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Managerial Strategies to Accelerate Lead Times with the Failure Mode and Effect Analysis (FMEA) Method (Qualitative Study at Naibonat Regional General Hospital, Kupang Regency)

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ABSTRACT

This study aims to formulate a managerial strategy to accelerate waiting time through the identification of the root of the problem using the Failure Mode and Effect Analysis (FMEA) method. The research used a qualitative design involving five groups of informants, namely patients, specialist doctors, nurse at output patient clinics, medical record officers and management. Data were collected through in-depth interviews, observations, and Likert scale assessments, then analyzed using the FMEA approach to determine the Severity, Occurrence, Detection, and Risk Priority Number (RPN) values in each failure mode. The results of the study showed four failure modes with the highest RPN scores, namely: Hospital Management Information System failure (RPN 47.75), registration administration process (RPN 43.40), repeated service failures (RPN 42.05), and delay in specialist doctor attendance (RPN 40.98). HMIS is the most critical factor because it has the highest frequency of disruptions and has a direct impact on the entire service flow. Other dominant obstacles are delays in medical record files, insynchronization of administrative processes, and obstacles in pharmaceuticals. Based on these findings, the proposed managerial strategies include short-term improvements (optimization of human resources and SOPs), medium-term (digitalization through EMR and e-prescribing), and long-term (strengthening of Hospital Management Information System infrastructure and implementation of CQI). This research confirms that accelerating waiting times requires an integrated managerial approach, focusing on digitalization and cross-unit coordination.

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1. INTRODUCTION

Indonesia continues to strive to expand access to health services for the entire population through the National Health Insurance Program managed by the Health Social Security Administration. In March 2024, the number of National Health Insurance Program participants will reach 269.49 million people or around 95.70% of the total population of Indonesia. This achievement shows that National Health Insurance Program plays a role as the main instrument for public health protection while placing hospitals at the forefront of providing quality services. Social Security Agency for Health requires health service facilities to be able to provide services that are easily accessible, effective, and oriented towards patient satisfaction. The quality of health services has a close relationship with the level of patient satisfaction, as explained by Hafera (2022), so improving the quality of services is the main focus in hospital management.

Hospitals as health service institutions provide promotive, preventive, curative, and rehabilitative services to the community. Fajrin (2021) explained that these services are realized through outpatient, inpatient, and emergency services that require planned and coordinated management of resources. Hospital management is required to be able to manage human resources, infrastructure, and administrative systems efficiently so that services run optimally. Outpatient installations have a strategic position because they are the main entrance for patients in obtaining health services. Patients' perceptions of outpatient services are often an initial reflection of the overall quality of hospital services.

Outpatient services include a series of processes from the patient registering to the completion of receiving medical and support services. Patient waiting time is one of the most frequently complained quality indicators in outpatient services. Long wait times have the potential to reduce patient comfort and satisfaction. Sumayku et al. (2023) stated that long queues, inefficient administrative processes, and suboptimal officer responses can form a negative perception of the quality of health services. Laeliyah and Subekti (2017) emphasized that the length of waiting time reflects the ability of the service unit to manage the flow of services according to patient expectations. The findings show that waiting time control is a crucial aspect in hospital service quality management.

The Minimum Service Standards set by the Ministry of Health through the Ministry of Health Number 129/Menkes/SK/II/2008 stipulate that the outpatient waiting time is less than or equal to 60 minutes. The reality on the ground shows that the achievement of these standards still faces various obstacles. Tetty et al. (2020) found that administrative services, the availability of human resources, and the condition of infrastructure facilities affect the length of patient waiting time. Fajrin (2021) classifies waiting times of more than 90 minutes as the old category, 30–60 minutes as the medium category, and less than 30 minutes as the fast category. Research by Insani et al. (2020) shows that the cognitive aspect of patients has a significant contribution to the perception of outpatient waiting time, which has an impact on the level of satisfaction with the services received.

Naibonat Regional General Hospital as a referral hospital owned by the Kupang Regency Government faces health service challenges due to the area, geographical conditions, and relatively large population as stated in the Kupang Regency Profile (2024). National quality indicator data shows that the achievement of outpatient waiting times at Naibonat Hospital for the period January to March 2025 is still below the standards of the Ministry of Health. Patient waiting time affects public satisfaction and trust in hospitals, as explained by Pohan (2017). The hospital management literature presented by Tabish (2003) emphasizes the importance of risk management and operational efficiency, but the application of technical methods such as Failure Mode and Effect Analysis is still rarely used in regional hospitals in Indonesia. This condition encourages the implementation of FMEA as a systematic tool to identify potential service failures, calculate risk levels through Risk Priority Numbers, and formulate managerial strategies to accelerate outpatient waiting times at Naibonat Hospital, Kupang Regency according to national standards.

