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Analysis of Management Information System Implementation at Pratama 24 Hour Clinic Firdaus

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ABSTRACT

The industrial revolution 4.0 era experienced rapid technological developments, especially in the health aspect. The management information system implemented helps health facilities improve service quality and make fast, efficient, effective and correct decisions. This type of research is a descriptive qualitative approach to determine the background, challenges and obstacles in implementing the management information system at the 24-hour paradise clinic. Data collection methods use observation and interviews. Research subjects included clinic leaders, programmers, registration admins, doctors, pharmacists and cashiers. The results of the research in the form of the clinic's vision and mission are important points for clinics and IT staff to facilitate the development and implementation of Clinical SIM. Based on the implementation components, it was found that there was a minimum of IT staff. There has been no training or socialization of the Clinical SIM features which are undergoing development. Software that is not yet optimal because it still uses an old software version. Clinic SIMs cannot yet be bridged with SIMs from BPJS. And not yet implementing a billing system in the cashier unit. The conclusion is that the implementation of the Clinical SIM is good but requires optimization of the existing Clinical SIM.

Keywords: Challenges, Implementation, Clinical Management Information Systems, Clinical MIS

ABSTRAK

Era revolusi industri 4.0 mengalami perkembangan teknologi yang pesat khususnya di aspek kesehatan. Sistem informasi manajemen yang diterapkan membantu fasilitas kesehatan meningkatkan kualitas pelayanan dan mengambil keputusan yang cepat, efisien, efektif, dan tepat. Jenis penelitian ini adalah pendekatan kualitatif deskriptif untuk mengetahui latar belakang, tantangan, dan hambatan dalam implementasi sistem informasi manajemen di klinik pratama 24 jam firdaus. Metode pengumpulan data menggunakan observasi dan wawancara. Subjek penelitian meliputi pimpinan klinik, programer, admin pendaftaran, dokter, apoteker, dan kasir. Hasil penelitian berupa visi misi klinik menjadi point penting bagi klinik dan staf IT untuk memudahkan pengembangan dan penerapan SIM Klinik. Berdasarkan komponen implementasi, didapatkan minimnya staf IT. Belum adanya pelatihan/sosialisasi fitur SIM Klinik yang mengalami pengembangan. Software yang belum optimal karena masih menggunakan versi software yang lama. SIM Klinik belum bisa bridging dengan SIM dari BPJS. Serta belum menerapkan sistem billing di unit kasir. Kesimpulannya adalah penerapan SIM Klinik sudah baik namun memerlukan optimalisasian SIM Klinik yang ada.

Kata kunci: Tantangan, Implementasi, Sistem Informasi Manajemen Klinik, SIM Klinik

INTRODUCTION

The era that is currently developing is the era of industrial revolution 4.0 which has a rapid increase in technological development. Technological development will also develop information technology in all aspects of the world (Ernawati et al., 2023). Information technology is also developing rapidly, especially in the health aspect, so that it can improve the quality of existing health services (Setiorini et al., 2021).

The government's efforts to develop health are one of the efforts to advance national development to increase the will, awareness and ability to live healthily so as to improve the health status of the community. Community health development can be carried out if existing health services can support improving the community's health status (Kementerian Kesehatan, 2015).

Health services are an aspect with high complexity because health services have situational complexity, system complexity and medical complexity. The complexity of health services is divided into three, namely medical complexity, situational complexity, and health service complexity. Conditions of medical complexity include chronic medical conditions, the severity of a disease, disability, comorbidity of a disease, and the complexity of medical work. Conditions of situational complexity include interactions with environmental, personal and activity factors, as well as a healthy culture that is influenced by the environment. The complexity of health services includes referral systems, fragmentation of health services, limited funding, active involvement of patients, different thinking from health service providers, and innovation for health services. (Fadilla & Setyonugroho, 2021).

Health services that have high complexity in their implementation can be made easier by using a hospital information system. Hospital information systems make it easier for health facilities to make their organizations more efficient by developing electronic information systems based on business processes, changing service processes to become automatic, optimizing the performance of human resources, using quality technology, and minimizing costs incurred (Fadilla & Setyonugroho, 2021).

The information system in the health aspect is the Hospital Information System (SIRS). SIRS is a collection of data, indicators, information, procedures, devices, technology and human resources that are related and integrated to determine an action or decision in order to support health development (Menteri Kesehatan Republik Indonesia, 2013). SIRS can make it easier for health facilities to access information data in a timely, fast, accurate and relevant manner (Fahmi & Esabella, 2022).

According to PMK no. 82 of 2013 concerning Hospital Management Information Systems (SIMRS) defines a hospital management information system as an ICT (Communication Information Technology) system that can process and integrate all hospital services in the form of coordination, reporting and administrative procedures to obtain appropriate information, accurate, and includes part of the health information system (Menteri Kesehatan Republik Indonesia, 2013). The implementation of SIMRS which is starting to be promoted also has several challenges and obstacles. Factors that become challenges and obstacles for hospitals are human factors, human environment, organizational environment, system characteristics, and hardware. Hospitals that successfully manage these factors can benefit from SIMRS in running their organizations (Salari et al., 2017).

The policies implemented require health facilities to switch from information systems to traditional electronic information systems. The information system in question is a reporting application in the form of patient data, personnel data, service activity recapitulation data, data on disease complications or patient morbidity, both inpatient and outpatient (Kyalo et al., 2018).

Several studies related to management information systems have been carried out, such as research by Wimmie (2017) showing that there are several factors that support the success of implementing SIM, namely there must be a master plan that is carefully planned, integration of existing parts in the organization, creating a team consisting of IT staff and involving both clinicians and non-clinicians (doctors, nurses, pharmacists, administration, cashiers and management), IT infrastructure, and acceptance of work culture renewal from manual to automated (Wimmie, 2017). Another research conducted by Rika Andriani. et al (2022) show that implementing electronic medical records (RME) has several obstacles and challenges, one of which is the absence of training on the use of RME by IT staff. This can lead to errors in perceiving the information that new/old staff get if there are new features (Rika Andriani et al., 2022). Apart from that Salari. et al (2017) stated that the challenges in using hospital information systems have several dimensions such as system characteristics, human factors, human environment, organizational environment, and hardware factors. The most common challenges encountered are human factors in the form of a lack of incentives for using the system and human environmental factors in the form of negative attitudes from the community towards the use of information systems (Salari et al., 2017). These studies show that the implementation of management information systems not only has many benefits for health facilities, but also has several obstacles that need to be considered by health facilities so that SIM implementation can run optimally.

