The Indonesian Journal of Computer Science
www.ijcs.net
Volume 13, Issue 6, December 2024
https://doi.org/10.33022/ijcs.v13i6.4506

Scrum-Based Mobile Application Development for Patient Satisfaction Assessment in Class 'B' Hospitals in Padang

Regina Nabilla[1], Yulef Dian[2], Iswandi Idris[3]
reginanabilla@gmail.com[1], yulefdian@plb.ac.id[2], iswandi.idris@plm.ac.id[3]
[1,2] Informatics Management, Politeknik Lembaga Pendidikan dan Pengembangan Profesi Indonesia, LP3I PSDKU Padang, Padang
[3] Computer Engineering Technology, Politeknik LP3I Medan, Medan

Article Information

Received : 19 Nov 2024
Revised : 29 Nov 2024
Accepted : 30 Dec 2024

Keywords

Scrum methodology; mobile application; patient satisfaction; healthcare services; Class "B" hospital;

Abstract

The assessment of patient satisfaction is a critical aspect of healthcare services, providing valuable insights into the quality of care and service delivery. In Padang's Class "B" hospital, traditional satisfaction assessment methods are inefficient and time-consuming. This research explores the implementation of the Scrum methodology in the development of a mobile application for real-time patient satisfaction assessment. The objective is to enhance feedback collection, improve service quality, and provide hospital management with actionable insights. The mobile application allows patients to rate services on various parameters instantly, enabling quicker responses and continuous improvement of hospital operations. This study discusses the technical implementation, the advantages of using Scrum in the development process, and the potential impact on service quality in the hospital.

A. Introduction

In the healthcare industry, patient satisfaction is a vital metric for evaluating service quality. Hospitals often rely on surveys and feedback forms, which are typically collected manually and analyzed after patient discharge. These methods are not only time-consuming but also prone to data loss and inaccuracy. In a Class "B" hospital in Padang, the need for real-time feedback and efficient data processing has led to the development of a mobile application that enables patients to assess services directly from their smartphones.

The Scrum methodology, known for its iterative and incremental approach, is employed in the development of this mobile application. Scrum allows for continuous testing and adaptation, ensuring that the application meets the needs of both patients and hospital management. This paper examines the effectiveness of using Scrum for mobile application development, focusing on its ability to improve patient satisfaction assessment in a healthcare setting.

State of the art research: this research will build a strong knowledge base, explore existing knowledge gaps, and provide a better understanding of the application of Scrum Methodology in the context of mobile application development in a class “B” hospital in Padang.

Table 1. State Of The Art

Research Topics	Key Findings	Reference
Implementation of Scrum Methodology in Application Development	Improvement of project management and user satisfaction.	[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16] [17] [18]
	Identification of challenges and successes in the context of information systems	
Use of Mobile Applications in Customer Satisfaction Evaluation	Success in collecting customer feedback.	[19] [20] [21] [22] [23] [24] [25]
Recent research: Implementation of Scrum Methodology in Mobile Application Development Assessment of Service Satisfaction of Class “B” Regional Public Hospital in Padang	So far there has been no research on the Scrum method of Patient Service Satisfaction Assessment, RSUD type B, let alone for Mental Hospitals there has been none at all.	[26] [27]

