

Competence Alone Does Not Guarantee Effectiveness: Mediating the Gap Between Technical Skills and Damage Reporting System Success

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Keywords:	Abstract
Damage Reporting System, Technician Competence, Technician Response, Reporting System Effectiveness, IPSRS, SEM	Reliable utility maintenance supports hospital safety and continuity of services; however, damage reporting systems may remain ineffective when reported problems are not translated into timely corrective actions across hospital units. This study examined the effects of the damage reporting system and IPSRS technician competence on reporting system effectiveness, with technician response as a mediating variable, at Pasar Minggu Regional General Hospital. A mixed-methods design combined a survey of 210 employees selected through purposive sampling with interviews involving 10 informants. Quantitative data were analyzed using covariance-based structural equation modeling (CB-SEM) with IBM SPSS Amos, while qualitative findings were used to strengthen the interpretation of the quantitative results. The damage reporting system significantly improved reporting system effectiveness ($\beta = 0.436$; $p < 0.001$) and technician response ($\beta = 0.157$; $p = 0.002$). Technician competence did not have a significant direct effect on reporting system effectiveness ($\beta = 0.144$; $p = 0.058$), but it had a strong positive effect on technician response ($\beta = 0.709$; $p < 0.001$). Technician response significantly improved reporting system effectiveness ($\beta = 0.380$; $p < 0.001$) and mediated the effects of both the damage reporting system and technician competence on reporting system effectiveness. Interview findings confirmed that complete reporting information, diagnostic competence, and prompt corrective action were essential, while limited competence in managing condensation problems in central air-conditioning systems hindered repair effectiveness. Therefore, effective damage reporting requires integrated improvements in reporting quality, technician competence, and the speed and accuracy of technician responses.

INTRODUCTION

Hospitals are integral components of social and health care systems that provide comprehensive services, including promotive, preventive, curative, rehabilitative, and palliative care. In addition to delivering patient care, hospitals also serve as centers for the education and training of health care professionals and for the advancement of health sciences (Adisasmito, 2010). The World Health Organization (WHO) recognizes hospitals as essential components of health systems that provide comprehensive services to communities (Auliani, 2021). In line with the development of modern health care systems, hospitals are required not only to provide competent health care professionals but also to ensure that all facilities, infrastructure, and utility systems function safely, reliably, and sustainably (Amanda et al., 2021; Hilmy Amanda N. Anindita R., 2021; Hilmy Christin & Nofierni., 2026; Hilmy Putranto R. D. Mahadewi E. P. Setiawan I. & Shameela A., 2026; Hilmy Shameela A. & Mahadewi E. P., 2026; Hilmy Simanjuntak I. R. & Wahid K. R., 2026).

Pasar Minggu Regional General Hospital (RSUD Pasar Minggu) is a health care facility owned by the DKI Jakarta Provincial Government and operates under the DKI Jakarta

Provincial Health Office (Amanda et al., 2021). In delivering health care services, the hospital is responsible for ensuring the safety of patients, health care workers, and visitors, as well as maintaining the continuity of hospital operations (Okoro, 2023; Zhi & Husain, 2024). One component supporting these responsibilities is the reliability of hospital utility systems. Utilities such as electrical installations, heating, ventilation, and air-conditioning (HVAC) systems, clean-water systems, plumbing, medical gas systems, generators, fire protection systems, elevators, and other supporting facilities play an important role in maintaining health care operations. Disruptions to these systems can hinder service delivery and potentially create safety risks.

The reliability of utility systems is closely related to timely maintenance and repair activities. Fiwidia (2017) stated that suboptimal hospital utility maintenance can reduce the quality and functionality of facilities and infrastructure and shorten equipment service life, thereby potentially disrupting health care delivery. (Pradina et al., 2024) also explained that disruptions to utility facilities can not only hinder service operations but also create safety risks for patients, health care workers, and visitors. Therefore, the Hospital Facilities and Infrastructure Maintenance Unit (IPSRS) plays a strategic role in maintaining facilities so that they remain safe, functional, effective, and capable of supporting service continuity (Dzulkifli et al., 2021).

An important component of maintenance activities is the damage reporting system. (Busuioc, 2021), a reporting system is a mechanism for collecting, recording, processing, and communicating information concerning the condition and damage of facilities and infrastructure as a basis for maintenance activities and decision-making. The effectiveness of a damage reporting system can be reflected in ease of reporting, the accuracy and completeness of information, timeliness of report submission, speed of technician response, completion of follow-up actions, documentation, and feedback. A well-functioning reporting system enables damage to be promptly identified, verified, addressed, and documented, thereby minimizing the risk of service disruption.

