Developing Bima-Indonesia Mobile Dictionary with Input-Output Google Voice Feature

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Abstract. In the 21st century is the starting point of technological developments, such as tablets, internet, and smartphones, there are many innovative ways to learn Bima culture and language. For example, by utilizing technology to package it in the form of unlimited mobile applications by space and time whenever and wherever. Certainly good for researchers and users as a motivation to love and preserve more culture. Therefore, this paper presents a pilot study and aims to develop the Bima-Indonesian language dictionary application. This list uses google voice as content in the application, and researchers design vocabulary 15.53 for use in the Bima language dictionary. In addition, a questionnaire was used to gather user opinions about the appropriateness of the application. During this pilot study and with the use of cellular applications, it is expected to answer the problems that occur. This research resulted in the Bima-indonesia language dictionary application Input-Output Voice Text Based on Android whose output is in the form of extension *.apk* then the product produced is considered very feasible based on the assessment of media experts and expert experts with very appropriate categorical content then based on beta testing by users with a result of 4.5.

1. Introduction

The *Mbojo* tribe is one of the many ethnic groups in Indonesia, the *Mbojo* tribe is located in the province of West Nusa Tenggara precisely in the Neighbourhood of Dompu Regency, Bima Regency, and Bima City and is the largest population among the two other tribes inhabiting the province of West Nusa Tenggara. The *Mbojo* tribe in communicating using their own language was later known as the Bima language *"Nggahi Mbojo"*.

Bima language is basically made up of many dialects, including the Kore dialect, Donggo dialect, Wawo dialect and Sambori dialect which in each dialect has a peculiar value, besides that the Bima language can also be said to be unique because each word in the Bima language always ends with a vowel. Aside from being a means of communication, Bima language is also one of the cultural heritages so it needs to be preserved so that it remains a part of Indonesia's cultural wealth, as well as to introduce the wider community to the language of Bima itself.

Basically, Bima Language is an absorption language that is formed through three stages of the period, the first stage is known as the initial period, developmental stages, and stages of dissemination. Initial period, at this stage is the first period introduced by the script which when referring to the book "BO Sangaji" found many words in the Bima language that are absorbed from several regional languages such as Arabic, Javanese, Bugis, and Malay. This is due to the fact that Bima developed in the coastal area and geographically Bima was the archipelago trade route and there was a cultural acculturation process between traders and then communicating using a language that was light and easy to understand so that a mixture of languages occurred.

The stages of development, this stage was officially inaugurated as the language of the Bima kingdom with the aim of applying the rules in language namely ethics in speaking well. For the *Mbojo* tribe people use bima language properly and correctly to be one measure of someone's level of politeness in the sense that Bima language influences people's morale.

Then the deployment stage. At this stage there is a process of spreading Bima language to all areas of the Bima kingdom, in its spread the Bima language is very quickly spread because in terms of using the Bima language there is no limit on the use between low caste communities and high caste communities. This is proof that the Bima language is a popular language that has no restrictions if used by ordinary people and nobility. From the explanation of the three stages of the Bima language formation period above, the writer can give an initial conclusion that Bima language contains ethical, moral and good manners so that it makes a person more meaningful with the language. In addition, Bima's language is easily accepted because there is no limit in using it either by the community high caste and low caste society. So besides being a tool of diplomacy, with language can shape ethics and morals and make the people who use them become the same position.

In the current condition of degradation in the use of the Bima language by the *Mbojo* tribe with the highest level being in adults, adolescents and children in the *Mbojo* tribe, this was evidenced in the results of direct observations and from interviews with several traditional leaders and language practitioners and the culture of the *Mbojo* tribe, where in its use the *Mbojo* youth tend to mix every word both in the Bima language and in Indonesian in communicating so that it affects the lack of ethical moral and courtesy values and makes a person less meaningful in his language. In addition, many of the vocabulary in the Bima language are lost by civilization because of the high consumerist culture of the *Mbojo* tribe in this case teenagers who tend to choose the contemporary languages they absorb from the social media environment. Furthermore, from the observations of the Bima language, it is now rarely used in formal activities or in cultural ceremonies for the *Mbojo* tribal people. Another cause of the degradation of the use of Bima language is that no subjects are found that teach about local languages in the educational environment.

