







Morphophonemics of the Morpheme {N} in the Javanese Language

Dwi Bambang Putut Setiyadi^{a*} , Purwo Haryono^b , Nanik Herawati^c ,
Hersulastuti^d 

^a*Universitas Widya Dharma Klaten, Indonesia, Email: dbputut@gmail.com*

^b*Universitas Widya Dharma Klaten, Indonesia, Email: pwharyono@gmail.com*

^c*Universitas Widya Dharma Klaten, Indonesia, Email: akunaniherawati@gmail.com*

^d*Universitas Widya Dharma Klaten, Indonesia, Email: hersulastuti@gmail.com*

Received 25 September 2022 | Received in revised form 27 November 2022 | Accepted 29 December 2022

APA Citation:

Setiyadi, D. B. P., Haryon, P., Herawati, N., Hersulastuti. (2022). Morphophonemics of the Morpheme {N} in the Javanese Language. *Eurasian Journal of Applied Linguistics*, 8(3), 70-82.

Doi: <http://dx.doi.org/10.32601/ejal.803006>

Abstract

This research paper explores the morphophonemic variations of the morpheme {N} in the Javanese language, a member of the Austronesian language family. The study aims to comprehensively analyze the various phonological and morphological processes that affect the realization of the {N} morpheme in different linguistic contexts. The research employs a descriptive approach based on analyzing data collected from both primary and secondary sources. This study aims to examine the morphophonemics of the morphemes N- + RW, N- + RW + -ake, and N- + RW + -i, as well as their productivity and underlying principles. Observation, document analysis, and interviews were employed as data-gathering methods. Among the observation and document procedures utilized for data gathering was the observation of written and spoken Javanese materials. The data gathering additionally included interviews with three native Javanese speakers and Javanese language specialists to cross-reference the word forms employed. The researcher used a data triangulation methodology to validate the data. The technique for data analysis included an interactive analytical model that provides for data collection, display, condensation, and conclusion. The morphophonemics of the Javanese morphemes N- + RW, N- + RW + -ake, and N- + RW + -i involve assimilation, ellipsis, synthesis, and phoneme addition, according to the findings of this study. The assimilation process results in the creation of allomorphs of the morpheme N-, particularly m-, n-, ny-, ng-, and -. As shown in Table 5, the morphophonemic principles of the morpheme N- + RW can be formed. In general, the productivity of the morphemes N- + RW, N- + RW + -ake, and N- + RW + -i is high. Unproductivity of these morphemes happens when the morpheme N- meets an RW with a nasal-sounding starting phoneme.

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Keywords: morphophonemics, morpheme N-, principles, productivity, Javanese language

1. Introduction

Morphophonemics studies the variations in a morpheme's sound when paired with other morphemes or used in different situations. In other words, it is concerned with the phonological changes in a morpheme due to its interaction with other morphemes or its phonological environment.

* Corresponding Author.

Email: dbputut@gmail.com

<http://dx.doi.org/10.32601/ejal.803006>

For instance, the morpheme "-ed" is pronounced differently depending on the last sound of the verb stem to which it is linked. The "kiss" morpheme is pronounced as /t/ if the verb stem ends in a voiceless consonant (such as "-ed") (kissed). If the verb stem ends in a voiced sound (as in "love"), then the "-ed" morpheme is pronounced as /d/. (loved). If the verb stem ends in a fricative (as in "wish"), the "-ed" morpheme is pronounced as /t/. (wished). The "like" morpheme is pronounced as /d/ if the verb stem ends in a nasal or liquid sound (such as "marvel" or "-ed") (liked, marveled).

Similarly, the plural morpheme "-s" in English is pronounced differently depending on the last sound of the noun to which it is linked. If the noun ends in a voiceless sound (such as "book"), the "-s" morpheme is pronounced as /s/ (books) (books). The "dog" morpheme is pronounced as /z/ if the noun ends in a voiced sound (such as "-s") (dogs). The "bus" morpheme is pronounced as /z/ if the noun ends in a sibilant sound (such as "-s") (buses). The "bath" morpheme is pronounced as /s/ if the word ends in a fricative (such as "-s") (baths).

In conclusion, morphophonemics studies the changes in a morpheme's sound due to its interaction with other morphemes or its phonological context. It is essential to the comprehension and production of words in a language.

Javanese is one of Indonesia's several regional languages. According to a Language Board study, there are 718 recorded regional languages in Indonesia (Badan Pengembangan dan Pembinaan Bahasa, 2017). Javanese is one of these regional languages. Javanese is spoken in Central Java, East Java, and the Special Region of Yogyakarta, in addition to Banten, Lampung, the region surrounding Medan, and transmigration areas throughout Indonesia. Due to Java's crowded population, these transmigration areas are places outside Java where people were encouraged to move. In addition to Indonesia, the Javanese language is also spoken in Suriname, the Netherlands, New Caledonia, and the west coast of Johor. Approximately 75.5 million people worldwide currently speak Javanese (Wedhawati, 2006). Javanese is the world's eleventh most widely spoken language, out of a total of 6703, based on the number of native speakers (Purwo, 2000).

Poerwadarminta asserts that the Javanese language has been in use since antiquity. Up to the 1400s, Ancient Javanese was spoken. This was followed by the evolution of a language known as Middle Javanese, which was spoken until the early eighteenth century. From the 1700s to the current day, the period is known as the New Javanese period (Setiyadi, 2012). Poerwadarminta compiled Baoesastra Djawa, a 670-page Javanese lexicon, in 1939. He was also a prominent linguist who authored the book Sarining Paramasastra Djawa on Javanese grammar in 1953. This book offers information on the Javanese language's origins, vocabulary, and grammar. Form and category are employed to describe the words and phrases. In succeeding times, Javanese language publications tended to be similar, emphasizing words and sentences (without mentioning morphology and syntax). Javanese language vocabularies, such as tembung and ukara, meaning 'word' and sentence, were also employed.

In Padmosoekatjo's 1986 book Paramasastra Jawa, a discussion of the vocal sounds of the Javanese language (which was not yet known as phonology) first appeared. Edi Subroto, in his book Tata Bahasa Deskriptif Bahasa Jawa (1991), and Sudaryanto, in Tata Bahasa Baku Bahasa Jawa (1992), both of which focus on linguistics and its components such as phonology, morphology, and syntax, published additional comments based on academic research. The most recent publication of this sort is Wedhawati (2006) Tata Bahasa Jawa Mutakhir. These three works are written predominantly in Indonesian. Wedawati provides the most comprehensive explanation, covering the evolution of the Javanese language, its speech varieties, speech levels, and fundamental concepts, as well as its phonology, morphology, syntax, and discourse, in a total of 676 pages.

Morphology is a branch of linguistics concerned with the origin and structure of words. In word formation, there are two processes: morphological and morphophonemic (Katamba, 1993). The morphological process is related to the process of word development from other units that are basic root words. These root words (RW) could be monomorphemic or polymorphemic. Word formation may entail the processes of affixation, reduplication, and composition. It is referred to as a morphophonemic process if, during the development of a word, there are phoneme modifications brought about by the interaction of two morphemes. Morphophonemics in the Javanese language have numerous forms and properties not present in other languages. These distinctive qualities are a result of the multiple phonemic alterations they contain.

