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The Changing of 'Sor Singgih Basa' in Balinese Root Based on the Internal Modification: Morpho-Phonology Study

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Abstract

This research investigates the relationship between phonology and morphology in influencing the changing Balinese speech level, namely 'singgih' (high) and 'sor' (low). The analysis focuses on utilizing the internal modification of a formal morphological element (root) in Balinese that creates a pattern of alternation apophony for vowel and consonant mutation, which lead to the transformation of speech level. Qualitative data analysis, including internal structure diagrams and observation, is used to analyze the data. There are 54 words found in the data findings using the documentation method from Balinese dictionary. The analysis results are (1) the alternate vowels and the mutation of consonant distinguished the level of the word without changing the meaning; (2) most of the alternation vowels change from [+low, +back] vowel into [+high] vowel, namely umlaut process; (3) the consonant mutation corresponds with the phonological sets of the consonant in initial position or phoneme addition in the middle position. Thus, this study has enriched and enlarged the linguistics documentation for the umlaut and ablaut existence in the Austronesian language.

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Introduction

A morpho-phonology study concerns the linguistics process formed by the interface between morphology and phonology in creating a specific linguistics phenomenon (Stewart, 2020). In some instances, it is seen that the morphological representations (stemand morpheme) is interrelated to the essential influence of phonology as an input of sounds that combine and form a suitable phonological representation of a morpheme. A change of morpheme can be distinguished from its phonological input (Odden, n.d.). In English, it is noted the addition of phoneme –s attached to bound morpheme nouns marked the notion of plurality. For example, the word /bæg/ and /s/are aligned into [bægz]. Thus, the process

changes the morphological form of a morpheme in terms of number and phonological change allows a subsequent sound production /s/ into /z/ (Alkhudair & Aljutaily, 2022). In addition, the integration of words creates a new phonological environment. Cohen (2013) states that the integrated morpheme creates a new phonological process that varies on how it conforms to universal and language-specific phonological constraints.

The phonology interface in morphology is also found in Austronesian languages such as Indonesian. Most morpho-phonology studies of the Indonesian language discover the phonological process in changing the form of a morpheme, such as by the affixation processes. For example, in Indonesian, "me-" + bantu (V) = meMbantu, a new phoneme occurs between the prefix and the underlying form of the morpheme. However, there is a limitation to the internal stem change study in the Indonesian local language.

In specific Indonesian local languages, the modification of phonology influences the morpheme in terms of lexical function, speech level, semantic meaning, and cultural value (Arka, 2022). Speech level is a term of language that differentiates the word chosen according to the relative social status of speech participants (Arka, 2019). According to Arka (2022), Balinese is a language that agglutinates the relativity of having rich verbal and nominal morphology. He stated that the speech levels are different in mostly the form of lexicon, not morphosyntax.

In Balinese, there are several patterns of a root (a formal morpheme element) that show a pattern of alternation apophony for vowels and consonant mutation that change the speech level of the language related to cultural value (Arka & Dalrymple, 2017). Common English found that apophony is involved in marking various differences of tense (sing/sang) and aspects by the vowel changing such as transitivity (rise/raise), part of speech (sing/song) or grammatical number (goose/geese) (Stewart, 2020).

The form of changing by the alternate vowel is known as apophonic changing. Apophonic alternations are cases of non-concatenative morphology in which vowel alternation expresses a grammatical opposition. One important class of non-concatenative patterns is base modification (or stem modification/alternation) (R. Wiese, 1996). This is a collective term for morphological patterns in which the shape of the base is changed without adding segmentable material. A common type of base modification pattern results from changing place of articulation.

In Balinese, there are several patterns of a root (a formal morpheme element) that show a pattern of alternation apophony for vowels and consonant mutation that change speech level of the language related to cultural value. Common English found that apophony is involved in marking various differences of tense (sing/sang) and aspects by the vowel changing such as transitivity (rise/raise), part of speech (sing/song) or grammatical number (goose/geese) (Stewart, 2020).

