



Risk Management Analysis of Hospital Management Information System (SIMRS) at ABC Hospital using ISO 31000

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Abstract

A hospital is a health institution that serves as a center for providing care and treatment to individuals who are ill. To ensure optimal service delivery, the regulations of the Indonesian Ministry of Health mandate that every hospital in Indonesia must implement and manage the development of a Hospital Management Information System (SIMRS). ABC Hospital, a private institution, has been utilizing SIMRS since 2002. Risk management at ABC Hospital follows a structured approach encompassing five stages: communication and consultation, context determination, and risk assessment, which includes risk identification, analysis, evaluation, treatment, and monitoring. The results of this risk analysis enable ABC Hospital to prevent and minimize risks while addressing them according to their impact and priority. Based on research findings: (1) Governance management in the SIMRS unit at ABC Hospital aligns with the requirements of ISO 31000:2018; (2) Potential risks identified include the absence of certain features in the SIMRS program and inconsistent application of existing Standard Operating Procedures (SOPs); (3) The hospital's SIMRS faces 27 risks, categorized into 9 low risks, 3 moderate risks, and 15 high risks; (4) To mitigate these risks, it is recommended that procedures be strengthened and the existing application programs be enhanced.



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I. INTRODUCTION

As a critical healthcare facility, hospitals often face challenges in managing information effectively, both for internal operations and external needs[1]. so that need endeavoured enhancement management efficient, fast, easy, accurate, cheap, safe, integrated information and accountable. One forms its application through system service by utilising technology information through the use of a system Information based computer [2]. fast progress technology in the field of information has given birth to change in the order of life in society, nation And state [3].

In this context, the role and function of data services implemented by the hospital, as one of the key data and information management units, require the ability to make various adjustments and changes [4], [5]. System Information can be utilized for activity and data services information with more productive, transparent, orderly, fast, easy, accurate, integrated, safe and efficient, especially help in expedite and make it easy formation policy in increase system service health specifically in field maintenance House Sick in Indonesia. A lot of House Pain has to make an effort To build And develop system information, however, part experience failure and part of House Sick choose For do Work The same operational (*outsourcing*) with relative cost big ones on Finally follow burden cost health for patient/community [6].

Based on the matter above, the Directorate General in charge of a business in the field Build Effort Health Ministry Health looked necessity build framework reference work (*framework*) and device application (*software*) system information House Characteristic pain source open general (*open source generic*) [7] For House Sick in Indonesia. With the existence of generic open-source application software, This expected House Sick in Indonesia can use, develop, implement and look after alone. So that will there is uniformity of data sent to the Ministry of Health [1].

In the current industrial era of 5.0, information technology cannot be separated from an organization. Increasingly, information technology is growing rapidly and it is hoped that organizations can run following the flow of developments so that these organizations gain significant profits [8]. One example of information technology that is developing in the world of health is the Hospital Management Information System (SIMRS) [9]. SIMRS is used to support all hospital activities including hospital activities and processing of data and information related to the organization. This national standard-based SIMRS was issued based on related regulations, namely Indonesian Ministry of Health regulation number 82 of 2013 concerning Hospital Management Systems, which discusses the provision that every hospital in Indonesia is required to organize, carry out management and development of SIMRS in hospitals [10].

ABC Hospital is a private hospital in Surabaya. According to the government regulations above, SIMRS has also been implemented in carrying out system-integrated business processes since 2002. According to the head of the ABC hospital IT unit, a risk management study on SIMRS had never been conducted, so it was possible that some risks would arise. To reduce the negative impact of risk [9], risk management is needed. Risk management is a way to manage the risks that exist in the organization, where the threats that exist in the organization will be analyzed and then will be minimized as best as possible [11]. In using SIMRS, risk management is needed to overcome all problems that will occur for the smooth running of an organizational system process without obstacles. SIMRS is very important, so it must be protected from risks that might have a big impact if not handled properly, quickly and accurately [12].