There is not yet much literature on word development in the Javanese language. Therefore, this study aims to examine this topic, focusing specifically on the morphophonemics of the Javanese morpheme N-. In the Javanese language, the morpheme N- undergoes numerous transformations during word construction. These variations in the form are regular. Therefore it may be required to analyze the morphophonemic principles of the morpheme N- in addition to its varieties and productivity. The morphophonemic process in Javanese is a process of constant phonemic change, allowing its principles to be articulated. This research examines the principles of word creation for words with the suffixes N- + RW, N- + RW + -ake, and N- + RW + -i. Words containing these morphemes are used as evidence of their prevalence in everyday language. The same information is also utilized to examine the frequency of these terms in the mass media.

The questions in this research are formulated as: (1) what is the nature of the morphophonemic process of the morphemes {N}- + RW, {N}- + RW + {-ake}, and {N}- + RW + {-i} in the Javanese language? (2) what are the morphophonemic principles of the morphemes {N}-, {N}- + ake, and {N}- + -i? (3) how high is the productivity of the morphemes {N}- + RW, {N}- + RW + {-ake}, and {N}- + RW + {-i} in the Javanese language?

2. Literature Review

2.1 Javanese Morphology

The study of the grammatical structure of word parts is called morphology (Akmajian, Demers, Farmer, & Harnish, 2010; Fromkin, 2000; Lieber, 2009; Verhaar, 2016). Morphology is the branch of linguistics that deals with words, their internal structure, and how they are generated (Aronof & Fudeman, 2005). The morphological study focuses on constructs composed of words and word parts, including bound morphemes, but excludes the production of phrases, whereas syntax focuses on constructions known as phrases. Consequently, the units of a morphological study are words and word parts, one of which is bound morphemes, such as *nggunting* 'cut' [with scissors] (active verb form), consisting of the prefix N- and the RW *gunting*'scissors', *digunting* 'cut' (passive verb form), consisting of the prefix di- and RW *gunting*, *ginunting* 'cut'. The constrained morpheme in this procedure is the affix. At the same time, the RW is a free morpheme. Affixes that may be added to the RW *gunting* include a prefix, an infix, a suffix, and a confix.

Every word can be broken down into smaller units known as morphemes. For example, *nuthuk*'strike' from the morpheme N- and *thuthuk*'strike', *dipangan* (eaten) from the morpheme di- and *pangan*, *panganan* (meal) from the morpheme *pangan* and -an, etc. Morphemes are the smallest meaningful structures. Morphemes can be phonemes or combinations of phonemes that provide meaning. In Javanese, morphemes that take the shape of a phoneme are -i and -a, as in *diresiki* (passive), di- + *resik* + -i, and *nulisa* (imperative), from N- + *tulis* + -a. These units cannot be referred to as morphemes without meaning. For example, the term *sakampung*, which means "one village," consists of the units *sa-* and *kampung*, both of which have meaning. However, in the word *sabar*, which means "patient," *sa-* lacks meaning and is, therefore, not a morpheme.

Morphology is often defined as the branch of linguistics dealing with the function and meaning changes of words (Booij, 2007; Heine & Narrog, 2010; Salzmann, Stanlaw, & Adhachi, 2012). The following illustration clarifies this concept provided by field specialists. The fundamental unit *pangan* (food) may change the classification to become the noun *panganan* (food) or the verb *dipangan* (eaten), a reduplication such as *mangan-mangan* (eating to celebrate something) or a composition such as *mangan turu* (eat and sleep) or another alteration. In addition, a process of assimilation, ellipsis, or the creation of a phoneme due to the meeting of two morphemes occurs due to this change in word class or another morphological process. In the case of the morpheme N- and *tulis* *nulis* (write), for instance, assimilation of N- to n- and ellipsis of the phoneme [t] occurs. As a result of assimilation, the morpheme N- becomes ng-, and the phoneme /e/ is added to form the word *ngebom*, which means "bomb."

As in other languages, word development is a component of the morphological process. Word construction may involve affixation, reduplication, composition, abbreviation, internal modification, zero modification, etc. Affixation is a process in which an affix is added to the RW, such as the prefix N- and *tulis* 'write' to become *nulis* 'write' (active verb); the infix -um- and *gulung* 'roll' to become *gumulung* 'rolling around'; the suffix -an added to the word *ukur*'measure' to become *ukuran*'measurement'; the In the process of word production, there is also a morphophonemic process, which involves phoneme alterations such as assimilation, dissimilation, ellipsis, metathesis, phoneme addition, and coding (Parera, 2007; Setiyadi, 2011). This research focuses on the morphophonemic process of the morpheme N- and its morphophonemic principles inside the Javanese language.

2.2 Morphophonemics

Morphophonemics is a subsystem that connects morphology with phonology or phonological events resulting from meeting two morphemes. The conjunction of two morphemes leads to changes in phonemes (Badan Pengembangan dan Pembinaan Bahasa, 2017; Setiyadi, 2011; Verhaar, 2016). The morphophonemic process can be described as a phonological event resulting from two morphemes' interaction. In Javanese, the morphophonemic process can only occur when a root-form morpheme meets a bound morpheme, such as a prefix, infix, suffix, or confix.

Examples:

- | | | | | |
|-----|---------------|--------------|---|-----------------------|
| (1) | {N}- + | <i>tabok</i> | → | <i>nabok</i> 'slap' |
| (2) | (Katamba)- + | <i>ili</i> | → | <i>keli</i> 'flow' |
| (3) | <i>tali</i> + | -{ake} | → | <i>talekake</i> 'tie' |

In process (1), the morpheme N- assimilates to n- because the phoneme /n/, which is homorganic with the phoneme /t/ at the beginning of the root word, changes. In addition, the phoneme /t/ undergoes an ellipsis process. In number (2), the phonemes /a/ and /i/ combine to become /e/, whereas in number (3), the phoneme /i/ assimilates to become /e/ and the phoneme /k/ is added between *tali* and -ake. The morphophonemic process involves phoneme alterations in the form of assimilation, ellipsis, synthesis, and the emergence or addition of phonemes, as demonstrated by these instances.

3. Methodology

The method employed is qualitative. The nature of qualitative research is descriptive. The data collection methods included observation, document analysis, and interviews (Patton, 2015). Observation of documents of written language found in the Javanese dictionaries Baoesastra Djawa and Kamus Pepak Basa Jawa, the magazine Panjebar Semangat years 2020-2021, and oral language sources for the everyday use of the Javanese language were used to collect data about the morphemes N- + RW, N- + RW + -ake, and N- + RW + - To cross-check the word forms used as examples, and interviews were performed with three native Javanese speakers and Javanese language specialists.

