



Design of Android-based Community Satisfaction Index Information System in urban villages

Perancangan Sistem Informasi Indeks Kepuasan Masyarakat Berbasis Android pada Kelurahan

Nola Putri Ritonga^{1,*}, Yustria Handika Siregar²

¹Universitas Islam Negeri Sumatera Utara, Medan, Indonesia

²Politeknik Cendana, Indonesia

ABSTRACT

The Kelurahan Office is a government institution at the kelurahan or village level that is responsible for the management of public affairs in its area. His responsibilities cover various aspects, such as administrative services, population registration, community empowerment, and implementation of government programs at the local level. In addition, the sub-district office is also involved in maintaining public order, handling conflicts, and facilitating social welfare policies. Thus, the sub-district office has an important role in supporting the welfare and progress of the community at the kelurahan or village level. Therefore, it requires an effective and efficient system for the assessment of public services. The purpose of this study is to facilitate the public in providing an assessment of public services provided, improve accessibility, transparency, and community participation and provide evaluation data for continuous improvement in the provision of public services. The system development method uses the waterfall method which includes requirements analysis, system design, implementation, testing and maintenance. The results of the study in the form of display output prove that the system is running well. And the test results of the system run well so that it can be used by the community.

Keyword: community satisfaction index, public service, waterfall method

ABSTRAK

Kantor Kelurahan merupakan lembaga pemerintahan di tingkat kelurahan atau desa yang bertanggung jawab dalam pengelolaan urusan publik di wilayahnya. Tanggung jawabnya mencakup berbagai aspek seperti pelayanan administrasi, pencatatan kependudukan, pemberdayaan masyarakat, serta pelaksanaan program pemerintah di tingkat lokal. Selain itu, kantor kelurahan juga berperan dalam menjaga ketertiban umum, menangani konflik, dan memfasilitasi kebijakan kesejahteraan sosial. Oleh karena itu, kantor kelurahan memiliki peran penting dalam mendukung kesejahteraan dan kemajuan masyarakat di tingkat kelurahan atau desa. Untuk itu, diperlukan sistem yang efektif dan efisien dalam penilaian terhadap layanan publik. Tujuan dari penelitian ini adalah untuk mempermudah masyarakat dalam memberikan penilaian terhadap pelayanan publik yang diberikan, meningkatkan aksesibilitas, transparansi, dan partisipasi masyarakat serta menyediakan data evaluasi untuk perbaikan berkelanjutan dalam penyelenggaraan pelayanan publik. Metode pengembangan sistem menggunakan metode waterfall yang mencakup analisis kebutuhan, perancangan sistem, implementasi, pengujian, dan pemeliharaan. Hasil penelitian berupa tampilan output membuktikan bahwa sistem berjalan dengan baik. Dan hasil pengujian menunjukkan sistem dapat berjalan dengan baik sehingga dapat digunakan oleh masyarakat.

Kata kunci: indeks kepuasan masyarakat, pelayanan publik, metode waterfall

* Correspondence :

Nola Putri Ritonga,

Information System, Universitas Islam Negeri Sumatera Utara, Medan, Indonesia

Email: nolaputritonga@gmail.com

DOI: <https://doi.org/10.55537/bigint.v2i2.797>

ISSN: 3032-5374

Received: 2024-02-15; Revised: 2024-08-08; Accepted: 2024-08-08



1. INTRODUCTION

The development of internet technology has had many positive impacts on human life, especially in finding information and sharing information with other users. The influence of information technology has made it easier for humans to find information about work, education, products and others. To improve services, it is necessary to utilize IT massimally[1][2][3][4]. The quality of services provided by government agencies is still suboptimal in terms of dissemination, provision, and accessibility of information to the public[5]. This is directly the right solution to utilize the technology needed by the community, therefore the government is required to provide good services to the community for its satisfaction [6].

Excellent service is service to the community and society that satisfies the people who receive services, accountable public services are needed to realize good governance, where accountability is one of the principles that must be imbued in the administration of control government[7][8]. Therefore, there is a need for innovation in service delivery, willingness to evaluate, respond to community suggestions, and continue to make improvements[9][10]. Sei Kera Hulu Village as one of the local government units has a strategic position because it is on the front line that deals directly with people with various backgrounds, needs and demands that are always changing and evolving[11]. Good and bad services reflect the quality of performance, so sub-districts must provide optimal services to the community[12].

Community Satisfaction Index (IKM) is defined as data and information about community satisfaction obtained from quantitative and qualitative measurements by comparing public opinions about expectations and needs when using the services of a public service provider [13][14]. Kelurahan in determining policies, especially in improving public and community services, can easily provide assessments anywhere and anytime by filling out questionnaires online[15][16].

