



Use of a Mobile-Based Online Public Complaint System in Kebun Kelapa Village

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ABSTRACT

The problem that occurs among the people of Kebun Kelapa Village is the lack of knowledge regarding technology, especially the use of applications on Android-based mobile phones. The Langkat Regency Communication and Informatics Service as a regional work unit which has duties and functions in the field of technology is supposed to provide direct services to the community in the field of ICT (Information and Communication Technology). The public needs a service or means to make it easier to submit questions and complaints related to the field of technology, which of course hopes to get direct answers from parties who are experts in their fields. So far, the role of the Langkat Regency Communication and Informatics Service is still very minimal in providing facilities for submitting complaints and requests for information to the public, where the public still has to come to the Langkat Regency Communication and Informatics Service Office to submit all types of complaints. This research provides a solution for the Langkat Regency Communication and Informatics Service to provide complaint services to the community, especially in Kebun Kelapa Village, so that they can submit various types of complaints and requests for information in the fields of technology and informatics. The responses and answers obtained are of course obtained directly from the government agency in charge of this matter, so that the public no longer receives wrong information circulating from one media to another. The mobile-based public complaint system that was built can guarantee the confidentiality of personal information for people who are afraid to submit complaints if their identity is known. This system will also provide a guarantee that complaints submitted will be responded to immediately by having a control system for the complaint handling process. In the end, it is also hoped that this research will become a new public service innovation for the Langkat Regency Communication and Information Service, especially in Kebun Kelapa Village, especially in fulfilling the public service compliance survey conducted by the Indonesian Ombudsman every year.

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1. INTRODUCTION

Kelapa Garden Village, during the Dutch colonial period, most of the area was a Dutch coconut plantation area which was returned to the community. In general, economic life originates from rice farming activities (rice, horticulture) and plantations and some labor. Kelapa Garden Village is located/located to the north of the city of Secanggang District at a distance of 3.5 km and from Langkat Regency City 11.5 km, borders Hinai Kiri Village to the south, borders Sungai Ular and Tanjung Ibus Villages to the east, borders Karya Maju Village (District Tanjung Pura) to the north and borders Muka Paya Village (Tanjung Pura District) to the west. The community of Kebun Kelapa Village, which is inhabited by 3061 people, consists of different ethnic groups, namely: Banjar, Malay and Javanese. The majority of people adhere to the Islamic religion and almost all of the community's educational strata have received formal education.

In today's increasingly advanced digital era, information technology has significantly changed the way people access information, communicate and carry out various daily activities. In Indonesia, the development of information technology has had a positive impact, especially in efforts to introduce regional potential, including village potential, to a wider audience (Indrawan et al., 2022). Villages in Indonesia have unique natural and cultural riches, but they are often not explored and utilized optimally.

The Communication and Information Technology Service has an important role in providing Information and Communication Technology services to the community. In explaining its main tasks and functions, the Langkat Regency Communication and Information Service is a Regional Apparatus which has the main function in the Langkat Regency Government in carrying out digitalization or electronification in every aspect of public services. Public services or general services can be defined as all forms of services, both in the form of public goods and public services which in principle are the responsibility and implemented by government agencies at the center, in the regions, and within the State-Owned Enterprises or Regional-Owned Enterprises, in order to fulfill community needs and in the context of implementing the provisions of laws and regulations. Therefore, the public bureaucracy is obliged and responsible to provide good and professional services (Risnawan, 2017). One form of good and professional service is by making it easy for the public to submit complaints, questions and requests for information to the government work unit, which in this case is the Langkat Regency Communication and Information Service.

On this basis, the author feels that there is a need for a media that can be a means for the community or the Communication and Information Department to exchange information and accommodate public complaints and technical questions related to information technology which have been difficult for the public to understand. The media that will be built must of course prioritize the principles of ease of access, broad coverage, and the use of technological elements in it. For this reason, the author in this research will try to design a solution to the problems described previously in the form of a mobile application through a research entitled "**Use of a Mobile-Based Online Public Complaint System in Kebun Kelapa Village**"

2. RESEARCH METHOD

The research approach that can be used in the case study "Use of a Mobile-Based Online Community Complaint System in Kebun Kelapa Village is a qualitative approach and a quantitative approach. By combining these two approaches, research can provide comprehensive and in-depth insight into the Use of a Mobile-Based Online Community Complaint System in Coconut Garden Village.