In line with the existing conditions, the Ministry of Education and Culture in proclaiming National Literacy presents three important things related to language literacy, namely first, using good and true Indonesian, second preserving the local language, and third, mastering foreign languages as needed. Departing from the description of the history of Bima's language, then in terms of its threat and the statement from the Ministry of Education and Culture, it is necessary for researchers to produce the Bima-Indonesian language dictionary input-output voice text to help the *Mbojo* tribe in understanding the importance of preserving Bima language in an adequate and interesting media and motivating to learn Bima culture and language. In addition, Ahmadi & Supriyono also

stated that the absence or lack of complete learning media that is interesting is one of the factors that make everyone's lack of motivation to learn [1].

With all the obstacles and problems above, then one solution that is expected to be able to overcome these problems is by developing or providing the right learning media, interesting and as needed. Arsyad states that the right learning media will function as teaching aids that also influence the climate, conditions, and learning environment [2]. Attractive media and capable of being a solution to this problem are multimedia-based media or also known as multimedia applications. The application is a ready-to-use program that can be used to execute the commands of the application user with the aim of getting more accurate results in accordance with the input from the user and the purpose of making the application. Usually racing against a desired computation or expected data processing. The application combines several media elements in one whole medium as a means of delivering knowledge information [3].

The use of multimedia applications will be more optimal if supported by devices that are easy and attractive to use, one of which is a smartphone besides that the efficient nature and direct communication of smartphones can influence the learning process in interacting with peers, accessing resources, and sharing data and information quickly and precisely [4]. In line with this matter Peng, Jinming, & Tianzhou, explained the ability in computer-like computing and the high carrying capacity of mobility then made smartphones have many users [5]. The phenomenon of smartphones in Indonesia with the highest usage is the Android-based operating system. Android is an open source operating system that can allow anyone to be able to develop various applications including dictionary applications. According to the data presented on the gs.statcounter.com website, there is a rapid increase in the use of smartphones with an Android-based operating system of 49.86%, namely from 18.53% on August 2012 to 68.39% as of August 2015. This is reinforced by the observation that almost every *Mbojo* tribe adolescent adult community owns a smartphone and makes it an item that is almost never separated from its daily life with diverse functions. In addition to other studies stated that android has mastered the market with total sales reaching 37.19%, iOS 27.18%, Syimbian 7.98%, and Blacberry 3.27% based on this then the smartphone based on the Android operating system is a good enough potential to later be used as the Bima-Indonesia language dictionary input the output of voice text [6].

Android-based application development in this study aims to optimize the advantages of technology in supporting the success of learning so that technological developments will have a positive impact. Android-based media has actually been developed, but most do not pay attention to good multimedia principles [7]. In addition, the benefits of having a smartphone can also be concluded based on the explanation that has been presented as a solution to the limitations of the media in providing information related to *Mbojo* tribe culture information and Bima language as well as limitations in displaying voice text input facilities, and by applying Google Voice Command recognition technology (Introduction google voice commands) in this dictionary application is expected to be able to provide comfort and convenience in the process of searching vocabulary. Search results on the google play store application, found that the Bima-Indonesian language dictionary application or media is still quite difficult, especially those that provide voice input features. This is reinforced by the results of research on the review of digital dictionaries that have been developed in India, the results of which are developed with or without an internet connection using either a computer or cellular can help the communication process and help the community to be able to find information easily [8]. Through exposure to the problems and solutions offered, it is deemed necessary to conduct research with the aim to produce the Bima-

Indonesia language dictionary application input-output of voice-based Android text as a solution to the problems previously described by the target users are adults, teenagers and children son of the *Mbojo* tribe community.

2. Literature Review

2.1. Basic Concept of Bima Language

The language of Bima has variations both in the use of certain dialects as well as in pronunciation. In general, these differences or variations are limited by the sub-district, although sometimes within an area there is more than one variation. Besides Bima language *Mbojo* tribe community uses other languages that are different from Bima, namely Donggo, Kolo, and Tarlawi. People who use this language are very few in number. They can generally understand the language of Bima. However, on the contrary the understanding person may not understand other languages [9].

