



Android-Based Digital Dictionary of the Lani Tribe Language

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Abstract

Digital dictionaries are very useful tools in the process of learning and preserving language. This research aims to develop a digital dictionary based on the Lani Tribe language which can be accessed via the Android platform. Application development methods include user needs analysis, user interface design, application development, and user evaluation. This application development was carried out using the Java programming language and Android Studio technology. This digital dictionary provides word search features, word definitions, and examples of using words in sentences. The evaluation results show that this digital dictionary can be accessed easily and is useful for users who need a language reference for the Lani tribe. Overall, it is hoped that this digital dictionary can help in the preservation and development of the Lani language.

Keywords: Digital Dictionary, Lani Tribe Language, Android, Language Preservation, Application Development

1. INTRODUCTION

Whaley states that indigenous languages are dying all over the world, but there are many efforts being made to try to preserve indigenous languages and cultures. Failure to preserve and maintain language will result in the loss of the continuity of a culture [1]. Agreeing with Whaley, Romaine (2007) also states that in recent decades, an increasing number of publications and scientific papers predict a very worrying decline in the number of languages. According to him, linguists believe that 60-90 percent of the world's approximately 6,900 languages will become extinct in the next few years [2]. Currently there is an ongoing extinction of one language every two weeks, especially for languages that do not have large populations [3].



Indonesia has enormous cultural diversity and linguistic richness, and has characteristics that are different from each other [4]. Regional languages in Indonesia have characteristics that vary from one language to another. The uniqueness of each region's language proves the identity of a particular region, so it is important to carry out research that can clearly show this uniqueness [5]. According to research results from the Indonesian Institute of Sciences (LIPI), of the 746 regional languages in the country, 169 are threatened with extinction because the number of speakers is below 500, most of them are old and there is no replacement for the younger generation and they are in remote locations. Ismadi, via the website badanbahan.kemdikbud.go.id, said that among the hundreds of languages in Indonesia, from year to year their numbers continue to decrease until they are threatened with extinction, some are even heading towards extinction [6]. If we look at the linguistic map in Indonesia based on mapping made by UNESCO (Moseley, 2010), we can find that the most endangered languages are in eastern Indonesia. This is because the linguistic diversity in eastern Indonesia is richer. This is different from the island of Java which only has three largest languages (Javanese, Sundanese and Madurese) with various dialects.

In fact, there has been several studies carried out to help preserve tribal languages from extinction, including research into indigenous tribal languages in West Papua [7], Skouw and Tabla tribal languages in Jayapura Regency, Papua [8][9], as well as Marind tribal languages in Merauke, Papua [10]. Preserving tribal languages can be helped in several ways, such as asking people to actively speak tribal languages in their homes. This will help their children to retain the tribal language [11]. Apart from that, it can also be done through: 1) Educational Policy, 2) Familiarity with tribal language conversations in various formal meetings, 3) Dissemination through the media, and 4) Documentation in the form of songs or dictionaries [10].

Based on the problems above, the Lani tribe is located between several districts as follows; Tolikara, Lani Jaya, Puncak Jaya, Puncak Papua, Central Manbramo, Jayawijaya and Nduga Papua Mountains. Papua's mountainous province is one of the provinces that is experiencing the extinction of regional languages due to population shifts continuing to increase over time so that the Lani tribe has spread to several urban areas such as Wamena, Jayapura, Timika and other Papuan areas, this has had quite a significant influence. towards the young generation of the Lani tribe who

2| *Android-Based Digital Dictionary of the Lani Tribe Language*

no longer use Lani as one of the languages they inherited from their ancestors, but the majority of Lani tribe young people in communicating prefer to use Indonesian as their everyday language and make it the most effective language in communicating between fellow young people. care about the existence of the Lani language as an ancestral language. A number of fundamental issues that can affect the system and social order of communication in the lives of Lani people. So it is estimated that the Lani tribe in the mountainous province of Papua is slowly becoming extinct, so to anticipate the extinction of the Lani language in Papua, it is necessary to carry out various literary studies as a form of preventing the extinction of the Lani language from all parties. One form of contribution made by researchers in this research is developing a digital dictionary based on Android-based Lani language. This application was developed based on the characteristics of the Lani language, which has various dialects in several city districts in the mountainous province of Papua.