2. METHODS

This study uses a descriptive qualitative approach that is carried out under natural conditions, placing the researcher as a key instrument in data collection and interpretation. The focus of the research is directed at an in-depth understanding of the phenomenon of outpatient waiting times at Naibonat Hospital through data mining from in-depth interviews, direct observation of service flows, and examination of hospital documents. This approach is used to describe holistically the outpatient service process, the factors that trigger waiting times, and the realities that occur in the field as experienced by patients and health care workers.

Data analysis was carried out qualitatively using the Failure Mode and Effect Analysis (FMEA) method as a service risk analysis tool. The analysis process includes the stages of identifying service process points that have the potential to cause failures, grouping and reducing data based on field findings, as well as assessing the risk level of each failure through severity, occurrence, and detection parameters. The results of the assessment are calculated in the form of a Risk Priority Number (RPN) to determine improvement priorities and develop a directed managerial strategy in an effort to accelerate outpatient waiting times at Naibonat Hospital.

3. FINDINGS AND DISCUSSION

Interview Results

Patients

Based on the results of interviews with 10 patient informants, several main ideas were obtained that described the patient's experience regarding the length of waiting time for outpatient services. The findings are summarized into four main categories, which are coded P1 to P4 as a thematic representation of the informant's overall answers.

In the registration administration category (P1), patients said that the registration queue became long due to incomplete files, so the verification and registration process required additional time before the patient could proceed to the next stage of service. The Hospital Management Information System (HMIS) category (P2) shows that patients experience long waiting times due to the disruption of the HMIS system, which causes the administrative service process to be delayed. In the human resources category, especially doctors (P3), patients revealed that service delays occurred because doctors came not according to schedule, so patients had to wait longer even though they had completed the registration process. Furthermore, in the medical record category (P4), the patient stated that the medical record file was not available at the polyclinic at the time the service was supposed to be provided, which resulted in the patient's delay in being able to see the doctor.

Overall, the results of patient interviews show that there are several failure modes in the outpatient service flow that are felt directly by patients during the process of obtaining services at Naibonat Hospital.

Specialist Doctor

Based on the results of interviews with 6 specialist informants, several main ideas were obtained that describe doctors' perceptions of factors that affect the smooth running of outpatient services. In the Hospital Management Information System (HMIS) (D1) category, specialist doctors said that HMIS disruptions, especially during busy service hours, often hinder the patient service process. This condition causes the flow of services to be suboptimal and has an impact on increasing patient waiting times. The service administration category (D2) shows that specialist physicians assess that the long administrative flow contributes to the accumulation of patients in the poly. The layered administrative process is considered to slow down the flow of patients to the examination room. Furthermore, in the category of human resources, especially doctors (D3), the informant said that doctors' practice schedules often experience shifts due to other tasks outside of poly services. This condition has an impact on the untimely service according to the set schedule. Overall, the results of the specialist

doctor's interviews show that there are several failure modes in outpatient services related to information systems, administrative processes, and scheduling of doctors' practices.

Nurse at output patient clinic

Based on the results of interviews with 6 nurses at output patient clinic informants, several main ideas were obtained that described the experience of nurses in the implementation of outpatient services. In the medical record category (N1), nurse at output patient clinics said that medical record files were often not available at the poly at the time the patient was to be served. This condition causes services to not be resumed immediately even though the patient has been called. The service administration category (N2) indicates that the simultaneous arrival of patients causes long queues at the poly, thereby slowing down the flow of services and affecting patient wait times. Furthermore, in the Hospital Management Information System (HMIS) (N3) category, nurse at output patient clinics stated that HMIS ran slowly during the data input process, especially during busy service hours, thus hindering the smooth flow of patient services. Overall, the results of nurse at output patient clinic interviews show that there are several failure modes in outpatient services related to delays in medical record files, patient accumulation, and limited information system performance.

Management

Based on the results of interviews with 7 informants from the management element, several main themes related to organizational factors that affect outpatient services were obtained. The findings are summarized into two main categories, which are coded M1 and M2 as thematic representations of the overall management informant responses. In the Hospital Management Information System (HMIS) (M1) category, management informants said that the limitations of HMIS infrastructure are one of the obstacles in supporting the smooth running of services, especially when the service load is increasing. The limited capacity of this system has an impact on the performance of applications and service processes that depend on the information system.