1. Qualitative Approach:

A qualitative approach will help to understand the perceptions, views and experiences of related subjects, such as village communities, village promotion managers and other related parties. Methods that can be used in a qualitative approach include in-depth interviews with relevant respondents, participatory observation in villages, and content analysis from social media and websites related to Kebun Kelapa Village. A qualitative approach will provide insight into how Mobile-based Online Complaint System techniques are implemented and responded to by village communities and their impact in improving village progress.

2. Quantitative Approach:

A quantitative approach will help in measuring and analyzing numerical data related to digital promotion and village visibility objectively. Methods that can be used in a quantitative approach include surveys with questionnaires filled out by relevant respondents, collecting statistical data from digital platforms and search engines, as well as data analysis using statistical methods. A quantitative approach will provide strong figures and data to measure the effectiveness of the use of the mobile-based online complaint system.

With combining qualitative and quantitative approaches, this research will gain in-depth insight into the role of the mobile-based Online Complaint System for the progress of Kebun Kelapa village. A qualitative approach will provide descriptive and contextual information about the implementation of this technique from the perspective of society and related parties, while a quantitative approach will provide more objective and measurable numerical data to validate and support qualitative findings. It is hoped that the results of this research will provide comprehensive and relevant understanding for developing village progress strategies to create digital villages.

Data collection technique

The following are the data collection techniques used in this research:

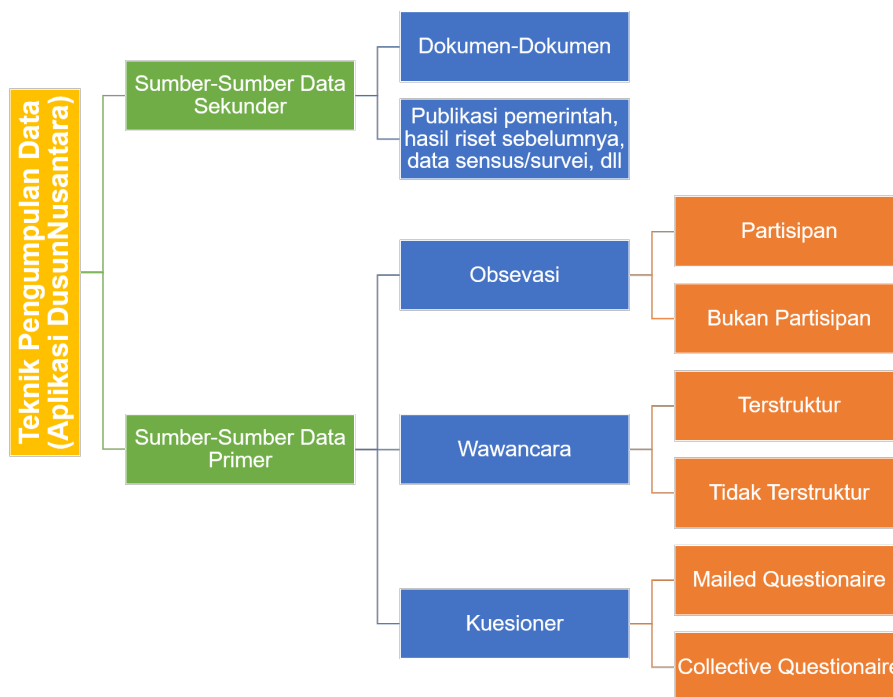


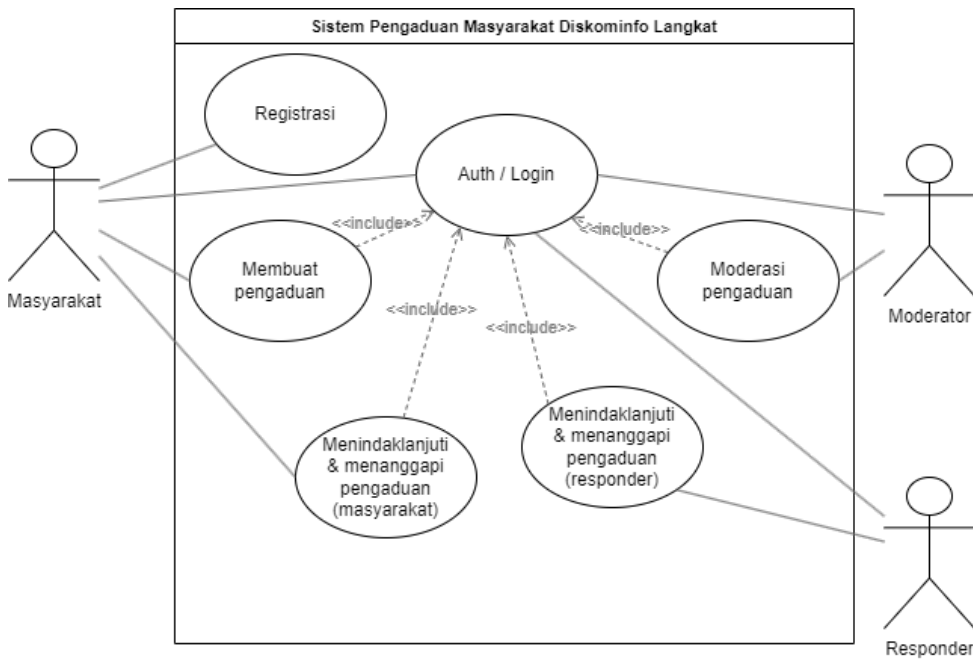
Figure 1 : Data Collection Method

System Design Methods

Before entering the development stage of a mobile-based online public complaint system, an application development design is created which contains the entire business process that will be built up to the technical design of the program. The design of this research will mostly be prepared using Use Case diagrams, Data Flow Diagrams (DFD) and flowcharts which are popularly used to describe business processes in software design.

Use Case Diagrams

The use case diagram in this section will describe the role of each actor or user in the system. In the use case diagram that the author describes, the entire process carried out by Moderators and Responders in managing complaints is made by the author in the form of a generalization of the process to simplify and make it easier for the author to provide an overview of the main processes that occur in the manager's interaction with the system in processing complaints. Each main process in the public complaints system is also seen to include the auth / login process which is also carried out in each process to ensure that only users with authenticated access can carry out the process.



Picture 3.3 Use Case Diagram

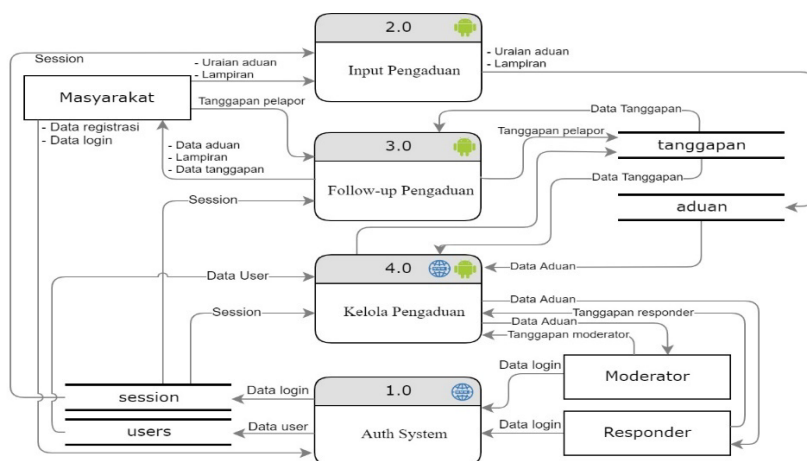
Data Flow Diagram (DFD)

Data Flow Diagrams are used to describe the flow of data in a business process. Before determining the data flow, it is necessary to determine what business processes will be designed, then describe the data flow from each business process.