Using a data triangulation technique, the method, theory, and researcher verified the data's validity. Data triangulation was performed using a range of data sources, including the two Javanese dictionaries mentioned previously, periodicals, and oral sources. Triangulation was also incorporated into the process. Various techniques were employed to collect reliable data, including document analysis, observation, and interviews. Data acquisition using document and observation approaches comprised written language data from the dictionaries mentioned above and magazines. Next, interviews were performed with informants, who were Javanese language users and Javanese language specialists, regarding the usage of the Javanese language gleaned from the document and observation techniques. The research was triangulated by holding FGDs concerning the data, technique, and analysis results before concluding the findings. There was also a comparison with the research findings of other language experts who had undertaken comparative research. The triangulation of theories was conducted by discussing the study problems from multiple theoretical perspectives.

The method of data analysis employed was an interactive analytical model that included data collection, data display, data consolidation, and conclusions/verification (Miles, Huberman, & Saldana, 2014). The data analysis procedure was conducted concurrently with data collection from the outset and throughout. After completing the data collection, the researcher focused solely on the three components of the analysis: data display, data condensation, and conclusion. If it was determined that the data collected was insufficient, the researcher would collect further information to support the conclusion. The analytical procedure can be depicted as follows:

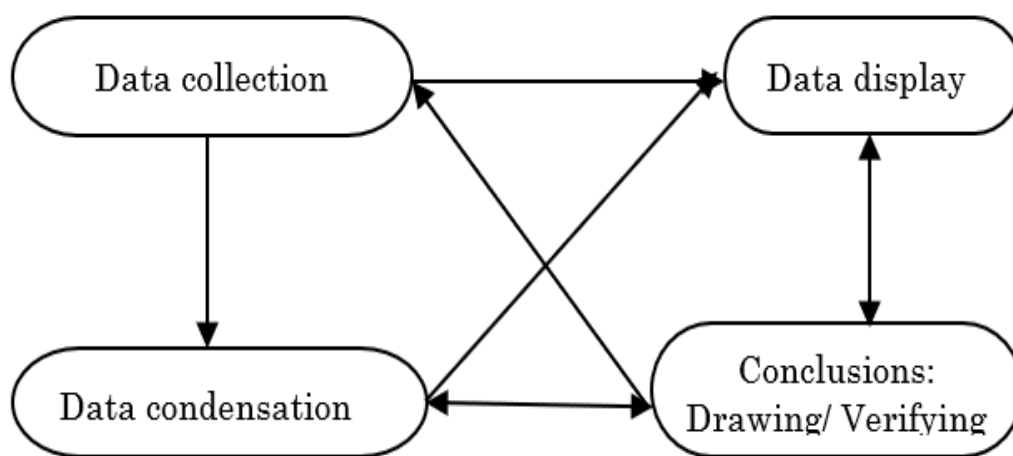


Figure 1. Interactive analysis

4. Findings and Discussion

4.1 Morphophonemic Process of Morpheme {N}- + Rw

The morphophonemic process of the morpheme {N}- + RW involves assimilation, ellipsis, coding/synthesis, and the emergence of phonemes.

The morphophonemic process of the morpheme N- + RW with the beginning phoneme /p/ involves two processes: the assimilation of N- to /m/ and the ellipsis of the phoneme /p/, as in the word pathok'stake' to form mathok. N- + RW with the first phoneme /b/ only includes assimilation of N- to become /m/, as in the word bobol 'break' to become mbobol, but N- + RW with the initial phoneme /f/ involves both assimilation of N- to become /m/ and ellipsis of the phoneme /f/, as in the word fitnah's. The initial phoneme /f/ of an RW only occurs in loanwords because the Javanese language lacks the phoneme /f/. Hence no words begin with /f/.

Table 1. Morphophonemic of morpheme {N}- becomes /m/ if followed by a Root Word with the initial phoneme /p,b,f/

No.	Morpheme	Root Word	Result	Morphophonemic
1	{N}-	<i>pathok</i>	<i>mathok</i>	1. {N} → /m/ 2. ellipsis of /p/
		<i>pulut</i>	<i>mecah</i>	
		<i>pincuk</i>	<i>mincuk</i>	
		<i>poles</i>	<i>moles</i>	
		<i>pecah</i>	<i>mecah</i>	
		<i>pecok</i>	<i>mecok</i>	
		<i>plorok</i>	<i>mlorok</i>	
		<i>protes</i>		
		<i>bobol</i>	<i>mbobol</i>	
		<i>babat</i>	<i>mbabat</i>	
2	{N}-	<i>bilas</i>	<i>mbilas</i>	{N} → /m/
		<i>becak</i>	<i>mbecak</i>	
		<i>bedhol</i>	<i>mbedhol</i>	
		<i>bukak</i>	<i>mbukak</i>	
		<i>brodhol</i>	<i>mbrodhol</i>	
		<i>blokek</i>	<i>mblokek</i>	
3.	{N}-	<i>fitnah</i>	<i>mitnah</i>	1. {N} → /m/ 2. ellipsis of /f/
		<i>foto</i>	<i>moto</i>	
		<i>film</i>	<i>milm</i>	

Table 2. Morphophonemic of morpheme {N}- becomes /n/ if followed by a Root Word with the initial phoneme /t, d/

No.	Morpheme	Root Word	Result	Morphophonemic
1	{N}-	<i>tari</i>	<i>nari</i>	1. {N} → /n/ 2. ellipsis of /t/
		<i>tutu</i>	<i>nutu</i>	
		<i>tolak</i>	<i>nolak</i>	
		<i>tiba</i>	<i>niba</i>	
		<i>tembak</i>	<i>nembak</i>	
		<i>tekak</i>	<i>nekak</i>	
		<i>tratap</i>	<i>nratap</i>	
		<i>ilosor</i>	<i>nlosor</i>	
		<i>delok</i>	<i>ndelok</i>	
		<i>deres</i>	<i>nderes</i>	
2	{N}-	<i>dumuk</i>	<i>ndumuk</i>	{N} → /n/
		<i>damu</i>	<i>ndamu</i>	
		<i>dongeng</i>	<i>ndongeng</i>	
		<i>dilat</i>	<i>ndilat</i>	
		<i>dregil</i>	<i>ndregil</i>	
		<i>dlodok</i>	<i>ndlodok</i>	

The morphophonemic of the morpheme N- changes to /n/ when it encounters an RW with the initial phoneme /t/ or /d/, as in words *tari* 'dance' and *delok* 'look at', which become *nari* and *ndelok*, respectively. When the morpheme N- unites with a RW that begins with the phoneme /t/, assimilation of N- results in /n/ with the omission of the phoneme /t/. N- assimilates to /n/ when linked to a RW with the initial phoneme /d/, as in the word *delok*, which becomes *ndelok*.

