

The Effect of Hospital Management Information System and Good Clinical Governance on The Effectiveness of Health Services with Internal Control as A Moderating Variable at Hikmah Hospital, Makassar

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Abstract: This study aims to examine the influence of hospital management information systems and good clinical governance on the effectiveness of health services with internal control as a moderating variable at Hikmah Makassar Hospital. The population in this study was all employees of the Hikmah Hospital in Makassar City totaling 173 employees. Meanwhile, in determining the sample, we used several sample determination criteria so that the total sample in this study was 77 respondents. This research uses primary data by conducting direct research in the field, by giving questionnaires/statement sheets to 77 respondents. The data analysis method used is intervening analysis with the help of the Smart PLS application. Research results show that: partially that: Hospital Management Information Systems have a positive and significant effect on the effectiveness of health services in hospitals. Good Clinical Governance has a positive and significant effect on the effectiveness of health services in hospitals. Internal Control is able to moderate the Hospital Management Information System on the effectiveness of health services at the Hospital and Internal Control is able to moderate Good Clinical Governance on the effectiveness of health services in hospitals.

Keywords: Hospital Management Information System, Good Clinical Governance, Effectiveness of Health Services, Internal Control

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1. INTRODUCTION

The increasing quality of public health has impacted the need for quality hospital services. Government policies regarding the establishment of hospitals, polyclinics, and community health centers have spread to various regions. In addition to assessing the quality of medical personnel at the hospitals where they seek treatment, the public will also examine the quality of services provided by the hospitals in question (Divianto, 2012; Sholikah & Praptiestrini, 2021).

The role of hospital organizations is crucial for communities experiencing health problems, encompassing various activities related to maintaining and improving health services and the facilities where these facilities are provided. Healthcare efforts carried out by medical personnel aim to achieve optimal health for the community. Therefore, hospital management must carefully consider service programs, both in terms of direct medical care and the service programs provided to the community, as management is responsible for the internal aspects of the hospital (Ella, 2015; Riyasari & Indra Arza, 2020).

Improving public health quality is driving demand for quality hospital services. Hospitals are judged not only by the competence of their medical staff, but also by the effectiveness of their management systems, facilities, and services. Digitizing services through the Hospital Management Information System (SIMRS) is a strategic step to improve service efficiency and accuracy. However, its implementation still faces challenges such as infrastructure readiness, human resources, and network limitations (Nurwito, 2022; Fahmi et al., 2022).

In addition to SIMRS, the implementation of Good Clinical Governance (GCG) and internal control also play a crucial role in ensuring the quality of healthcare services. GCG focuses on accountability and improving the quality of clinical services, while internal control ensures operational activities run according to procedures. However, previous research has shown conflicting views regarding the effectiveness of these three systems on hospital service quality. Therefore, this study was conducted at Hikmah Hospital Makassar to examine the influence of SIMRS and GCG on healthcare service effectiveness, with internal control as a moderating variable, based on the New Public Management (NPM) approach.

2. LITERATURE REVIEW

New Public Management

New Public Management (NPM) is a decentralized management system with management tools such as monitoring (controlling) and benchmarking that applies private sector work practices to the public sector to create efficiency and effectiveness in local government/private sector performance (Good Governance) and thus achieve public welfare. The goal of NPM theory is to improve efficiency and effectiveness, and improve performance accountability.

Hospital management information system

The Hospital Management Information System (SIMRS) is a computer-based information system designed to manage all aspects of hospital information in an integrated manner. According to Handayani, Wuri, et al. (2018), SIMRS supports hospital operational, administrative, and managerial activities with the aim of improving service efficiency, data accuracy, and the quality of decision-making.

