphasizes the importance of knowledge, courtesy, and the ability of service providers to foster trust and a sense of safety among service users(Pena et al., 2013). In healthcare services, assurance and trust are closely associated with patient data security, procedural certainty, and the professionalism of healthcare personnel. HMIS implementation functions as a supporting system that enhances service transparency and accountability through electronic documentation and access control mechanisms. The results of this study are also supported by various previous studies indicating that the implementation of health information systems and electronic medical records can increase patient trust in hospital services, strengthen adherence to standard procedures, and reduce the risk of data misuse and breaches (Alomar et al., 2024; Shen et al., 2025). These studies emphasize that service assurance is not determined solely by system sophistication, but also by human resource competence and institutional commitment to maintaining system security and reliability on a sustainable basis.

Empathy

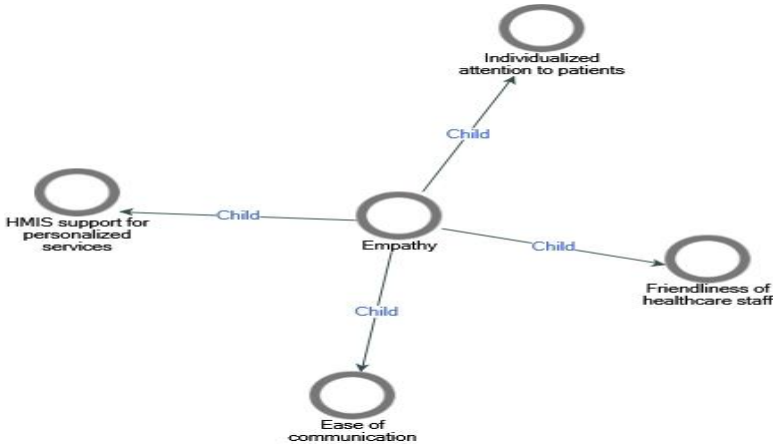

Figure 6. Empathy Node

Empathy is a dimension of healthcare service quality that emphasizes the ability of healthcare personnel to provide individual attention, understand patient needs, and establish effective communication throughout the service process(Byrne et al., 2024; Moudatsou et al., 2020). Based on the NVivo analysis mapping as shown in Figure 5, the empathy dimension in this study is broken down into several key indicators, namely staff attention to patients, ease of communication, understanding of patient needs, and the role of the HMIS in supporting patient-centered care. The visualization indicates that HMIS implementation contributes to the creation of more structured services, thereby enabling healthcare personnel to allocate greater attention to patients.

The interview results with Key Informant 1 (Head of the Service Unit) revealed that the use of HMIS assists staff in understanding patients' conditions and needs more comprehensively through access to complete and integrated data. The informant stated that patient history information stored in the system facilitates staff in tailoring service approaches, making interactions with patients more personalized.

"With HMIS, patient history can be accessed immediately, so staff better understand the patient's condition and can adjust the service accordingly." (Key Informant 1)

In line with this, Key Informant 2 (Head of the Outpatient Installation) explained that HMIS supports communication between staff and patients because service-related information can be conveyed more clearly and accurately. According to the informant, the certainty and reliability of data within the system help staff respond to patients' questions more calmly and confidently.

"Patient data are already in the system, so it is easier to explain conditions and procedures to patients." (Key Informant 2)

From the perspective of technical implementers, General Informants (nurses and administrative staff) reported that HMIS indirectly helps enhance empathy by reducing administrative workload. With less time spent on manual documentation, staff have more opportunities to interact with patients and listen to their concerns.

"When documentation is faster, there is more time to communicate with patients." (General Informant)

Field observations showed that interactions between staff and patients were more focused, particularly in units that had optimized the use of HMIS. Nevertheless, empathy in service delivery remains highly influenced by individual staff attitudes and communication skills. HMIS functions as a supporting tool but cannot fully replace the humanistic aspects of healthcare services.

The results of source and method triangulation indicate that HMIS implementation contributes to strengthening the Empathy dimension through the provision of accurate patient information, reduction of administrative burden, and improvement in communication quality. However, enhancing empathy still requires the development of staff interpersonal communication competencies as well as sustained organizational commitment to embedding patient-centered care as a continuous work culture.

These findings are consistent with the concept of empathy in the SERVQUAL service quality model, which emphasizes the importance of individual attention, understanding patient needs, and effective communication between service providers and users (Babaii et al., 2021; Balinado et al., 2021). In the context of healthcare services, empathy is a key element in building therapeutic relationships and increasing patient satisfaction. HMIS implementation serves as a supporting system that enables staff to obtain comprehensive and accurate patient information, allowing services to be tailored to individual patient needs. The findings of this study are also supported by previous research demonstrating that the implementation of health information systems can reduce administrative workload, increase direct interaction time with patients, and improve communication quality in healthcare services (Popescu et al., 2022; Tummers et al., 2021). These studies affirm that although empathy is a humanistic interpersonal competence, the use of information technology such as HMIS can create more conducive working conditions for healthcare personnel to deliver patient-centered care more optimally.