This study uses ISO 31000:2018 as a reference in analyzing risk management and risk identification using *Generic Risk Scenarios Cobit5* [7]. The reason for using ISO 31000 in this study is a structured framework, more effective risk management techniques and proven research where the ISO *framework* can identify 12 types of risk, 8 of which are classified as high-level risk (*High*), 3 medium levels (*Medium*), and

1 low level (*Low*) and carry out risk reduction (*Risk Reduction*) according to each level of risk (Alvian, 2020).

II. METHODS

Study This is characteristic observational with design get up cross-sectional with Include 5 sources related information with channel System Information Management House Sick namely (1) Treat Road, (2) Treat Inpatient, (3) Cashier, (4) Registration and (5) Doctor Poly. Study This is done with observation with the photograph of many obstacles that occur. From several resulting constraints in the portrait, several possible risks will happen over time come. after done evaluation maa grouped risk in grading priority and then lowered factor risk.

III. RESULTS AND DISCUSSIONS

Qualitative analysis is a quick and relatively easy analysis to use for a broad range of *impact* and *likelihood identification* that can be used as material for evaluating risk ratings. Qualitative risk analysis is a process of determining priorities for further analysis or response actions by measuring and combining the probability of occurrence of risks and the impact of these risks [13].

Qualitative risk analysis is considered the most effective and cost-effective stage because, through this analysis, organizations or companies can improvise project performance by focusing on risks that have a high priority level (*high-priority risk*) [7], [14]. This risk priority can eventually be used as a basis for conducting quantitative risk analysis if necessary. When opportunities or probabilities (*likelihoods*) and impacts have been identified, an evaluation will then be carried out to determine the priority risks to be addressed first [15].

In process management risk There are 3 activities carried out ie identification risk, analysis risk, and evaluation risk. the identification process is done To see the potency risk What only will occur in the entity area [16]. After knowing the risk What only will happen as well as the impact that will generate furthermore need to consider the reason and possible scenarios happened. a) Identification First Process Risk in an evaluation risk is to identify existing risks Where in the study This used stages interview to existing risks in operational House sick [12], [17]. Following This results in the identification of risks that occur in home IT processes sick. The list identified risks furthermore done analysis more carry on based on from chances and criteria of the resulting impact. Following This assessment was carried out in an analysis risk following.

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identify 12 types of risk, 8 of which are classified as high-level risk (*High*), 3 medium levels (*Medium*), and 1 low level (*Low*) and carry out risk reduction (*Risk Reduction*) according to each level of risk [19].

Table 1.Constraint Analysis And Impact as well as Treatment Risks k o SIM RS ABC

No	Process/Sub Process	Constraint	Likelihood	impact	Risk	Treatment Risk
1	Patient Register At Pavilion Independent	Patient average is elderly And No Can be using programs	5	1	5	Accept
2	Patient List Direct	Queue crowded on Morning day	5	2	10	Accept
3	Patient List of Websites	Only many patients can use the applications on the website	5	2	10	Accept
4	Patient List With Application	Many patients No Can be using android	5	1	5	Accept
5	Patient Inspection To Doctor Specialist	The doctor come at No appropriate time so the queue of patients piled up	5	3	15	Reduce
6	Request Inspection Manually Done	Many doctors No Can use the application	5	2	10	Accept
7	Patient Direct treatment Inpatient (ER)	Patient No own completeness file in a manner administration	5	2	10	Accept
8	Patient queue	Program Number queue No walk with Good	5	2	10	Accept
9	Patient Get Service Doctor	Missing application programs complete	5	3	15	Reduce
10	The patient needs to treat stay	The patient transfer program from take care road to take care stay is Still Not yet complete	5	2	10	Accept
11	Patient To Registration treatment stay	Sometimes the program hasn't Can see the condition patient is patient Already gone home or has Not yet	5	2	10	Accept
12	Patients need inspection support	Request data inspection is Still done manually	5	3	15	Reduce
13	Patient need drug	Request data drug Still done manually	5	4	20	Reduce
14	A patient needs an inspection laboratory	Request data laboratory is Still done manually	5	4	20	Reduce
15	A patient needs an inspection of the Radiology	Request Data Radiology is Still done manually	5	4	20	Reduce