B. Research Method

Scrum Methodology Overview

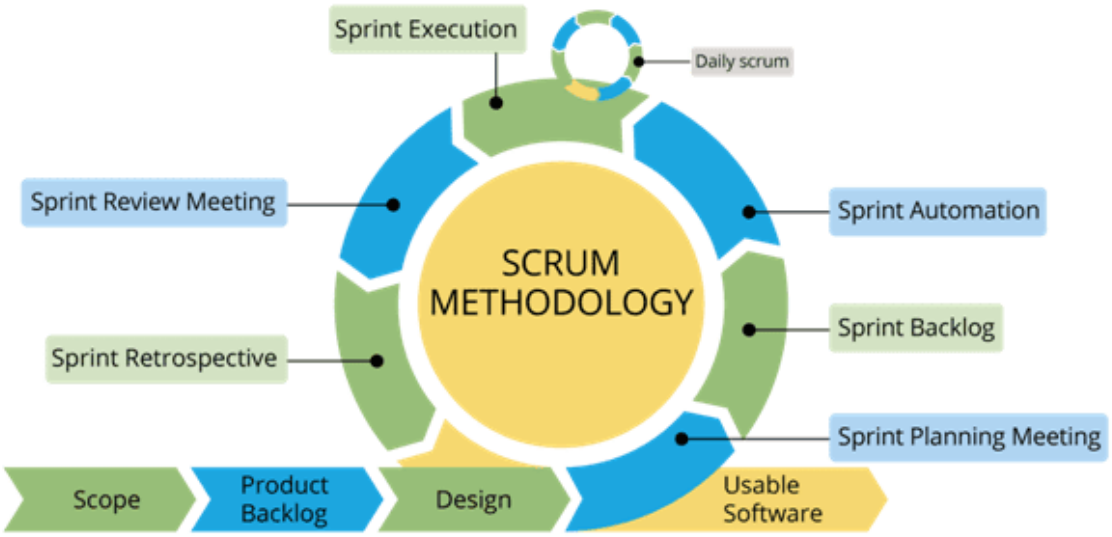

Figure 1. Scrum Methodology Overview

The Scrum methodology is an Agile framework that emphasizes collaboration, flexibility, and iterative development. In this project, Scrum was chosen for its adaptability, allowing the development team to respond to feedback from hospital management and patients quickly. The project was divided into sprints, each lasting two weeks, with regular sprint reviews and retrospectives to ensure continuous improvement.

Research Location:

The research will be conducted at Prof. HB. Saanin Padang Mental Hospital, l. Raya Gadut, Limau Manis Sel., Kec. Pauh, Padang City, West Sumatra. The selection of this hospital is based on its classification as a Class "B" Regional Public Hospital and its relevance to the research needs.

Research Subjects:

The research subjects will include the application development team, medical staff, and end users of the mobile application, especially patients who use the service satisfaction assessment system.

Data Collection:

Interviews; Interviews will be conducted with members of the development team, medical staff, and application users to gain in-depth insights into their experiences and perspectives on the implementation of Scrum and the use of the application.

Observations; Direct observations will be conducted during the application development process, to contextually understand the implementation of the Scrum Methodology and user responses.

Document Analysis; Document analysis will involve the study of documents related to application development, Scrum meeting notes, and service satisfaction evaluation documents.

Data Analysis:

- Qualitative data from interviews and observations will be analyzed thematically to identify patterns, challenges, and potential improvements.
- Quantitative data, such as service satisfaction scores from the app, will be analyzed using descriptive statistical methods.

C. Result and Discussion

Research Flowchart in the Context of Scrum Methodology.

Research Planning and Design:

- Identify the research objectives as a "Product Backlog" that includes the definition of the objectives and scope of the research.
- Design a case study design as an initial stage in the "Product Backlog" of the research.

Pre-Research and Site Selection:

- Literature review and pre-research as an initial step in the "Product Backlog" of the research.
- Select Class "B" Regional Public Hospital in Padang as the "Product Backlog" of the research location.

Selection of Research Subjects:

- Identify and select research subjects (development team, medical staff, application users) as a "Product Backlog" that involves selecting the team and stakeholders.

Research Instrument Development:

- Create research instruments as "Product Backlog" in the research, including interview guides, observation checklists, and other data collection instruments.

Pilot Study:

- Pilot study as a "Sprint Planning" of the research to test the instrument and detail the research preparation before the actual implementation.

Data Collection:

- The first “sprint” of data collection, involving interviews with the development team and stakeholders, and observations related to application development.