The category of human resources (HR) (M2) shows that informants assess the distribution of human resources that are not optimal as a factor that affects the efficiency of outpatient services. The imbalance in the number and placement of human resources between units leads to an uneven workload and has the potential to extend service time. Overall, the results of the management informant interviews identified the existence of a failure mode related to the limited capacity of information systems and human resource management in outpatient services.

Medical Record Officer

Based on the results of interviews with 3 informants of medical record officers, several main ideas related to the implementation of file management in outpatient services were obtained. The findings are summarized into two main categories. In the medical record category (MR1), the informant said that the process of manually searching files still takes a relatively long time. This condition has an impact on the delay in providing medical record files needed in patient services. The service administration category (MR2) shows that medical records are often piled up in the registration section, so the process of distributing files to service units has not been running efficiently. This accumulation of files causes delays in sending files to service stations. Overall, the results of the medical record officer's interviews show that there are several failure modes in outpatient medical record management related to the length of the file search process and the inefficiency of file distribution.

In the Likert scale assessment of all respondent groups consisting of patients, specialists, nurse at output patient clinics, management, and medical records officers, a score range of 1 to 5 was used, with the following categories: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. In general, the results of the assessment showed a relatively consistent pattern of perception between respondents towards factors that affect outpatient waiting time.

In the aspect of the conformity of waiting time with the Ministry of Health's standards (≤60 minutes), the average score was in the range of 2–3, indicating that most respondents assessed that the standard had not been achieved optimally. The statement regarding the role of the registration administration in the length of the waiting time obtained a score of 3–4, while the incompleteness of the patient's file was scored at 3–4, indicating that administration is still an important obstacle.

Delay or absence of specialist doctors is considered quite influential with a score range of 3–5. The assessment of infrastructure facilities and the effectiveness of HMIS is in the range of 2–4, reflecting the need to strengthen facilities and information systems.

In the aspect of roles in the flow of services, all respondents gave high scores on the responsibilities of counter officers and specialist doctors, respectively 4–5. The need for consultation with IT staff as well as management's obligation to receive reports also obtained a score of 4–5, indicating that cross-unit coordination is considered very important.

The assessment of service failure indicators showed that registration administration as a point of failure to obtain a score of 3–5, doctor's delay obtained 3–5, and HMIS failure of 3–5. The impact of administration failure on patient satisfaction was in the range of 3–5, while the ability to detect failure and the frequency of repeated failures were in the range of 3–4.

In the aspect of the quality improvement strategy, all respondents gave a high score of 4–5 for various improvement proposals, including online pre-registration, integration of administrative data, patient file education, HMIS integrated doctor attendance, implementation of reward-punishment, provision of performance-based incentives, routine monitoring, transparency of doctors' schedules, and target waiting time of <60 minutes if the managerial strategy is implemented consistently.

The results of the analysis from all categories of respondents showed that the length of outpatient waiting time at Naibonat Hospital was mainly influenced by several key stages in the service flow. The registration stage is the starting point that often causes queues due to the manual file verification process, incomplete patient documents, and HMIS system disruptions. After registration, delays in the delivery of files or patient status to the polyclinic also extend the waiting time before the patient can be processed by the nurse. The initial assessment stage at the polyclinic went quite well, but it still depended on the presence and readiness of the doctor; Many respondents reported that the delay of specialist doctors was the dominant cause of the increase in waiting times. In the final stage, the collection of drugs in pharmacies again created a buildup due to the limited number of officers and the high volume of patients. Overall, the stages that contribute the most to the length of waiting times are registration, submission of files to the polyclinic, physician readiness, and medication queues.

Failure Mode Based on Respondent Data

The calculation of RPN for Outpatient Service Failure Mode uses a Likert scale of 1–5: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree. The severity value (S) is taken from the average assessment of the statement "administrative or system failure has a serious impact on patient satisfaction" of 4.34. The occurrence value (O) is taken from the average of the assessment of the specific statements of each failure mode (often the point of failure, the main cause, or the frequent recurrence). The detection value (D) is calculated from the statement "service failure is easily detected" with the transformation D = 6 − mean, so the more difficult it is to detect, the higher the D score. From the data, the average D value is 2.62.