The digitization of the Android-based Ngalum Ok-Indonesian tribal language dictionary is an innovation that is very relevant for preserving culture and facing the extinction of tribal languages in the Land of Papua. This digital dictionary was developed taking into account the characteristics of tribal languages in the region, which have a variety of unique dialects. The use of the Java programming language and the Butter Knife library in application development allows the creation of interactive and responsive user interfaces. In addition, the use of the Realm database as a mobile database technology brings benefits in performance and more efficient use on Android devices. The results of the trial show that this digital dictionary application can function well on Android smartphones, allowing users to translate vocabulary from Indonesian into the language of the Ngalum Ok tribe with three different dialects, namely Okbibab-Oksibil-Kiwirok. More than that, this application is also capable of translating between dialects, as well as translating from certain tribal languages to Indonesian. Thus, through digitizing the Ngalum Ok tribal language dictionary, it is hoped that the culture and language of this tribe can continue to live and contribute to linguistic diversity in the Land of Papua, while facilitating the exchange of information between Indonesian and the Ngalum Ok tribal language.

Preserving local languages that are threatened with extinction throughout the archipelago is the focus of developing an Android-based Nduga language dictionary application. This application aims to support efforts to

preserve the Nduga ethnic language by providing learning facilities for the younger generation of the Nduga ethnic group and other people who are interested in learning the language. The use of Realm and Butter Knife database technology in application development allows the creation of efficient and user-friendly dictionary applications. This Nduga language dictionary application has been tested and runs successfully on Android smartphones. This application has the ability to translate vocabulary from Indonesian to Nduga language which consists of three dialects, namely Mapenduma, Mbua, and Kenyam. Apart from that, this application is also capable of translating between dialects, as well as translating from certain dialects into Indonesian. Preserving local languages that are threatened with extinction throughout the archipelago is the focus of developing an Android-based Nduga language dictionary application. This application aims to support efforts to preserve the Nduga ethnic language by providing learning facilities for the younger generation of the Nduga ethnic group and other people who are interested in learning the language. The use of Realm and Butter Knife database technology in application development allows the creation of efficient and user-friendly dictionary applications. This Nduga language dictionary application has been tested and runs successfully on Android smartphones. This application has the ability to translate vocabulary from Indonesian to Nduga language which consists of three dialects, namely Mapenduma, Mbua, and Kenyam. Apart from that, this application is also capable of translating between dialects, as well as translating from certain dialects into Indonesian.

With this Android-based Nduga language dictionary application, it is hoped that it can increase public awareness and interest, especially the younger generation of the Nduga tribe, in maintaining and learning their language. This application is an important tool in maintaining the continuity of the language and culture of the Nduga tribe, as well as facilitating communication and exchange of information between Indonesian and Nduga in various dialects. As part of efforts to preserve local languages, this dictionary application acts as a learning tool that can be accessed by anyone who wants to understand and appreciate the rich language and culture of the Nduga tribe.

Language is a means of communicating. In this world there are many languages, including Indonesian and Javanese. Knowledge of language is very important because a conversation or discussion requires language. The means for learning a language is by using a dictionary. There are many

types of dictionaries ranging from book-shaped dictionaries to mobile phone applications, but if you want to learn the language you can use the Android-based Javanese Indonesian dictionary application which provides services for translating vocabulary. The aim of making a dictionary application is to help users make it easier to search for vocabulary in Javanese and Indonesian. Based on test results, the Javanese Indonesian Dictionary application using the Android-based Raita Method is only for searching vocabulary, the application contains an add data and edit data menu to add and edit data if there are errors. This Android-based Indonesian Javanese Dictionary application can be run on smartphones with an Android system.

This research aims to design and develop an Android-based Nias language dictionary application, which functions to help translate Indonesian into Nias with precise accuracy. In the development stage, the research used the Rapid Application Development (RAD) method, which allows the application development process to be faster and more efficient.

Based on the results of research that has been carried out, the Nias-Indonesian dictionary application has had a significant impact and received a positive response from the community, especially among the deepening community. This is because this application is the first mobile-based dictionary application, where the use process is simpler and more flexible. Using this mobile-based dictionary application makes it easy to use the dictionary practically on a smartphone device. This Nias-Indonesian dictionary application not only functions as a means of translating languages, but also acts as a learning and communication medium for the surrounding community. With this application, it is hoped that the preservation of the Nias language and culture can be maintained, because people can more easily access and understand the Nias language through this application.

Overall, this literature study shows that the development of an Android-based Nias-Indonesian dictionary application using the RAD method makes a positive contribution to preserving Nias language and culture. This application allows easier and more efficient access to understand the Nias language, as well as being a learning tool for the local community. In this way, efforts to preserve local language and culture can continue to be maintained and appreciated through technological developments such as this mobile-based dictionary application.