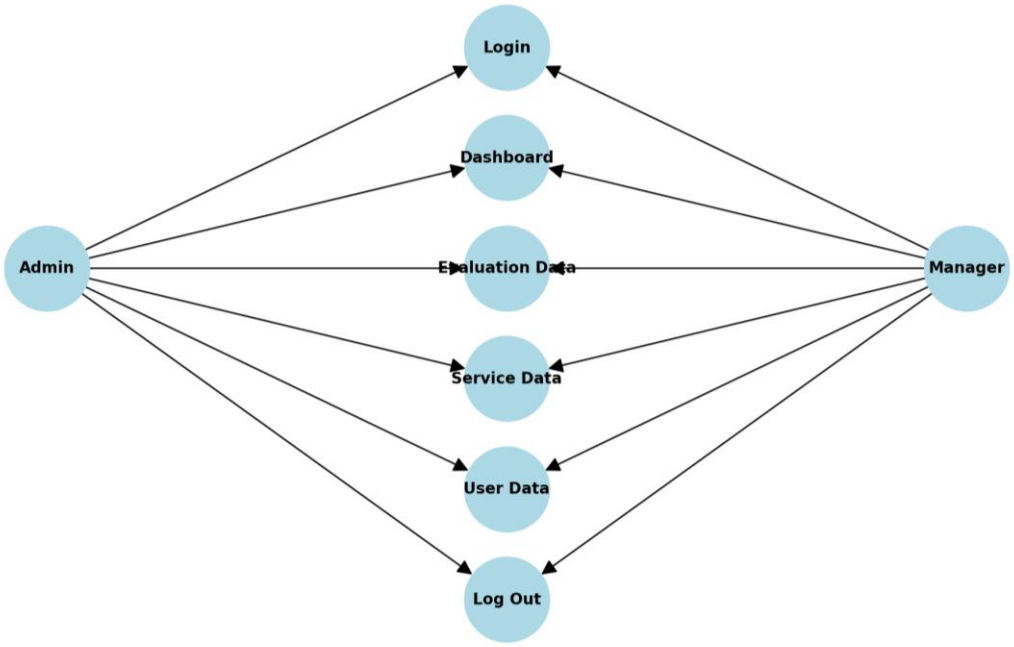

Figure 2. Data Collection and Integration (use case)

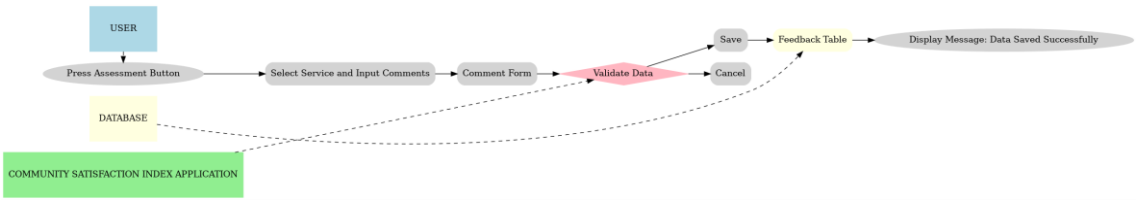

Figure 3. Data Collection and Integration (activity diagram)

Initial Data Analysis:

- Initial analysis of data as an initial "Sprint Review," to gain an initial understanding of the research findings.