Good Clinical Governance

Good Clinical Governance is a system in which healthcare organizations are accountable for continuously improving the quality of their services and ensuring high standards of care by creating an environment that supports clinical excellence. This concept was first introduced in the UK's National Health Service (NHS) in response to major medical incidents that demanded comprehensive reforms to the quality and safety of healthcare services. The primary regulation on good clinical governance (GCG) in Indonesia is Law Number 44 of 2009 concerning Hospitals, specifically Article 36, which requires hospitals to implement good clinical governance. This regulation is reinforced by Minister of Health Regulation Number 775/Menkes/Per/IV/2011 concerning the Implementation of Medical Committees, which regulates the role of medical committees in implementing GCG through credentials, quality assurance, and medical professional discipline. These guidelines are also developed through Hospital By Laws (internal hospital regulations) that establish corporate and medical bylaws to ensure comprehensive GCG implementation.

Effectiveness of Health Services

The effectiveness of healthcare services is a measure of the extent to which targets have been achieved for maintaining and improving health, preventing and treating disease, and restoring the health of individuals, groups, and communities. Healthcare effectiveness refers to hospital management that consistently strives to provide the best possible service and treatment (Ninla, 2019). The effectiveness of an organization's service performance is difficult to measure in detail, as the assessment is subjective and dependent on the recipient of the service. Therefore, several criteria are used to assist companies in measuring performance.

Internal Control

According to COSO (The Committee of Sponsoring Organizations of the Treadway Commission), Internal Control is a process produced by the board of directors, management, and other personnel, which is designed to provide reasonable assurance regarding the achievement of objectives, the effectiveness and efficiency of operations, the reliability of financial reporting, and compliance

with applicable laws and regulations. The purpose of internal control is to assess the effectiveness and efficiency of all activities, ensuring they align with company objectives. Internal control can also prevent deviations from procedures, create more reliable financial reports, and ensure company operations comply with applicable laws and regulations (Ardianto & Riskarini, 2017; Prameswari, 2023).

Hypothesis

The Hospital Management Information System (SIMRS) plays a crucial role in supporting hospital administration and operational processes, from patient registration to digital medical records, ultimately improving the efficiency and accuracy of healthcare services (Nadifa Maulani & Winny, 2024). Furthermore, the implementation of Good Clinical Governance principles, such as transparency, accountability, responsibility, independence, and fairness, is believed to foster good hospital governance, thereby supporting professional and patient-oriented services. However, internal control plays a crucial role in strengthening the relationship between the Hospital Management Information System and Good Clinical Governance on service outcomes; when internal control is strong, data reliability and process compliance increase, strengthening the impact of the Hospital Management Information System and Good Clinical Governance on service effectiveness.

Hospital Management Information System Has a Positive Influence on the Effectiveness of Health Services in Hospitals

Information technology plays a crucial role in today's healthcare. The quality of information processing is a crucial factor in the success of healthcare institutions. A good information system can support clinical workflows in various ways, contributing to better patient care (Deddy, 2016; Kristanti & Ain, 2021). With a smoother information flow, medical personnel can make faster and more accurate decisions, ultimately positively impacting the quality of patient care. **H1:** Hospital Management Information System has a positive influence on the effectiveness of health services in hospitals.

Good Clinical Governance Has A Positive Influence on The Effectiveness of Health Services In Hospitals

Effective healthcare delivery can be achieved through good hospital governance. This governance is regulated by Indonesian Minister of Health Regulation Number 69 of 2004 for all healthcare institutions. Healthcare institutions, such as hospitals, must implement good medical governance to improve the quality of the healthcare environment. This quality can be demonstrated by the alignment of healthcare services within a hospital with its objectives. **H2:** Good Clinical Governance has a positive influence on the effectiveness of health services in hospitals.

Internal Control is Able to Moderate the Hospital Management Information System Towards the Effectiveness of Health Services in the Hospital

Financial Management Activities are a series of processes that include planning, The Hospital Management Information System (SIMRS) is designed to improve the efficiency, speed, and accuracy of healthcare services by integrating patient data, medical records, medication management, and hospital finances. Optimal implementation of SIMRS has been proven to improve healthcare service

effectiveness by reducing waiting times, improving diagnostic accuracy, and enabling data-driven decision-making. However, the success of SIMRS depends not only on the technology but also on the hospital's internal control system. Good internal controls can moderate or strengthen the impact of SIMRS on service effectiveness by ensuring that the information system is used according to procedures, protected from data misuse, and supporting operational accountability. **H3:** Internal Control is able to moderate the Hospital Management Information System towards the effectiveness of health services in the Hospital.