1. Context Diagram



2. Diagram DFD Level 0



In the complaint management process, there are 2 (two) managers involved, namely the Moderator and the Responder. Each manager can provide a response, either a response to the reporter or an internal response that can only be read by fellow managers. For processes such as accepting, rejecting and resolving complaints, the system will create responses automatically according to the process carried out

Data analysis method

The data analysis method in this research will include qualitative and quantitative approaches, considering that this research uses a combination of both approaches. The following are data analysis methods that can be used:

1. Qualitative Analysis:

a. Content Analysis: To analyze content from interviews, documents, or social media content that is relevant to the digital promotion of Kebun Kelapa Village.

b. Themes and Categories: Identify important themes and categories from qualitative data to understand people's views and perceptions regarding the use of mobile-based online billing systems.

2. Quantitative Analysis:

a. Descriptive Statistics: Use descriptive statistics to summarize and present numerical data about measured variables, such as mean, median, and standard deviation.

b. Hypothesis Testing: If relevant, use statistical hypothesis testing to test significant differences before and after implementing online system techniques in increasing mobile usage.

3. Combined Method:

a. Case Analysis: Use case analysis to analyze the impact of using a mobile-based online complaint system. Identify changes that occur in website visibility, social media engagement, and website rankings before and after application implementation.

b. Triangulation: Use data triangulation to combine findings from multiple data sources, such as interviews, surveys, and analytical data, to strengthen the validity and reliability of research results.

4. Data Interpretation:

a. Conclusion: Draw conclusions based on the results of data analysis, whether the use of a mobile-based online system has succeeded in increasing public complaints in Kebun Kelapa Village in accordance with the system objectives that have been set.

b. Discussion of Findings: Discuss research findings with relevant literature and previous research findings to provide broader context and interpretation.

The use of various data analysis methods will provide a holistic understanding of the effectiveness of applying this technique in increasing the use of mobile-based online systems. The results of in-depth and diverse data analysis will provide a basis for developing sustainable strategy recommendations for Kebun Kelapa Village and can serve as a guide for other villages in increasing their attractiveness and local economy through improving the performance of village officials and advancing Village technology.

3. RESULTS AND DISCUSSIONS

Minimum Hardware and Software Specification Requirements

The need for appropriate specifications will ensure that applications can be developed and implemented well. In this research, the software and hardware required to run this system are fully available at the Langkat Regency Communication and Information Service, but for the specific amount of resource allocation, the author must make observations and interviews with Langkat Regency Diskominfo Experts as staff who handle ICT infrastructure at the Langkat Regency Diskominfo.

The following are the results of the description of hardware and software specification requirements that the author obtained from observations and interviews with Langkat Regency Diskominfo Experts.

1. Hardware and software application development requirements

This section will provide details of the hardware and software specification requirements used during the application development process. Considering that there are 2 (two) types of applications being built, namely mobile and web-based applications, the specification requirements will be adjusted to the greatest resource requirements.

Tabel 4.1 Requirement *hardware* and *software* on process *development*

Kategori	Uraian	Tipe / Spesifikasi	Requirement
<i>Hardware</i>	PC / Laptop	- CPU: i7 Gen10, 3.0GHz - RAM 16GB - Storage 500GB SSD	Perangkat untuk pengembangan aplikasi <i>mobile & web</i>
	Koneksi internet	- PC / Laptop: 10Mbps	Koneksi pada PC <i>development</i>
<i>Software</i>	Operating System	Windows 10 / 11	Sistem operasi utama pada PC / Laptop
	IDE	- VSCode - Android Studio	Editor untuk menulis kode program

	Framework	- Mobile: Flutter & dart - Web: Codeigniter	<i>Framework</i> dan bahasa program aplikasi <i>mobile</i> dan web pengelola
	Emulator	Android Studio	Untuk menjalankan aplikasi <i>mobile</i> yang dibangun
	API Tester	Postman	Pengujian <i>API</i> untuk komunikasi antara aplikasi <i>web</i> dan <i>mobile</i> .
	Tools & Library	- Code-server - MobaXterm - Browser	Aplikasi pendukung untuk pengolahan kode program dan upload ke <i>server</i>
	Drawing & modelling	- Diagrams.net - DBVisualizer	Untuk melakukan modelling dan menyusun diagram-diagram yang dibutuhkan
	Webserver	- Apache - PHP 7.4 - MySQL	Untuk menjalankan aplikasi <i>web</i> pengelola dan <i>server API</i>

2.Application deployment hardware and software requirements

In this section, the specifications presented are the specifications used to run the application that has been completed. And all of these specification requirements have been provided by the Langkat Regency Communication and Information Service.