The previous research that the author quoted from the journal "Implementation of Community Satisfaction Index Assessment Using Android-Based Analytical Hierarchy Process and Scoring Methods" [17]. In the previous study using the AHP Method method while in the current study using the waterfall method aims to build an information system that can help urban village efforts to improve the quality of public services with an android-based survey that makes it easier for the community to provide assessments [18]. The Waterfall Method and the AHP (Analytical Hierarchy Process) Method are two methods used in system development and decision determination[19]. Both have differences including the type of input, the flow of development, and the way decisions are made[22][23]. The Waterfall method is a structured or sequential method when creating software. This model consists of several stages, namely system requirements analysis, system design, code generation, system testing, and system maintenance, while the AHP method is a method used to make decisions and manage risks in system development [24][25].

The purpose of my research is to make it easier for the public to assess the public services provided and increase accessibility, transparency, and public participation, as well as provide evaluation data for continuous improvement in the provision of public services. Authors must ensure that their writing does not contain elements of plagiarism. Articles that have been published as proceedings are not accepted for publication in bigint without going through a further process to complete the paper and final research data.

2. METHODOLOGY

The research involves the data collection stage, system development methods, and designing information system applications for community satisfaction index in upstream monkeys In the picture below is the flowchart that will be used.

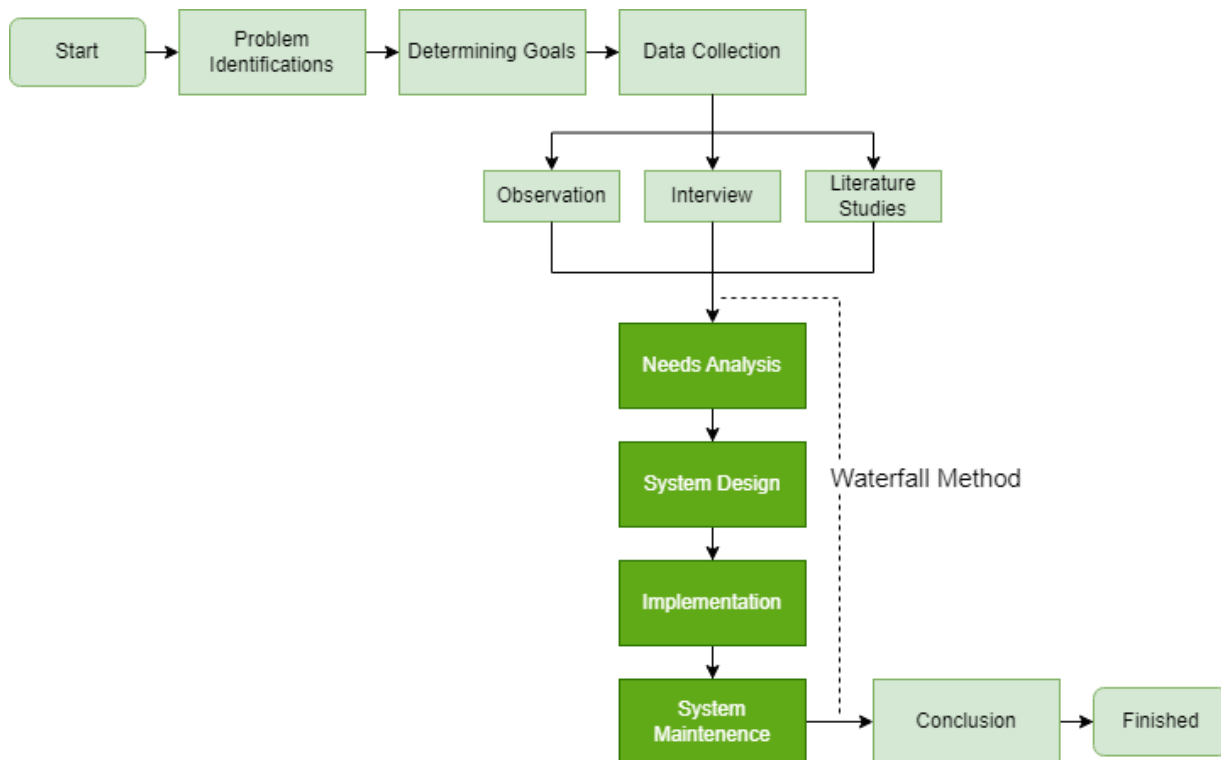


Figure 1. Stages of Research

Based on the picture above, the process in research can be described as follows:

1. **Problem Identification**
The process of recognizing and determining problems or obstacles that need to be solved in a given situation.
2. **Determining Goals**
Research objectives are needed to answer the problem formulation. The purpose of the study describes the purpose and results to be achieved through this research.
3. **Data Collection**
Techniques in data collection conduct observations, interviews and literature studies, interviews are carried out by directly interviewing related parties, which are useful for obtaining information and data needed for the design of the system to be built.
4. **Needs Analysis**
System needs analysis is to determine the needs or conditions that must be met by a system.
5. **System Design**
The stage where the pouring of thought and system design is carried out on the solution of existing problems.
6. **Implementation**
This stage involves developing code and testing units to ensure that each component of the system is functioning properly.
7. **System Testing**
This stage involves testing the system as a whole to ensure that the system runs according to specifications and meets user needs.
8. **System Maintenance**
The application of the system as the final stage in designing applications when the program has passed the testing stage, with good results the system can be applied.
9. **Conclusion**
Conclusion is a summary of a topic or theme that is written and analyzed, and is a decision obtained from the method of thinking inductively or deductively.

3. RESULTS AND DISCUSSION

3.1 Data Collection

The results of observations and interviews were conducted with the following village parties:

Table 1. Interview Results Data

| No | Source | Interview Results |
|----|-----------------------|--|
| 1 | Head of Sei Kera Hulu | It is still done manually in providing an index assessment of community satisfaction in Sei Kera Hulu Village. |
| 2 | Secretariat | There is often a loss of questionnaire papers that have been dissipated by the community. |
| 3 | Development Section | There is often a loss of questionnaire papers that have been dissipated by the community. |

Based on the table above, it is known that the main problem in the Community Satisfaction index in the upstream sei ape office. Therefore, a Community Satisfaction Index information system is needed at the Sei Kera Hulu office.

3.2 Analysis of system requirements

Based on the results of observations and interviews at the Sei Kera Hulu Subdistrict Office, researchers want to design an application-based community satisfaction index system in Sei Kera Hulu Village. Designing an information system is useful for improving accessibility, transparency, and public participation, as well as providing evaluation data for continuous improvement in the provision of public services.

3.3 System Design

In this system using UML (Unified Modelling Language) is a visual modeling method used as a suggestion for designing object-oriented systems.

1. Use Case

Use Case Diagrams can help in designing more effective and efficient systems.

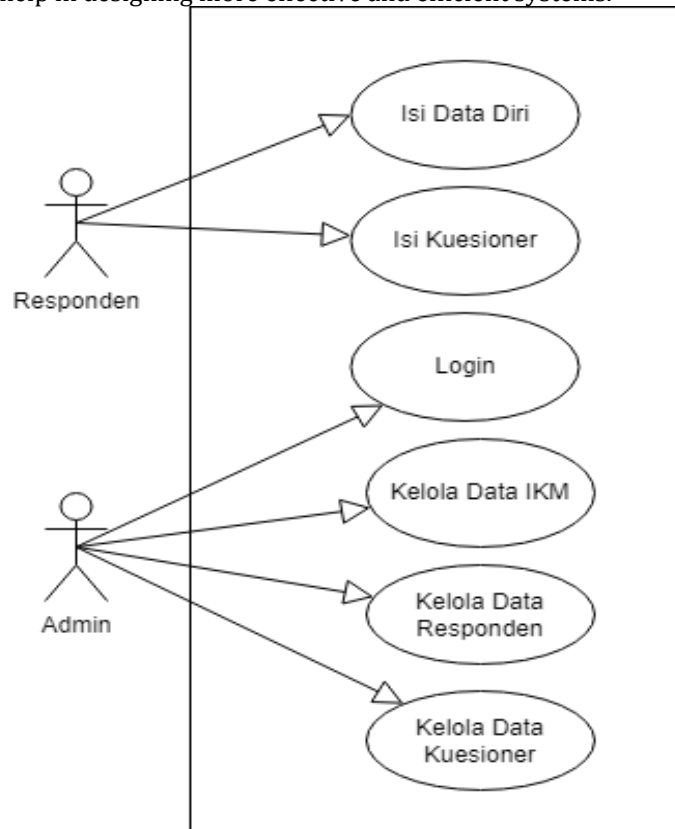


Figure 2. Use Case Diagram

While the Admin plays a role in logging in, managing IKM data, respondent data and questionnaire data.

2. Class Diagrams

Functions can help visualize how data is organized in an application or system, as well as help understand how parts of the application are interconnected.