Until now, research regarding managerial analysis of the implementation of clinical management information systems has not previously been carried out at KP24F. This is the motivation to carry out further research, so that it is hoped that the results obtained can be used as material for evaluation and consideration in optimizing the use of existing clinical management information systems.

METHOD

The approach chosen for this research is a qualitative approach with a phenomenological research design. This approach was chosen because it can describe a characteristic of a phenomenon. This design emphasizes revealing the meaning of concepts or phenomena experienced by several individuals so that essential things related to existing phenomena are obtained. The description of characteristics is carried out thoroughly and completely using words and narrative sentences.

The subjects of this research are representatives of workers who are related to or have positions related to clinical information systems. The research subjects were selected as workers who were competent to provide information regarding the clinical information system, namely clinic leaders, financial coordinators, general practitioners providing services, dentists providing services, admins, pharmacy units, and programmers. The object of the research is the clinical information system at the Firdaus

24-hour pratama clinic. This research was conducted at the Firdaus 24-hour pratama clinic from December 2022 to March 2023.

Sampling was carried out using purposive sampling technique. Purposive sampling technique is a sampling technique that is based on predetermined inclusion criteria. This technique can select subjects that are in accordance with the research objectives and can provide information that is also in accordance with the research objectives.

This research is divided into three stages, there are information collection, data analysis, and research results. The data collection technique used is observation to obtain data regarding a general description of the research variables and the extent to which the clinical information system has been implemented. Apart from observations, in-depth interviews were also conducted to develop and explore in depth the main issues at hand. Interviews use an interview guide with open questions, resulting in answers that explain the questions in detail. Data analysis was obtained from the transcription of interview results, where the researcher obtained an overview of the data. After getting a description of the data, the researcher grouped the data into meaningful units, the researcher understood these units and wrote an explanation of what was experienced (texture description). Apart from that, researchers also compared findings between informants (Triangulation). The results of the analysis are prepared as input and recommendations to optimize the implementation of the existing clinical information system.

Ethical Clearance research is carried out starting from manage permits for research ethics eligibility, make a cover letter requesting permission from the Yogyakarta Muhammadiyah University Hospital Administration Management postgraduate study program which will later be given to the research site, and apply for a research permit to the Firdaus 24 Hour Pratama Clinic. After obtaining research permission, the research will begin observations at the 24 Hour Pratama Clinic and conduct interviews with research subjects at the Firdaus 24 Hour Pratama Clinic.

RESULTS AND DISCUSSION

The research carried out involved several medical and non-medical personnel at KP24F. Subject characteristics can be seen in the following table:

Participants	Gender	Age of Participants	Position	Last Education	Length Of Work
Participants 1	F	54 years old	Clinic Director	Doctoral Program	8 years
Participants 2	M	42 years old	Programmer	Civil Engineer	8 years
Participants 3	F	24 years old	Medical Records Staff	Diploma 3 Medical Records	1 years
Participants 4	F	33 years old	General Practitioners	Doctor Profession	5 years
Participants 5	M	34 years old	Dentist	Dentist Profession	5 years
Participants 6	F	26 years old	Pharmacist	Pharmacist Profession	6 years
Participants 7	F	27 years old	Cashier	Bachelor of Accounting	1 years

Table 1. Overview of Subject Characteristics

Based on table 1, the research subjects who participated were 7 people including the clinic leader, management information system programmer, registration admin, 2 service doctors, pharmacist and cashier. These subjects had varying lengths of work ranging from 6 months to 8 years. The ages of the subjects were still included in the productive age, namely between 24 years and 54 years. The education of the subjects is in accordance with the Republic of Indonesia Minister of Health Regulation number 9 of 2014 concerning Clinics (Menteri Kesehatan Republik Indonesia, 2014), namely that the clinic director is a medical personnel who has an educational and professional background as a doctor. Medical personnel who work in clinics also comply with existing regulations, namely the profession of doctor, profession of dentist and profession of pharmacist. Apart from that, there are special medical records personnel who have a diploma in medical records. Non-health workers have a bachelor's degree in accounting as a cashier and a bachelor's degree in civil engineering as a programmer.

Background to the implementation of the clinical information system at KP24F

Based on interviews conducted with the main director of KP24F, information was obtained that the Firdaus 24-hour Pratama Clinic is a clinic that was founded in 2015 and already has future thoughts about becoming a pilot clinic for other clinics. KP24F also has the aim of providing services that suit customer needs. At that time it could be seen that not many were implementing holistic and comprehensive services. This is the basis for KP24F to implement fast, holistic and comprehensive services. Apart from that, KP24F also makes patient safety and the quality of health services the main focus.

> *"Karena, e… saat itu memang yang jadi pemikiran kita itu kita ingin menjadi percontohan, klinik percontohan." (P.1)*

The founders also conducted orientations at the Gading Clinic and the Wirobrajan Community Health Center to examine shortcomings which would later become opportunities and differentiators for the Firdaus Clinic. From the orientation carried out, it can be concluded that KP24F must provide services that satisfy patients, provide fast service, and have efficiency for medical personnel. The hope is that due to these reasons, patients will return and switch health services to KP24F. This is the basis for making KP24F a 24-hour outpatient clinic.