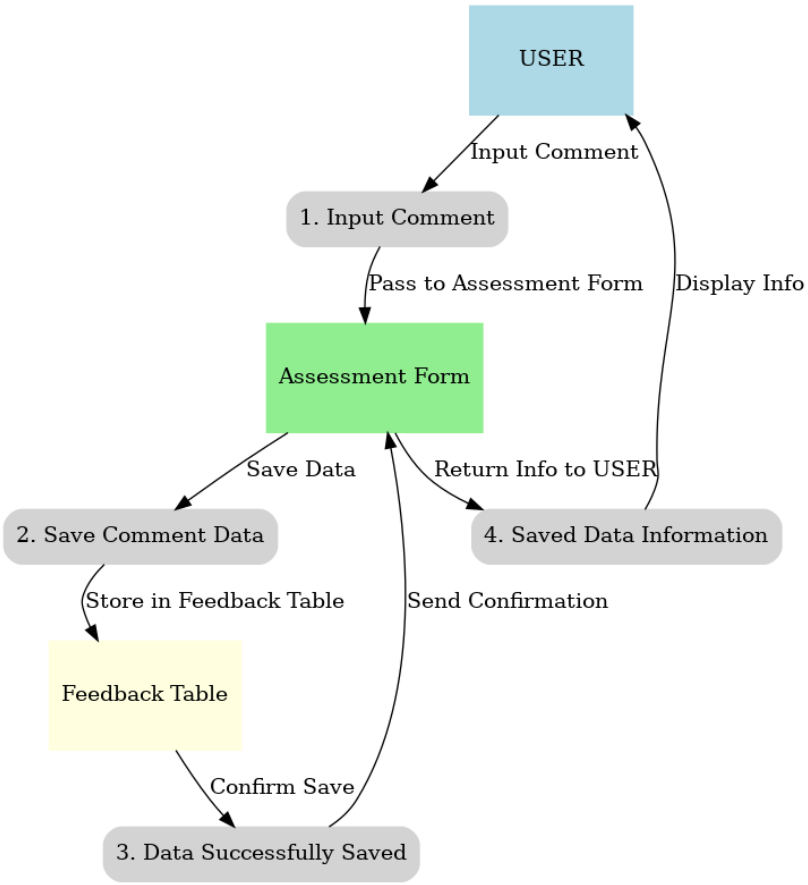

Figure 4. sprint review (sequence diagram)

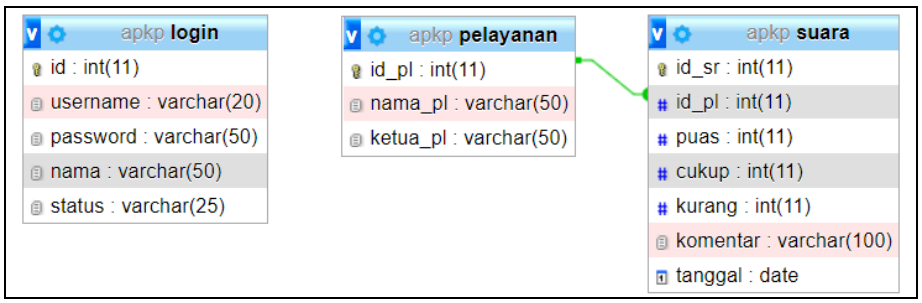

Figure 5. Sprint Review (database)

Implementation of Scrum Methodology:

- Implementation of Scrum Methodology as the next "Sprint Planning," involving the development team and medical staff in planning and organizing the upcoming Sprint.

