

Lexicostatistics of Javanese and Sasak Languages: Comparative Historical Linguistic Studies

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ABSTRAK

Suatu bahasa dapat dikatakan berkerabat dengan bahasa lainnya karena bahasa tersebut mirip satu sama lain. Kekerabatan bahasa Jawa dan bahasa Sasak dapat dilihat baik dari segi leksikal maupun korespondensi fonemisnya. Tujuan penelitian ini yaitu menganalisis hubungan kekerabatan berdasarkan hitungan angka antara bahasa Jawa dan bahasa Sasak serta tatanan leksikostatistik pada kedua bahasa tersebut. Penelitian ini menggunakan metode kualitatif dan kuantitatif. Data diperoleh dengan menggunakan metode studi pustaka yang sesuai dengan 200 kosakata dasar Morris Swades dengan teknik catat langsung. Analisis data menggunakan metode leksikostatistik. Hasil penelitian yaitu setelah dilakukan penghitungan leksikostatistik, diperoleh persentase kekerabatan antara bahasa Jawa dan bahasa Sasak sebesar 23,8%. Berdasarkan analisis kesalahan, diketahui bahasa Jawa dan bahasa Sasak merupakan bahasa tunggal sekitar 1553-1317 tahun yang lalu. Bahasa Jawa dan bahasa Sasak diperkirakan mulai berpisah dari suatu Proto kira-kira 469 – 705 Masehi (dihitung dengan tahun 2022)..

ABSTRACT

A language is related to other languages because these languages are similar to one another. The kinship between Javanese and Sasak languages can be seen in lexical and phonemic correspondences. This study aims to analyze the kinship relationship based on numerical calculations between the Javanese and Sasak languages and the lexicostatistical order of the two languages. This research uses qualitative and quantitative methods. Data were obtained using the literature study method, corresponding to Morris Swades' 200 basic vocabulary using direct note-taking techniques. Data analysis used the lexicostatistics method. The result of the research is that after lexicostatistical calculations have been carried out, the percentage of kinship between Javanese and Sasak languages is 23.8%. Based on the error analysis, it is known that Javanese and Sasak were a single language around 1553-1317 years ago. The Javanese and Sasak languages are estimated to have started to separate from Proto around 469 – 705 AD (calculated by 2022).

1. INTRODUCTION

Language is a media humans use to interact with one another and can be spoken or written (Mailani et al., 2022). The development of language in this world has gone through long and long stages. Language began to develop 100,000 years ago (Gani & Arsyad, 2019; Nugraha & Prasetyo, 2022). In its development, language cannot be separated from the kinship or resemblance of a language with other languages. Language kinship is a collection of languages from a language group with the same language development history (Setiawan, 2020; Surip & Widayati, 2019). Thus it can be concluded that languages with kinship or similarities were once the same proto-language. Indonesia, a multicultural and multilingual nation, belongs to the Austronesian language group (Hakim, 2020; Sholeha & Hendrokumoro, 2022). The division of languages into a group is based on genealogical classification. The world's languages can be categorized into three criteria: genetic classification or genealogical classification. Typological classification is based on linguistic structure and geographical location, called area classification (Jamzaroh, 2020; Muhammad & Hendrokumoro, 2022; Soniatin & Widyaningsih, 2022).

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The study of questioning language in the field of time and the changes in language elements that occur in that field of time is called comparative historical linguistic study (Adhiti, 2019; Kumala & Lauder, 2021). The grouping of languages in comparative historical linguistic studies is based on the differences and similarities of languages (Hadi & Kusumaningrum, 2020). This grouping aims to determine the percentage of similarities and differences between one language and another and also to find out the kinship system and the age of the languages, and the time of separation based on their kinship characteristics, namely phonemic and lexicon (Afria et al., 2020; Aisyah & Widayati, 2022). Comparative historical linguistic studies have several limitations in it, such as studying language in the field of time and changes in language elements in that field of time; examining data from one or more languages in two or more periods or the same period; data of one language from two or more periods are carefully compared to obtain the rules for changes that occur in that language, as well as to compare two or more languages (Iqbal et al., 2022; Rizqi & Widayati, 2021). These elements are compared based on facts from the same period, even what happened between several periods (Lailiyah & Wijayanti, 2022).