2.2. Basic Concept of Electronic Dictionary

The development of science and technology has encouraged the development of educational technology. Omar and Dahlan argue that these developments have inspired the discovery of several communications and technology tools to further enhance the rapid development of the information world. The information has been produced in different media form and helps in the development of an electronic dictionary which is also known as E-dictionary [10].

Another opinion of the electronic dictionary suggested by Winkler states that the electronic dictionary is one of the latest developments in the field of lexicography [11]. The electronic dictionary offers many advantages of modern technology, consisting of more information than the printed dictionary, electronic dictionaries can also use multimedia, such as animation or sound, and faster vocabulary search.

According to a recent study by Saful Islam and Baipul Syam on the development of a multilingual digital dictionary in India (2015) and reviewing its development results (2017) it is clear that the development of a digital dictionary using either the Internet or not, for its users to quickly find the information they need as long as it is developed by bringing forward the aspect of its target audience [12]. In line with the above opinion, Al-Rabi'i said that the electronic dictionary refers to a dictionary used with an electronic background, either in the form of a compact disc (CD) or online [13].

According to Syihabuddin, the criteria of an ideal dictionary has four standards, among which are:
1) Eligibility
2) Summary
3) Accuracy
4) Ease of explanation
5) Morphological and syntactic information
6) Other necessary information related to language and so on.

In essence, electronic dictionary standards must be complete, fast, easy, practical, attractive and cheap. One more thing, according to Syihabuddin, the advantages of electronic dictionaries compared to conventional dictionaries. That is, the ease for a developer to be able to revise and update the database on the electronic dictionary so that the contents, features and performance of

electronic dictionaries always appear new in accordance with technological developments and the needs of the users of electronic dictionaries [14].

2.3. Google Voive Search

Google speech is a framework developed by Google to recognize sounds, convert them into strings and put them into Google search pages so that search results will appear based on voice input [15]. In other words the voice input received by the Android device will be sent to Google's servers, which then Google servers do the introduction and turn it into text. The result of converting voice into text is then inserted in Google search page then Google server will send its search results to Android device.

3. Research Methods

3.1. Technique of collecting data

Data collection techniques used in this study are surveys. Data collection techniques with surveys are to provide questions that must be answered by media and material experts and respondents in the survey [16]. The survey in this study was a closed survey in which media and material experts and respondents chose the answers they gave. This survey is used to find out about the feasibility level of the dictionary application that has been developed.

3.2. Participants

Participants in this study were 10 *Mbojo* tribe communities who were randomly determined.

3.3. Development Model

Type of research is done by using research approach development of Research and Development (R&D). Research and development method is to produce a certain product. Research and development of a process or steps to develop a new product or refine an existing product [17]. The model of development in this study refers to the APPED development model that presents the stages of simple media development namely: Initial Analysis and Research, Planning, Production, Evaluation, and Dissemination. The essence in R & D type research is the presence of research and development elements. The steps taken in this APPED model follow the logic of the type of R & D research [18].

Figure 1. Systematic phase of the APPED development model

3.4. Technique of Analysis Data

The data analysis technique for media feasibility refers to the opinion of Djemari Mardapi with the following provisions [19]. Obtain quantitative data from instrument result filled by judgment expert and user by changing score data on instrument into qualitative data form with guidance in following table:

Table 1. Guidelines for the scoring of questionnaire

Quantitative Data	Grade
Very decent	5
Feasible	4
Quite decent	3
Less feasible	2
Not feasible	1

Next, calculate the score of the assessment criteria produced by determining the interval distance based on the highest (ideal) and lowest (ideal) scales along with the number of classes. The criteria are attached in the following table.

Table 2. Scoring assessment criteria

Score Average	Category
$x > 4.2$	Very decent
$3.4 \leq x \leq 4.2$	Feasible
$2.6 \leq x \leq 3.4$	Quite decent
$1.8 \leq x \leq 2.6$	Less feasible
$x \leq 1.8$	Not feasible

4. Results and Discussion

4.1. Result

Validation results by 2 experts with the assessment focused on the three aspects of the display, technical, and google voice. Assessment using a questionnaire with a scale of 5 which provisions: 1 if the application is not feasible to use, 2 if the application is less feasible to use, 3 if the application is feasible to use, 4 if the application is feasible to use, and 5 if the application is feasible to use. The results of the assessment of expert aspects of media can be seen in the following table.