No	Process/Sub Process	Constraint	Likelihood	impact	Risk	Treatment Risk
16	Patient Poly needs Drug	Patient poly Lots so that patient queue at the pharmacy	5	4	20	Reduce
17	Patient treatment stay Need Drug treatment stay	Request data drug Still done manually	5	4	20	Reduce
18	Planning Hospital budget	No there is a program in SIM RS	5	5	25	Reduce
19	Preparation Hospital budget	No there is a program in SIM RS	5	5	25	Reduce
20	Evaluation Hospital budget	No there is a program in SIM RS	5	5	25	Reduce
21	Recording Cash	No there is a program in SIM RS	5	5	25	Reduce
22	Recording Debt	No there is a program in SIM RS	5	5	25	Reduce
23	Recording accounts receivable	No there is a program in SIM RS	5	5	25	Reduce
24	Purchase / Receipt	No there is a program in SIM RS	5	5	25	Reduce
25	Recording Inventory	No there is a program in SIM RS	5	4	20	Reduce
26	Asset Management	No there is a program in SIM RS	5	4	20	Reduce
27	Payrolls and HRM	No there is a program in SIM RS	5	4	20	Reduce

Table 1 is obtained effort mitigation risk with road complete the application program, so the system is needed can be used in a manner direct and with no happen mistakes Monitoring and review activities are carried out after the evaluation risk is done and recommendation control has implemented in the organization. Based on the monitoring carried out in a manner routine there is a declining risk And the resulting impact. Monitoring and review activities are carried out with stage meetings with topic discussion application technology information to discuss obstacles or possible risks that will disrupt business processes organization and discuss prevention so you can minimize the risk that will happen later day.

IV. CONCLUSIONS AND RECOMMENDATIONS

The governance management of the ABC hospital's SIMRS unit demonstrates its alignment with the implementation of ISO 31000:2018, ensuring an effective framework for risk management. However, there are potential risks that could arise, such as the absence of certain features within the SIMRS program and inconsistent application of existing Standard Operating Procedures (SOPs). These gaps could potentially impact the overall efficiency and reliability of the system.

An assessment of the risks associated with the SIMRS at ABC hospital identified a total of 27 risks, categorized into 9 low risks, 3 moderate risks, and 15 high risks. To mitigate these risks, it is essential to strengthen the existing procedures and ensure that the application programs are fully developed and

consistently applied. This approach will help minimize the risks and enhance the overall effectiveness of the SIMRS.