In his article, B. Wiese (2008) discussed the relation between phonology and morphology through vowel alternation of Standard German umlaut and ablaut. Thus, the analysis found a unified process of vowel fronting (umlaut) and unpredictable vowel change in strong verbs (ablaut). Alkhudair and Aljutaily (2022) found that Qassimi Arabic (QA) exhibited a hybrid morpho-phonological system and adopted different trilateral perfect passive patterns that diverge from those in Modern Standard Arabic, which is explained by prosodic structure. They confirmed one language feature was changeability since the pattern of TPPV's in QA reveals several diachronic changes among the speakers.

However, it is found that in the Balinese language, the apophony changes the level of the language, for instance, *adep* 'sell' to *adol* 'sell'. The meaning is still the same, but the language level is different. *Adep* is used when someone talks to people in their age but *adol* is used to speak with older people, or even important person. It is called Sor Singgih Basa (the level of Balinese use according to the level of the people the speaker is talking to).

The second case is Consonant Mutation- a change in the consonant of a word according to

its morphological or syntactic environment for example in Spanish.

un [b]arco 'a boat' mi [b] arco 'my boat'.

Consonant modification is a process in which by changing the consonant segment in a syllable, the morphological pattern in a word is alternated. For example, in Scottish Gaelic, indefinite nouns undergo weakening of word-initial obstruent consonants in the genitive plural. Here, stop consonants become fricatives: [b] becomes [v], [kj] becomes [ç], [g] becomes[y], and [th] becomes [h]. English also has a few cases where a verb is derived from a noun by a different operation – voicing the last consonant of the root (e.g. hou[s]e (noun) and hou[z]e (verb), thie[f] (noun) and thie[v]e (verb), wrea[q] (noun) andwrea[d]e (verb)). This phenomenon is also found in Balinese, in which the alternation of the consonant changes the speech level (Stewart, 2020).

Balinese can be defined by assuming a hierarchy of phonological alternations from a word unit into a set of associated features (segment) that combine a complex non-prosodic phonological unit (Jo, n.d.). In Balinese, several phonological changes happened in certain stages such as lexical and post-lexical level. However, this research focuses on the lexical level, which means the phonology alternations that happen in a word and do not apply across words.

Thus, the internal units are the roots where the phonological changes may refer to the word-internal structure divided into which segment (syllable) with an alternation. But in Balinese, the consonant mutation is happening just because of the changing of *Sor Singgih Basa* which means by only the phonological process, not the syntactical environment. Therefore, this research aims to analyze kinds of phonological change that happened in certain Verb of Balinese and how the changes in morphology and cultural aspects (speech level) in Balinese.

In identifying the alternation modification occurs in a root, the syllabic structural mechanism is used to explain the emergence of a sound being replaced or changed by the other sounds. Schane (2021) mentioned that the syllabic structural process may influence the relative distribution of a vowel or consonant in a word. It is indicated that a vowel or consonant sound can be modified to form a word.

In Sum, this research developed the previous conception of umlaut and ablaut in morphology that focuses the findings and elaboration on German and Arabic language only. The current research utilizes the theory to discover the special morpho-phonology phenomenon that occurs not only in German or Arabic but also in specific proto-austronesian languages, such as the Balinese local language.

Methodology

According to the form of data, this study is qualitative research. The data is taken from the Balinese Dictionary, namely *Kamus Anggah-Ungguhin Basa Bali Balinese* (2008) and supported by a lexicon list in the Dictionary named Wakya (2003). This section outlined the method and technique used in conducting the research. The data was collected through a documentation method from the Balinese *Anggah Ungguhin Basa* dictionary. Therefore, the criteria of the data are (1) the SOR and SINGGIH have an alternate vowel or consonant process in their internal structure, (2) the Alos Mider (middle level) is not used even though it has shown an alternation of phonology because the middle speech level does not show significant speech level differentiation. The immediate constituent analysis approaches the morpho-phonological process that occurs in Balinese vowel and consonant.