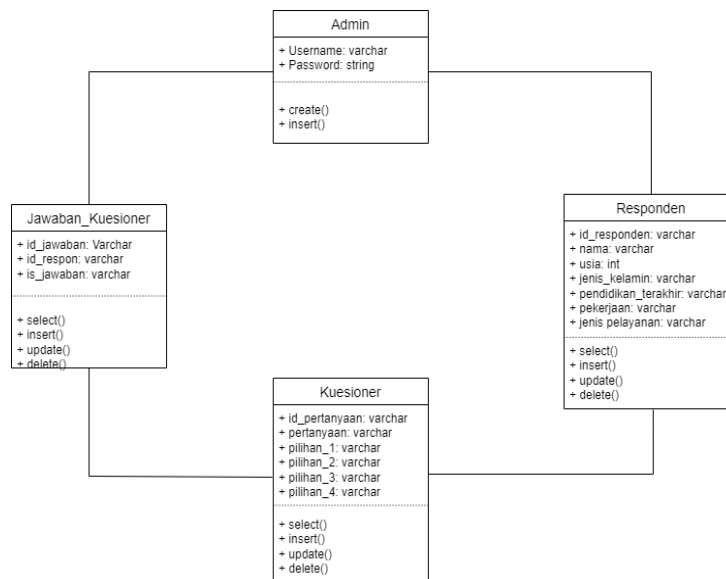


Figure 3. Class Diagrams

Class Diagram in this study consists of 4 classes, namely admin, respondent, questionnaire, questionnaire answer.

3.4 Implementation

The following are the results of the implementation of the system in the form of a display of an application-based community satisfaction index system.

1. Respondent List View & Respondent Questionnaire View

The list page is the main page when respondents run applications, to access it respondents must fill in the data that has been provided.

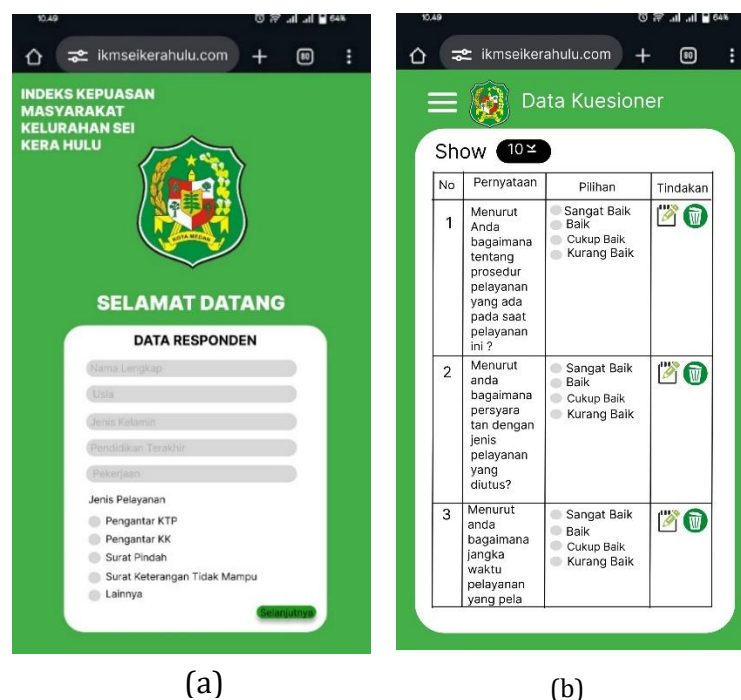


Figure 4. (a) Respondent List View; (b) Respondent Questionnaire View

After that, respondents will be redirected to the questionnaire page, respondents can fill out the questionnaire that has been provided by the admin.

2. Admin Login View & Admin Dashboard View

On the admin login page this is the admin's main page to run the application, where the admin enters the username and password to access the dashboard page.