Table 3. Morphophonemic of morpheme {N}- becomes ny [ñ] if followed by a Root Word with the initial phoneme /s, c, j/

No.	Morpheme	Root Word	Result	Morphophonemic
1	{n}-	<i>siram</i>	<i>nyiram</i>	1. {n} → /ny/ [ñ] 2. ellipsis of /s/
		<i>suluh</i>	<i>nyuluh</i>	
		<i>senggol</i>	<i>nyenggol</i>	
		<i>semak</i>	<i>nyamak</i>	
		<i>soto</i>	<i>nyoto</i>	
		<i>saring</i>	<i>nyaring</i>	
		<i>srobot</i>	<i>nyrobot</i>	
		<i>slomot</i>	<i>nylomot</i>	
		<i>colong</i>	<i>nyolong</i>	
		<i>caruk</i>	<i>nyaruk</i>	
2	{n}-	<i>cetak</i>	<i>nyetak</i>	1. {n} → /ny/ [ñ] 1. ellipsis of /c/
		<i>cecep</i>	<i>nyecep</i>	
		<i>cucuk</i>	<i>nyucuk</i>	
		<i>ciprat</i>	<i>nyiprat</i>	
		<i>clorot</i>	<i>nylorot</i>	
		<i>joget</i>	<i>njoget</i>	
3	{n}-	<i>jujug</i>	<i>njujug</i>	{n} → /ny/ [ñ]
		<i>jalu</i>	<i>njalu</i>	
		<i>jebol</i>	<i>njebol</i>	
		<i>jereng</i>	<i>njereng</i>	
		<i>jilih</i>	<i>njilih</i>	
		<i>jranthal</i>	<i>njranthal</i>	
		<i>jilmet</i>	<i>njilmet</i>	

The phoneme N- becomes /ny/ or [ñ] when coupled with a RW that begins with the phonemes /s.c.j/. In N- + RW with the first phoneme /s/, such as in the word siram 'bathe,' there are two processes: assimilation of N- to become /ny/ and ellipsis of the phoneme /s/. In contrast, in N- + RW with the initial phoneme /c/, such as in the word colong'steal' to become nyolong, there is Next, there occurs assimilation of N- to /ny/ in N- + RW with the initial phoneme /j/, as in the word joget 'dance', to form njoget. The phoneme /ny/ is represented by the letter /n/ because it bears the sound [ñ]. This is also to avoid writing it using the old spelling system, in which it would be spelled as /nj/, resulting in the word njoget.

Table 4. Morphophonemic of Morpheme {N}- becomes ng-/ [ŋ] if followed by a Root Word with the initial phoneme /k, g, r, l, y, and vowels/

No.	Morpheme	Root Word	Result	Morphophonemic
1	{N}-	<i>karang</i>	<i>ngarang</i>	1. {N}-→/ng-/ [ŋ] 2. ellipsis of /k/
		<i>kurung</i>	<i>ngurung</i>	
		<i>kesot</i>	<i>ngesot</i>	
		<i>kethok</i>	<i>ngethok</i>	
		<i>kroncal</i>	<i>ngroncal</i>	
		<i>kleler</i>	<i>ngleler</i>	
2	{N}-	<i>garang</i>	<i>nggarang</i>	{N}-→/ng-/ [ŋ]
		<i>godhok</i>	<i>nggodhok</i>	
		<i>gulung</i>	<i>nggulung</i>	
		<i>gelung</i>	<i>nggelung</i>	
		<i>gendhong</i>	<i>nggendhong</i>	
		<i>gitik</i>	<i>nggitik</i>	
3	{N}-	<i>gropyok</i>	<i>nggropyok</i>	{N}-→/ng-/ [ŋ]
		<i>glundhung</i>	<i>ngglundhung</i>	
		<i>rampok</i>	<i>ngrampok</i>	
		<i>rumat</i>	<i>ngrumat</i>	
		<i>rokok</i>	<i>ngrokok</i>	
		<i>remuk</i>	<i>ngremuk</i>	
4	{N}-	<i>renteng</i>	<i>ngrenteng</i>	{N}-→/ng-/ [ŋ]
		<i>rinci</i>	<i>ngrinci</i>	
		<i>lamar</i>	<i>nglamar</i>	
		<i>loloh</i>	<i>ngloloh</i>	
		<i>lucu</i>	<i>nglucu</i>	
		<i>lempit</i>	<i>nglempit</i>	
5	{N}-	<i>lepa</i>	<i>nglepa</i>	{N}-→/ng-/ [ŋ]
		<i>lirik</i>	<i>nglirik</i>	
		<i>yasa</i>	<i>ngyasa</i>	
		<i>yiyid</i>	<i>ngyiyid</i>	
		<i>yakin+ -{ake}</i>	<i>ngyakinake</i>	
		<i>yekti + -{ake}</i>	<i>ngyektekake</i>	
6	{N}-	<i>endhog</i>	<i>ngendhog</i>	{N}-→/ng-/ [ŋ]
		<i>elus</i>	<i>ngelus</i>	
		<i>emban</i>	<i>ngemban</i>	
		<i>erah</i>	<i>ngerah</i>	
		<i>entut</i>	<i>ngentut</i>	
		<i>eja</i>	<i>ngeja</i>	
7	{N}-	<i>etung</i>	<i>ngetung</i>	{N}-→/ng-/ [ŋ]
		<i>edan</i>	<i>ngedan</i>	
		<i>eman</i>	<i>ngeman</i>	
		<i>eyub</i>	<i>ngeyub</i>	
		<i>ajak</i>	<i>ngajak</i>	
		<i>arak</i>	<i>ngarak</i>	
8	{N}-	<i>antem</i>	<i>ngantem</i>	{N}-→/ng-/ [ŋ]
		<i>ambung</i>	<i>ngambung</i>	
		<i>asah</i>	<i>ngasah</i>	
		<i>undhuh</i>	<i>ngundhuh</i>	
		<i>urus</i>	<i>ngurus</i>	
		<i>ubah</i>	<i>ngubah</i>	
9	{N}-	<i>utus</i>	<i>ngutus</i>	{N}-→/ng-/ [ŋ]
		<i>usap</i>	<i>ngusap</i>	
		<i>obong</i>	<i>ngobong</i>	
		<i>olah</i>	<i>ngolah</i>	
		<i>ombak</i>	<i>ngombak</i>	
		<i>ombe</i>	<i>ngombe</i>	
10	{N}-	<i>oyod</i>	<i>ngoyod</i>	{N}-→/ng-/ [ŋ]
		<i>iris</i>	<i>ngiris</i>	
		<i>ilang</i>	<i>ngilang</i>	
		<i>isi</i>	<i>ngisi</i>	
		<i>ijo</i>	<i>ngijo</i>	
		<i>ibadah</i>	<i>ngibadah</i>	
11	{N}-			{N}-→/ng-/ [ŋ]

The morpheme N- becomes /ng/- or [ŋ] when it combines with a RW that begins with the phonemes /g, r, l, y, and vowels/. Assimilation of N- to /ng/- and ellipsis of the phoneme /k/ occur when N- combines with a RW beginning with the phoneme /k/, such as in the word *karang*, to form *ngarang*. If the morpheme N- is added to the root words *rampok* 'rob,' *lamar* 'propose,' and *yasa* 'build,' just assimilation is required to produce /ng/, resulting in the words *ngrampok*, *nglamar*, and *ngyasa*. Similarly, when combined with a RW with a vowel as the first phoneme, assimilation occurs to form /ng/, as in the words *endog* 'egg,' *eja* 'spell,' *ajak* 'invite,' *unduh* 'download,' *obong* 'burn,' and *iris* 'slice,' which become *ngedhog*, *ngeja*, *ngunduh*, *ngobong*, and *ngiris*.