Internal Control Is Able to Moderate Good Clinical Governance Towards the Effectiveness of Health Services in Hospitals

H4: Internal Control is able to moderate Good Clinical Governance towards the effectiveness of health services in Hospitals

Good Clinical Governance (GCG) is a framework that ensures clinical services in hospitals are provided professionally, safely, and oriented towards sustainable quality. Good Clinical Governance encompasses principles such as transparency, accountability, efficiency, evidence-based evaluation, and the involvement of medical personnel in clinical decision-making. Strong implementation of good clinical governance is believed to improve the effectiveness of healthcare services by strengthening quality standards, preventing medical errors, and increasing patient satisfaction (Rahmadani, 2022). However, for good clinical governance to be truly effective, an internal control system is required to serve as a tool for monitoring and controlling clinical and managerial practices.

3. RESEARCH METHODS

Data

In this study, a quantitative approach is used to measure the influence of Hospital Management Information Systems, Internal Control, and Good Clinical Governance on hospitals. Quantitative research will be conducted using survey techniques, utilizing questionnaires as a data collection tool. The questionnaires will be distributed to a sample selected from a predetermined population.

Statistical Analysis of Data

In order for the collected data to be useful, data analysis must be carried out. Data analysis is the process of processing the collected data and interpreting the results of the processed data along with the conclusions (Aminah, 2022). The data analysis in this study was conducted using the SmartPLS program. The analysis of the internal model in this study was conducted using the SmartPLS program.

4. RESULTS AND DISCUSSION

Table 1. Description of Variable Data

	N	Minimum	Maximum	Mean	Std. Deviation
Hospital Management Information System	77	2.63	5.00	4.2143	.57025
<i>Good clinical governance</i>	77	2.50	5.00	4.1883	.72515
Internal Control	77	3.00	5.00	4.4987	.66223
Effectiveness of Health Services	77	2.00	5.00	4.1120	.73493
Valid N (listwise)	77				

Source: Data processing in SmartPLS4.0

Based on the descriptive statistics in Table 1, all variables in this study show an average in the “agree” to “strongly agree” category. The Management Information System (X1) variable has an average of 4.2143 and Good Clinical Governance (X2) of 4.1883, both indicating a tendency for respondents to agree with the statements given. Internal Control (M) has the highest average of 4.4987, which is in the “strongly agree” category, while Health Service Effectiveness (Y) has an average of 4.1120 and is also in the “agree” category. The standard deviation values of the four variables range from 0.57 to 0.73, indicating a moderate level of data distribution from the average value.

Convergent Validity Test

Table 2. Test the validity of the outer model variable

Indicator	<i>Outer Loading</i>	Information	Indicator	<i>Outer Loading</i>	Information
X1.1	0.734	Valid	M3	0.955	Valid
X1.2	0.884	Valid	M4	0.952	Valid
X1.3	0.940	Valid	M5	0.927	Valid
X1.4	0.920	Valid	M6	0.919	Valid
X1.5	0.902	Valid	M7	0.820	Valid
X1.6	0.924	Valid	M8	0.828	Valid
X1.7	0.861	Valid	M9	0.946	Valid
X1.8	0.843	Valid	M10	0.902	Valid
X2.1	0.892	Valid	Y1	0.837	Valid
X2.2	0.910	Valid	Y2	0.856	Valid
X2.3	0.901	Valid	Y3	0.871	Valid
X2.4	0.970	Valid	Y4	0.956	Valid
X2.5	0.918	Valid	Y5	0.911	Valid
X2.6	0.914	Valid	Y6	0.954	Valid
M1	0.965	Valid	Y7	0.964	Valid
M2	0.965	Valid	Y8	0.924	Valid

Table 2 shows the results of the outer loading test using PLS for the variable indicators used in this study. The table above shows that all variables used in this study are reflective indicators, as they have a loading factor > 0.70, indicating that all construct indicators are valid. It is concluded that all indicators are valid for

measuring the variable constructs in this study.