Tabel 4.2 Requirement *hardware* dan *software* on procees *deployment*

Kategori	Uraian	Tipe / Spesifikasi	Kebutuhan
Hardware	Server	- CPU: 8 core, 3.50 GHz - 8GB RAM - Storage 100GB	Server utama untuk menjalankan aplikasi web pengelola & server API
	Koneksi internet	Dedicated 20Mbps	Koneksi untuk mengakses aplikasi
Software	Operating System	Linux Debian 9.13	Sistem operasi utama pada server
	Tools & Library	- Code-server - MobaXterm - Browser	Aplikasi pendukung untuk pengolahan kode program dan upload ke server

	Websserver	- Apache - PHP 7.4 - MySQL	Untuk menjalankan aplikasi web pengelola yang dibangun
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Application Testing and Discussion

Application testing is carried out by implementing all processes related to handling complaints using the application that has been built, to see how the application that has been built can help resolve the problems raised in this research previously. The implementation uses the Black Box Testing method to assess the features and functions of the application from the user's perspective. Black Box testing in this research was carried out based on the functions previously defined in the system requirements analysis section. The choice of the Black Box method in this research is because Black Box testing can be understood and understood by system users (Nirmala, 2021).

Android mobile application testing (community)

1. Register a new account

Open the mobile complaint application (Android) and on the Login page, press the "REGISTER HERE" link to register an account, then a registration form will appear

2. Login

To log in to the mobile application, simply enter the username and password that was previously registered. After successful login, the user will be shown the home page. Users who have just registered will see a blank screen with the message that there is no complaint data yet.

3. Add a new complaint

On the application's main page, press the Add Complaint button to create a new complaint, then fill in the complaint details in the form that appears. Select the appropriate category, if you don't know the correct category the user can select "Other categories", then enter the title of the complaint and details of the complaint. If there is a file you want to attach, select the file by pressing the file button. To hide the user's identity, check the hide identity option. Check the statement of agreement then press the Send button to send the complaint.

4. Give feedback

Users can respond only if the complaint has been approved and received a response. To provide a response to a complaint, open the details of the complaint you want to respond to, then fill in your response in the response column at the bottom.

5. Cancel the complaint

Complaints sent by users can be canceled if the status has not been processed by the moderator. If the complaint status has been processed, the user cannot cancel it. Complaints that have been canceled will no longer be able to be responded to and can be deleted by the user.

6. Delete the complaint

The only complaints that can be deleted are complaints that have been canceled by the user. To delete a complaint that has been cancelled, not the complaint on the Rejected/Closed tab, then press the Details button and press the delete button at the bottom of the complaint details.

7. Resolve complaints

Users can resolve complaints if the user feels they have received the right response or answer to their complaint. To resolve a complaint, you can press the "Resolve" Complaint button at the bottom of the complaint details. Complaints that have been resolved by users will go to the Completed Complaints tab on the application home page and cannot be responded to again.

4. CONCLUSION

Public complaint services are one of the main indicators in assessing public service compliance in all regional government work units, so the Communications and Information Service makes the issue of complaint services one of the important things for improvement. One way is to build a mobile-based complaint service application as the author did in this research.

This research has implemented various stages to create a public complaints system that is applicable to the Langkat Regency Communication and Information Department to handle public complaints in the field of Kominfo duties. Some of the conclusions that have been reached in this research are:

1. The current complaint handling process is considered less effective because the use of suggestion boxes and direct complaints is less known to the wider public. By building a mobile-based complaint system, outreach and community participation will increase.
2. The mobile-based complaint system has been tested and can be applied to community complaint handling services in Kebun Kelapa Village which can be connected to the Langkat Regency Communication and Information Service.
3. The suggestion box media can still be used in accordance with the obligations contained in Presidential Decree No. 76 of 2013 concerning Management of Public Service Complaints, with the addition of a banner explaining the existence of a complaint handling application made by the Kebun Kelapa Village Government.
4. This mobile-based online public complaint system can be proposed as one of the innovations in the assessment of public service compliance which is carried out by the Indonesian Ombudsman every year.