There are 54 data found in the data findings however, it is being reduced from the elimination process according to the category of the words and their alternation. The elimination process of the data is conducted by classifying the data based on three categories, namely data with the process of vowel alternation in the internal structure of the morpheme, data with consonant mutation in the internal structure of the morpheme, and data with multiple phonological changes in the internal structure of the morpheme. Therefore, the data that shows significant alternation from SOR to SINGGIH in terms of phonological changes in the internal structure is taken as data. This process is conducted by the theory from Stewart about Internal Change in

Journal of Language and Literature
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Morphology. The data is analyzed using the descriptive qualitative method by comparing two levels of the words. The syllable structure is used to map the alternation found in the internal structure of a root and to show which syllable is alternate.

Firstly, this research used the documentation method from the Balinese *Anggah Ungguhing Basa* dictionary and Local Balinese dictionary in collecting the data and highlighted specific morphemes from the data source. The level of the data is in the form of a morpheme. Thus, the morphemes being collected as the data are eliminated based on the availability of specific morpho-phonological processes, namely alternations of vowel, consonant mutation, internal modification (phoneme addition and phoneme change) and multiple phonological processes. The data is classified by its speech level from SOR to SINGGIH to identify the internal modification between the SOR and the change into the SINGGIH.

Secondly, in analyzing the data, several processes are followed namely, (1) identifying the phonological changes that occur in a root/morpheme by characterizing the internal modification found in the internal root and determining the phonological change in each of SOR and SINGGIH root, (2) classifying the phoneme alternation and internal modification occur in those roots, (3) mapping the phonological changes by drawing the syllable structure to identify the segments of roots that being alternated, (4) analyze the pattern of those alternations from SOR into SINGGIH.

Lastly, the analysis is presented in an informal method by description and the presence of syllable structure elaboration. In conducting this research, the Morphological Typology Theory by Brown (2012) is used, supported by the previous study of Stewart T (2020) about Stem Change (Apophony and Consonant Mutation) in Morphology.

Results and Discussion

The data findings are analyzed using the theory of Typological Morphology by Brown. Therefore, the data findings are analyzed and elaborated as follows.

Balinese Phonological Term

Balinese is a unique and rich of linguistics term of language. Phonologically, it has segmental phoneme distribution: vowels and consonants.

Balinese Vowels

Balinese vowels are /i/, /u/, /e/, /ə/, /a/, /o/, and /u/. According to Clynes (1995) there underlying phonemes of vocal from Balinese can be distinguished as mentioned in the table below.

Figure 1. Balinese Vowels

	front	central	back
high	i		u
mid-high	e	ə	o
low		a	

Thus, each individual vowel phonemes are assumed to have each specific marking value of phonological features in which prior to the organization of allophony rules mentioned in the table below.

Figure 2. Balinese Phonological Allophony

	i	e	ə	a	ó	u
[high]	+	-	-	-	-	+
[low]	-	-	-	+	-	-
[back]	-	-	+	+	+	+
[ATR]	+	+	-	-	+	+

Clynes (1995, p. 24) mentioned that all positions of each occurring vowels are mostly in internal morpheme except for schwa, which cannot occur in the final open syllable. In certain conditions, the occurrence of /a/ can be inversed by the phoneme /ə/ depending on the dialect of Balinese and does occur in morpheme-final underlying; however never seen to occur in final morpheme phonologically except again the dialect. In Balinese, each syllable contains a vowel and those vowels can be long sequences occur i.e the morpheme 'luu' /luu/ /luhu/ 'rubbish' and oot /oot/ [òòt] 'rice husks'.