Table 5. Morphophonemic of Morpheme {N}- becomes nge-/ [ŋə] if followed by a monosyllabic Root Word

No.	Morpheme	Root Word	Result	Morphophonemic
1	{N}-	<i>bor</i>	<i>ngebor</i>	{N}-→/nge/- [ŋə]
2	{N}-	<i>cet</i>	<i>ngecet</i>	{N}-→/nge/- [ŋə]
3	{N}-	<i>las</i>	<i>ngelas</i>	{N}-→/nge/- [ŋə]
4	{N}-	<i>gas</i>	<i>ngegas</i>	{N}-→/nge/- [ŋə]
5.	{N}-	<i>rong</i>	<i>ngerong</i>	{N}-→/nge/- [ŋə]
6.	{N}-	<i>gong</i>	<i>ngegong</i>	{N}-→/nge/- [ŋə]
7.	{N}-	<i>dang</i>	<i>ngedang</i>	{N}-→/nge/- [ŋə]
8	{N}-	<i>tok</i>	<i>ngetok</i>	{N}-→/nge/- [ŋə]
9.	{N}-	<i>sat</i>	<i>ngesat</i>	{N}-→/nge/- [ŋə]
10.	{N}-	<i>byar</i>	<i>ngebyar</i>	{N}-→/nge/- [ŋə]

All N- morphemes transform into /nge-/ or [ŋə] when preceded by a monosyllabic RW in the morphophonemic process described above. In this morphophonemic process, assimilation is decided not by the beginning phoneme of the root word, but by the number of syllables in the root word. This form of assimilation happens in terms such as *bor*, *cet*, *las*, *gas*, and *gong*, which become *ngebor*, *ngecet*, *ngelas*, *ngegas*, and *ngegong*, respectively.

Table 6. Morphophonemic of Morpheme {N}- is an ellipsis if followed by a Root Word with the initial phoneme /ng, m, n, ny/

No.	Morpheme	Root Word	Result	Morphophonemic
1	{N}-	<i>Ngungun</i>	<i>ngungun</i>	{N}- ellipsis
2	{N}-	<i>nyanyi</i>	<i>nyanyi</i>	{N}- ellipsis
3	{N}-	<i>Masak</i>	<i>masak</i>	{N}- ellipsis
4	{N}-+{-ake}	<i>mangga</i>	<i>manggakake</i>	{N}- ellipsis
5	{N}- + {-i}	<i>Nakal</i>	<i>nakali</i>	{N}- ellipsis
6	{N}- + {-i}	<i>nomer</i>	<i>nomeri</i>	{N}- ellipsis

All N- morphemes are omitted in the preceding morphophonemic procedure because they combine with a RW that begins with a nasal phoneme. When the morpheme N- combines with *ngungun* 'amaze', *nyanyi* 'sing,' and *masak* 'cook,' the morpheme N- is an ellipsis, meaning its form does not appear to change, in the examples above becoming *ngungun*, *nyanyi*, and *masak*. Similarly, in the morphemes N- + {-ake}/ -i added to *mangga* 'request', *nakal* 'naughty,' and *nomer* 'number,' the N- morpheme is elliptical, resulting in *manggakake*, *nakali*, and *nomeri*. In this data, the morpheme N- is known as a zero morpheme.

4.2 Morphophonemic Process of the Morpheme {N}- + Rw + {-Ake}

Table 7 displays the morphophonemic process of the morpheme N- + RW + {-ake} in cases that experience a change, whereas those that do not change are omitted.

When the morpheme {N}-+{-ake} meets a RW in which the final phoneme is a vowel /i, a, o u, e/ there are different kinds of assimilation of the phoneme. More specifically, {N}-+{-ake} becomes a homorganic phoneme following the initial phoneme of the root word. In other words there is a synthesis of two different phonemes to become another phoneme. If the RW has the final phoneme /i/ such as in the RW *bali* 'return', the phoneme /i/ is assimilated to become [ɛ] when it meets the phoneme /a/ in {-ake} and is followed by the emergence of the sound [ʔ] which produces the result *mbalekake* [mbaleʔake]. In everyday use, in addition to the form *mbalekake*, the form *mbalekke* also appears, so the morphophonemic process is also different, in that the synthesis of the phoneme /i/ in *bali* and /a/ in {-ake} becomes [ɛ] which is followed by the process of emergence of the phoneme [ʔ] to become *mbalekke* [mbaleʔke]. In the RW *tata* [tətə] 'arrange', the phoneme /ə/ assimilates to become /a/ and the emergence of the phoneme [ʔ] before {-ake} becomes [nataʔake].

Table 7. Morphophonemic of the Confix {N}-+{-ake} if followed by a Root Word with a vowel as the final phoneme.

No.	Morpheme	Root Word	Result	Morphophonemic
1	{N}-+{-ake}	<i>bali</i>	<i>mbalekake</i>	1. {N}-→ /m/ 2. /i/ + /a/ → /e/ 3. + [ʔ]
		<i>dadi</i>	<i>ndadekake</i>	
		<i>mari</i>	<i>marekake</i>	
		<i>lali</i>	<i>nglalekake</i>	
		<i>nyunggi</i>	<i>nyunggekake</i>	
2	{N}-	<i>tata</i>	<i>natakake</i>	1. {N}-→ /n/ 2. /i/ + /a/ → /e/ 3. + [ʔ]
		<i>tamba</i>	<i>nambakake</i>	
		<i>jaga</i>	<i>njagakake</i>	
		<i>krama</i>	<i>nramakake</i>	
		<i>tiba</i>	<i>nibakake</i>	
3	{N}-+{-ake}	<i>kadho</i>	<i>ngadhokake</i>	1. {N}-→ /ng/- [ŋ] 2. + [ʔ]
		<i>bodho</i>	<i>mbodhokake</i>	
		<i>kendho</i>	<i>ngedhokake</i>	
		<i>foto</i>	<i>motokake</i>	
		<i>jodho</i>	<i>njodhokake</i>	
4	{N}-+{-ake}	<i>tiru</i>	<i>nirokake</i>	1. {N}-→ /n/ 2. /u/+/a/ → /o/ [O] 3. + [ʔ]
		<i>tuku</i>	<i>nukokake</i>	
		<i>krungu</i>	<i>ngrungokake</i>	
		<i>tunggu</i>	<i>nunggokake</i>	
		<i>туру</i>	<i>nurokake</i>	
5	{N}-+{-ake}	<i>rame</i>	<i>ngramekake</i>	1. {N}-→ /ng/- [ŋ] 2. /e/+/a/ → /e/ [ε] 3. + [ʔ]
		<i>sendhe</i>	<i>nyendhekake</i>	
		<i>pepe</i>	<i>mepekake</i>	
		<i>sate</i>	<i>nyatekake</i>	
		<i>gadhe</i>	<i>nggadhekake</i>	