It is just that the lack of community ability to interpret the interrelationships between regional languages has an impact on the lack of a sense of unity and oneness between these regions (Napitupulu & Silaban, 2020). In addition, the lack of public understanding of the interrelationships between languages also impacts the difficulty in interpreting words because each word has a different meaning, thus creating different perceptions (Ahya et al., 2022). One effort that can be made to overcome this problem is by studying lexicostatistics. Lexicostatistics is a technique that allows us to determine the level of relationship between two languages using the easiest way, namely by comparing the vocabulary of these languages, which can then be seen and determine the degree of similarity between the vocabulary of the two languages (Erni et al., 2022; Erniati, 2021). The lexicostatistical method operates under two basic assumptions. The first assumption is that some parts of the vocabulary of a language are more difficult to change than others. What is meant by a vocabulary that is difficult to change is a basic vocabulary. These words are very intimate in the life of a language and are the elements that determine the life and death of a language (Hadi & Kusumaningrum, 2020). The second assumption is that there are similarities in vocabulary changes across languages.

It is further explained that lexicostatistics is a technique in language grouping that prioritizes statistical observation of words (lexicon) to determine the grouping based on the percentage of similarities and differences between a language with other languages (Syafi'i, 2019). Previous studies have revealed that lexicostatistical studies can show the kinship between Sasak, Sumbawa/Samawa, and Bima/Mbojo languages. These studies show similarities and similarities in form and meaning reflections of the same historical heritage (Hilmi, 2017). The results of other studies reveal that lexicostatistical studies can also show a kinship relationship between the Bukittinggi dialect of Minang and Indonesian (Hafizah, 2018). The results of further research also revealed that the lexicostatistical study of the data showed that the Bugis and Toraja languages are related and belong to the level of the Indonesian language family (Mayangsari, 2020). Based on some of the results of these studies, it can be said that the lexicostatistical study can significantly show the relationship between languages. In previous research, no study has specifically discussed the lexicostatistics of Javanese and Sasak languages in comparative historical linguistic studies. So this research is focused on analyzing kinship relationships based on numerical calculations between the Javanese and Sasak languages and the lexicostatistical order in both languages.

2. METHOD

This research uses qualitative and quantitative methods. Qualitatively, a reconstruction of cognates will be carried out, proving the existence of kinship between BJ and BS. Meanwhile, quantitatively, lexicostatistical and glottochronology calculation techniques will be carried out between the two languages to see the kinship between the two languages and the time of language separation and estimate the age of the two languages. The research data was in the form of vocabulary in BJ and BS, which were obtained from various written sources and informant interviews using the note-taking technique to obtain data. This research was conducted in several stages, including collecting basic vocabulary of related languages, determining and calculating which pairs are related words, and connecting the results of calculations in kinship percentages with kinship categories.

The research collected data using the literature study method or secondary data from local languages, namely Javanese and Sasak, which correspond to Morris Swades' 207 basic vocabularies. The technique used in this study is lexicostatistical. In this technique, data analysis is carried out in the following steps: first, choosing words for research data from each language obtained from the Swades basic vocabulary list. The words obtained from Swades are then selected to find words that will be used as

research data. This selection was made considering that the words chosen had similarities between the Javanese and Sasak languages. Second, determine the related words to be analyzed. The next step is to determine related words based on the similarity of the sounds of the two languages to be compared. Third, calculate the level of kinship between the two languages. The arrangement of the sequence of the language divisions follows the analysis results of the lexicostatistical techniques.

3. RESULT AND DISCUSSION

Result

The research results show that in the lexicostatistical analysis, collecting basic vocabulary lists from Javanese and Sasak plays an important role in comparing the two languages. The data collected was 207 Swades' basic vocabulary. Next, a comparison of words is carried out to determine which pairs of words are related words and which are not. Furthermore, the analysis results show several findings in this study, including the first finding relates to the classification of relatives. This classification is done by comparing the vocabulary of the two languages, Javanese and Sasak. A word pair is declared a relative word if it fulfills the following conditions: first, it is an identical pair. Identical word pairs are word pairs where all the phonemes are the same and are a direct inheritance from their old or proto-language (Keraf). There are 13 identical pairs in both languages, as shown in [Table 1](#).