This concept is consistent with Donabedian's Structure–Process–Outcome model (Donabedian, 1988), which explains that service quality is influenced by the relationship among adequate structures, standardized processes, and the outcomes achieved. In the context of hospital facility maintenance, the reporting system forms part of the process that connects facility users with IPSRS technicians. Therefore, the availability of an effective reporting system alone is insufficient unless it is followed by timely and appropriate corrective action. Technician response is a critical component because it determines the extent to which reported damage is translated into actual maintenance and repair actions.

(Busuioc, 2021), IPSRS technician response refers to the actions taken by technicians to receive, verify, follow up on, and resolve reports of damage to hospital facilities, infrastructure, and utilities promptly, accurately, and in accordance with established procedures. Technician response includes the timeliness of receiving reports, diagnostic accuracy, appropriateness of corrective actions, and completion of work within established time standards. Thus, reporting system effectiveness is determined not only by the quality of the information received but also by the technicians' ability to translate that information into effective maintenance and repair actions.

Pasar Minggu Regional General Hospital has developed a digital damage reporting

system to accelerate communication between hospital units and technicians, facilitate monitoring of report status, and improve work accountability. The use of digital systems has the potential to improve efficiency and coordination when supported by competent human resources. Hilmy et al. (2025) explained that digital transformation in health care, through the application of technology, data-driven processes, and automation, can improve service efficiency and optimize resource utilization. However, the effectiveness of digital systems remains influenced by user readiness, management support, information quality, and human resource competence (Armstrong, 2020).

The success of the reporting system is also related to the competence of IPSRS technicians. Spencer and Spencer (1993) explained that competence is a fundamental characteristic associated with effective job performance, encompassing knowledge, skills, self-concept, personal characteristics, and motives. In hospital facility management, technician competence includes technical knowledge, repair skills, experience, problem-solving ability, discipline, and compliance with established procedures. Shohet and Lavy (2004) emphasized the importance of knowledge, skills, and experience in hospital facility management, while (Mobley, 1982) explained that the competence of maintenance personnel plays an important role in inspection, preventive maintenance, repair, and fault-handling activities.

Problems involving utility systems are increasingly important because disruptions to hospital facilities and infrastructure can directly affect patient safety and continuity of services. The WHO has reported that patient safety can be affected by system failures, technology-related problems, equipment failures, and limited human resource competence. Disruptions to utilities such as electricity, water, ventilation, and air-conditioning systems can delay services, compromise patient comfort, and increase safety risks if they are not addressed promptly.

This condition was also evident at Pasar Minggu Regional General Hospital. Based on the IPSRS Key Performance Indicator (KPI) Report for 2025, faults involving air-conditioning (AC) and heating, ventilation, and air-conditioning (HVAC) systems were among the most frequently reported utility-system problems, with more than 150 reports recorded from January to December 2025. The reports originated from various service units, including inpatient units, the Emergency Department (ED), Intensive Care Unit (ICU), Pediatric Intensive Care Unit (PICU), Radiology, Laboratory, Pharmacy, outpatient clinics, Computed Tomography (CT), Physiotherapy, and administrative offices. Reported problems included inadequate cooling, complete system shutdowns, water leakage, system errors, clogged drainage lines, condensation, and faults requiring replacement parts.

Most minor faults were targeted for completion within six hours; however, some moderate-level faults required substantially longer resolution times, in some cases exceeding one month because of technical complexity and delays in procuring replacement parts. This condition indicates that a high volume of reports does not necessarily reflect an effective reporting system. Effectiveness depends largely on the system's ability to communicate complete and timely information, technicians' competence in diagnosing faults, and the speed and accuracy of corrective actions.

Preliminary interviews with the Head of IPSRS and several unit heads indicated that some staff members did not fully understand the reporting workflow and that incomplete reports, delays in information transmission, and suboptimal follow-up still occurred. A preliminary survey of 10 respondents also identified problems related to system reliability and

report documentation, each reported by 20% of respondents. Regarding technician competence, the greatest problems were identified in technical skills and compliance with standard operating procedures (SOPs), each reported by 25% of respondents. For technician response, 20% of respondents reported problems related to the accuracy of corrective actions. Reporting system effectiveness also showed weaknesses in goal achievement and timeliness, each reported by 20% of respondents, while 15% reported problems related to information quality.