ACKNOWLEDGEMENTS

During the testing and implementation stages, of course, several deficiencies and certain needs were discovered that could not be realized in this research. To realize the objectives of this research so that it will be better in the future, the author has formulated several suggestions that can be applied in implementing this public complaints system so that it can be used more optimally in the future.

1. Public complaints require instruments in the form of validation documents and decrees or regulations (SOP, SK) which must be created as a basis for handling complaints through this application.
2. The Langkat Regency Communication and Informatics Service must consider applications that have been built, which require long-term maintenance and cannot be carried out only during this research period.
3. Applications that have been successfully tested can be considered for publication on the Google Play Store, of course after having supporting regulatory instruments to implement.

REFERENCES

- Asroni. (2018). *Penerapan Model View Controller (MVC) Dengan Framework Codeigniter Pada Sistem Informasi Booking Wisata Klangon*. Berdikari. Vol 6, No 2. Hal 119-130. <https://doi.org/10.18196/bdr.6239>
- Crosstechno. (2019, 26 Maret). *Apa itu Flutter?*. Tautan pada <https://crosstechno.com/blog/view/apa-itu-flutter->
- Dinas Komunikasi dan Informatika Kabupaten Langkat. (2019). *Rencana Strategis Dinas Komunikasi dan Informatika Kabupaten Langkat 2019-2024*. Langkat: Penulis. Diakses dari: https://diskominfo.langkatkab.go.id/web/unduh_download/2
- <https://flutter.dev>
- K. Hapsari, dan Y. Priyadi, *Perancangan Model Data Flow Diagram Untuk Mengukur Kualitas Website Menggunakan Webqual 4.0*, JSINBIS (Jurnal Sistem Informasi Bisnis), vol. 7, no. 1, pp. 66-72, Mei. 2017. <https://doi.org/10.21456/vol7iss1pp66-72>
- Nirmala, P., Putra, I., & Sudana, A. (2021). Pengujian Black Box pada Sistem Terintegrasi Pembayaran Uang Kuliah pada Universitas X dengan Metode Equivalence Partitions. *JITTER : Jurnal Ilmiah Teknologi Dan Komputer*, 2(3), 558-570. Diakses dari <https://ojs.unud.ac.id/index.php/jitter/article/view/79410>
- Olususi, Oluyemi. (2020, November 19). *Create a Secured RESTful API with CodeIgniter and JSON Web Tokens*. Tautan pada <https://www.twilio.com/blog/create-secured-restful-api-codeigniter-php>
- Prabowo, Mei. (2020). *Metodologi Pengembangan Sistem Informasi*. Salatiga: LP2M IAIN.
- Presiden Republik Indonesia. 2013. *Pengelolaan Pengaduan Pelayanan Publik* (Perpres No.76 tahun 2013). Jakarta, DKI: Penulis. Diakses dari <https://peraturan.go.id/common/dokumen/ln/2013/ps76-2013.pdf>
- Rahmalia, Nadiyah. (2021, 31 Mei). *Yuk, Kenali Perbedaan Wireframe, Mockup, dan Prototype!*, Tautan pada <https://glints.com/id/lowongan/beda-wireframe-mockup-prototype>
- Raihan. (2017). *Metodologi Penelitian*. Jakarta: Universitas Islam Jakarta.
- Risnawan, W. (2017). "Fungsi Birokrasi dalam Efektivitas Pelayanan Publik". *Jurnal Ilmiah Ilmu Administrasi Negara*. Vol 4, No 1. Hal 156-166. Diakses dari: <https://jurnal.unigal.ac.id/index.php/dinamika/article/view/1951/1571>.
- Supono, Vidiandry. 2018. *Pemrograman Web dengan Menggunakan PHP dan Framework Codeigniter* (1st ed.). Yogyakarta: deepublish
- Uzair, Sufyan. (2022). *Mastering UI Mockups and Frameworks: A Beginner's Guide* (1st Ed.). Abingdon, Britania Raya: CRC Press.
- Yusuf, Muri. 2017. *Metode Penelitian Kuantitatif, Kualitatif, dan Penelitian Gabungan* (edisi pertama, cetakan ke-4). Jakarta: Kencana.