The Lani language is a minority language that has important value in preserving cultural identity and local wisdom. Digital dictionaries are a very relevant tool in efforts to preserve this language, because they provide easier and wider access for people to learn and use the Lani language. The use of Android technology as an application development platform offers advantages and flexibility, which can help provide dictionary applications that are responsive and easily accessible to users. In developing an Android-based digital dictionary application, development methods such as prototyping or agile can be used to ensure an efficient development process that focuses on user needs. In terms of dictionary data storage, database technologies such as SQLite or Realm can be considered taking into account the advantages and disadvantages of each option.

This digital dictionary application is expected to have features and functions that allow users to search, add and edit dictionary entries with translation capabilities from the Lani language to Indonesian or vice versa. This will help the Lani tribe community and other parties who are interested in understanding and learning this language more comprehensively. In addition, it is important to plan trials and evaluation of this digital dictionary application. Testing will ensure that the application runs well and meets its development goals. Evaluation will help to understand the extent to which this application is successful in meeting user needs and providing benefits in efforts to preserve the language and culture of the Lani Tribe. Thus, a comprehensive and structured theoretical basis will provide a solid foundation for the development of an Android-based digital dictionary of the Lani Tribe language, which aims to preserve the language and culture of the Lani Tribe effectively and sustainably.

2. METHOD

This research aims to develop a digital dictionary based on the Lani Tribe language using a qualitative method approach. Qualitative methods were used to gain an in-depth understanding of the Lani language, including the linguistic structure, vocabulary and dialects used in the language. Qualitative methods also allow researchers to understand the views, perceptions and experiences of the Lani people regarding their language use and their need for a digital dictionary. In the context of developing Android-based dictionary applications, qualitative methods can be used to

identify user needs and preferences regarding dictionary features and interfaces. Researchers can conduct in-depth interviews with members of the Lani Tribe community to understand how dictionary applications can be more useful for them in understanding and learning the Lani Tribe language. In this research, several research stages were carried out, as described in the chart below.

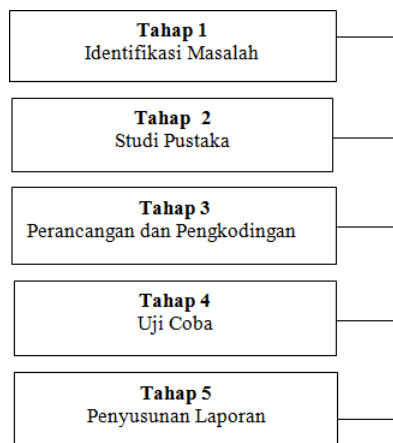


Figure 1. Research Stages

Stage 1. Problem Identification: The first stage is identifying the problem or need to be solved by developing a digital dictionary based on the Lani language. This involves understanding the challenges in preserving the Lani language and user needs related to digital dictionaries. Identification of this problem will be the basis for the entire development process to ensure that the digital dictionary developed can provide appropriate and relevant solutions.

Stage 2. Literature Study: After the problem has been identified, a literature study is carried out to understand the research or development of similar digital dictionaries that have been carried out previously. This literature study involves searching and reviewing journals, articles, books and other sources relevant to the Lani language, digital dictionaries and Android technology used as an application platform. The literature study will provide insight into approaches, methods and previous research findings that can assist in the development of this digital dictionary.

Stage 3. Designing and Coding (Application Development): The next stage is designing and coding a digital dictionary application based on the Android language of the Lani tribe. The design process involves planning the user interface, the features to be provided, as well as the overall application architecture. After the design is complete, coding or creating the application program code is carried out according to the design that has been created. In this stage, database technology, natural language processing and other relevant technologies are implemented.

Stage 4. Trial: After the digital dictionary application has been developed, the next stage is to carry out a trial. This test aims to check the functionality, performance and reliability of the application. Testing can be done by inviting a group of users to try the application in a specific test environment. During the trial, users are expected to provide feedback and report problems or obstacles encountered in using the application. The results of the trial will be used to make improvements and adjustments to the application before it is rolled out more widely.

Stage 5. Report preparation: After all development and testing stages have been completed, the final step is to prepare a research or development report. This report contains the results of problem identification, literature review, description of the application design and coding, as well as the results of testing. This report is documentation of the entire development process and the results that have been achieved. This report will also be the basis for presenting the findings and contributions of the Lani language-based digital dictionary application in preserving the language and culture of the Lani Tribe.

3. RESULTS AND DISCUSSION

3.1. Planning

This section only visualizes the main display of the Lani Tribal Language dictionary which consists of a selection menu for the keywords being searched on the left and the language/dialect translation results on the right. The following is a design of the application display.