These findings indicate a gap between the availability of the reporting system and the effectiveness of its implementation. An effective system requires accurate and complete information, competent technicians, and prompt and appropriate corrective responses. Therefore, IPSRS technician response was hypothesized to function as an important mechanism linking the quality of the damage reporting system and technician competence to the effectiveness of the damage reporting system. Based on these conditions, this study was conducted to examine the effects of the damage reporting system and IPSRS technician competence on reporting system effectiveness, with IPSRS technician response as an intervening variable in the management of utility facilities at Pasar Minggu Regional General Hospital. The findings are expected to provide a basis for hospitals to improve reporting system quality, technician competence, and the speed and accuracy of responses to utility-system faults.

METHOD

This study employed a mixed-methods approach combining quantitative and qualitative methods. The quantitative component examined the relationships among the damage reporting system (X_1), IPSRS technician competence (X_2), IPSRS technician response (Z), and reporting system effectiveness (Y) using structural equation modeling (SEM). The qualitative component explored the implementation (Koesyono Efendi & I Wayan Suastra, 2023) of the damage reporting system, including supporting and inhibiting factors and informants' experiences. The integration of both approaches supported data triangulation and provided a more comprehensive interpretation of the findings (Creswell & Plano Clark, 2018).

The study was conducted at Pasar Minggu Regional General Hospital, South Jakarta, from May to August 2026. Quantitative data were analyzed using covariance-based structural equation modeling (CB-SEM) with IBM SPSS Amos to examine direct and indirect relationships among the study variables.

Population and Sample

The research population is health workers and support staff at Pasar Minggu Hospital who use hospital facilities and have the potential to report facility damage to IPSRS. The population includes management, doctors, nurses and midwives, other health workers, and administrative officers with a total of about 995 people.

The determination of the sample refers to (Hair et al., 2022), which is 5–10 times the number of indicators used in SEM research. The research instrument consists of 42 indicators so that the number of samples needed is in the range of 210–420 respondents. This study set 210 respondents as the minimum sample. The sampling technique uses purposive sampling based on certain criteria (Ruswanti & Januarko, 2021), namely employees who have worked for at least one year, understand or have been involved in reporting damage to hospital

facilities, IPSRS technicians, heads or related coordinators, and are willing to be respondents. Respondents who were on leave, not actively working, did not fill out the questionnaire completely, or were not willing to participate in the study were excluded.

Data Collection Techniques

Data collection was carried out using questionnaires as primary data instruments. The questionnaire uses a four-level Likert scale, namely Strongly Disagree (1), Disagree (2), Agree (3), and Strongly Agree (4). The scale was used to measure respondents' perception of the Damage Reporting System, the Competence of IPSRS Technicians, the Response of IPSRS Technicians, and the Effectiveness of the Damage Reporting System (Sugiyono, 2018).

Data Analysis Techniques

The data analysis technique in this study uses descriptive statistical analysis and Structural Equation Modeling (SEM). Descriptive analysis was used to describe the characteristics of respondents and the tendency of answers to each variable using the three box method approach, namely low, medium, and high categories (Ferdinand, 2014). Furthermore, a Covariance-Based SEM-BASED SEM (CB-SEM) SEM analysis with the help of IBM SPSS AMOS was used to test the relationship and influence of the Damage Reporting System, IPSRS Technician Competence, IPSRS Technician Response, and Damage Reporting System Effectiveness. Testing includes measurement models through CFA, construct validity and reliability, SEM assumptions, structural models, Goodness of Fit, hypothesis testing, and the effect of mediation through bootstrapping. The hypothesis is stated to be significant if the Critical Ratio value ≥ 1.96 and the p-value < 0.05 .

RESULTS AND DISCUSSION

Hypothesis Testing

Hypothesis testing was carried out using Structural Equation Modeling (SEM) with the help of the Analysis of Moment Structures (AMOS) program. The test was carried out to determine the direct and indirect influence between the research variables. The hypothetical decision is based on the Critical Ratio (CR) value > 1.96 and the p-value < 0.05 , then H_0 is rejected and H_a is accepted. The Critical Ratio (CR) value ≤ 1.96 or p-value ≥ 0.05 , then H_0 is accepted and H_a is rejected (Hashim et al., 2016).