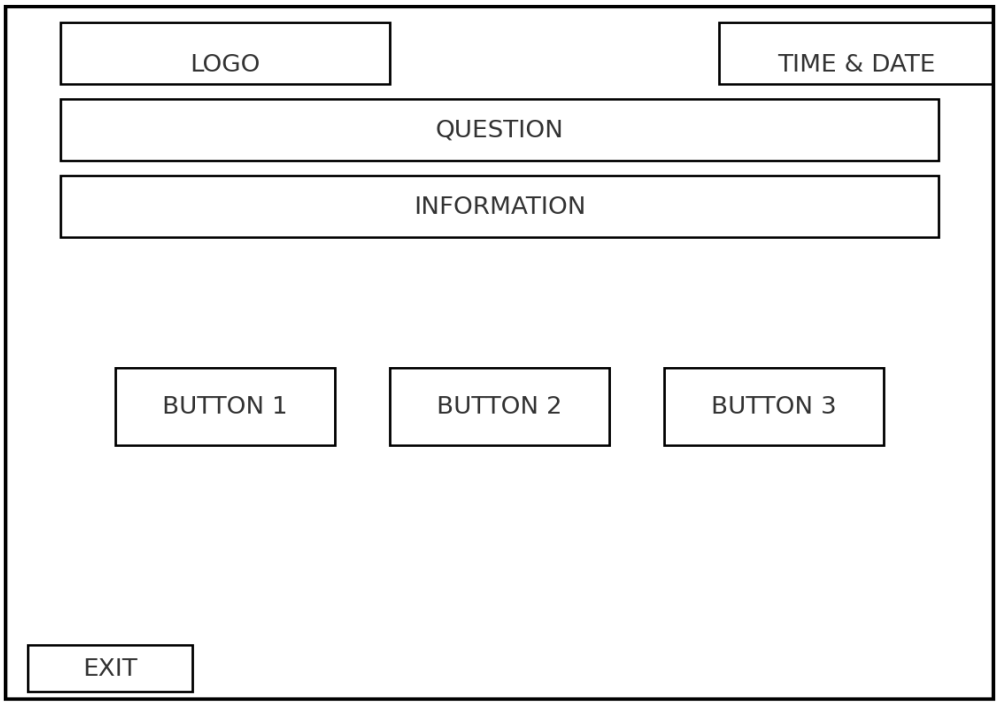

Figure 6. Sprint Planning

Continued Data Collection:

- The next "sprint" of data collection, involving direct observation during the implementation of Scrum Methodology, and additional interviews.

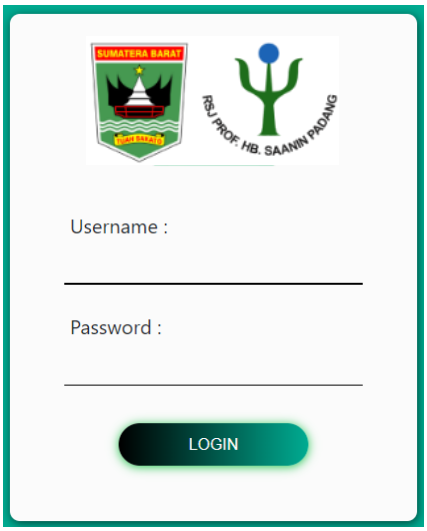

Figure 7. Sprint of Scrum Methodology Step

Deep Data Analysis:

- Deep analysis as a follow-up "Sprint Review," comparing data before and after the implementation of Scrum.