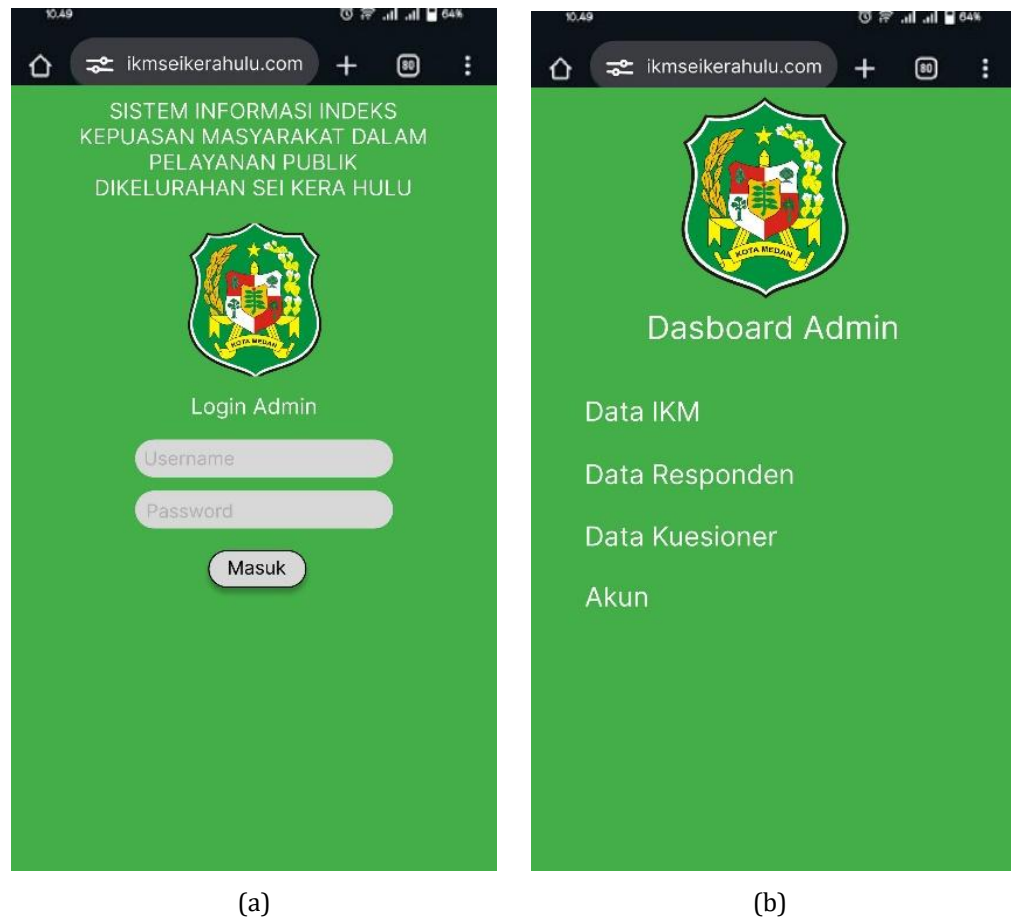
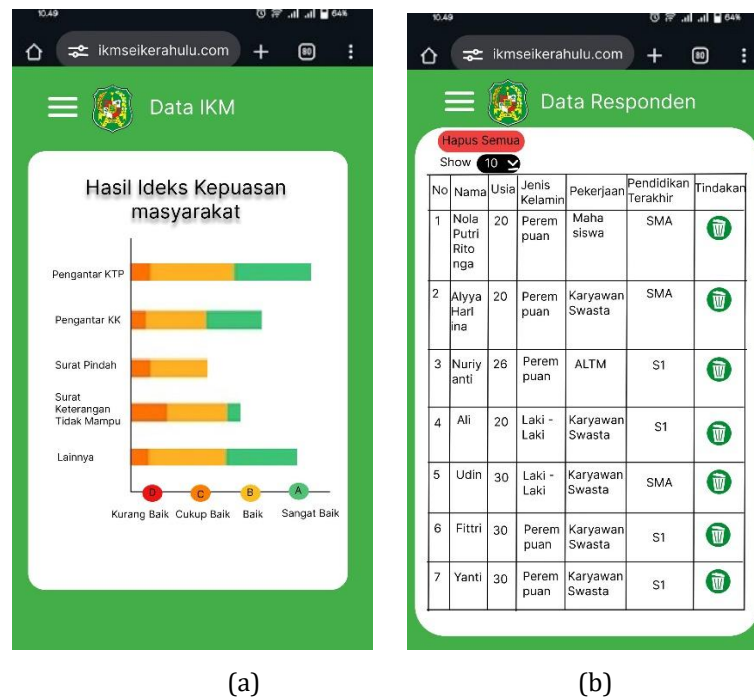


Figure 5. (a) Admin Login View; (b) Admin Dashboard View

After success, the admin will be directed to the admin dashboard page, which functions to be able to access IKM data, respondent data, questionnaire data and accounts.

3. Display of IKM Data & Respondent Data

The IKM (Community Satisfaction Index) page is used to display information on respondent survey results.