Table 1 Hypothesis Testing

Hypothesis	Estimate	CR/Z	P-Value	Verdict	Conclusion
Hypothesis 1: IPSRS Technician Damage Reporting and Competency Reporting System → Effectiveness through IPSRS Technician Response	-	2,619 *	0,009	H_{01} rejected, H_{a1} accepted	There is a significant indirect influence through the IPSRS Technician Response
Hypothesis 2: Damage Reporting System → Effectiveness of Damage Reporting System	0,436	9,594	<0.001	H_{02} rejected, H_{a2} accepted	Positive and significant effect
Hypothesis 3: IPSRS Technician Competencies → Effectiveness of Damage Reporting System	0,144	1,899	0,058	H_{03} accepted, H_{a3} rejected	No significant effect

Hypothesis 4: IPSRS Technician Damage Reporting → Response System	0,157	3,152	0,002	H ₀₄ rejected, H _{a4} accepted	Positive and significant effect
Hypothesis 5: IPSRS Technician Competence → IPSRS Technician Response	0,709	13,035	<0.001	H ₀₅ rejected, H _{a5} accepted	Positive and significant effect
Hypothesis 6: IPSRS Technician Response → the Effectiveness of the Damage Reporting System	0,380	4,737	<0.001	H ₀₆ rejected, H _{a6} accepted	Positive and significant effect
Hypothesis 7: Damage Reporting System → Effectiveness through IPSRS Technician Response	0,060	2,619	0,009	H ₀₇ rejected, H _{a7} accepted	IPSRS Technician Response Mediates Significantly
Hypothesis 8: IPSRS Technician Competence → Effectiveness through IPSRS Technician Response	0,269	4,467	<0.001	H ₀₈ rejected, H _{a8} accepted	IPSRS Technician Response Mediates Significantly

Source: Data processing results using IBM SPSS AMOS.

Based on the results of the hypothesis test results of the test on eight hypotheses, six hypotheses (H1, H2, H4, H5, H6, H7, H8) were declared accepted, while H3 was rejected. The Damage Reporting System has been proven to have a positive and significant effect on the Effectiveness of the Damage Reporting System and the Response of IPSRS Technicians. The competence of IPSRS Technicians has not been proven to have a direct and significant effect on the effectiveness of the Damage Reporting System, but it has a positive and significant effect on the Response of IPSRS Technicians. Furthermore, the Response of IPSRS Technicians has been proven to have a positive and significant effect on the Effectiveness of the Damage Reporting System and plays a significant role as a significant intervening variable on the influence of the Damage Reporting System and the Competency of IPSRS Technicians on the Effectiveness of the Damage Reporting System.

Table 2 Results of Interviews with Informants

No.	Informants	Interview Results/Key Findings	Linkages with Variables
1	Person in Charge of IPSRS	The reporting system makes it easier for units to submit damage reports. Location information, damage type, reporting time, and follow-up status make reports easier to monitor. The effectiveness of the system is greatly influenced by the speed with which technicians respond to reports. For now, the most frequently received report by IPSRS is the problem of condensation of AirConditioning (AC) in the service unit. This problem can result in a patient safety risk especially when it occurs in the OR Room during surgery. So this is important. The obstacle in responding to this report is the limited competence of IPSRS, especially units that use central air conditioning so that the response of old technicians in making repairs. This has been reported to the management department and there has been a follow-up to provide training to IPSRS	X1 Damage Reporting System; X3 Response Technician; And Effectiveness