Table 1. Pairs of identical words

Number	Data	Gloss	Javanese language	Sasak language
1	1	Saya	Aku	Aku
2	24	Tiga	Telu	Telu
3	39	Anak	Anak	Anak
4	59	Bunga	Kembang	Kembang
5	75	Hidung	Irung	Irung
6	76	Mulut	Cangkem	Cangkem
7	104	Pikir	Mikir	Mikir
8	138	Jahit	Jait	Jait
9	173	Hijau	Ijo	Ijo
10	174	Kuning	Kuning	Kuning
11	179	Tahun	Taon	Taon
12	180	Hangat	Anget	Anget
13	207	Nama	Aran	Aran

The second condition is that the pair has phonemic correspondence. Suppose the phonemic changes between the two languages occur reciprocally and regularly, and the frequency is high. In that case, the balanced forms between the two languages are considered to be related. Eight pairs have phonemic correspondences from both languages, as shown in [Table 2](#).

Table 2. Word pairs that have phonemic correspondences

Number	Data	Gloss	Javanese language	Sasak language
1	4	Kami/Kita	Kita	Ite
2	25	Empat	Papat	Mpat
3	38	Manusia	Manungsa	Manusie
4	53	Ranting	Pang	Pempang
5	79	Kuku	Kuku	Kungku
6	82	Lutut	Dhengkul	Jengku
7	95	Isap	Isep	Ngisep
8	175	Putih	Putih	Putek

The third condition is that there are pairs that have one phoneme difference. If in one-word pair, there is a difference of one phoneme. It can be explained that the difference occurs due to the influence of the environment it enters. In contrast, in other languages, the influence of the environment does not change the phoneme. Then, the pair is defined as a relative word (Keraf). Fifteen pairs have one different phoneme from both languages, which can be seen in [Table 3](#).

Table 3. Pairs of Words that Have One Different Phoneme

Number	Data	Gloss	Javanese language	Sasak language
1	7	Ini	Iki	Niki
2	19	Beberapa	Pira	Pire
3	26	Lima	Lima	Lime
4	49	Ular	ula	Ulah
5	90	Jantung	Jantung	Jantong
6	91	Hati	Ati	Ate
7	109	Mati	Mati	Mate
8	117	Coret	Corèk	Coret
9	118	Gali	Kedhuk	Keduk
10	131	Gosok	Nggosok	Ngosok
11	141	Nyanyi	Nyanyi	Bnyanyi
12	151	Hujan	Udan	Ujan
13	168	Abu	Awu	Au
14	171	Gunung	Gunung	Gunong
15	178	hati	Dina	Dine

The data from the analysis regarding the classification of related forms have explained the words related word pairs, while the non-relative word pairs are one hundred and fifty-one, and the glosses not considered are twenty. Further, the results of the classification of Javanese and Sasak language relatives can be seen in [Table 4](#).

Table 4. The Results of the Classification of Javanese and Sasak Language Relatives

Data name	Total
Vb (independent variable)/number of basic vocabulary from Javanese and Sasak languages	207
Vd (basic variable)/n = Vb-gloss, which is not taken into account	187
Vt (related variable)/relative vocabulary = Vd - non-relative	36
a. Identical pair	13
b. Pairs that have a phonemic correspondence	8
c. Pairs that have one distinct phoneme	15
The gloss that doesn't count	20
Non-relative vocabulary	151

The second finding relates to calculating the degree of kinship between the two languages, showing that the degree of kinship between Javanese and Sasak is 23.8%. The third finding relates to calculating the separation time between the Javanese and Sasak languages. Data on the classification of relatives, the separation time between Javanese and Sasak languages shows 1435 thousand years ago. The Javanese and Sasak languages are estimated to have begun to separate from the Proto language around 587 AD (calculated by 2022). The fourth finding relates to the results of calculating the error term. Determining the possibility of a more precise separation between Javanese and Sasak can be done by calculating the standard error period. The result of the standard error shows a value of 0.03 which is then added to the percentage of initial relatives (C) to get the new $C = C + S$, namely $0.238 + 0.03 = 0.268$. With this new C, the separation time can be calculated again using the same formula. Thus, the error period: $W - \text{new } W = 1435 - 1317 = 118$ years.

The fourth finding relates to the results of an analysis of the kinship relationship between the Javanese and Sasak languages. Based on the lexicostatistical analysis of the two languages, it can be seen that the kinship relationship between the Javanese and Sasak languages is 23.8%. The age of the Javanese and Sasak languages can be stated as follows: first, Javanese and Sasak languages were a single language in 1435 ± 118 years ago. Javanese and Sasak were a single language in $1435 + 118 = 1553$ and $1435 - 118 = 1317$. So Javanese and Sasak were a single language from 1553-1317 years ago. And third, Javanese and Sasak languages separated in a proto 587 ± 118 years ago. $587 + 118 = 705$, and $587 - 118 = 469$. So these two languages split into a proto-language between 469 - 705 AD (calculated by 2022). In more detail, the kinship relationship can be seen in [Figure 1](#).