Variations in form of use also appear, where *natakke*, with the phoneme /ä/ in *tata* [tätä] and the phoneme /a/ in {-ake} synthesize to become /a/ followed by the emergence of the phoneme [ʔ] to become *natakke* [nataʔke]. In the RW *kadho* 'gift', the phoneme /o/ meets the phoneme /a/ in {-ake} and assimilates to become [O], followed by the sound [ʔ] to become *ngadhokake* [ŋadhOʔake], or the phoneme /o/ in *kadho* and the phoneme /a/ in {-ake} synthesize to become /O/, followed by the emergence of the phoneme [ʔ] to become *ngadhokke* [ŋadhOʔke]. If the RW ends with the phoneme /u/ such as in the word *tiru* 'imitate' and meets the phoneme /a/ in {-ake}, the phoneme /u/ assimilates to become [O] followed by the emergence of the phoneme [ʔ] resulting in *nirokake* [nirOʔake], or the phoneme /u/ in *tiru* and the phoneme /a/ in {-ake} synthesize to become /O/ followed by the emergence of the phoneme [ʔ] to become *nirokke* [nirOʔke]. In the RW *rame* 'busy', the phoneme /e/ meets the phoneme /a/ in {-ake} and assimilates to become [ε] resulting in the emergence of the sound /ʔ/ to become *ngramekake* [ŋrameʔake], or the phoneme /e/ in *rame* and the phoneme /a/ in {-ake} synthesize to become [ε] followed by the emergence of the phoneme [ʔ] to become *ngramekke* [ŋrameʔke].

4.3 Morphophonemic Process of the Morpheme {N}- + Rw + {-i}

Table 8 below shows the morphophonemic process of the morpheme {N}- + RW + {-i} which changes, while cases that do not change are not discussed.

Table 8. Morphophonemic of Morpheme {N}-+{-i} if followed by a Root Word in which the final phoneme is a vowel.

No.	Morpheme	Root Word	Result	Morphophonemic
1	{N}-+{-i}	<i>bali</i>	<i>mbaleni</i>	1. {N}-→ /m/ 2. /i/ + /i/ → /ε/ 3. + /n/
		<i>bathi</i>	<i>batheni</i>	
		<i>ragi</i>	<i>nrageni</i>	
		<i>mari</i>	<i>mareni</i>	
		<i>dadi</i>	<i>ndadeni</i>	
2	{N}-+{-i}	<i>tata</i>	<i>natani</i>	1. {N}-→ /n/ 2. ellipsis of /t/ 3. + /n/
		<i>tamba</i>	<i>nambani</i>	
		<i>jaga</i>	<i>njagani</i>	
		<i>kandha</i>	<i>ngandhani</i>	
		<i>tiba</i>	<i>nibani</i>	
3	{N}-+{-i}	<i>gadho</i>	<i>nggadhoni</i>	1. {N}-→ /ng/- [ŋ] 2. + /n/
		<i>bodho</i>	<i>mbodhoni</i>	
		<i>kendho</i>	<i>ngendhoni</i>	
		<i>conto</i>	<i>nyontoni</i>	
		<i>foto</i>	<i>motoni</i>	
4	{N}-+{-i}	<i>bumbu</i>	<i>mbumboni</i>	1. {N}-→ /m/ 2. /u/+/i/ → [O] 3. + /n/
		<i>tuku</i>	<i>nukoni</i>	
		<i>luku</i>	<i>nglukoni</i>	
		<i>tunggu</i>	<i>nunggu</i>	
		<i>туру</i>	<i>nuroni</i>	
5	{N}-+{-i}	<i>rame</i>	<i>ngrameni</i>	1. {N}-→ /ng/- [ŋ] 2. /e/ → [ε] 3. + /n/
		<i>sendhe</i>	<i>sendheni</i>	
		<i>pepe</i>	<i>mepeni</i>	
		<i>gedhe</i>	<i>nggedheni</i>	
		<i>ombe</i>	<i>ngombeni</i>	

The meeting of the morpheme {N}-+{-i} with a RW in which the final phoneme is a vowel /i, a, o u, e/ leads to morphophonemic processes in which {N}-+ RW becomes a homorganic phoneme following the initial phoneme of the root word, while the meeting between the RW and {-i} leads to different changes in the vowel phoneme. If the final phoneme of the RW is /i/ such as in the RW *bali* 'return', the phoneme /i/ assimilates to become [ɛ] when it meets the morpheme {-i} followed by the emergence of the phoneme /n/ to produce the result *mbaleni* [mbaleni]. In the RW *tata* [tätä] 'arrange', the phoneme /ä/ meets the morpheme {-i} and assimilates to become the phoneme /a/, causing the emergence of the phoneme /n/ to become *natani* [natani]. In the RW *gado* 'eat without rice', the phoneme /o/ meets the morpheme {-i} and assimilates to become [O] leading to the emergence of the phoneme /n/ to become *nggadoni* [nggadOni]. If the RW ends in the phoneme /u/ such as in the word *bumbu* 'spice' and meets the morpheme {-i}, the phoneme /u/ assimilates to become [O] and is followed by the emergence of the sound /n/ resulting in *mbumboni* [mbumbOni]. In the RW *rame* 'busy', the phoneme /e/ meets the morpheme {-i} and assimilates to become [ɛ], and is followed by the emergence of the sound /n/ to become *ngrameni* [ngrameni].

From the research results above, the principles of the morphophonemic process of the morpheme {N}- + RW in the Javanese language can be outlined as follows.

Table 9. Morphophonemic Principles of {N}- + RW

No Morpheme	Root Word	Assimilation	Example
1.	{N}- Initial phoneme /p,b,f/ Ellipsis of phoneme /p/ and /f/	/m/	<i>mathok, methik, mupus, mithing mbobol, mbabat, mbolong, mbubut mitnah, moto, milm</i>
2.	{N}- Initial phoneme /t, th, d, dh/ Ellipsis of initial phoneme /t and th/	/n/	<i>nari, nulis, nabok, nata, nulung nuthuk, nothok, nethel, nithik ndelok, ndemok, ndulang, ndilat ndhodhok, ndhungkluk, adheprok</i>
3.	{N}- Initial phoneme /s,c,j/ Ellipsis of phoneme /s,c/	/ny/ or [ñ]	<i>nyiram, nyunat, nyorot, nyanak nyacat, nyuplik, nyopot, nyipta njoget, njala, njupuk, njahit, njereng ngarang, ngopi, ngirim, ngurung nggarang, nggoreng, nggarap ngrampok, ngrombak, ngrusak nglamar, nglurug, ngliling, ngloloh ngyakinake, ngyektekake</i>
4.	{N}- Initial phoneme /k, g, r, l, y, and vowels/ Ellipsis of phoneme /k/	/ng/ or [ŋ]	<i>ngendhog, ngerong, ngesat, ngemban ngeja, ngeman, ngewangi ngajak, ngarak, ngadu, ngadeg ngundhuh, ngunndur, ngundang ngobong, ngojek, ngolah, ngobel ngiris, ngisi, ngindhik, ngidak</i>
5.	{N}- Monosyllabic	/nge/ or [ŋə]	<i>ngebor, ngecet, ngelas, ngegas, ngerong, ngegong, ngedang, ngethok, ngesat, ngebyar</i>
6.	{N}- Initial nasal phoneme	Ø	<i>nomeri, nyanyi, ngungun</i>