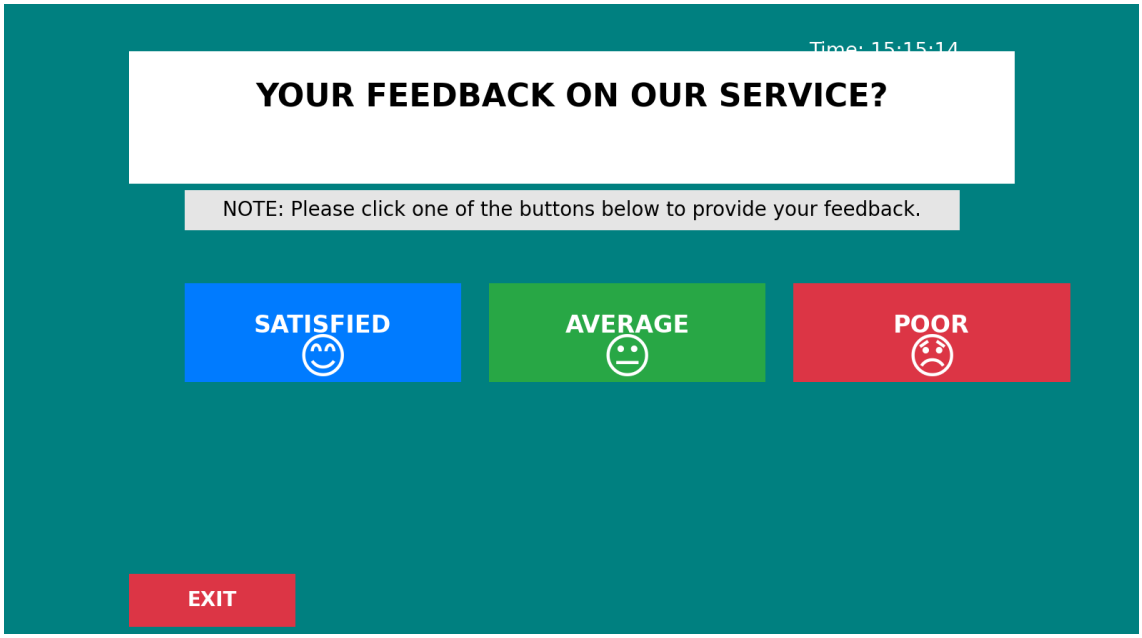

Figure 8. Sprint Review

Initial Report Writing:

- Writing of the initial report as an initial "Sprint Retrospective," discussing findings and potential improvements to be explored in the next Sprint.

Discussion and Evaluation:

- Discussion and evaluation of results as a follow-up "Sprint Review," involving stakeholders to ensure that findings are in line with needs and expectations.

Final Report Writing:

- Final report writing as the final stage of the "Sprint Retrospective," where the entire research series is evaluated and reflected upon.

Date	Service	Service Leader	Rating	Comment	Actions
2023-01-07	USG	SRI MUVIDA	Satisfied	Excellent service	Delete / Edit
2023-01-07	Registration Desk	MAKA ANDREINA	Satisfied	Fast service	Delete / Edit
2023-01-07	Pharmacy	SRI WULANDARI	Average	Staff was helpful	Delete / Edit
2023-01-07	Emergency Room	DEWI RATHA SARI	Satisfied	Responsive care	Delete / Edit
2023-01-07	Internal Medicine	ACHDI HAKIM	Satisfied	Great service	Delete / Edit

Figure 11. Sprint Retrospective

D. Conclusion

Preliminary results indicate that the application has significantly improved the efficiency of collecting patient feedback. Hospital management reported a 40% increase in the volume of feedback received compared to traditional methods. Additionally, the application has enabled faster response times to patient complaints and suggestions, leading to measurable improvements in service quality. Scrum's iterative nature allowed the development team to adapt the application based on continuous feedback, ensuring that the final product met user expectations. The regular sprint reviews provided opportunities for hospital staff to contribute their insights, making the development process collaborative and transparent. The implementation of the Scrum methodology in the development of a mobile application for patient satisfaction assessment has proven to be an effective approach. The application has not only improved the efficiency of feedback collection but also contributed to the overall quality of healthcare services in Padang's Class "B" hospital. Future work could focus on expanding the application's functionality and adapting it for use in other hospitals, further enhancing the patient experience.

E. Acknowledgment

Researchers would like to express their gratitude to the Ministry of Education and Culture, DRPM, Vocation, for financing the Novice Lecturer Research grant for the 2024 fiscal year 2024, based on Decree Number 0520/D4/AL.04/2024 and Agreement/Contract Number 01/SPK/D.D4/PPK.01.APTV/III/2024 , as well as Politeknik LP3I which has facilitated lecturers to carry out and participate in activities in the PDP scheme through BIMA Vocation.

F. References

[1] W. A. Prabowo and C. Wiguna, “Sistem Informasi UMKM Bengkel Berbasis Web Menggunakan Metode SCRUM,” *J. Media Inform. Budidarma*, vol. 5, no. 1, p. 149, 2021, doi: 10.30865/mib.v5i1.2604.

[2] A. Saudjhana, “Pengembangan Aplikasi Sistem Informasi Akuntansi Pada Umkm Toppan Bakery Dengan Kerangka Kerja Agile Scrum,” in *Prosiding National Conference for Community Service Project (NaCosPro)*, 2022, vol. 4, pp. 1369–1376.