> *"Nah itu menjadi patokan memang. Orang itu kalau di kota maksimal menunggu itu 30 menit, lebih dari itu udah gelisah. Jadi kita usahakan layani dalam waktu 30 menit selesai. Obat juga nunggu. Obat terlalu lama juga nggak bagus" (P.1)*

Fast health services must also be accompanied by good service quality. The quality of health services has a primary focus in the form of patient safety. Patient safety can be improved in one way, namely implementing an electronic management information system. At its inception, the clinic used electronic medical records which were not yet a complete management information system. This electronic medical record was developed by KP24F itself, because at that time there were still few people interested in developing electronic information systems. Independent development of electronic medical records has several considerations as stated by the director of KP24F :

> *"Kita buat sendiri, bangun sendiri elektronik rekam medis karena memang saat itu masih jarang banget yang ada. Kita mau pake yang punyanya yang ada di luar itu juga nggak sesuai dengan apanya kita, yah kita bangun sendiri. Kita menggunakan tenaga IT yah, yang kemudian tenaga IT ini kita ambil dari salah satu rumah sakitnya UMY, begitu kita minta tolong untuk dibangunkan. Karena kita khawatir kalau kita ambil tenaga dari luar risikonya hilang tenaga IT nya, nanti tidak ada yang bisa mengembangkan." (P.1)*

According to the KP24F programmer, the creation of this electronic information system was carried out in accordance with direct user requests. This system was created independently without collaboration with third parties/vendors. KP24F programmers already have experience creating clinical SIMs for the Nitipuran Clinic in Yogyakarta. The process of developing a Clinical SIM at KP24F from start to ready for use takes around 3 months.

> *"3 bulan selesai sambal berjalan. Sekitar 3 bulanan itu dulu. Waktu mulai belum yah, belum banyak revisian. Setelah kita mulai jalan, mulai ada perbaikan, perbaikan, perbaikan gitu yah." (P.1)*

"Kalau kemarin itu 3 bulan. Intensif soanya 3 bulan. Karena kan akhir…dulu tu mulai awal itu oktober awal itu mulai ngembangin. Jadi rapat tiap bulan itu sampai dengan desember. Desember tanggal 25 itu kan pembukaan klinik firdaus. Jadi 3 bulan tiap hari bertemu dengan dokter. Tiap hari rapat saya. Ngembanginnya yaa langsung." (P.2)

After completing the development, trials began to be carried out in implementing the development of the electronic medical record, then several evaluations emerged from several officers who used the medical record. Evaluations from users will be collected first with a grace period of 2 weeks, after which they will be updated according to the evaluation.

"Ya kemarin itu sekitar 2 mingguan. 2 minggu, jadi dikumpulkan dulu 2 minggu baru nanti di update" (P.2)

"Gini, biasanya yang kita lakukan adalah masukan masukan dari karyawan itu dikumpulkan, ya direkap. Kemudian kalau sudah dari ITnya dipanggil untuk kemudian disampaikan mana yang bisa mana yang tidak. Nggak semua permintaan itu bisa dilaksanakan." (P.1)

The development of information systems in an intensive manner is recognized as more effective, as expressed by programmers as follows:

"Yaaa sebenernya lebih enak gitu kalau mau ngembangin sistem. Jadi kita tau apa namanya eee sudah sesuai belum ituuu langsung. Langsung dibuat terus udah sesuai belum…udah sesuai belum, gitu. Sebenernya lebih cepet gitu kalau develop dari awal." (P.2)

This SIM Clinic also has a security system in the form of each staff having a special user and password and is required to change the password regularly, namely once every 3 months. Apart from that, users also cannot simply delete information that has been stored without approval from IT staff. This is an important aspect in a computerized system which consists of privacy which is an effort to protect existing data from parties who do not have the right to access; integrity is protection that can read all changes and cannot easily delete information that has been stored; authentication in the form of limiting access rights and including name, fingerprint and time; availability of data that can be accessed easily and quickly; Access control and non-repudiation can help in protecting existing information from data changes that may be detrimental or misused (Wiranata et al., 2023).

"Kalau di firdaus itu jadi transkripsi password sih sebenernya. Untuk user dan password sendiri, jadi ada dokter sendiri, untuk perawat sendiri. Jadi punya user dan password sendiri dan itu sudah standarisasi. Sebenernya kalau yang di firdaus itu dah standarisasi sudah ISO apa yang harus pake karakter khusus yang kompinasi angka dan huruf, minimal 8 karakter, dan setiap 3 bulan sekali harus ganti. Ini sih yang merepotkan sih. Kalau di firdaus sudah dipaksa jadi tiap 3 bulan dia kalau nggak ganti ya nggak bisa log in." (P.2)

"Udahhh, Karena masing-masing sudah punya username sama passwordnya sendiri" (P.4)

From the background to the implementation of the clinical information system at KP24F, information was obtained that the vision and mission of a clinic can influence the choice to implement a clinical SIM. Apart from that, collaboration between the director, IT staff and medical personnel who provide services is also very important in creating, implementing and developing a Clinical SIM. With good cooperation, an optimal, efficient and effective clinical SIM will be formed. This is in accordance with (Tun & Madanian, 2023) research, which states that human resources have an important role. Clinic leaders must have knowledge of IT and with adequate training and facilities they can help implement clinical SIMs and reduce missed communications between IT staff and medical personnel providing services.

Analysis of Clinical Management Information System Implementation Components

a. Human Resources

The results of interviews regarding the number of human resources for clinical IT programs/units obtained information :

"Karena kita tidak punya tenaga IT sendiri. Klinik akan sulit untuk menggaji tenaga IT sendiri." (P.1)

"Iyaaa kalau SDM nya sih sebenarnya kemarin saya minta untuk nambah, kalo bisa sih ada itu yang disana." (P.2)

"Iyaaa karena kalau disini kekurangannya gitu IT kurang" (P.4)

"Karena kan IT nya cuma satu, mas aji kayak gitu. Juga, beliau kan juga di mana mana gitu kan" (P.7)

The information obtained shows that IT personnel are urgently needed at KP24F at this time. Minimal IT personnel can cause obstacles in developing management information systems that have been implemented.

Insufficient skills and knowledge in operating the system can increase the time required to enter, store and process information held by the patient (Salari et al., 2017)(Farzandipur et al., 2016).