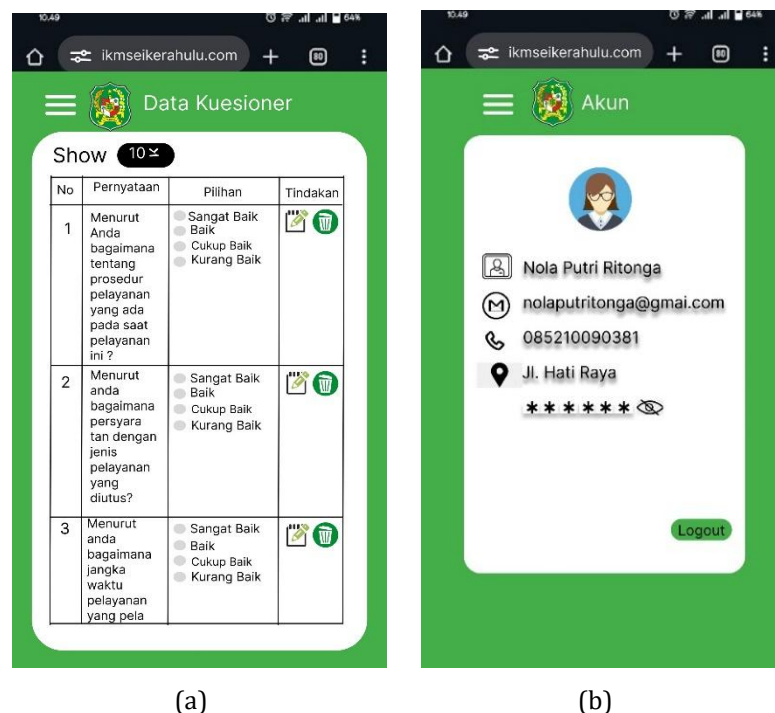


Gambar 6. (a) Display Of IKM Data; (b) Respondent Data

Furthermore, on the respondent data page, it functions to see respondent data displaying name, age, gender, occupation and education.

4. Questionnaire Data Display & Admin Account

On the data page, the questionnaire is used to add, edit, and delete questionnaires.



Gambar 7. (a) Questionnaire Data Display & Admin Account; (b) Admin Account

Furthermore, on this account page displays data belonging to the admin such as name, email, phone number, address, and password.

3.5 Testing

The Android-based IKM (Community Satisfaction Index) Information System will test the system and decide the system is running or there are still errors.

Tabel 2. System Testing

| No | Tested pages | Expected results | Status |
|----|----------------------------------|---|---------|
| 1 | Respondent list page | The application can input respondent data | Succeed |
| 2 | Questionnaire Page | Applications can fill out questionnaires | Succeed |
| 3 | Admin login page | Admin login page | Succeed |
| 4 | Admin dashboard page | Applications can operate the system by selecting menu options | Succeed |
| 5 | IKM data page | The application can view surveys | Succeed |
| 6 | The application can view surveys | Apps can display respondent data | Succeed |
| 7 | Questionnaire data page | Apps can display questionnaire data | Succeed |
| 8 | Admin account view page | Apps can display profile pages | Succeed |

In the test results above, it can be concluded that the system built has succeeded well.

Based on the results of interviews and observations conducted at the Sei Kera Hulu Village Office, it was found that the process of assessing the Community Satisfaction Index (IKM) is still carried out manually. This causes several problems, such as the loss of paper questionnaires and an inefficient data recap process. These findings are consistent with Ayuni et al. [2], who noted that manual systems in public services often hinder the effectiveness and accountability of local service delivery.

The development of an Android-based IKM system in this study aims to improve transparency, accessibility, and public participation in evaluating government services. This aligns with the views of Yuliana et al. [1], who emphasized the importance of integrating information technology to create public services that are adaptive and responsive to community needs.

The system design uses the Unified Modeling Language (UML) approach through use case and class diagrams, which illustrate the interactions between users (respondents) and the admin. This approach not only facilitates system flow visualization but also improves the efficiency of software design, as also applied by Danur et al. [17] in their Android-based community satisfaction evaluation system using the Analytical Hierarchy Process method.

The implementation results show a user-friendly interface for both respondents and administrators, including login pages, questionnaire forms, IKM data management, and admin account data. A simple and functional interface is essential to reach all segments of the community, including those with limited digital literacy, as emphasized by Kusworo et al. [9] in the development of mobile-based reporting systems.

Testing results indicate that all major system features functioned as expected. This reflects the successful implementation of the Waterfall method, which includes requirements analysis, system design, implementation, testing, and maintenance. This success is consistent with findings by Priskila et al. [14], which demonstrated that a web-based IKM application could improve the effectiveness of collecting community satisfaction data.