Table 1. FMEA Calculation

Failure mode	Severity (S)	Occurrence (O)	Detection (D)	RPN (S×O×D)
Registration administration process as a point of failure	4.34	3.81	2.62	43.40
Delay in the presence of a specialist doctor as the main cause	4.34	3.59	2.62	40.98
Hospital Management Information System / Hospital Information System Failure (HMIS /HFIS) that causes delays	4.34	4.19	2.62	47.75
Frequent service failures	4.34	3.69	2.62	42.05

Based on the calculation of the Risk Priority Number (RPN), Hospital Management Information System / Hospital Information System Failure (HMIS /HFIS) is the highest risk with a value of 47.75, indicating that information system disruptions have the most significant combination of severity, frequency, and detection difficulty in slowing down the flow of services. The next mode of failure is the registration administration process (RPN 43.40) and repeated service failures (RPN 42.05), which shows that slow file flow and repetition of administrative problems are still the dominant obstacles. The delay of specialist doctors had a value of RPN of 40.98, indicating a contribution that remained substantial, although slightly lower than the failure of the system and administration.

Overall, this RPN pattern confirms that the three main areas of enrollment administration, physician readiness, and HMIS reliability are the critical points that have the most influence on the length of outpatient wait times.

Discussion

The quality of health services in the Outpatient Installation is a reflection of the efficiency of hospital management, where the waiting time for services from registration to doctor's examination functions as the main indicator of the Ministry of Health's Minimum Service Standards with a tolerance limit of ≤ 60 minutes which has a direct effect on customer satisfaction and institutional image. Naibonat Hospital shows that there is a gap between standards and service reality, as reflected in the achievement of compliance with outpatient waiting times in the first quarter of 2025 which are still fluctuating and have not reached 100%, namely 67.96% in January, 79.01% in February, and 85.95% in March, so that some patients still experience waiting times that exceed the tolerance limit. This condition encourages the formulation of a focused managerial strategy through the Failure Mode and Effect Analysis approach to identify potential failures, analyze their impacts, and rank risks based on Risk Priority Number so that corrective actions can be directed appropriately to the most critical service areas.

The results of interviews with five groups of informants showed that the length of waiting time for outpatients at Naibonat Hospital was influenced by several critical stages in the service flow. This finding is in line with systems theory which views hospitals as an open system consisting of interdependent inputs, processes, and outputs, where interference with one component will affect the performance of the system as a whole (WHO, 2007). In the context of outpatient services, failure in the early stages of service has the potential to extend the waiting time to the final stage of clinical services.

The findings of the study show that patient waiting time delays are influenced by several interrelated service stages, namely registration administration, medical record management, HMIS performance, and specialist doctor services. At the registration stage, incompleteness of files and long administrative flows slow down the initial service, in line with the view of Tabish (2003) who places administration as a front-line service that determines the smooth flow of patients. Delays in the distribution of medical records also extend waiting times because they hinder the continuity of clinical services as explained by Fajrin (2021), while HMIS disruptions during rush hour reduce operational efficiency due to limited support systems according to Rao (2009). Specialist services also contribute through inaccurate practice schedules that impact service reliability, reflecting the weaknesses of hospital human resource management as stated by Buchbinder and Shanks (2017).

The stages of outpatient services that contribute to the length of patient waiting time at Naibonat Hospital include the administration of registration, management and distribution of medical records, the performance of the Hospital Management Information System (HMIS), as well as the arrangement of specialist services that are interrelated and form an accumulation of process failures as described in the theory of Failure Mode and Effect Analysis by Stamatis (2003). Each of these stages represents a failure mode that has a direct impact on the quality of service and patient satisfaction, so it cannot be partially handled. The FMEA approach requires risk analysis based on severity, occurrence, and detection levels to produce a Risk Priority Number as the basis for determining improvement priorities, as affirmed by Dev et al. (2018). The findings of the study show that administrative failures and medical records have a high incidence and severity, while HMIS disorders and physician delays are difficult to detect early, thus becoming a critical factor in the formulation of managerial strategies to accelerate outpatient waiting times.

The results of the assessment using the Likert scale showed the consistency of perception where the administration of registration, incompleteness of files and late or absenteeism of doctors were assessed as the most influential factors (average score 3-5). In general, all groups of respondents except nurse at output patient clinics and more varied medical records agreed that the waiting time was not up to the Ministry of Health's standards (scores 2–3).