The lack of IT personnel can be one of the causes of obstacles in developing the management information system that has been implemented (Putri & Pertiwi, 2022). The IT staff who are currently developing the KP24F Clinical SIM already have experience in creating and developing Clinical SIMs at the Nitipuran Clinic and have competencies in accordance with PERMENKES Number 46 of 2014 concerning Health Information Systems, namely having competency at least in the fields of statistics, computers and epidemiology (Menteri Kesehatan Republik Indonesia, 2014).

b. Training for Implementing Staff

It is hoped that the training provided to implementing staff will improve their skills in using the clinical management information system. Increasing skills can speed up the process resulting in effectiveness at work. From the results of interviews regarding training held for implementing staff, information was obtained:

> *"Pelatihan yaaaa…. pelatihan kalau ini…misalkan untuk karyawan baru nih cuman diajari aja sih." (P.3)*
>
> *"Ada kalau pelatihan, maksudnya peeee eeemmmm penjelasan. Sama yang bagian yaaaa dokter siapa dulu tu ya. Yaaa manajer pelayanannya. Bagian pelayanan. Sebentar 1 hari, kan lebih ke cara pertama nanti sambil jalan. Lebih ke umum secara umum nya, cara pemanggilan pasien, pengisian, apa yang harus diisi, bagaimana setelah diisi, yaaa prosesnya." (P.4)*
>
> *"Kalau pelatihan resmi yang betul-betul makan waktu itu nggak. Tapi lebih kearah short course misalnya 1 jam saya dikenalin alat dikenalin CMS. Habis itu sambil jalan, karena ada perawat senior yang mendampingi." (P.5)*
>
> *"Nggak ada, mbak. Hanya hand over-an saja." (P.7)*

Excerpts from the information obtained show that KP24F provides training through hand overs by officers who have worked previously to new officers. The training in question is direct training on how to operate existing features and how to fill out a Clinic SIM. Currently, training has not been carried out by existing IT staff, so if old staff do not provide enough information, it could give rise to misunderstandings among new staff (Salari et al., 2017). The training provided is also not carried out regularly, this will be an obstacle because the software will basically develop over time. With this periodic training, it is hoped that staff can be aware of changes that may occur and faster in operating the SIM clinic (Dwiyanto et al., 2023)(Bygholm, 2018). KP24F also has a guidebook regarding the SIM Clinic that it has, but in its implementation it tends to have direct training by old staff (hand over). Lack of knowledge and skills is one of the obstacles that can be experienced in implementing a clinical management information system (Salari et al., 2017)(Putri & Pertiwi, 2022).

If seen from the perspective of user knowledge, it is natural that users who have inadequate knowledge and abilities will experience difficulties. Insufficient literacy will give rise to errors in interpreting existing data, generate incorrect data during the entry process, and can create new workloads for users. These things will be very dangerous in providing health services to patients (Gagnon et al., 2016).

c. Facilities and infrastructure

Facilities and infrastructure are very important in implementing an electronic-based management information system. Facilities and infrastructure that can support the running of a clinical SIM can include SOPs/regulations, software, hardware and networks.

- SOP/Regulation

  "Kebijakan pasti ada yah, kita punya SOP dan kebijakan-kebijakan. Yang paling penting itu adalah menjaga kerahasiaan dari system ini. Sekarang untungnya kita masih intranet, tidak keluar. Jadi kita enggak bisa ngisi dari luar itu, tidak bisa" (P.1)

- Software

  "eee itu tadi eee karena kita develop dulu tahun 2015 sih, terus untuk base nya kita pake PHP, PHP dulu masih lama PHP 5, 6. Pengembangan sekarang kan udah PHP 7, 8, nahhh itu kan nggak support untuk programnya itu yang dibikin di PHP 5." (P.2)

  "nahhh kalau dulu memang belum belum sampai ke accounting sih, jadi cuman laporan laporan pembayaran. Karena ya itu tadi karena dulu kan semua langsung BPJS jadi masukkan ke BPJS. Ya cuman laporan pembayaran aja jadi belum ada accounting." (P.2)

  "Kalau kalau yang pasien umum tu saya sama mbak annas tu bikin rekapan sendiri mbak pake excel masihan. Nah itu yang jadi pr itu." (P.7)

- Hardware

  "Kalau infrastrukturnya sebenarnya sudah cukup sih, kalau untuk pelayanan kayak di Klinik. Karena di klinik kan nggak begitu kompleks." (P.2)

  "Emmm kalau itu sih dah lengkap." (P.4)

- Network

  "Yang pernah itu bukan server rusak, tapi internet bermasalah. Meskipun udah intranet tapi waktu itu Telkom bermasalah. Nggak bisa kerja kan, yah manual" (P.1)

  "Jaringan pasti itu, terutama BPJS. Aplikasi ini e-klaim. Kalau ini (CMS) nggak begitu yaa cuman ya kalau listrik mati sama jaringannya mati tapi nggak sering" (P.3)

  "Jaringan internet, jaringan lemot, pernah juga" (P.4)

  "Kalau hang atau error untuk rekam medis sihhh biasanya server ya. Tapi terutama kalau internetnya bermasalah. Sebulan rata rata 3 kali. Jadi nggak setiap hari." (P.5)

The excerpt of information obtained shows that KP24F already has good regulations and SOPs regarding clinical management information systems, however the software used requires updating to optimize the work of the information system. The hardware and internet network used are also sufficient to run the information system.

The facilities and infrastructure at the clinic are adequate, such as regulations, software, hardware and networks. This is in accordance with Minister of Health Regulation Number 46 of 2014 concerning Health Information Systems which states that in managing (Health Information Systems) SIK it is necessary to use SIK tools which include hardware and software. The hardware owned is in the form of cards, register books, report forms, computer networks and connection media (Menteri Kesehatan Republik Indonesia, 2014). The hardware element that is still an obstacle is the internet network which sometimes has problems not being able to connect and the signal is sometimes weak (Nugroho et al., 2022). However, this is still within reasonable limits because it does not happen often. Based on the results of interviews, devices in the form of computers, printers, mice, CPUs, etc. have met the needs at the Firdaus clinic.