In Balinese, vowel allophony can be divided into certain sub-classes regarding its allophonic behavior. In the Balinese typology

itself, there are two groups of allophonic vowels namely 'oldest' phonemes /I, u, ə/ and /a/ (which deconstructed for Proto-Austronesian) show less complex variation than the more recently acquired phoneme /e/ and /o/. Then, the high vowel /I, u/ is turned together as a sub-class as the central vowels/a/ and /ə/. Moreover, these terms give a possibility to a separate morpheme status to a phoneme /ɛ/ when it is occurring in one morpho-syntactic context. Thus, the allophone of Balinese can be drawn as follows.

Figure 3. Balinese Main Vowel Allophones

high	i		u
	ɪ		ʊ
mid	e	ɜ	ó
	ɛ	ə	ò
low		a	ɑ

Balinese Consonants

Balinese consonants are /p, b, m, w, t, d, n, s, l, r, c, j, n, k, g, ŋ, y, h/. According to Clynes (1995), in Balinese there are 18 consonant phonemes but it is also depending again on the dialect of each region. However, in Balinese the specific underlying existence for /n/ nasal is unspecified for place because it is found that the nasal can be homorganic nasal-stop clusters. Moreover, the consonant glides /w/ and /y/ do not contrast the high vowels/u/ and /i/ as mentioned in the table below.

Figure 4. Balinese Consonants

	labial	apical	laminal	back
nasal stops	m	n	ny, ñ² (/ɲ/)	ng (/ŋ/)
oral stops				
vclss	p	t	c	k
vcd	b	d	j	g
fricatives			s	h
liquids		l, r		
glides	w		y (/j/)	

Clynes (1995, p. 13) stated that all consonants can be occurring in the initial syllable even though in daily speeches the phonemes /h/ doesn't occur in onsets such as Hyang and Shasa 'suddenly' because it is pronounced slightly as /yaŋ/ and /saasa/ in the everyday language. Then, all can occur in final syllable except the laminal stops /n. c, j/ and glides /w,y/.

Vowel Alternation and Consonant Modification in Balinese

In the previous sections, the concept of vowel and consonant allophones of Balinese has been explained. Thus, this section presents the utilization of the phonological concepts of Balinese with the occurring phenomenon of umlaut and ablaut in Balinese through the process of changing the speech level.

Vowel Alternation

In linguistics, apophony is also known as ablaut, vowel gradation, vowel mutation, and internal modification. The apophony is the term in which a vowel in an internal structure of a morpheme being alternate and grammatically change the morpheme such as in English /sing//sang//sung/ where the alternate vowel /i//a//u/ change the tense of the word. However, Balinese has a very special feature of apophony where it is not grammatically changing the morpheme but culturally instead it changes the speech level of the morpheme. Look at an example of the data below.

[3-1]	**Alus Sor**	**Alus Singgih**	**Gloss**
	anggon	anggén	'wear'
	takon	takén	'ask'

The alternations vowel happens where from Alus sor which is [+high, +back] and [+low, +back] it turns into Alus singgih which is [+front] vowel. This is an umlaut process.

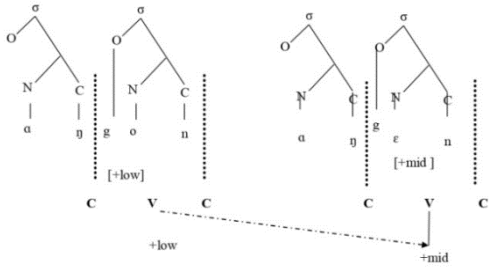
Anggon	Anggén
ɑŋgon	ɑŋgɛn
VCC**V**C	VCC**V**C

Takon	Takén
tɑkon	tɑkɛn
CVC**V**C	CVC**V**C

Notice the lexemes 'anggon' and 'takon'. Both lexemes are constructed in the form of [+low +back] vowel in the pre-final position such as the mapping below.