Table 3. Expert media validation results

No	Statement	Expert		Average	Criteria
		1	2		
1	Harmony on the color selection composition	4	5	4.5	Very decent
2	Level of contrast between background color and text	4	5	4.5	Very decent
3	The selected font type	4	5	4.5	Very decent
4	Font size used	4	5	4.5	Very decent
5	Position of text placement	4	4	4.0	Feasible
6	Location of image placement	3	4	3.5	Feasible
7	Picture selection	3	4	3.5	Feasible
8	Conformity of display layout	3	4	3.5	Feasible
9	Capture app view	3	5	4.0	Feasible
10	Attractive packaging application design	3	5	4.0	Feasible
11	Ease of application entry	4	5	4.5	Very decent
12	Ease of user choose menu	4	5	4.5	Very decent
13	The user's interactive level with the program	4	5	4.5	Very decent

14	Notification of outgoing confirmation on the program	4	5	4.5	Very decent
15	Level of ease in running the program	4	5	4.5	Very decent
16	Accessibility of the buttons on the app	4	5	4.5	Very decent
17	The functionality of the buttons on the application	4	5	4.5	Very decent
18	Ease of installing applications	3	5	4.0	Feasible
19	The performance level of the operating system application program	3	5	4.0	Feasible
20	Level of pronunciation of the word input	4	5	4.5	Very decent
21	Sound response response rate	4	5	4.5	Very decent
22	Level of sound output clarity	4	5	4.5	Very decent
23	Pronunciate the output of each word	4	5	4.5	Very decent
	Average of Media Expert Rating			4.3	Very decent

Based on the above results, it was found that the average of the overall assessment of media experts in all aspects of 4.3 with very decent category. The acquisition of this value indicates that the application of Bima-indonesia language dictionary developed is in accordance with the criteria of a good dictionary application.

Then the results of material validation conducted by 2 experts and practitioners in the field of history *Mbojo* tribe. Assessment is focused on aspects of content feasibility aspects, and language structure. Assessment using a questionnaire with a scale of 5 which provisions: 1 if the application is not feasible to use, 2 if the application is less feasible to use, 3 if the application is feasible to use, 4 if the application is feasible to use, and 5 if the application is feasible to use.

Table 4. Expert material validation results

No	Statement	Expert		Average	Criteria
		1	2		
1	Description of the term / word of translation displayed	5	5	5.0	Very decent
2	The translation structure of words	5	5	5.0	Very decent
3	Suitability of vocabulary in apps with original book dictionary data	4	5	4.5	Very decent
4	Placement of each word's pronunciation symbol	3	4	3.5	Feasible
5	Compatibility between cultural information displayed with dictionary material	3	5	4.0	Feasible
6	Presentation of cultural information in general			3.5	Feasible
7	Readability of every word	3	4	4.5	Very decent
8	The use of language rules	4	5	4.5	Very decent
9	The effectiveness of the translation of each word	4	5	4.5	Very decent
	Material Expert Evaluation Rate			4.3	Very decent

Based on the above results, the average of the overall assessment of material experts in all aspects of 4.3 with very decent category. This value acquisition indicates that the developed Bima-indonesia dictionary application has been followed according to the criteria of a good dictionary application.

The next phase of this implementation is done by 10 users of the *Mbojo* tribe community selected at random to determine the level of user satisfaction with dictionary applications with aspects that are assessed are aspects of display, technical, google voice features, content feasibility, and language structure. Assessment using a questionnaire with a scale of 5 which provisions: 1 if the application is not feasible to use, 2 if the application is less feasible to use, 3 if the application is feasible to use, 4 if the application is feasible to use, and 5 if the application is feasible to use.