Reliability Test

Tabel 3. Test Results Cronbach's Alpha, Composite Reliability and AVE

Variable	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Y	0.970	0.982	0.975	0.829
X2	0.963	0.993	0.970	0.843
M	0.979	0.980	0.982	0.845
X1	0.958	0.998	0.964	0.771

The test results based on Table 3 show that the composite reliability and Cronbach's alpha results show satisfactory values, namely the value of each variable above the minimum value of 0.70. The AVE value generated by all constructs above is > 0.50. This indicates the high consistency and stability of the instrument used. In other words, all constructs, namely the variables of Management Information System, Good Clinical Governance, Internal Control, and Effectiveness of Health Services, have become fit measuring instruments, and all questions used to measure each construct have good reliability.

Discriminant Validity Test

Table 4. Discriminant Validity

Fornell-Larcker Criteria

Variable	Effectiveness of Health Services	Hospital Management Information System	Good Clinical governance	Internal Control
Y	0.910			
X2	0.271	0.918		
M	0.228	0.021	0.919	
X1	0.210	-0.157	-0.053	0.878

Based on Table 4 above, it shows that the diagonal is the square root of the AVE value and the value below it is the correlation between constructs. Therefore, it can be seen that the square root of the AVE value is higher than the correlation value, so it can be concluded that the model is valid because it has met discriminant validity.

R² (R-Square)

Table 5. R Square Construct Variable

Variable	R-square	Adjusted R-square
Effectiveness of Health Services	0,290	0,240

From table 5, it can be seen that the R-Square value for the variable

Effectiveness of health services is 0.290, which means that it is included in the fairly high category. The R-square value of the Effectiveness of health services of 0.290 or 29% indicates that the variable Effectiveness of health services can be explained by the variables Management information system and Good clinical governance with Internal control as a moderator variable is 29% while the remaining (100-29%) = 71% can be explained by other variables not included in this study.

Direct Effect

Tabel 6 Hypothesis Testing based on Path Coefficient

Variabel	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Internal control > Effectiveness of health services	0.301	0.306	0.100	2.999	0.003
Management information systems > Effectiveness of health services	0.307	0.319	0.151	2.027	0.043
<i>Good clinical governance</i> > Effectiveness of health services	0.242	0.262	0.095	2.534	0.011

The test results show that Management Information Systems and Good Clinical Governance have a positive and significant effect on the effectiveness of health services. Management Information Systems has a significance value of 0.043 and a t-statistic of 2.027, while Good Clinical Governance has a significance value of 0.011 and a t-statistic of 2.534. Both indicate that hypotheses H1 and H2 are accepted.

Moderation Effect Testing

Tabel 7 Hypothesis Testing Based on Moderation Effect

Variabel	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Management information systems > Internal control > Effectiveness of health services	0.311	0.320	0.125	2.480	0.013
<i>Good clinical governance</i> > Internal control > Effectiveness of	0.159	0.173	0.072	2.200	0.028

health services

Based on the inner weight value of the indirect effect consisting of the Management Information System (X1) and Good Clinical Governance (X2), it can be seen that their influence on the effectiveness of health services (Y) is partially moderated by internal control (M).

5. CONCLUSION

The conclusion of this study indicates that the Management Information System and Good Clinical Governance have a positive and significant impact on the effectiveness of healthcare services, and that internal control can strengthen both. This means that the effectiveness of healthcare services at Hikmah Hospital Makassar can be improved through a management information system, good clinical governance, and effective internal control.