Furthermore, this system serves as a tool to strengthen the principles of good governance, where public participation in service evaluation becomes a vital part of accountability processes (Engkus et al. [5]; Widanti [22]). By facilitating easier access for the public to digital evaluation platforms, local government offices can obtain faster, more accurate, and more representative data to improve service quality continuously.

Therefore, the Android-based Community Satisfaction Index system at the Sei Kera Hulu Village Office provides a positive contribution in addressing public service challenges in the digital era, reinforcing the principles of efficiency, transparency, and public participation, as demanded by the Industrial Revolution 4.0 (Saputro & Safriansyah [25]).

4. CONCLUSION

Based on research conducted by the author, it can be concluded that the implementation of the android-based community satisfaction index information system design at the Sei Kera Hulu District Office has succeeded in making a positive contribution in improving public services. The implementation of this system has a positive impact on transparency, efficiency, and community participation in providing feedback. System testing that has been performed to demonstrate that the system has successfully met the expected criteria. This system is expected to be a solution to optimize respondents so that they have no difficulty in using this application and can be done anywhere in conducting surveys and providing assessments of village services.

REFERENCES

- [1] Y. Yuliana, S. Nurwanti, and B. N. Nirbita, "Analysis of Student Satisfaction with the Use of the DANA Application Using the SWOT Method," *Widya Manaj.*, vol. 5, no. 2, pp. 84–94, 2023, DOI: 10.32795/widyamanajemen.v5i2.3682.
- [2] D. Ayuni, A. Firdaus, A. Wibowo, and D. Nurnaningsih, "Design an Information System for Community Satisfaction Index for Web-Based District Integrated Administration Services (Case Study: Rajeg Sub-District Office)," *IF (Journal Inform.)*, vol. 5, no. 1, p. 1, 2021, doi: 10.31000/jika.v5i1.3238.
- [3] Damayanti, "Sistem Informasi Pendistribusian Barang Bengkel Las Dan Advertising Menggunakan Model Scm," *J. Komput. dan Inform.*, vol. 15, no. 1, pp. 209–218, 2020.
- [4] D. A. Megawati, D. Santia, and I. Kurniawan, "Design and Build Alignment Measurement System," vol. 14, no. 2, pp. 92–97, 2020.
- [5] Engkus, Ainyna Rachmadianty Azan, Alliadzar Hanif, and Anisa Tiara Fitri, "Realizing Good Governance through Public Services," *J. Dialect. J. Social Science.*, vol. 19, no. 1, pp. 39–46, 2021, doi: 10.54783/dialectics.v19i1.62.
- [6] H. Herizal, M. Mukhrijal, and M. Wance, "Public Service Accountability Approach in Following the New Paradigm Shift of Public Administration," *J. Gov. Soc. Policy*, vol. 1, no. 1, pp. 24–34, 2020, doi: 10.24815/gaspol.v1i1.17327.
- [7] D. D. Hidayah, "QUALITY OF PUBLIC SERVICES (Study of Population Administration Services in Cipatujah District, Tasikmalaya Regency)," *Din. J. Ilm. Science Adm. State*, vol. 7, no. 1, pp. 28–34, 2020.
- [8] H. Izmaya and D. Purnamasari, "Measurement of Community Satisfaction Index on Service and Quality of Remote Sensing Data," *J. Inform. J. Developer. IT*, vol. 6, no. 2, pp. 93–98, 2021, doi: 10.30591/jpit.v6i2.49.
- [9] N. R. Kusworo, A. Arwan, and A. A. Soebroto, "Development of Geotagging Application for Community Complaint Reporting at the Mojokerto City Transportation Office using Mobile-based Restful Web Services," *J. Pengemb. Techno. Inf. and Computational Science.*, vol. 3, no. 9, pp. 8779–8786, 2019.
- [10] L. Muliawaty and S. Hendryawan, "The role of e-government in public services (case study: Sumedang Regency public service mall)," *Kebijak. J. Science ...*, vol. 11, pp. 101–112, 2020, [Online]. Available: <https://www.journal.unpas.ac.id/index.php/kebijakan/article/view/2898%0Ahttps://www.journal.unpas.ac.id/index.php/kebijakan/article/download/2898/1285>.
- [11] Y. Jamal, A. Mustanir, and A. Latif, "Application of Good Governance Principles to Village Apparatus in Public Services in Ciro-Ciroe Village, Watang Pulu District, Sidenreng Rappang Regency," *PRAJA J. Ilm. Government.*, vol. 8, no. 3, pp. 207–212, 2020, DOI: 10.55678/PRJ.V8i3.298.
- [12] Atang Setiawan, "ANALYSIS OF PUBLIC SERVICE QUALITY," *Экономика Региона*, vol. 1, no. 1, p. 32, 2012.
- [13] V. H. Pranatawijaya, W. Widiatry, R. Priskila, and P. B. A. A. Putra, "Application of Likert Scale and Dichotomy Scale in Online Questionnaire," *J. Science and Inform.*, vol. 5, no. 2, pp. 128–137, 2019, doi: 10.34128/jsi.v5i2.185.