Tangibles

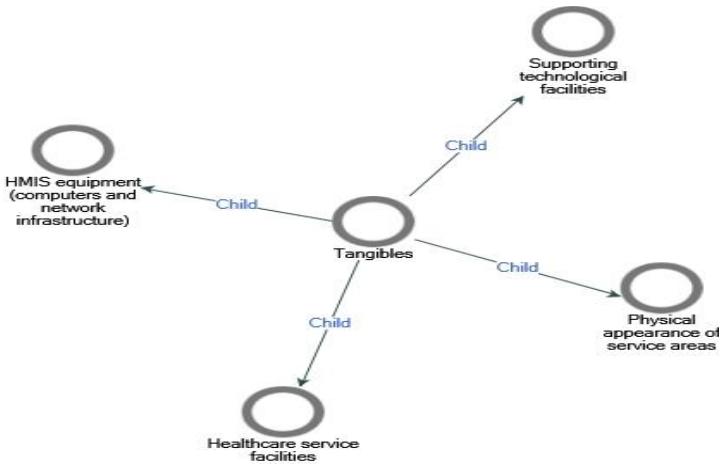

Figure 7. Tangibles Node

The Tangibles dimension (physical evidence) in healthcare service quality refers to the condition of facilities and infrastructure, the completeness of service facilities, the appearance of the service environment, and the availability of technological devices that support service processes(Fatima et al., 2019; Panda & Das, 2014a). Based on the NVivo analysis mapping as presented in Figure 4.X, the Tangibles dimension is broken down into several key indicators, namely the availability of service facilities, HMIS supporting devices (computers, networks, and systems), the appearance of service areas, and information technology support facilities. The visualization indicates that physical evidence is an important aspect that strengthens the effectiveness of HMIS implementation in improving healthcare service quality.

The interview results with Key Informant 1 (Head of the IT Department) revealed that the success of HMIS implementation is strongly influenced by the availability and condition of technological devices. The informant stated that adequate computers, internet networks, and servers are critical determinants of the smooth operation of information system–based services.

"If the devices and networks are supportive, HMIS-based services can run smoothly and do not hinder patients." (Key Informant 1)

In line with this, Key Informant 2 (Head of the Service Unit) explained that physical facilities integrated with information systems help create patient comfort and trust. According to the informant, a well-organized service environment, the availability of computers in every unit, and an HMIS-based queuing system provide a professional and modern impression.

"Patients feel more confident because they see that services are already using systems and the facilities are well organized." (Key Informant 2)

From the perspective of technical implementers, General Informants (administrative staff and nurses) stated that technology support facilities such as computers, printers, and HMIS applications are very helpful in accelerating service delivery. However, some informants also reported that limitations in the number of devices and network disruptions remain constraints in several service units.

"If there are enough computers and the network is stable, services are fast. But if the network has problems, services can be disrupted." (General Informant)

Field observations showed that most service units have been equipped with HMIS devices, such as computers and local networks. However, variations were found in facility conditions across units, both in terms of the number of devices and network quality. These conditions affect the consistency of service quality, particularly during peak service hours.

The results of source and method triangulation indicate that the Tangibles dimension plays a strategic role in supporting HMIS implementation. The availability of adequate facilities and infrastructure strengthens patient trust and improves service efficiency. Nevertheless, optimizing this dimension still requires more equitable distribution of facilities, maintenance of technological infrastructure, and stronger management support for the development of technology-based physical facilities.

The findings on the Tangibles dimension are consistent with the concept of tangibles in the SERVQUAL service quality model, which emphasizes the importance of physical evidence in the form of facilities, equipment, and the appearance of the service environment as representations of service quality perceived by patients(Panda & Das, 2014b). In healthcare services, adequate facilities and information technology not only function as operational support but also shape patients' perceptions of hospital professionalism and quality. HMIS implementation requires reliable technological infrastructure to ensure optimal system performance. The results of this study are also supported by various previous studies showing that the availability of technological devices, network stability, and facility conditions significantly influence the effectiveness of hospital information systems and patient satisfaction (Iqbal & Paramarta, 2024; Nawiri et al., 1907). These studies affirm that investment in physical evidence and technological infrastructure is an essential prerequisite for the success of digital transformation in healthcare services and for sustainable improvements in service quality.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The findings of this study indicate that the implementation of the Hospital Management Information System (HMIS) at North Konawe Regional Hospital plays a significant role in improving healthcare service quality. HMIS contributes to faster service processes, improved accuracy and consistency of patient data, enhanced data security, and greater procedural certainty in service delivery. In addition, the system supports more patient-centered care by reducing administrative workloads and improves service tangibles through the utilization of information technology infrastructure. Nevertheless, the effectiveness of HMIS implementation is still influenced by limitations in infrastructure, human resource readiness, and system stability.

Recommendations

The hospital is advised to strengthen information technology infrastructure, enhance human resource competencies through continuous training, and ensure consistent management support to optimize and sustain HMIS implementation.

ADVANCED RESEARCH

This study has limitations due to the use of a qualitative approach with a limited number of informants and a focus on a single hospital. Future research is recommended to employ quantitative or mixed-method approaches, involve a larger number of healthcare institutions, and examine the impact of HMIS on patient satisfaction and organizational performance more comprehensively.

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