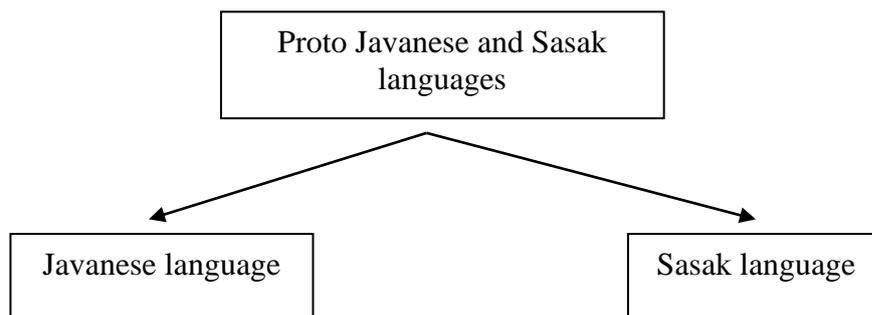


Figure 1. Kinship Relationship Between Javanese and Sasak Languages

Discussion

Comparative Historical Linguistic Studies show the relationship between the Javanese and Sasak languages. Both languages belong to the Javanese family, the Malay-Polynesian family, even though these two languages are geographically located in separate areas and on different islands. The grouping of related languages can be carried out using the lexicostatistics method. Besides that, it is also used to determine the time of separation of related languages (Setiawan, 2020; Surip & Widayati, 2019). The grouping of languages in comparative historical linguistic studies is carried out based on the differences and similarities of languages. This grouping aims to determine the percentage of similarities and differences between one language and another and also to find out the kinship system and the age of the language, and the time of separation based on the nature of the kinship, namely phonemic and lexicon (Hakim, 2020; Sholeha & Hendrokumoro, 2022). Comparative historical linguistic studies have several limitations in it, such as studying language in the field of time and changes in language elements in that field of time; examining data from one or more languages in two or more periods or the same period; data of one language from two or more periods are carefully compared to obtain the rules for changes that occur in that language, as well as to compare two or more languages (Iqbal et al., 2022; Lailiyah & Wijayanti, 2022; Rizqi & Widayati, 2021).

The analysis results of the percentage of kinship between Javanese and Sasak languages show 23.8%. Furthermore, based on the error term analysis, it is known that Javanese and Sasak languages were a single language around 1553-1317 years ago. The Javanese and Sasak languages are thought to have begun to separate from one proto around 469 – 705 AD (calculated by 2022). Classification of Javanese and Sasak relatives' forms are grouped into three categories: identical word pairs, word pairs with phonemic correspondences, and word pairs with one phoneme difference. Identical word pairs are word pairs in which all the phonemes are the same and are a direct inheritance from their parent or proton language.

In contrast, word pairs with phonemic correspondence are word pairs in which the two forms of language have regular interchange, and the frequency is the same. Thus giving rise to a balanced form between the two languages considered to be related (Erni et al., 2022; Erniati, 2021; Hadi & Kusumaningrum, 2020). Furthermore, there are pairs of words that have a difference of one phoneme, if in one pair of words, there is a difference of one phoneme, but it can be explained that the difference occurs due to the influence of the environment it enters, whereas in other languages, the influence of the environment does not change the phoneme, then the pair is determined as a relative (Hakim, 2020; Sholeha & Hendrokumoro, 2022).

The results obtained in this study are in line with the results of previous research, which also revealed that lexicostatistical studies could show the kinship between Sasak languages, Sumbawa/Samawa languages, and Bima/Mbojo languages, where these studies show similarities and similarities in form and meaning which are a reflection of the same historical heritage (Hilmi, 2017). The results of other studies reveal that lexicostatistical studies can also show a kinship relationship between the Bukittinggi dialect of Minang and Indonesian (Hafizah, 2018). The results of further research also revealed that the lexicostatistical study of the data showed that the Bugis and Toraja languages are related and belong to the level of the Indonesian language family (Mayangsari, 2020). Based on these results, the lexicostatistical study can significantly show the relationship between languages..

4. CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that the percentage of kinship between Javanese and Sasak languages is 23.8%. Further, the error term analysis shows that

Javanese and Sasak languages were a single language around 1553-1317 years ago. The Javanese and Sasak languages are thought to have begun to separate from one proto around 469 – 705 AD (calculated by 2022).

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