Software in the form of a computer program that has instructions for processing the data that has been entered. Software can be software for operating systems, applications, or manufacturer software that can be integrated into SIK (Menteri Kesehatan Republik Indonesia, 2014). KP24F has software that was developed by itself from scratch in 2015 which uses PHP version 5/6. Over time, PHP has developed new versions and the latest version is version 8. This is a major obstacle because several innovations in developing the Clinical SIM

cannot be implemented. This is because the Clinical SIM does not support the added programming instructions.

Challenges in implementing Clinical SIM

The interview results show that in implementing the Clinical SIM, challenges will arise for the clinic. Information regarding the challenges obtained is in the form of:

"Yang sekarang itu yang susah di maintenancenya memang. Karena kita tidak punya tenaga IT sendiri." (P.1)

"Memang yang menjadi kelemahan itu memang kaya hal hal yang terkait dengan tanda tangan pasien. Jadi itu yang belum bisa kita, seperti inform consent, yah kemudian edukasi. Kalau sekarang kita masih pake yang manual ya" (P.1)

"Sejak klinik ini berdiri 2015, bekerjasama BPJS pun sampai sekarang kita belum berhasil untuk bridging dengan sistem P-Carenya BPJS." (P.1)

"Karena BPJS nya. BPJSnya tidak memberikan kesempatan kita untuk bridging. Saya udah berkali-kali mengajukan surat. Karena kalau mereka tidak memberikan kesempatan kita, ya kita bisa masuk gitu. Jadi sekarang kita masih nginputnya 2 kali itu" (P.1)

"Sebenarnya kalau proses, bisnis prosesnya sih simpel, cuma yang agak ribet itu yang di bridging. Biasanya bridging ke BPJS trus akuntansinya." (P.2)

"Kalau ada tambahan itu yang agak susah." (P.2)

"Kalau CMS belum terintegrasi dengan BPJS." (P.3)

"Yaaa beberapa item yang belum inform consent belum bisa" (P.4)

"Iyaaa kita sudah kerjasama dengan BPJS tapi memang belum bridging." (P.5)

The excerpt from the information obtained shows that human resources are still a high priority obstacle because human resources are really needed in terms of development and maintenance of the information system that is owned. The next priority obstacle is the lack of bridging access from BPJS, so clinics are still double inputting patient data.

The challenges in implementing the Clinical SIM obtained at KP24F consist of IT personnel who handle the Clinical SIM, the BPJS system is still not able to be bridged, there are several parts that are still done manually such as signatures at the initial assessment of new patients, patient informed consent, and patient/patient family education, as well as programs for cashiers who still don't have a billing system. A billing system is a system where processes that will generate costs/pay are automatically input into the system. This will make it easier for the staff at the cashier not to input too many paid processes, so that the time required will be shorter (Sari, 2016). Clinical SIMs that cannot be bridged are also still an obstacle in developing Clinical SIMs because in the end the staff will fill in patient data twice and it is less efficient. Clinics for bridging have not yet appeared because there is no access provided by BPJS to first level health facilities, so effective functions cannot be carried out (Kurniawan & Harjoko, 2021).

Information that has good quality depends on 3 things, namely accurate, timely, and useful for the user. What is meant by accuracy is minimal or free from errors, being able to describe the meaning, and conveying clearly from the source to the recipient of the information (Rochman et al., 2019). The quality of the information in KP24F cannot yet be said to be good, because the accuracy of the data is still not optimal. Research (Rahmadan, 2017) shows that there is an increase in effectiveness and efficiency when SIMPUS can be bridged with BPJS Primary Care.

Evaluation of the implementation of Clinical SIM

a. To what extent is the implementation of Clinical SIM implemented?

"Bagus. Kalau menurut saya dengan model e-RM ini tadi, akhirnya harapan kita tercapai. Waktu tunggunya lebih cepat, kemudian kepuasan pasien juga bagus. Itu karena dia merasakan pelayanannya efisien. Jadi menurut saya dampaknya kelihatan, lebih ke dampak sekundernya. Dampak sekunder itu kelihatan dari peningkatan jumlah peserta BPJS nya itu signifikan." (P.1)

"Sangat membantu wkwkw." (P.3)

"Kalau saya sih sudah lumayan ini yaaa dipermudah yaaa dari pada kita menggunakan manual rekam medis yang paling yaaaa menurut saya sih mudah trus lebih gampang pengaplikasiannya, efisien" (P.4)

"CMS yang sekarang itu terlalu lengkap jadi untuk aplikasi klinik untuk klinis efisiensi ini nggak ada, kurang. Karena banyak isianya tapi nggak terisi semua. Jadi saya bilang CMS yang sekarang, saking lengkapnya kurang applicable untuk teknis klinis. Jadi terlalu banyak yang harus diisi dan akhirnya dokter karena nggak punya banyak waktu, dia hanya mengisi bagian bagian yang penting saja." (P.5)

"Iyaaa, saya lumayan kebantu, mbak" (P.7)

The excerpt of information obtained shows that the implementation of the clinical management information system is very effective and efficient in helping medical personnel provide services to patients. So that KP24F can maintain and improve the quality of service and patient safety which will automatically increase patient satisfaction. Patient safety can be improved with a clinical management information system because with this information system medical personnel can increase medical personnel's compliance with existing clinical guidelines, increase credibility in diagnosis, and reduce errors in drug administration (Sutton et al., 2020).