REFERENCE

- Amaliah, A., Andreas, & L, A. A. (2020). Pengaruh Audit Operasional, Pengendalian Internal, Dan Motivasi Kerja Terhadap Efektivitas Pelayanan Kesehatan Di Rumah Sakit. *Jurnal Online Mahasiswa*, 7(2), 1–15.
- Andika Fajar Nugroho, & Dety Mulyanti. (2023). Penerapan Sistem Informasi Manajemen Rumah Sakit Secara Umum. *Jurnal Manajemen Riset Inovasi*, 1(3), 39–45. <https://doi.org/10.55606/mri.v1i3.1243>
- Bagus satrio Nurwito. (2022). *Manfaat dan Efektivitas Penerapan Sistem Informasi pada Rumah Sakit Swasta dan Rumah Sakit Pemerintah*. 165–170. <https://doi.org/10.33560/jmiki.v12i2.664>
- Dewi, N. S. A., Khuzaini, & Djawoto. (2023). Pengaruh Profitabilitas, Likuiditas Dan Leverage Terhadap Nilai Perusahaan Dengan Kebijakan Dividen Sebagai Variabel Moderating (Studi Pada Perusahaan Ritel Di Bei). *Jurnal Bisnis Dan Manajemen*, 10(1), 109–120.
- Faradhifa, N. (2022). ANALISIS PENGARUH IMPLEMENTASI SISTEM INFORMASI MANAJEMEN RUMAH SAKIT (SIMRS) TERHADAP KINERJA KARYAWAN DI UNIT RAWAT JALAN RSUD ARIFIN ACHMAD PROVINSI RIAU. *Braz Dent J.*, 33(1), 1–12.
- Ghozali, I. (2015). *Structural Equation Modeling; Metode Alternatif Dengan Partial Least Squares (PLS)*. Edisi 4. Semarang: Universitas Diponegoro.
- Handayani, Wuri, dkk. (2018). *Pengantar Sistem Informasi Manajemen Rumah Sakit (SIMRS)*. Depok. PT RajaGrafindo Persada.
- Kristanti, yuliana erna, & Ain, R. Q. (2021). Informasi Manajemen Rumah Sakit. *Muhammadiyah Public Health Journal*, 1(3), 179–193.
- Lestari, S. A. (2017). *Pengaruh pelaksana audit operasional dan pelaksana pengendalian internal terhadap efektivitas pelayanan kesehatan pada rumah sakit (studi kasus pada rumah* <http://repository.uinsu.ac.id/2083/>
- Mcsherry, R., & Pearce, (P).(2011). *Clinical Governance: A guide to implementation For healthcare professionals (3rd ed)*. Wiley Blackwell
- Nadifa Maulani & Winny. (2024). Sistem Informasi Manajemen Rumah Sakit dalam Meningkatkan Efisiensi: Mini Literature Review. *COMSERVA: Jurnal Penelitian Dan Pengabdian Masyarakat*, 3(10), 4135–4144. <https://doi.org/10.59141/comserva.v3i10.1223>
- Prameswari, A. H. (2023). *Pengaruh Audit Operasional dan Pengendalian Internal terhadap Efektivitas Pelayanan Penyaluran dana Pensiun pegawai Negeri Sipil*. <https://dspace.uui.ac.id/handle/123456789/46703%0Ahttps://dspace.uui.ac.id/bitstream/handle/123456789/46703/19312040.pdf?sequence=1&isAllowed=y>

Riyasari, W., & Indra Arza, F. (2020). Pengaruh Audit Operasional, Pengendalian Internal, Dan Good Clinical Governance Terhadap Efektivitas Pelayanan Kesehatan Pasien Bpjs Di Rumah Sakit. *Jurnal Eksplorasi Akuntansi*, 2(4), 3533–3552. <https://doi.org/10.24036/jea.v2i4.301>

Sholikhah, T., & Praptiestrini. (2021). Analisis Pengaruh Audit Operasional, Pengendalian Internal, Good Clinical Governance dan Etika Bisnis Lembaga Rumah Sakit Terhadap Efektivitas Pelayanan Kesehatan Pasien Rawat Jalan di RSU Jafar Medika. *Fakultas Ekonomi Universitas Surakarta*, 3(2), 89–100.