The results of the in-depth interview and Likert score provide a detailed picture of the failure mode that occurs at each stage of the service flow (Figure 3: Outpatient Service Flow). This analysis was carried out by mentriangulating the answers from the five groups of respondents. Obstacles in the early stages are in the form of administration and medical records. The registration stage, which is supposed to be a quick process, is often a point of queue build-up at the beginning. Complaints are in the form of long counter queues and suggest an online registration system. RM officers and nurse at output patient clinics admitted that the queue occurred at the registration counter and was exacerbated when the fingerprint scan was problematic and the HMIS network sometimes error.

On the other hand, specialist doctors complained about the storage space of the RM file that was far from the counter/poly and the double medical record number, which directly slowed down the flow. The weakness in coordination explained by one of the doctors stated that the patient's status request was never met at the same time as the patient's arrival, showing the weak coordination between the Counter, Medical Records and Poly. Overall, this shows a failure in the file logistics flow in physical form and the information flow in the form of HMIS. This failure is in line with the research of Tetty and Bone, 2020 which found that completeness and speed of administration are the main factors in the length of the waiting time.

The waiting time at the polyclinic is highly dependent on the discipline of the specialist's time of attendance. The perception clearly states that the longest waiting time occurs at the polyclinic because waiting for doctors is often late and suggests that doctors are already in the room on time.

The management assessment shows that the delay in the presence of specialist doctors at the polyclinic has a high influence on patient waiting time with a score of 4–5, because it directly inhibits the entire flow of services. The results of the interviews revealed that the delay did not always come from the doctor, but was often an accumulation of obstacles at previous stages such as registration and laboratory examinations, so that the patient was not ready when the poly schedule began, in line with the findings of Purwoko (2022) regarding irregularities in doctor's scheduling. This condition emphasizes the relevance of the Failure Mode and Effect Analysis philosophy which emphasizes the principle of "prevent before it happens", where the determination of risk factors with the highest Risk Priority Number value is the basis for the management of Naibonat Hospital in developing a focused and applicable improvement strategy.

The length of waiting time at Naibonat Hospital is not caused by a single factor, but is the result of a series of interrelated process delays, creating a domino effect. The results of this study are in line with the findings of Sumayku et al, 2023 and Sulisna et al. 2023, which confirm that factors such as administration, medical records, and human resources in polyclinics have a significant relationship with waiting time.

The FMEA analysis yields four failure modes with high RPN values, which should be the main focus of strategic planning as shown in the table below.

Table 2. FMEA Analysis

Failure Mode	S	O	D	RPN (S×O×D)
Hospital Information System Failure (HMIF)	4.34	4.19	2.62	47.75
Registration Administration Process	4.34	3.81	2.62	43.40
Frequent Recurring Service Failures	4.34	3.69	2.62	42.05
Delay in Specialist Doctor Attendance	4.34	3.59	2.62	40.98

The results of the analysis showed that HMIS failure was the highest risk in the flow of outpatient services at Naibonat Hospital with a Risk Priority Number value of 47.75, which was influenced by the high frequency of occurrence and significant impact (severity). System disruptions and network instability complained about by specialist doctors, nurse at output patient clinics, and medical record officers make HMIS the main link for various modes of service failure, ranging from registration, data verification, information distribution to polyclinics, to e-prescribing in pharmacies. This condition reflects the weakness of the organizational function and implementation of management as stated by Siagian (2012), characterized by the still use of manual processes and the low ability to detect failures early. The improvement of HMIS is seen as strategic because it has the potential to reduce the frequency of failures in the administrative process, medical records, and pharmaceuticals simultaneously.

The next mode of failure is repeated administrative failures with RPN 42.05, which reflects weak internal control and evaluation of administrative issues such as the replacement of old patient status with new patients, thereby hindering the continuity of clinical services, in line with the findings of Tetty and Bone (2020) and Kristina and Indriati (2023). Delay in the presence of a specialist doctor has an RPN of 40.98 and although it is often perceived by patients as the main cause, in terms of risk analysis it is under system and administrative factors because it is less frequent and easier to recognize. The accumulation of queues in outpatient pharmacies is also a failure with a significant impact due to limited human resources, high volume of prescriptions, and suboptimal e-prescribing, thereby extending the waiting time at the end point of service and reducing the perception of overall service quality.

The identification of the main failure modes based on the FMEA results shows that the length of outpatient wait time is an accumulation of various process obstacles that occur at administrative, clinical and technological points that create a domino effect on total wait time. Principally, in the theory of managerial strategy presented by Siagian, 2012 explains that planning, organizing, implementing, evaluating, and controlling that are integrated with the principles of continuous quality improvement (Continuous Quality Improvement) explained by Swayne, Duncan and Ginter, 2018 aim to ensure that hospitals are able to provide fast, precise and high-quality services.