A clinic management information system, patients can easily get a queue number, register, and get some information from the clinic (Istiqomah & Irawati, 2023). Apart from that, it will be easier for health workers because they don't need to fill out lots of forms and can reduce patient waiting time which automatically increases effectiveness (Mohammadpour et al., 2021)(Suryadi Karim et al., 2022).

b. Quality of data provided by SIM Clinic

"Kalau saat ini kalau untuk kepentingan pelayanan oke. Tapi kalau untuk kepentingan manajemen secara umum belum. Karena kita belum memasukkan masalah billing system untuk laporan keuangan. Kemudian untuk data obat dan sebagainya juga belum masuk. Saya kira itu yang harus kita kembangkan." (P.1)

"Sebenarnya kemarin itu masih ada tambahan juga sih, yaaa yang terkait karena kemarin ada akreditasi itu ada tambahan tambahan apa ya kemarin itu? laporan. Memang belum belum sempet karena ya itu, saya mikir lebih baik bikin baru lagi buat mgembangin itu"(P.2)

"Lengkap sih" (P.3)

"Iyaaaa sejauh ini itu ya, apa, cuman mungkin yang kalau misalnya… kayak contoh apa ya… untuk mmm total kunjungan gitu ya. Total kunjungan dalam satu bulan, misalnya untuk pengambilan data itu entah kelengkapan rekam medis, atau mungkin untuk meeenghitung sampel kunjungan, nahhh itu kan kita menilai dari total sebulan itu disortir dari tanggal 1 sampai tanggal 30 total berapa. Cuman kita nggak bisa melihat apalah itu bener-bener mmmm berjalan atau tidak, misalnya input kan ooo ternyata tidak jadi digunakan atau apa kan nggak jadi kunjungan itu. Tapi dah terinput"(P.4)

"Informasi CMS untuk data sudah bagus cuman dia kalau dipilah-pilah lebih spesifik lebih banyak fitur buat milah-milahnya lebih bagus yaaaa. tapi overall bagus ya ndak ada masalah." (P.5)

The information obtained shows that the clinical management information system can provide data and information quickly. However, data accuracy is still not optimal because there are still deficiencies that need to be corrected.

Implementation of the Clinical SIM at KP24F provides benefits for management and staff. The results of the interviews show that implementing the Clinical SIM can make it easier to make decisions because the required data is available at any time and quickly (Sutejo et al., 2021)(Oktamianiza & Leonard, 2019). It is now increasingly developing and has become a necessity for existing health facilities. This is also in accordance with several studies which show that the advantages or benefits that can be obtained, such as implementing a Clinical SIM, can minimize the workload of each unit, especially in the medical records section (Deharja et al., 2022). This is because the medical records unit has a role in many processes. With a SIM, these processes can run automatically. This automation also has a good impact on patient service, because the time spent will be faster, more effective and efficient (Wimmie, 2017). This will increase patient satisfaction as our customers. Cost cutting can also be done by using this Clinic SIM. This cost reduction is seen from the point of view of the use of paper used for making various reports, recording medical records, writing drug prescriptions, etc. (Wimmie, 2017). Managerial decision making in health facilities is also greatly helped

because existing data can be accessed in a timely, fast, accurate, relevant and useful manner for the user. (Fahmi & Esabella, 2022)(Kristiani et al., 2021).

c. Advantages of implementing Clinical SIM
The implementation of Clinical SIM is now increasingly developing and has become a necessity for existing health facilities. Firdaus Clinic has also had a good impact in implementing the SIM Clinic. The advantages that can be seen from the information obtained are::

"Nah sekarang memang rekam medisnya kita ini banyak manfaatnya untuk kepentingan manajemen, antara lain pada saat kita menetapkan indikator butuh waktu tunggu. Itu otomatis tinggal ambil data dari situ. Misalnya berapa waktu kecepatan pelayanan di apotek atau berapa waktu pelayanan dokternya. Itu semua bisa terbaca berapa di pendaftaran karena sistem itu kan mencatat jamnya yah"(P.1)

"Kalau kita ingin memunculkan, ingin melihat data, mau mengevaluasi misalnya pelayanan hipertensi, kita nanti munculkan yang diagnosanya hipertensi kemudian kita evaluasi. Kita mau melihat resistensi antibiotik." (P.1)

"Asesmen awalnya itu sudah bisa sangat holistic" (P.1)

"Iyaa nanti kalau udah di input kayak gini baru masuk ke sistemnya. Sudah terintegrasi semua dari awal sampai akhir." (P.3)

The excerpt of information obtained shows that the management information system that is owned has begun to be used as material for managerial consideration. So it is hoped that optimization can help in clinical managerial decision making.

Management information systems can provide benefits for health workers in increasing health coverage without having to be in the hospital, increasing their ability to make decisions, and managing chronic patients more easily and in real time (Rhoads et al., 2017). Management information systems can also improve access to health services, patients are freer to choose visit schedules, and can save time during visits (Scott Kruse et al., 2018). With a clinic management information system, information and communication between the registration admin, service provider doctors/dentists, nurses, pharmacists and cashier units can be improved (Islam et al., 2018).

LIMITATION OF THE STUDY

The limitation of this research is the short time, so it cannot follow the monitoring evaluation carried out by internal parties from KP24JF

CONCLUSIONS AND SUGGESTIONS

Based on the research results from the analysis of the implementation of the management information system at the 24-hour paradise clinic, it can be concluded that:

a. The vision and mission that have been set by the clinic will be points that must be considered by the clinic and the IT development staff of the SIM Clinic. This will make it easier for both parties to develop and implement a Clinical SIM.
b. Components of implementing Clinical SIM
    a) Facilities and infrastructure in the form of SOPs/regulations, hardware and networks are optimal. However, the software is still not optimal because it still uses the old software version.
    b) Human resources who act as IT staff are still very minimal to manage and develop Clinical SIM.
    c) There has been no training or outreach regarding the Clinical SIM features that have undergone development.

d) Clinic SIM cannot be bridged with a SIM owned by BPJS, because BPJS has not provided access for bridging
e) Not yet implementing a billing system in the cashier unit

Based on the research results from the analysis of the implementation of the management information system at the Firdaus 24-hour Pratama Clinic, suggestions that may be given are:

a. There is a need for training and socialization of the Clinical SIM features that have undergone development. This is necessary to minimize staff misunderstandings in implementing the Clinical SIM, so that implementation will be more optimal.
b. Need to update the version of the software used. This right is because if you are still using the old software version it will make it difficult for IT staff to develop the Clinical SIM. The difficulty you may face is that features developed using the old software version are not supported.
c. BPJS needs to open up so that SIM Clinics can be integrated with BPJS's system so that health services are more effective and efficient.
d. It is necessary to develop and integrate the Clinical SIM with the billing system, so that everything needed by financial management can be channeled optimally.
e. It is very necessary to add additional human resources as IT staff to further optimize the implementation of Clinical SIM. Because with adequate human resources, the development process of the Clinical SIM will also be optimal. This will also increase efficiency in all service processes.
f. It is hoped that this research can be developed and continued for future research. Suggestions for future research are to be able to collaborate between observation and in-depth interviews with monitoring, evaluation of activities, focus group discussions, and evaluation of patient satisfaction. This can be done to get deeper results and to provide more specific solutions to health facilities.