		officers to fix the condensation problem of air conditioners, especially central air conditioners. For now, there are 7 officers who have participated in the training out of 11 IPSRS officers.	
2	IPSRS Technician I	The reporting system helps technicians determine the priority of work because the report contains the location, type of damage, and level of urgency. The competence of technicians, especially the ability to analyze the cause of damage and work experience, helps to speed up the repair process.	X1 Reporting System; X2 Technician Competence; X3 Technician Response
3	IPSRS Technician II	The success of damage handling is not only influenced by the reporting system, but also the ability of technicians to diagnose damage. A complete report helps technicians prepare equipment before heading to the site for more effective handling.	X1 Reporting System; X2 Technician Competence; X3 Response Technician; And Effectiveness
4	Head of Child Inpatient Room	The reporting system helps report damage such as air conditioning, lights, and electrical installations. Repairs are faster if technicians respond immediately to reports so that they have a positive impact on patient comfort and smooth service.	X1 Reporting System; X3 Response Technician; And Effectiveness
5	Head of Internal Medicine Room	The reporting system makes it easier for officers to submit reports without having to come directly to IPSRS. The effectiveness of the system is more felt when technicians provide quick responses. Delayed responses can interfere with patient service.	X1 Reporting System; X3 Response Technician; And Effectiveness
6	Head of Emergency Room	The reporting system helps speed up the technician's response to the breakdown. Because the emergency room operates 24 hours, a quick response to damage to emergency service support facilities is needed to keep patient services running.	X1 Reporting System; X3 Response Technician; And Effectiveness
7	Person in Charge of Outpatient Care	The reporting system provides convenience in delivering reports in a more structured manner than manual reporting. Reports are also easier to monitor the progress of the follow-up so that users can find out the status of the damage resolution.	X1 Reporting System; And Effectiveness
8	Person in Charge of the Operating Room (OK)	The competence of technicians is very important because operating room facilities require fast and appropriate handling. The experience and technical capabilities of the technicians support the effective resolution of the damage so that the operation service does not experience delays.	X2 Technician Competence; X3 Response Technician; And Effectiveness
9	ICU Person in Charge	The reporting system helps in service conditions that require high speed. Coordination between room attendants and technicians is going well enough that urgent damage can be dealt with immediately. Technician responses are considered to be the most determining factor in the effectiveness of the reporting system.	X1 Reporting System; X3 Response Technician; And Effectiveness
10	Person in Charge of the Laboratory	The reporting system simplifies the reporting process, while the competence of technicians is an important factor in determining the accuracy of repair actions. The combination of a good reporting system and a quick response of technicians increases the effectiveness of laboratory services.	X1 Reporting System; X2 Technician Competence; X3 Response Technician; And Effectiveness

Based on the results of interviews with 10 informants, the most prominent findings showed that the Damage Reporting System has made it easier to submit and monitor reports,

but the effectiveness of the system is greatly influenced by Technician Response and Technician Competence. A comprehensive report helps technicians determine priorities and prepare for remedial actions, while technicians' competence in diagnosing damage and determining solutions affects the speed of handling. The most prominent obstacle is the limited competence in handling condensation of air conditioners, especially central air conditioners, which can slow down the response and potentially disrupt service, especially in the operating room. Thus, the results of the interview reinforce that Technician Response is an important factor that connects the Technician Reporting System and Competency with the Effectiveness of the Damage Reporting System

The discussion of the results of the research with the results of hypothesis testing using Structural Equation Modeling (SEM) and related it to the theory used and the results of previous research. The discussion is arranged based on each research hypothesis.

The Damage Reporting System and the Competency of Hospital Facilities Maintenance Installation Technicians (IPSRS) have a simultaneous positive effect on the Effectiveness of the Damage Reporting System through the Response of Hospital Facility Maintenance Installation Technicians (IPSRS)

The results of the study showed that the Damage Reporting System and the Competency of Hospital Facility Maintenance Installation Technicians (IPSRS) simultaneously had a significant effect on the effectiveness of the Damage Reporting System through the Response of Hospital Facility Maintenance Installation Technicians (IPSRS) as an intervening variable.

The results of this study support the Donabedian theory (Structure–Process–Outcome) which states that the quality of a system is influenced by the relationship between structure, process, and outcome. In this study, the Damage Reporting System and the Competency of Hospital Facility Maintenance Installation Technicians (IPSRS) is a structural component, the Hospital Facility Maintenance Installation Technician Response (IPSRS) is a process component, while the Effectiveness of the Damage Reporting System is an outcome component. This shows that a structured reporting system and adequate technician competence will result in a faster and more precise damage handling process, thereby increasing the effectiveness of the damage reporting system.

The findings of this study are also in line with the theory of R. Keith Mobley, who states that the damage reporting system is an important part of maintenance management because it provides accurate and complete information as the basis for the implementation of repair actions (Koesyono Efendi & I Wayan Suastra, 2023). In addition, Shohet and Lavy's theory explains that technician competence is a major factor in the success of hospital facility maintenance, because technicians who have good knowledge, skills, and experience will be able to respond more quickly and appropriately to any damage report. Thus, the combination of an effective reporting system and good technician competence will improve the quality of technician response, resulting in an increase in the effectiveness of the damage reporting system.

The results of the quantitative research were strengthened by the results of the informants' interviews stating that the damage reporting system has facilitated the process of reporting and monitoring damage follow-up. However, the effectiveness of the reporting system is largely determined by the speed and accuracy of the response of the Hospital Facilities Maintenance Installation (IPSRS) technician in handling each report. In addition, the competence of Hospital

Facility Maintenance Installation (IPSRS) technicians in the form of knowledge, skills, and work experience is considered to play an important role in accelerating the damage handling process. These results also support Donabedian's theory which states that a good structure, namely the reporting system and the competence of Hospital Facilities Maintenance Installation (IPSRS) technicians, will produce an effective process in the form of a rapid response of Hospital Facility Maintenance Installation (IPSRS) technicians so that it has an impact on increasing the effectiveness of the damage reporting system.