Formulation of Priority Managerial Strategies based on FMEA analysis

Based on the results of the FMEA and the improvement proposals from all respondents, the managerial strategy made must be comprehensive, including technological aspects (SIMRS), processes (SOPs and EMR) and Human Resources (discipline and incentives). For short-term strategies (1–3 Months) focus on improvements that can be implemented immediately to reduce occurrence (O) and increase detection (D). Briefly shown in the table below.

Table 3. Formulation of Short-Term Strategy

Priority Areas	Intervention Objectives	Managerial Strategy	Data Support
Physician Readiness (RPN 40.98)	Reduce the occurrence of doctor delays.	Implementation of performance-based Reward – Punishment and SIMRS(HIMS)/Digital Attendance integrated attendance data. Transparency of Doctor's Schedule to the public.	Patient Proposal ("the doctor is already in the room") and Management ("Performance-based incentives, including punctuality of attendance").
Administration (RPN 43.40)	Transform the occurrence queue of the counter and the duplicate file.	Addition of Counter Human Resources at Peak-Hour Staffing. Preparation of SOP for Counter Officer Discipline and Technical SOP for Registration (RM proposal).	Patient Proposal ("add officers") and MRO ("Counter clerks who are often late").
Basic Infrastructure	Improve network detection and occurrence.	Appointment of on-site IT Officers at IRJ for real-time network	Doctor, Nurse, and MRO Complaints ("Network

		and hardware troubleshooting.	sometimes errors," "HIMS is problematic").

In the medium-term strategy (4–12 Months), namely digitization and integration that focuses on system integration to overcome the highest RPN of SIMRS and eliminate file flow failures.

Table 4. Formulation of Medium-Term Strategy

Priority Areas	Intervention Objectives	Managerial Strategy	Data Support
SIMRS (RPN 47.75)	Eliminates Information System failure mode.	Full implementation of integrated Electronic Medical Records (EMR) to eliminate physical files and double MR (according to the Director General or Permenkes). Server and Network Upgrades (Management: "Server and network upgrades").	All respondent groups agreed on the failure of HMIS. Doctors propose "increased use of EMR".
Administration and Pharmacy	Removing obstructions at the counter and pharmacy.	Fully integrated implementation of online queuing and e-Prescribing system. The prescription from the doctor is directly sent to the Pharmacy for the preparation of the drug.	Patient Proposals ("The registration system is better made online") and Doctors ("Increased use of online queues is needed".
Coordination	Improve communication across units.	Formation of a Cross-Unit HMIS Management Team involving IT, MRO, Output patient clinic and Pharmacy to ensure the integration of the system runs smoothly (Management).	Doctor's Complaints ("Coordination is still lacking, often waiting for each other").

The long-term strategy (> 12 months) is related to sustainable quality, where this strategy focuses on capacity building and Continuous Quality Improvement (CQI).

Table 5. Formulation of a Long-Term Strategy

Priority Areas	Intervention Objectives	Managerial Strategy (Corrective Action)	Data Support
Physical Planning	Reduces file/patient transfer time.	Revision of output patient clinic physical master plan to bring vital locations closer such as counters, MR and output patient clinic) (Management).	Doctor's Complaint ("The MR file storage space is far from the counter and output patient clinic).
Quality Supervision	Maintain the achievement of minimum service standards (SPM).	Integration of FMEA into the quarterly quality law cycle. Using RPN as the basis for all improvement programs, as well as real-time monitoring and evaluation of waiting times (Swayne, Duncan, and Ginter, 2018).	Management Proposal ("Real-time monitoring and evaluation").
Human Resources	Ensuring the competence of digital human resources.	Adaptive recruitment policy that prioritizes digital competencies (Management).	Management Complaints ("Limited number and competence of human resources").

4. CONCLUSION

In conclusion, the stages of registration, medical record management, doctor services at polyclinics, as well as pharmaceutical processes and HMIS disorders are the main contributors to the length of patient waiting time because they are interrelated and form systemic service barriers. The failure mode with the highest Risk Priority Number value was found in HMIS failures, followed by repeated enrollment and service administration, which showed a high frequency of occurrences and low detection capabilities. These findings emphasize the need for managerial strategies in the form of strengthening and stabilizing HMIS, digitizing service flows, improving administrative of standard operational procedure, improving physician discipline, and optimizing human resources and information technology infrastructure to accelerate outpatient waiting times to meet the standard ≤ 60 minutes.

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