1. The morpheme N- assimilates to become /m/ when it encounters a RW with the beginning phonemes /p, b, and f/, whereas a RW with the initial phonemes /p and f/ results in the ellipsis of the initial phoneme.
2. The morpheme N- transforms to /n/ when it encounters a RW with the beginning phonemes /t, th, d, and dh/, whereas a RW with the initial phonemes /t and th/ results in ellipsis of the initial phoneme.
3. The morpheme N- transforms to /ny/ when it encounters a RW with the beginning phonemes /s, c, and j/, and a RW with the initial phonemes /s and c/ results in the omission of the initial phoneme.
4. The morpheme N- transforms to /ng/ when it encounters a RW with the beginning phoneme /k, g, r, l, y, and vowels/, whereas a RW with the initial phoneme /k/ results in the omission of the initial phoneme.
5. The morpheme N- becomes /nge/ when a monosyllabic RW follows it.
6. The pairing of the morpheme N- with a RW that begins with a nasal phoneme results in the ellipsis of the initial nasal phoneme.

Following are the factors governing the morphophonemic process of the formation of the Javanese morpheme N-+ RW + -ake.

Table 10. *Morphophonemic Principles of {N}- + RW + {-ake}*

No	Morpheme	Final phoneme of the RW is a vowel	Assimilation	Example
1	{N}-+{-ake}	<i>bali, dadi, mari</i>	/i/ → [ɛ] + [ʔ] /i/+a/ → [ɛ]	<i>mbalekake, ndadekake, marekake</i> or <i>mbalekke, ndadekke, marekke</i>
2	{N}-+{-ake}	<i>nata, lara, gawa</i>	[ã] → /a/ + [ʔ] [ã] +/a/ → [a]	<i>natakake, nglarakake, nggawakake</i> or <i>natakke, nglarakke, nggawakke</i>
3	{N}-+{-ake}	<i>kadho, bodho, jodho</i>	/o/ → [O] + [ʔ] /o/+a/ → [O]	<i>ngadhokake, mbodhokake, jodhokake</i> or <i>ngadhokke, mbodhokke, njodhokke</i>
4	{N}-+{-ake}	<i>tiru, tuku, tunggu</i>	/u/ → [O] + [ʔ] /u/+a/ → [O]	<i>nirokake, nukokake, nunggokake</i> or <i>nirokke, nukokke, nunggokke</i>
5	{N}-+{-ake}	<i>rame, sendhe, gadhe</i>	/e/ → [ɛ] + [ʔ] /e/+a/ → [ɛ]	<i>ngramekake, nyendhekake, nggadhekake</i> or <i>ngramekke, nyendhekke, nggadhekke</i>

From the table above it can be seen that changes to the morpheme {N}- are assimilated as described in Table 9, but when combined with the morpheme {-ake} the following principles are applied:

1. When the morpheme {-ake} meets a RW with the final phoneme /i/ assimilation occurs where [i] becomes [ɛ] with the addition of a glottal sound [ʔ], or synthesis of the phonemes /i/+a/ occurs to become [ɛ] in variants of the words *mbalekke, ndadekke, and marekke*.
2. When the morpheme {-ake} meets a RW with the final phoneme /a/ assimilation occurs where [ã] becomes [a] with the addition of a glottal sound [ʔ], or synthesis of the phonemes [ã] +/a/ occurs to become [a] in variants of the words *natakke, nglarakke, and nggawakke*.
3. When the morpheme {-ake} meets a RW with the final phoneme /o/ assimilation occurs where [o] becomes [O] with the addition of a glottal sound [ʔ], or synthesis of the phonemes /o/+a/ occurs to become [O] in variants of the words *ngadhokke, mbodhokke, and njodhokke*.
4. When the morpheme {-ake} meets a RW with the final phoneme /u/ assimilation occurs where [u] becomes [O] with the addition of a glottal sound [ʔ], or synthesis of the phonemes /u/+a/ occurs to become [O] in variants of the words *nirokke, nukokke, and nunggokke*.
5. When the morpheme {-ake} meets a RW with the final phoneme /e/ assimilation occurs where [e] becomes [ɛ] with the addition of a glottal sound [ʔ], or synthesis of the phonemes /e/+a/ occurs to become [ɛ] in variants of the words *ngramekke, nyendhekke, and nggadhekke*.

The table below outlines the principles of the morphophonemic process of the morpheme {N}-+ RW + {-i} in the Javanese language.

Table 11. *Morphophonemic Principles of {N}- + RW + {-i}*

No	Morpheme	Final phoneme of RW is a vowel	Assimilation and addition	Example
1	{N}-+{-i}	<i>bali, dadi, mari, tali</i>	/i/+i/ → [ɛ] and + /n/ [ã] + /i/ → [a]	<i>mbaleni, ndadeni, mareni, nalen</i>
2	{N}-+{-i}	<i>nata, lara, gawa, mara</i>	and + /n/ /o/ + /i/ → [O]	<i>natani, nglarani, nggawani, marani</i>
3	{N}-+{-i}	<i>gadho, bodho, conto</i>	and + /n/ /u/ + /i/ → [O]	<i>nggadhoni, mbodhoni, nyontoni</i>
4	{N}-+{-i}	<i>bumbu, tuku, tunggu, biru</i>	and + /n/ /e/+i/ → [ɛ]	<i>mbumboni, nukoni, nunggoni, mbironi</i>
5	{N}-+{-i}	<i>rame, sendhe, pepe, gawe</i>	and + /n/	<i>ngrameni, nyendheni, mepeni, nggaweni</i>

From the table above it can be seen that changes to the morpheme {N}- are assimilated as described in Table 10, but when combined with the morpheme {-i} the following principles are applied:

1. When the morpheme {-i} meets a RW with the final phoneme /i/ assimilation of [i] occurs to become [ɛ] and there is addition of the phoneme /n/.
2. When the morpheme {-i} meets a RW with the final phoneme [ã] assimilation of [ã] occurs to become [a] and there is addition of the phoneme /n/.

3. When the morpheme $\{-i\}$ meets a RW with the final phoneme /o/ assimilation of [o] occurs to become [O] and there is addition of the phoneme /n/.
4. When the morpheme $\{-i\}$ meets a RW with the final phoneme /u/ assimilation of [u] occurs to become [O] and there is addition of the phoneme /n/.
5. When the morpheme $\{-i\}$ meets a RW with the final phoneme /e/ assimilation of [e] occurs to become [e] and there is addition of the phoneme /n/.