Damage Reporting System has a positive effect on the Effectiveness of the Damage Reporting System

The results of the study show that the Damage Reporting System has a positive and significant effect on the Effectiveness of the Reporting System. These results show that the better the damage reporting system is in providing clear, complete, documented, and easily conveyable information, the more effective the reporting process will be. These findings are in line with R. Keith Mobley's theory that reporting systems are an important part of maintenance management because fault information is the basis for determining appropriate maintenance actions. These results also support Donabedian's theory (Structure–Process–Outcome), where the damage reporting system is part of the structure that supports the implementation of the maintenance process so as to produce outcomes in the form of the effectiveness of the damage reporting system. The results of interviews with 10 informants also strengthened the findings, because the informants said that the reporting system that provides information about the location, type, and condition of the damage makes it easier for users to submit reports and help technicians follow up. Thus, a structured and informative damage reporting system can improve the ease of reporting, speed up follow-up, and reduce disruption to services, so that the better the damage reporting system, the higher the effectiveness of the damage reporting system.

The competence of Hospital Facilities and Infrastructure Maintenance Installation Technicians (IPSRS) does not have a significant direct effect on the effectiveness of the Damage Reporting System.

The results of this study show that the competence of Hospital Facilities Maintenance Installation (IPSRS) technicians which includes knowledge, skills, work experience, and technical abilities as described by Shohet and Lavy and Spencer and Spencer have not been able to directly increase the effectiveness of the damage reporting system. These results are also in line with Donabedian's theory (Structure–Process–Outcome) which explains that the structural component, namely the competence of technicians, does not directly produce outcomes, but must go through a process, namely the response of the Hospital Facilities Maintenance Installation (IPSRS) technician in following up on damage reports. Thus, the competence of technicians will have an impact on the effectiveness of the reporting system if it is realized in the form of a fast, precise, and procedural response. The results of interviews with 10 informants consisting of the Person in Charge of Hospital Facilities Maintenance Installation (IPSRS), Hospital Facility Maintenance Installation Technician (IPSRS), and the person in charge of the service unit also support these findings. Most of the informants stated that the Hospital Facilities Maintenance Installation (IPSRS) technicians have good skills in identifying and repairing damages, but the effectiveness of the reporting system is more determined by the speed and accuracy of the technician's response in following up on each

report. Therefore, the competence of technicians alone is not enough to increase the effectiveness of the damage reporting system if it is not supported by the optimal response of the Hospital Facilities Maintenance Installation (IPSRS) technician, so the results of this study reinforce that the Hospital Facility Maintenance Installation Technician Response (IPSRS) plays a role as a mechanism that connects the competence of technicians with the effectiveness of the damage reporting system.

The Damage Reporting System has a positive and significant effect on the Response of Hospital Facilities and Infrastructure Maintenance Installation Technicians (IPSRS).

These results show that the better the damage reporting system implemented, the faster and more appropriate the response of the Hospital Facilities Maintenance Installation technician in handling damage reports. The findings are in line with R. Keith Mobley's theory that the damage reporting system is an important part of maintenance management because it provides complete, accurate, and timely information as the basis for implementing remedial actions. In addition, the results of this study also support the Donabedian theory (Structure–Process–Outcome) which explains that a good structure, in this case the damage reporting system, will produce a more effective process in the form of increased technician response in following up on every damage report. The results of interviews with 10 informants consisting of the Person in Charge of the Hospital Facility Maintenance Installation, two Hospital Facility Maintenance Installation Technicians, the Head of the Pediatric Inpatient Room, and the Head of the Internal Medicine Room. The Head of the Emergency Installation Room, the Person in Charge of Outpatient Care, the Person in Charge of the Operating Room, the Person in Charge of the Intensive Care Unit (ICU), and the Person in Charge of the Laboratory also confirmed the findings. Most informants stated that a reporting system that contains complete and easily accessible damage information helps technicians determine work priorities, speed up the damage identification process, and speed up repair follow-up so that disruption to hospital services can be minimized.

The competence of Hospital Facilities and Infrastructure Maintenance Installation Technicians (IPSRS) has a positive and significant effect on the Response of Hospital Facilities Maintenance Installation Technicians (IPSRS).