Figure 2. Digital Dictionary Display Design

In this display, users can translate from Indonesian to the language of the Lani tribe. Translation can be done the other way around, namely from a certain dialect to Indonesian and translation between dialects. If the translation is from and to the same language or dialect, the application will give a message.

3.2. Coding and testing

The Lani language dictionary application was developed using Realm and Butter Knife database technology. Realm is an object-oriented database, realm has several differences from other databases. Realm does not use SQLite as the Main Engine [3]. The following is the coding section for implementing the Realm database in developing the Lani Language Dictionary. Data from the Lan Language Dictionary is loaded from the assets folder into the database, as in the coding below.

```

@Override
public void execute(Realm realm) {
    try {
        String content = "";
        BufferedReader br = new BufferedReader(new InputStreamReader(MainActivity.this
            .getAssets().open("dbase"), Charset.forName("UTF-8")));
        lineCount = 0;
        while ((content = br.readLine()) != null) {
            String[] items = content.split(regex: "#");
            SysLog.getInstance().sendLog(TAG, log: items[0] + " , " + items[1] + " , " + items[2] + " , " + items[3]);
            mapeenduma = items[0];
            mbua = items[1];
            kenyam = items[2];
            indo = items[3];
            realm.insert(new Language(lineCount++, mapeenduma, mbua, kenyam, indo));
            progressDialog.setProgress(lineCount);
        }
    } catch (IOException ex) {
        ex.getMessage();
    }
}
    
```

Butter Knife is a binding method for Android displays that uses an annotation process to produce boilerplate code [3]. The following is the Butter Knife method coding.

```
public class MainActivity extends BaseActivity {
    @BindView(R.id.toolbar)
    Toolbar toolbar;
    @BindView(R.id.fab)
    FloatingActionButton fab;
    @BindView(R.id.translate_from_field)
    AppCompatSpinner translateFromField;
    @BindView(R.id.translate_to_field)
    AppCompatSpinner translateToField;
    @BindView(R.id.switch_field)
    AppCompatImageButton switchField;
    @BindView(R.id.rv_data_field)
    RecyclerView rvData;
    @BindView(R.id.search_field)
    AppCompatEditText searchField;
}
```

The coding results using ButterKnife and Realm technology produce the application as below.

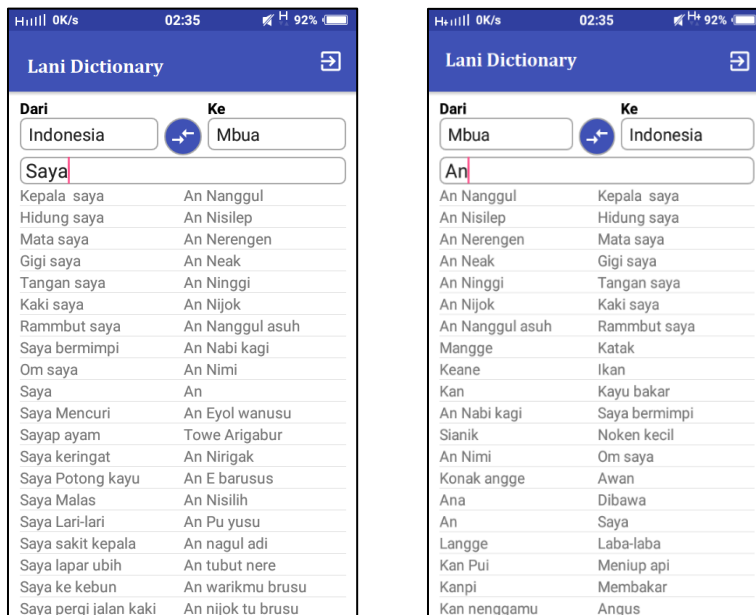


Figure 3. Display of the Lani Language Dictionary Application

In this display it appears that the user can translate from Indonesian to a certain dialect of the Lani tribe or vice versa. Translation can be done

between dialects. If the translation is from and to the same language or dialect, the application will give a message "wrong choice".

The application has been tested focusing on checking for incorrect or non-existent functions, checking the interface (interface errors) and performance (performance errors) showing that the application does not experience problems, it can be run on an Android smartphone and is able to carry out the function of translating vocabulary.

4. CONCLUSION

In order to support efforts to preserve local languages which are threatened with extinction throughout the archipelago, an Android-based Lani language dictionary application has been developed. This application can be used as a learning medium for the young generation of the Lani tribe and other people who want to learn the Lani language. Based on trials, the application can be run on an Android smartphone and can perform the function of translating vocabulary from Indonesian to Lani or vice versa from certain dialects to Indonesian.

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- Warton Liwiya et al*|11

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