Table 5. Implementation stage analysis results

No	Statements	Users										Average	Criteria
		1	2	3	4	5	6	7	8	9	10		
1	Description of the term / word of translation displayed	5	5	5	5	4	5	5	4	5	5	4.8	Very decent
2	Compatibility between cultural information with dictionary material	4	4	5	4	4	4	4	3	4	5	4.1	Feasible
3	Presentation of cultural general	5	5	5	4	5	5	4	3	5	4	4.5	Very decent
4	Readability of every word	4	5	5	5	3	5	5	4	5	2	4.3	Very decent
5	The effectiveness of the translation of each word	4	5	5	5	3	5	3	2	4	4	4.0	Feasible
6	Level of contrast between background color and text	5	4	5	4	5	5	5	4	4	4	4.5	Very decent
7	The selected font type	5	4	5	4	5	4	5	5	5	3	4.5	Very decent
8	Font size used	5	4	5	4	4	5	5	4	4	3	4.3	Very decent
9	Location of image placement	5	5	5	4	4	4	4	4	5	4	4.4	Very decent
10	Picture selection	5	5	5	5	4	4	4	4	4	5	4.5	Very decent
11	Conformity of display layout	4	5	5	5	5	3	4	4	5	4	4.4	Very decent
12	Ease of user in using the application	5	5	5	4	5	5	5	5	5	5	4.9	Very decent
13	Ease of user choose menu	5	4	5	4	5	5	5	5	5	4	4.7	Very decent
14	The user's interactive level with the program	5	5	5	5	4	4	5	5	4	4	4.6	Very decent

15	Accessibility of the buttons on the app	5	5	5	4	4	5	4	5	4	5	4.6	Very decent
16	Ease of installing applications	4	5	5	4	5	5	5	2	3	4	4.2	Feasible
17	Level of pronunciation of the word input	4	5	5	4	5	5	5	3	5	3	4.4	Very decent
18	Pronunciate the output of each word	4	5	5	5	5	5	4	4	4	4	4.5	Very decent
19	Level of sound output clarity	4	5	5	5	5	4	4	4	4	5	4.5	Very decent
Small Test Result Rate												4.5	Very decent

From the results of the above assessment shows that the large average assessment at the implementation stage is 4.5, with the average level of user satisfaction criteria that is "very feasible". Therefore Bima-Indonesia language dictionary application input-output based android voice text produced is very feasible to use and very satisfied for the user.

4.2. Discussion

From the results of media validation and material experts and user response results there are several suggestions for improving the application, including highlighting font size, clarity of cultural information and reference sources.

The development of this dictionary application has a significant impact on the *Mbojo* tribe community, especially in terms of language preservation and the use of appropriate words, besides from previous research studies stated the use of voice features in dictionary search is very helpful and makes it easier for users to search each vocabulary.

5. Conclusions

Bima-Indonesia language dictionary application input-output of android-based voice text that has been produced can be one of the means of preserving Bima language, because this application contains a database of providing vocabulary and information about the history of the *Mbojo* tribe. In addition, the application of Bima-Indonesia language dictionary input-output voice text is able to make every user to communicate properly and correctly by choosing the right words and making each user rich in vocabulary in the Bima language. Thus the presence of this dictionary provides a solution to the threat of degradation of each word in the Bima language due to problems previously mentioned in the background of the problem.

Through the evaluation phase, it was concluded that the average level of feasibility of the Bima-Indonesia language dictionary application input-output of Android-based voice text that had been assessed by media experts, material experts and based on the test of the response of users obtained results with the category "very feasible". Testing is based on several aspects of assessment, including aspects of appearance, technical aspects, aspect of voice text, aspects of material feasibility and linguistic aspects.

In the implementation phase, the Bima-Indonesia language dictionary input-output voice text based on android received a very good response from the Mbojo tribe community, seen from the

enthusiasm of the community in using and downloading the dictionary application on the google play store. In addition, regional bodies related to culture and local languages welcome this application and hope to be added with the latest features and menus to better introduce the culture of the Mbojo tribal people.

Acknowledgments
This research is partially supported by Indonesia's endowment fund for education. We are grateful to media and material experts who provide insights and expertise that greatly assist the evaluation of the development of dictionary applications in the research of this paper. As well as to all parties involved directly or indirectly in the research process of this paper.

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