ETHICAL CONSIDERATIONS

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REFERENCES

Bygholm, A. (2018). Staff training on the use of health information systems: What do we know? *Studies in Health Technology and Informatics, 247*, 191–195. https://doi.org/10.3233/978-1-61499-852-5-191

Deharja, A., Azis, M. N., Nuraini, N., Rahagiyanto, A., Santi, M. W., & Yunus, M. (2022). Technology Acceptance Model to Implementation of Electronic Medical Record (EMR's) at Clinic of Rumah Sehat Keluarga Jember. *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, *7*(4), 1215–1224. https://doi.org/10.30604/jika.v7i4.1370

Dwiyanto, U. A., Aini, Q., Kasihan, K., Bantul, K., Yogyakarta, D. I., Yogyakarta, U. M., Kasihan, K., Bantul, K., Yogyakarta, D. I., Yogyakarta, U. M., Kasihan, K., Bantul, K., & Yogyakarta, D. I. (2023). Hospital Management Information Model Hot-Fit : A Systemic Evaluation At Hospital Authors : Master Program in Hospital Management Muhammadiyah University , Yogyakarta , Indonesia ; Jl . Master Program in Hospital Management Muhammadiyah University , Yogya. *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, *8*(4), 1544–1555.

Ernawati, E., Bakhtiar, M. Y., & Rahmawati, R. (2023). Perancangan Sistem Informasi Klinik Berbasis Website Pada Pt Wonjin Indonesia Jakarta. *Semnas Ristek (Seminar Nasional Riset Dan Inovasi Teknologi)*, *7*(1), 69–75. https://doi.org/10.30998/semnasristek.v7i1.6249

Fadilla, N., & Setyonugroho, W. (2021). Sistem Informasi Manajemen Rumah Sakit Dalam Meningkatkan Efisiensi: Mini Literature Review. *Teknik Informatika Dan Sistem Informasi*, *8*(1).

Fahmi, K., & Esabella, S. (2022). *International Journal of Multicultural and Multireligious Understanding Performance Evaluation of Hospital Management Information System (SIMRS) Hl Manambai Abdulkadir on User Satisfaction Using Pieces Analysis (Performance , Information , Economic , C*. 355–369.

Farzandipur, M., Jeddi, F. R., & Azimi, E. (2016). Factors affecting successful implementation of hospital information systems. *Acta Informatica Medica*, *24*(1), 51–55. https://doi.org/10.5455/aim.2016.24.51-55

Gagnon, M.-P., Payne-Gagnon, J., Breton, E., Fortin, J.-P., Khoury, L., Dolovich, L., Price, D., Wiljer, D., Bartlett, G., & Archer, N. (2016). Adoption of electronic personal health records in Canada: Perceptions of stakeholders. *International Journal of Health Policy and Management*, *5*(7), 425–433. https://doi.org/10.15171/ijhpm.2016.36

Islam, M. M., Poly, T. N., & Li, Y. C. J. (2018). Recent Advancement of Clinical Information Systems: Opportunities and Challenges. *Yearbook of Medical Informatics*, *27*(1), 83–90. https://doi.org/10.1055/s-0038-1667075

Istiqomah, I., & Irawati, O. (2023). *SISTEM INFORMASI MANAJEMEN KLINIK PADA KLINIK PRATAMA " RUMAH SEHAT ." 2*(3), 798–803.

Kementerian Kesehatan. (2015). Peraturan Menteri Kesehatan Republik Indonesia Nomor 97 Tahun 2015 Tentang Peta Jalan Sistem Informasi Kesehatan Tahun 2015-2019. *Peta Jalan Sistem Informasi Kesehatan Tahun 2015 - 2019*, 1–76. http://www.pusdatin.kemkes.go.id/resources/download/pusdatin/lain-lain/PMK-No-97-Th-2015-ttg-Peta-Jalan-Sistem-Informasi-Kesehatan-Tahun-2015-2019.pdf

Kristiani, N., Adi, K., & Kartini, A. (2021). Management Information Systems in Decision Making: Narrative Review. *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, *6*(3), 673–680. https://doi.org/10.30604/jika.v6i3.989

Kurniawan, M., & Harjoko, A. (2021). Implementasi bridging system aplikasi sikda generik dengan p-care bpjs kesehatan di kabupaten lamongan. *Journal of Information Systems for Public Health*, *5*(2), 53. https://doi.org/10.22146/jisph.35277

Kyalo, C. K., Tenambergen, W., & Otieno, G. (2018). Technical Factors Influencing Integration of Health Management Information Systems in the Health System in Kenya. *International Journal of Scientific and Research Publications (IJSRP)*, *8*(8). https://doi.org/10.29322/ijsrp.8.8.2018.p8021

Menteri Kesehatan Republik Indonesia. (2013). Peraturan Menteri Kesehatan Republik Indonesia Nomor 82 Tahun 2013 Tentang Sistem Informasi Manajemen Rumah Sakit. *Peraturan Menteri Kesehatan Republik Indonesia Nomor 82 Tahun 2013 Tentang Sistem Informasi Manajemen Rumah Sakit*, 1–10.