V. REFERENCES

- [1] THE HEALTH MINISTER OF THE REPUBLIC OF INDONESIA, *REGULATION OF THE HEALTH MINISTER OF THE REPUBLIC OF INDONESIA NUMBER 28 OF 2013*. Indonesia, 2013, pp. 1–31.
- [2] L. Lluka and P. Chunduri, “A grading matrix assessment approach to align student performance to Threshold Learning Outcomes (TLOs) in a large first year biology class.,” *International Journal of the First Year in Higher Education*, vol. 6, no. 1, 2015.
- [3] Wimmie Handiwidjojo, “Management Information System for Hospital Health Services,” *Journal of Information Health Indonesia*, vol. 2, no. 1, pp. 28–32, 2017.
- [4] S. Sugiyanto and A. A. Rahayu, “THE IMPLEMENTATION OF RISK MANAGEMENT AND ITS EFFECT ON GOOD COOPERATIVE GOVERNANCE AND SUCCESS,” *Journal of Indonesian Economy and Business*, vol. 33, no. 3, p. 243, Jan. 2019, doi: 10.22146/jieb.28570.
- [5] H. Sun, Y. Zhang, D. Baleanu, W. Chen, and Y. Chen, “A new collection of real world applications of fractional calculus in science and engineering,” *Commun Nonlinear Sci Numer Simul*, vol. 64, pp. 213–231, Nov. 2018, doi: 10.1016/j.cnsns.2018.04.019.
- [6] I Wayan Wahyudi and A.A Komang Suardana, *Ilmu Dasar Alamiah*, First Edition. Denpasar: UNHI Press, 2019.
- [7] A. P. Aisyah and L. Dahlia, “Enterprise Risk Management Berdasarkan ISO 31000 Dalam Pengukuran Risiko Operasional pada Klinik Spesialis Esti,” *Jurnal Akuntansi dan Manajemen*, vol. 19, no. 02, pp. 78–90, Nov. 2022, doi: 10.36406/jam.v19i02.483.
- [8] M Risk, “DI House,” Mar. 2016.
- [9] D. Hendarsyah, “E-Commerce Di Era Industri 4.0 Dan Society 5.0,” *IQTISHADUNA: Jurnal Ilmiah Ekonomi Kita*, vol. 8, no. 2, pp. 171–184, Dec. 2019, doi: 10.46367/iqtishaduna.v8i2.170.
- [10] R. Molly and M. Itaar, “Analisis Pemanfaatan Sistem Informasi Manajemen Rumah Sakit (SIMRS) Pada RRSUD DOK II Jayapura,” *Journal of Software Engineering Ampera*, vol. 2, no. 2, pp. 95–101, Jun. 2021, doi: 10.51519/journalsea.v2i2.127.
- [11] Nadifa Maulani Fadilla and Winny Setyonugroho, “Sistem Informasi Manajemen Rumah Sakit Dalam Meningkatkan Efisiensi: Mini Literature Review,” *Jurnal Teknik Informatika dan Sistem Informasi*, vol. 8, no. 1, pp. 357–374, Mar. 2021.
- [12] Pujihastuti A., “Application of Management Information Systems in Supporting Hospital Management Decision Making,” *Journal of Manajemen Indonesian Health Information*, vol. 9, no. 2, p. 200, 2021.
- [13] M. W. Oliy, F. Rivai, and S. Palutturi, “IMPLEMENTASI MANAJEMEN RISIKO KLINIS DAN FAKTOR-FAKTOR YANG MEMPENGRUHI PADA RUMAH SAKIT DI KOTA MAKASSAR,” *Jurnal Kesehatan Masyarakat Maritim*, vol. 2, no. 1, May 2019, doi: 10.30597/jkmm.v2i1.10063.
- [14] M. Villacourt, “Failure mode and effects analysis (fmea): A guide for continuous improvement for the semiconductor equipment industry,” *Sematech. Org*, vol. 36, 1992.
- [15] A. A. Ulfa and T. Immawan, “Analisis Manajemen Risiko Dengan Penerapan ISO 31000 Pada Proses Machining (Studi Kasus: Perusahaan AB),” *Integrasi : Jurnal Ilmiah Teknik Industri*, vol. 6, no. 2, p. 42, Dec. 2021, doi: 10.32502/js.v6i2.3986.
- [16] Arjaty Daud, Dumillah Ayuningtyas, and Purnawan Junadi, “Pengetahuan, Persepsi, dan Pelaksanaan Manajemen Risiko Klinis di Lima Rumah Sakit di Daerah Khusus Ibukota Jakarta dan Banten Tahun 2005,” *Journal of Health Service Management*, vol. 10, pp. 9–11, 2007.
- [17] M. H. Firmansyah, “IMPLEMENTATION OF OCCUPATIONAL SAFETY AND HEALTH RISK MANAGEMENT IN ISLAMIC HOSPITAL SURABAYA A. YANI,” *Medical and Health Science Journal*, vol. 5, no. 2, pp. 15–25, Aug. 2021, doi: 10.33086/mhsj.v5i2.2179.
- [18] D. P. Natalie and A. D. Manuputty, “Analisis Manajemen Risiko Teknologi Informasi dengan ISO 31000:2018 pada PT Bayu Buana Tbk,” *JURIKOM (Jurnal Riset Komputer)*, vol. 9, no. 5, p. 1290, Oct. 2022, doi: 10.30865/jurikom.v9i5.4797.
- [19] Jakaria DA, Happy RT, and Hendrik, “Academic Information System Risk Management in Higher Education Using the Octave Allegro Method,” *Faculty of Law UII (Universitas Islam Indonesia)*, pp. 37–42, 2013.