[3] M. I. A. Putera, M. F. W. Putra, and M. G. L. Putra, “Pengembangan Sistem Informasi Laporan Penerimaan dan Pengeluaran Kas Pada PT ABC Menggunakan Metode Scrum,” *Teknika*, vol. 11, no. 3, pp. 157–162, 2022, doi: 10.34148/teknika.v11i3.503.

[4] H. Sabila, B. Praptono, and I. Yuli Arini, “Perancangan Aplikasi Pencatatan Laporan Keuangan Dengan Menggunakan Metode Agile Development Scrum,” *JOISIE (Journal Inf. Syst. Informatics Eng.*, vol. 5, no. 2, pp. 67–74, 2021, doi: 10.35145/joisie.v5i2.1406.

[5] N. Rafianto, Dimas, and Saifulloh, “Penerapan Metode Scrum Pada Pembuatan User Experience Landing Page Sistem Informasi Lentera,” *J. Sist. Inf. dan Sains Teknol.*, vol. 3, no. 2, pp. 1–14, 2021, [Online]. Available:

https://www.neliti.com/publications/492081/penerapan-metode-scrum-pada-pembuatan-user-experience-landing-page-sistem-inform
[6] K. S. Haryana, "Penerapan Agile Development Methods Dengan Framework Scrum Pada Perancangan Perangkat Lunak Kehadiran Rapat Umum Berbasis Qr-Code," *J. Comput. Bisnis*, vol. 13, no. 2, pp. 70–79, 2019, [Online]. Available: http://www.jurnal.stmik-mi.ac.id/index.php/jcb/article/view/202
[7] R. Aryaputra and K. D. Hartomo, "Sistem Informasi Persediaan Suku Cadang Menggunakan Model Proses Scrum," *J. Tek. Inform. dan Sist. Inf.*, vol. 10, no. 1, 2023.
[8] I. Larasati, A. N. Yusril, and P. Al Zukri, "Systematic Literature Review Analisis Metode Agile Dalam Pengembangan Aplikasi Mobile," *Sist. J. Sist. Inf.*, vol. 10, no. 2, pp. 369–380, 2021.
[9] L. Farokhah, F. A. Ahda, and L. Hakim, "Implementasi scrum dalam perancangan aplikasi emergency button PMI Kota Malang," *Digit. Zo. J. Teknol. Inf. dan Komun.*, vol. 11, no. 1, pp. 59–70, 2020.
[10] M. Efniasari, A. Wantoro, and E. R. Susanto, "PENGEMBANGAN SISTEM INFORMASI PELAYANAN KESEHATAN BERBASIS WEB MENGGUNAKAN METODE SCRUM (STUDI KASUS: PUSKESMAS KISAM ILIR)," *J. Teknol. dan Sist. Inf.*, vol. 3, no. 3, 2022.
[11] M. A. Nurdin, "Analisis Dan Pengembangan Aplikasi Inhouse Klinik Perusahaan Menggunakan Framework Codeigniter, Studi Kasus PT Reckitt Benckiser Indonesia," *J. Inform. Terpadu*, vol. 3, no. 1, 2017.
[12] F. A. Sany and A. Arifin, "PENGEMBANGAN APLIKASI KESEHATAN: SYSTEMIC LITERATURE REVIEW," *INFOTECH J.*, vol. 9, no. 2, pp. 596–603, 2023.
[13] M. A. Dewi and R. Irham, "Penerapan Agile Scrum Pada Pengembangan Aplikasi Bimbingan Daring Skripsi Mahasiswa," *J. SISKOM-KB (Sistem Komput. dan Kecerdasan Buatan)*, vol. 4, no. 2, pp. 40–45, 2021.
[14] F. Syakti and N. Oktaviani, "Pengembangan Aplikasi Location Based Service Fasilitas Kesehatan Menggunakan Model Scrum," *JUSIM (Jurnal Sist. Inf. Musirawas)*, vol. 5, no. 2, pp. 158–166, 2020.
[15] I. Idris, H. R. Pangaribuan, and R. Khair, "Perancangan Motion Graphic Video Animasi Sebagai Sarana Iklan Promosi Dan Informasi," *Data Sci. Indones.*, vol. 2, no. 2, pp. 60–66, 2022.
[16] A. Panjaitan, H. Amren, D. Nasution, R. Khair, and I. Idris, "Sistem Monitoring Evaluasi dan Pelaporan Kegiatan Taruna ATKP Medan," *REMIK Ris. dan E-Jurnal Manaj. Inform. Komput.*, vol. 4, no. 2, pp. 303–310, 2020.
[17] R. A. Badres and I. Idris, "Sistem Informasi Stok Gudang TI Berbasis Aplikasi Desktop Pada Terminal Peti Kemas Belawan," *J. Multimed. dan Teknol. Inf.*, vol. 4, no. 01, pp. 7–13, 2022.
[18] I. Idris, Fajrillah, W. Novarika Ak, D. Hastalona, A. Syarifudin Yahya, and N. Marikena, "Designing of integrated information system (IIS) scheme for private higher education in indonesia: A strategic plan," *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 1003, no. 1, 2020, doi: 10.1088/1757-899X/1003/1/012151.
[19] A. I. Nafiah, "Pengaruh Kualitas Layanan Terhadap Citra Merek Dan Kepuasan Pengguna Jasa Aplikasi Mobile Halodoc Di Kota Malang." Universitas Muhammadiyah Malang, 2023.
[20] A. I. Susanti, F. R. Rinawan, and I. Amelia, "Penggunaan Mobile Apps