Menteri Kesehatan Republik Indonesia. (2014a). Peraturan Menteri Kesehatan Republik Indonesia

Nomor 9 Tahun 2014 Tentang Klinik. *Peraturan Menteri Kesehatan Republik Indonesia Nomor 9 Tahun 2014 Tentang Klinik*, *3*(2), 1–46. http://journal.stainkudus.ac.id/index.php/equilibrium/article/view/1268/1127

Menteri Kesehatan Republik Indonesia. (2014b). Peraturan Pemerintah Republik Indonesia Nomor 46 Tahun 2014 tentang Sistem Informasi Kesehatan. *Peraturan Menteri Kesehatan Republik Indonesia Nomor 46 Tahun 2014 Tentang Sistem Informasi Kesehatan*, 1–66. http://jdih.kkp.go.id/peraturan/pp-46-2014.pdf

Mohammadpour, A., Ghaemi, M. M., Darrudi, R., & Sadagheyani, H. E. (2021). Use of Hospital Information System to Improve the Quality of Health Care from Clinical Staff Perspective. *Galen Medical Journal*, *10*. https://doi.org/10.31661/gmj.v10i0.1830

Nugroho, T. A., Mufreni, A., Wulandari, R. Y., & Wijayanto, W. P. (2022). Effectiveness of the Use Hospital Information And Management System (SIMRS) For Services Based on Hot-Fit Theory. *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, *7*(S1), 55–60. https://doi.org/10.30604/jika.v7is1.1199

Oktamianiza, O., & Leonard, D. (2019). Analisis Pendayagunaan Tenaga Rekam Medis Di Puskesmas Kota Padang. *Indonesian of Health Information Management Journal (INOHIM)*, *7*(2), 86–90. https://inohim.esaunggul.ac.id/index.php/INO/article/view/193

Putri, H., & Pertiwi, T. (2022). Implementasi bridging system antara e-puskesmas NG dengan p-care di Puskesmas Andalas Padang. *Jurnal Kesehatan Masyarakat Celebes*, *3*(2), 33–42.

Rahmadan, K. (2017). *Evaluasi Penerapan Bridging System Antara Sistem Informasi Manajemen Puskesmas (SIMPUS) Dengan Primary Care (P-CARE) Menggunakan Metode HOT-FIT di Puskesmas Umbulharjo I Kota Yogyakarta*. 355116.

Rhoads, S. J., Serrano, C. I., Lynch, C. E., Ounpraseuth, S. T., Gauss, C. H., Payakachat, N., Lowery, C. L., & Eswaran, H. (2017). Exploring Implementation of m-Health Monitoring in Postpartum Women with Hypertension. *Telemedicine and E-Health*, *23*(10), 833–841. https://doi.org/10.1089/tmj.2016.0272

Rika Andriani, Wulandari, D. S., & Margianti, R. S. (2022). Rekam Medis Elektronik sebagai Pendukung Manajemen Pelayanan Pasien di RS Universitas Gadjah Mada. *Jurnal Ilmiah Perekam Dan Informasi Kesehatan Imelda (JIPIKI)*, *7*(1), 96–107. https://doi.org/10.52943/jipiki.v7i1.599

Rochman, A., Tullah, R., & Rahman, A. (2019). Sistem Informasi Data Pasien di Klinik Aulia Medika Pasarkemis. *Jurnal Sisfotek Global*, *9*(2). https://doi.org/10.38101/sisfotek.v9i2.241

Salari, R., Salari, R., & Medicine, C. (2017). Challenges Of Using Hospital Information Systems By Nurses: Comparing Academic And Non-Academic Hospitals. *Electronic Physician*, *9*(January), 3592–3597.

Sari, Y. P. (2016). *Efektivitas Penerapan Sistem Informasi Kasir Di Rumah Sakit Marga Husada Kabupaten Wonogiri Tahun 2019o Title No Title*. *4*, 1–23.

Scott Kruse, C., Karem, P., Shifflett, K., Vegi, L., Ravi, K., & Brooks, M. (2018). Evaluating barriers to adopting telemedicine worldwide: A systematic review. *Journal of Telemedicine and Telecare*, *24*(1), 4–12. https://doi.org/10.1177/1357633X16674087

Setiorini, A., Natasia, S. R., Wiranti, Y. T., & Ramadhan, D. A. (2021). Evaluation of the Application of Hospital Management Information System (SIMRS) in RSUD Dr. Kanujoso Djatiwibowo Using the HOT-Fit Method. *Journal of Physics: Conference Series*, *1726*(1). https://doi.org/10.1088/1742-6596/1726/1/012011

Suryadi Karim, A., Sutedi, & Agarina, M. (2022). SistemInformasiManajemenLayananKesehatanPadaKlinikRawatInapdiBandar Lampung. *Jurnal Teknika*, *16*(2), 409–418. https://jurnal.polsri.ac.id/index.php/teknika/article/view/6367

Sutejo, S., Prasetijo, A. B., & Agushyban, F. (2021). The Role of Information System for Risk Management in Hospital: A Narrative Review. *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, *6*(3), 693–698. https://doi.org/10.30604/jika.v6i3.1014

Sutton, R. T., Pincock, D., Baumgart, D. C., Sadowski, D. C., Fedorak, R. N., & Kroeker, K. I. (2020). An overview of clinical decision support systems: benefits, risks, and strategies for success. *Npj Digital Medicine*, *3*(1), 1–10. https://doi.org/10.1038/s41746-020-0221-y

Tun, S. Y. Y., & Madanian, S. (2023). Clinical information system (CIS) implementation in developing countries: requirements, success factors, and recommendations. *Journal of the American Medical Informatics Association*, *30*(4), 761–774. https://doi.org/10.1093/jamia/ocad011

Wimmie. (2017). Sistem Informasi Manajemen Terhadap Layanan Kesehatan Rumah Sakit. *Jurnal Informasi Kesehatan Indonesia*, *02*(1), 32–28.

Wiranata, A., Wiradito, A., Ardhana, M. R., & Triase. (2023). Sistem Pengamanan Sistem Informasi Rawat Jalan Di Klinik. *Jurnal Informatika Teknologi Dan Sains*, *5*(1), 3–8.