- [14] R. Priskila, N. N. K. Sari, and Y. A. P. Surana, "Community Satisfaction Index Website Application (Case Study: Kelurahan Panarung)," *J. Inf. Technol. Comput. Sci.*, vol. 2, no. 4, pp. 290–299, 2022, doi: 10.47111/jointecom.v2i4.8881.
- [15] P. B. A. A. Putra, W. Widiatry, V. H. Pranatawijaya, and N. N. K. Sari, "Implementation of Android Application for Registration and Queuing System at Covid Poly Doris Sylvanus Hospital," *J. Teknol. Inf. J. Science and App. Bid. Tech. Inform.*, vol. 16, no. 1, pp. 81–91, 2022, doi: 10.47111/jti.v16i1.4011.
- [16] Y. Rahmanto and Y. Fernando, "Design a Web-Based Extracurricular Activity Management Information System (Case Study: Smk Ma'Arif Kalirejo Lampung Tengah)," *J. Tekno Kompak*, vol. 13, no. 2, p. 11, 2019, doi: 10.33365/jtk.v13i2.339.
- [17] R. S. Danur, M. S. Asih, F. Damayanti, and A. Z. Hasibuan, "Implementation of Community Satisfaction Index Assessment Using Android-Based Analytical Hierarchy Process and Scoring Methods," *TIN Terap. Inform. Nusant.*, vol. 2, no. 3, pp. 165–172, 2021, [Online]. Available: <https://ejurnal.seminar-id.com/index.php/tin/article/view/856>.
- [18] S. Styawati and F. Ariany, "Monitoring System for Toddler/Toddler Growth and Development in the Middle of Mobile-Based Covid-19," *J. Inform. Univ. Pamulang*, vol. 5, no. 4, p. 490, 2021, doi: 10.32493/informatika.v5i4.7067.
- [19] S. Styawati, F. Ariany, D. Alita, and E. R. Susanto, "Traditional Learning Towards Millennials: Web-Based Application Development as a Support for E-Learning Learning in Man 1 Pesawaran," *J. Soc. Sci. Technol. Community Serv.*, vol. 1, no. 2, pp. 10–16, 2020, doi: 10.33365/jsstcs.v1i2.816.
- [20] S. Suwarti, "Design of Web-Based Library Visitor Satisfaction Survey Application (Case Study: Amik Tri Dharma Pekanbaru)," *INFORMATIKA*, vol. 10, no. 2, p. 21, 2019, doi: 10.36723/juri.v10i2.111.
- [21] R. Ritnawati, R. Suppa, and M. Muhallim, "Android-based Community Service Information System at Kaliba Mamase Village Office," *SPEKTA (Journal of Community Service. Kpd. Masy. Techno. and Apl.*, vol. 1, no. 2, p. 95, 2020, doi: 10.12928/spekta.v1i2.2860.
- [22] N. P. T. Widanti, "The Concept of Good Governance in Public Service Perspective: A Literature Review," *J. Abdimas Perad.*, vol. 3, no. 1, pp. 73–85, 2022, doi: 10.54783/ap.v3i11.
- [23] Y. Yurindra, S. Sarwindah, and D. Irawan, "Prototype Design of Community Complaint Services through Android-Based Village Offices," *J. Sisfokom (Inf. and Computer Systems)*, vol. 10, no. 3, pp. 444–450, 2021, DOI: 10.32736/sysfokom.v10i3.1295.
- [24] B. M. Putri, "Information System for Regional Civil Service Administration Services of Pringsewu Regency Based on Website (Case Study of BKPSDM Pringsewu Regency)," *J. Inform. and Software Engineering*, vol. 4, no. 3, pp. 342–348, 2023, doi: 10.33365/jatika.v4i3.2728.
- [25] Roman Hadi Saputro and Safriansyah, "Challenges of Public Service-Based Information Systems in the Era of Industrial Revolution 4.0," *Sawala J. Adm. Negara*, vol. 9, no. 1, pp. 89–101, 2021, doi: 10.30656/sawala.v9i1.2943.