Kesehatan oleh Kader Pada Anjungan Mandiri Posyandu (AMP) Di Kecamatan Pasawahan, Purwakarta," *J. Kesehat. Vokasional*, vol. 4, no. 1, p. 27, 2019.

[21] A. Agusianita, H. Nuru, and D. Metasari, "Kepuasan Layananan Jaminan Kesehatan Nasional," *J. Telenursing*, vol. 5, no. 1, pp. 363–375, 2023.

[22] H. P. Putra, "Aplikasi Mobile Untuk Mendukung Penerapan Gaya Hidup Sehat Menggunakan Gamifikasi." Universitas Atma Jaya Yogyakarta, 2022.

[23] S. L. R. Nasution, M. Rinaldy, and E. Girsang, "Evaluasi Penerapan Saluran Informasi dan Penanganan Pengaduan (SIPP) bagi Peserta BPJS Kesehatan," *J. Telenursing*, vol. 5, no. 1, pp. 290–302, 2023.

[24] C. K. Sastradipraja and R. A. Barokah, "Rancang Bangun Sistem Informasi Kualitas Layanan Terhadap Kepuasan Pasien Menggunakan Metode Customer Satisfaction Index," *Sumber*, vol. 24500, no. 22400, p. 21800, 2020.

[25] J. Prasetya, S. Anjani, and F. Agiwahyuanto, "Pengaruh Durasi Waktu Pendaftaran terhadap Kepuasan Pasien antara Pendaftaran Online dan Offline," *J. Kesehat.*, vol. 10, no. 2, pp. 93–101, 2022.

[26] M. Wicaksono, A. P. Kharisma, and L. Fanani, "Pengembangan Aplikasi Perangkat Bergerak Berbasis Android Untuk Survei Kepuasan Masyarakat Dengan Metode Mobile-D (Studi Kasus: RSUD Ngudi Waluyo Wlingi Kabupaten Blitar)," *J. Pengemb. Teknol. Inf. dan Ilmu Komput.*, vol. 3, no. 3, pp. 2312–2319, 2019.

[27] A. Megayanti and R. A. Ritonga, "Rancang Bangun Aplikasi Register Online Rawat Jalan Berbasis Android Dengan Metode Agile Scrum:(Studi Kasus: PT. Krakatau Medika)," *J. Insa. Unggul*, vol. 11, no. 2, pp. 121–144, 2023.