These results show that the higher the technician's competence, which includes technical knowledge, skills, work experience, problem-solving skills, and compliance with standard operating procedures as described by Shohet and Lavy and Spencer and Spencer, the faster and more appropriate the technician's response will be in handling each damage report. These findings also support the Donabedian theory (Structure–Process–Outcome) which states that the quality of the structure, in this case the competence of human resources, will result in a better service process, namely an increase in technicians' response to damage reports. The results of interviews with 10 informants reinforced these results. Most informants stated that technicians who have experience, technical skills, and a good understanding of hospital utility systems are able to more quickly identify the cause of the damage, determine appropriate repair actions, and complete the work in a timely manner. Therefore, the better the competence of the Hospital Facilities Maintenance Installation (IPSRS) technician, the more optimal the response given to each damage report, thus supporting the smooth operation and service at the hospital.

The response of the Hospital Facilities and Infrastructure Maintenance Installation Technician (IPSRS) had a positive and significant effect on the effectiveness of the Damage Reporting System with an Estimate value of 0.380, a Critical Ratio (CR) of 4.737, and a p value of < 0.001, so that H_{06} was rejected and H_{a6} was accepted.

These results show that the faster, more precise, and in accordance with the technician's response procedures in following up on damage reports, the higher the effectiveness of the damage reporting system at the Pasar Minggu Regional General Hospital. These findings are in line with Donabedian theory (Structure–Process–Outcome) which states that the quality of the service process is a factor that determines the achievement of the desired outcome. In this study, the response of Hospital Facilities Maintenance Installation (IPSRS) technicians is the main process that connects the reporting system with the success of damage handling. In addition, Bedjo Utomo's theory regarding the management of hospital facilities and infrastructure also explains that the success of facility maintenance is highly determined by the speed and accuracy of follow-up to every damage report so that hospital services continue to run optimally. The results of interviews with 10 informants also strengthened the findings. Most of the informants stated that the quick response of the Hospital Facilities Maintenance Installation (IPSRS) technicians in verifying, identifying, and repairing damage was able to reduce operational disruptions and improve the smooth service to patients. On the other hand, the delay in response causes the service process to be disrupted even though the reporting system has been running well. Therefore, the results of this study prove that the response of Hospital Facilities Maintenance Installation (IPSRS) technicians is an important factor that determines the effectiveness of the damage reporting system and supports the creation of more effective and quality hospital services.

The response of Hospital Facilities and Infrastructure Maintenance Installation Technicians (IPSRS) significantly mediated the influence of the Damage Reporting System on the effectiveness of the Damage Reporting System.

These results show that the Response of Hospital Facilities Maintenance Installation Technicians (IPSRS) is able to significantly mediate the influence of the Damage Reporting System on the effectiveness of the Damage Reporting System. These findings support Donabedian's theory (Structure–Process–Outcome) which states that the structural component, namely the damage reporting system, will produce an optimal outcome if supported by a good process, namely the response of technicians in following up on each damage report. In addition, R. Keith Mobley's theory explains that a maintenance reporting system that is able to provide complete, accurate, and timely damage information will speed up the handling process by technicians thereby increasing the effectiveness of facility maintenance. The results of interviews with 10 informants also strengthened these findings. Most informants stated that a clear and easy-to-use reporting system makes it easier for technicians to obtain information about the location, type, and priority level of damage so that technicians can provide a faster and more accurate response. The optimal response of the Hospital Facilities Maintenance Installation (IPSRS) technician has an impact on accelerating the repair process, minimizing operational disruptions, and increasing the effectiveness of the damage reporting system. Thus, the results of the study prove that. The response of the Hospital Facility Maintenance Installation Technician (IPSRS) is a mediating variable that bridges the influence of the Damage Reporting System on the effectiveness of the Damage Reporting System.

The response of Hospital Facilities and Infrastructure Maintenance Installation Technicians (IPSRS) significantly mediated the influence of Hospital Facility Maintenance Installation Technician (IPSRS) Competency on the Effectiveness of the Damage Reporting System.