The morpheme $\{N\}$ - is a morpheme that is productive because it is a live morpheme that produces many derivatives. The morpheme $\{N\}$ - becomes unproductive when combined with a RW with the initial phoneme /m, ny, ng, and y/. The reason for the unproductivity of this morpheme in these cases is that RWs with these initial phonemes are seldom found in the Javanese language.

The morphophonemic processes described above are word formation processes in the Javanese language. From these processes, a morpheme can have other forms with a different phonemic structure. For example, the morpheme $\{N\}$ - may have the form $\{m-, n-, ny-, or ng-\}$. This is due to the influence of the environment where the morpheme exists (Turnbull, Seyfarth, Hume, & Jaeger, 2020). The changes that occur adapt to the initial phoneme of the RW. In the Javanese language, this is a common phenomenon, a particular phonemic structure represents a morpheme according to its environment. This can be referred to as alternating forms (Parera, 2007; Verhaar, 2016). The different phonemic structures representing a particular morpheme are known as allomorphs or variants of the same morpheme.

The morpheme $\{N\}$ - may have the form $\{m-, n-, ng-, nge-, ny-\}$ as its allomorph. The sound changes of these allomorphs is highly regular and can therefore be used to formulate a set of principles, as described in the morphophonemic principles of the morphemes $\{N\}$ - + RW, $\{N\}$ -+ RW + $\{-ake\}$, and $\{N\}$ -+ RW + $\{-i\}$ above. These consistent phonemic changes can serve as guidelines for Javanese language users who are new to the language or still learning to speak the language. The structure of certain phonemes changes to follow the initial phoneme of the the root word. These variations in form can also be referred to as forms with complementary distribution. One form will occur if another form does not occur. For example, $\{N\}$ - will become /m/ in a RW with the initial phoneme /b/, or its form will be /n/ if a RW follows it with the initial phoneme /d/, and so on.

In the process of word formation in the Javanese language, the process of affixation of the morphemes $\{N\}$ - + RW, $\{N\}$ -+ RW + $\{-ake\}$, and $\{N\}$ -+ RW + $\{-i\}$ undergoes a morphophonemic process that consists of assimilation, phoneme addition, synthesis, and ellipsis. The assimilation process occurs when a phoneme changes to resemble or become homorganic with the phoneme in its environment (Drachman, 2005). Suppose the initial phoneme of a RW is produced labially or bilabially by the speech organs [b, p, and f]. In that case, assimilation of a homorganic sound will occur, to produce the bilabial phoneme [m], or the morpheme $\{N\}$ - will change to become the allomorph $\{m\}$ -. If the initial phoneme of the RW is [t, d], it will change to become the phoneme [n], or the morpheme $\{N\}$ - will change to become the allomorph $\{n\}$ -. Likewise, the phoneme [k, g] will change to become [ŋ] or the allomorph $\{ng\}$ -, and a RW with the initial phoneme [s, c, j] will change to the phoneme [ñ], or the morpheme $\{N\}$ - will become the allomorph $\{ny\}$ -. This can be seen in the table below.

Table 12. Morphophonemic Process

Change of phoneme	Change of morpheme
[m] → [b, p, f] → bilabial	morpheme $\{N\}$ - becomes allomorph $\{m\}$ -
[n] → [t, d] → dental	morpheme $\{N\}$ - becomes allomorph $\{n\}$ -
[ŋ] → [k, g] → velar	morpheme $\{N\}$ - becomes allomorph $\{ng\}$ -
[ñ] → [s, c, j] → palatal	morpheme $\{N\}$ - becomes allomorph $\{ny\}$ -

In the morphophonemic process shown in the table above, phoneme changes occur because of the meeting between the morpheme in the form of an affix and the RW in the form of a word. These changes lead to the emergence of the allomorphs of these morphemes. When the morpheme $\{N\}$ - meets a RW with two or more syllables, the change that occurs is regular, as outlined above (Syed Jaafar, 2012). When the RW has only one syllable, there is no change in the initial phoneme of the RW.

The morphophonemic process of the morphemes $\{N\}$ - + RW, $\{N\}$ -+ RW + $\{-ake\}$, and $\{N\}$ -+ RW + $\{-i\}$ can be said to be productive because many polymorphemic words can be formed with these morphemes. This is also evident because the RWs that can combine with these morphemes are not only words originating from the Javanese language but also words that originate from foreign languages, such as the RWs *objek* 'object', *proses* 'process', *survei* 'survey', *terjemah* 'translate', which if added to the morpheme $\{N\}$ - become *ngobjek*, *mroses*, *nyurvei*, and *nerjemahke*. In the formation of words with RWs that originate from a foreign language, the morphophonemic process can adjust to the word formation of RWs which originate from the Javanese language (Paiman, Thai, & Yuit, 2015). Unproductive morphemes occur when the morpheme $\{N\}$ - meets words with an initial phoneme with a nasal sound. Hence, it can be said that overall the morpheme $\{N\}$ - is productive.

5. Conclusion

In conclusion, the morphophonemic study of the Javanese morpheme N reveals numerous phonological and morphological properties. The study has shown that the morpheme N has several phonological realizations based on its position inside the word, the type of affix it is coupled with, and its phonological context.

In addition, the analysis has found that the morpheme N plays an important function in the Javanese language system, as it produces grammatical categories such as the plural, diminutive, and possessive. The results of this study indicate that the study of morphophonemics is essential for comprehending the structure and function of languages, particularly those with complicated morphological systems such as Javanese.

Overall, this research has contributed to the knowledge of the morphophonemic properties of the Javanese morpheme N and underlined the need for additional investigation into the language. This research is intended to serve as a foundation for future studies in the Javanese linguistics field and contribute to the preservation and development of this distinct language.

In the Javanese language, the morphemes N- + RW, N-+ RW + -ake, and N-+ RW + -i undergo assimilation, ellipsis, synthesis, and phoneme addition during the morphophonemic process. Variations resulting from the assimilation process include the formation of allomorphs of the morpheme N-, particularly m-, n-, ny-, ng-, and. Ellipsis occurs when the morpheme N- meets a RW with a first nasal phoneme, such as in the morpheme N- + nyanyi'sing'. The synthesis process happens when a phoneme encounters another and synthesizes into a different phoneme, for example, when the phonemes /u/ and /a/ combine to become /o/. Phoneme emergence or addition happens when a RW ending in an open syllable meets the morpheme -ake/ -i, as *tuku 'buy' + ake/ -i nukoni/ nukokake*. As shown in Table 5, the morphophonemic process of the morpheme N- + RW can be expressed as follows. The production of the morphemes N- + RW, N- + RW + -ake, and N- + RW + -i is typically quite high. These morphemes become unproductive when the morpheme N- meets a RW whose beginning phoneme has a nasal sound.

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