These results show that technician competence does not directly increase the effectiveness of the damage reporting system, but provides an influence through increasing the technician's response in following up on each damage report. This finding is in line with Donabedian's theory (Structure–Process–Outcome) which explains that structure, namely the competence of human resources, will produce optimal outcomes if supported by a good service process, in this study in the form of the response of Hospital Facilities Maintenance Installation (IPSRS) technicians. In addition, Shohet and Lavy's theory as well as Spencer and Spencer states that competencies that include knowledge, skills, experience, and problem-solving abilities will improve the performance of technicians in carrying out maintenance tasks. The results of interviews with 10 informants also strengthened these findings. Most of the informants stated that technicians who have high competence are faster to identify the cause of the damage, determine the appropriate repair actions, and complete the work according to operational standards so that the response time is shorter and hospital services are not disrupted. Thus, the results of this study prove that the Response of Hospital Facilities Maintenance Installation Technicians (IPSRS) plays a role as a mediating variable that connects the Competency of Hospital Facility Maintenance Installation Technicians (IPSRS) with the Effectiveness of the Damage Reporting System, so that the improvement of technician competence needs to be followed by an improvement in the quality of response so that the effectiveness of the damage reporting system is effective.

Research Findings

Based on the results of quantitative data analysis using Structural Equation Modeling (SEM) supported by the results of in-depth interviews with 10 informants, the findings of the study show that the Competence of IPSRS Technicians is a very strong factor in improving the Response of IPSRS Technicians. This is evidenced by the results of SEM analysis which shows an Estimate value of 0.709, a Critical Ratio (CR) of 13.035, and a $p < 0.001$. This value shows that the Competence of IPSRS Technicians has a positive and significant effect on the Response of IPSRS Technicians. Thus, the better the competence of the technician, the better the technician's ability to respond to reports of damage to hospital utility facilities.

Technicians who have good diagnostic skills can more quickly identify the cause of the damage. Experience helps technicians recognize fault patterns based on previous events. Experienced technicians tend to be quicker to prioritize, estimate the cause of the damage, and select appropriate corrective actions. Technical skills allow technicians to carry out inspections and repair actions more effectively. With adequate skills, technicians are not only quick to come to the site, but also able to take appropriate action after receiving the report. Competence is also related to the ability of technicians to make decisions when dealing with damage. A competent technician can determine if the damage can be repaired immediately, requires a specific tool or part, or requires further handling. Thus, a technician's response not only means how quickly the technician arrives after a report is received, but also includes the ability to provide an appropriate response, make a diagnosis, determine action, and resolve damage. Technician competence is the capital that allows damage reports to be translated into quick and

precise technical actions. Therefore, improving technician competence can be one of the strategies to improve the quality of response to damage reports.

Research Limitations

This research has been carried out in accordance with the established research procedures, but it still has some limitations that need to be considered in interpreting the research results. The limitations of this study are as follows.

The variables in this study were limited to the Damage Reporting System, the Competence of Hospital Facility Maintenance Installation Technicians (IPSRS), Hospital Facility Maintenance Installation Technician Response (IPSRS), and the Effectiveness of the Damage Reporting System. There are still other factors that have the potential to affect the effectiveness of the damage reporting system, such as management support, availability of maintenance budget, availability of spare parts, workload of technicians, quality of information technology, and organizational policies that have not been analyzed in this study.

The mediation test was carried out using the Sobel Test as a complement to the Structural Equation Modeling (SEM) analysis, because the Analysis of Moment Structures (AMOS) output obtained did not present the significance of the indirect effect (bootstrap confidence interval for indirect effect). Although the Sobel Test is a widely used method in mediation research, the full use of the bootstrapping method can still provide a stronger estimate of the significance of indirect influences.

Limitations of sampling.

Sampling was carried out on respondents who met the research criteria in the Pasar Minggu Hospital. In the data collection process, there are limited access and time because some respondents have a fairly high workload and service responsibilities. This condition causes the questionnaire filling process to need to be adjusted to the respondents' free time so that the data collection time becomes longer. In addition, not all units have the same damage reporting intensity, so respondents' experience with the reporting system may differ.

CONCLUSION

This study employed a mixed-methods approach combining quantitative and qualitative methods. The quantitative component examined the relationships among the damage reporting system (X_1), IPSRS technician competence (X_2), IPSRS technician response (Z), and reporting system effectiveness (Y) using structural equation modeling (SEM). The qualitative component explored the implementation of the damage reporting system, including supporting and inhibiting factors and informants' experiences. The integration of both approaches supported data triangulation and provided a more comprehensive interpretation of the findings (Creswell & Creswell, 2018).

The study was conducted at Pasar Minggu Regional General Hospital, South Jakarta, from May to August 2026. Quantitative data were analyzed using covariance-based structural equation modeling (CB-SEM) with IBM SPSS Amos to examine direct and indirect relationships among the study variables.

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