Journal of Language and Literature
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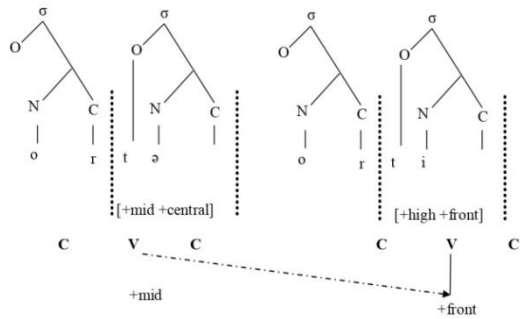
Figure 5. Vowel Alternation in the penultimate position



The alternations vowel happens where from Alus sor which is [+high, +back] and [+low, +back] it turns into Alus singgih which is [+front] vowel. This is an umlaut process (b). The second case is the change of vowel /a/ into /i/ in lexemes 'orta' and 'orti'. The data show fronting vowel. Differentiate with the (a) example, the (b) noticed to have a vowel change in the final position.

Orta	Orti
ɔrtə	ɔrti
VCCV	VCCV

Figure 6. Alternate Fronting Vowel



Thus, from the internal structure mapping, the change of the vowel from low or mid vowel and fronting to front vowel occur in the second syllable of the root precisely in the final position. It cannot be said all the process is umlaut fronting however, the data shows the dominant process is that the vowel turns up from the lower position into the higher position to change the morpheme's speech level. No data is showing that the alternation happens in the first syllable. For example, in root /ke-ber/ into /ke-bur/data findings. The vowel only alternates in the second syllable in which sound /ə/ turns into /u/. However, it is found that not only fronting occur in vowel alternation. See the data below:

[3-3]	**Alus Sor**	**Alus Singgih**	**Gloss**
	Baca	Waca	'read'

The vowel /schwa/ is alternate into /ɔ/ in the word 'sell'. There is no semantics or syntactic change by this vowel alternation however the level of the speech that is changing. The most common findings have shown that the dominant process occur in Balinese is fronting vowel. Mostly it is from the sound /ɑ/; /ɔ/; /u/; or /ə/ into /i/ and /ɛ/. But certain data findings show that there is a possibility of backing vowel form is occurring. Thus, it is seen in the data /keber//kebur/ and /adep//adol/. The sound /ə/ is positioned in the mid central vowel, but it is an alternate back formation to /ɔ/, a mid-back vowel. The vowel's position alternates from mid to back but the height (mid) remains the same. The alternate vowel also occurs in certain adjective class morphemes as shown below.

Table 1. Balinese Adjective with Vowel Alternation

Adjective Class		
Alus Sor	Alus Singgih	Gloss
Ocem	Ucem	'dirty'
Patuh	Pateh	'the same'
éndép	andap	'shallow'

In the table above, it can be seen that the vowel alternates from /o/ in /ocəm/ into /u/ in /ucəm/ which means 'dirty'. Notice that the vowel /o/ remains /ò/ in Balinese that placed by close-low back vowel turns into /u/ high back vowel. Thus, the fronting vowel remains to occur. Moreover, there are two more adjectives alternating:/u/ into /ə/ and /ɛ/ into /a/.

The alternation/u/ into /ə/ is a change from a high back vowel into mid central vowel. This process cannot be said as an umlaut but is nearly considered ablaut, where the vowel doesn't turn into backing form but lowers the height and position only from back into central vowel. But the special process occurs in the example of 'éndép' into 'andap'. The two morphemes constructed by metathesis term in

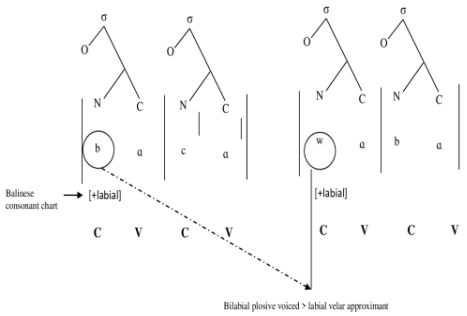
which a pattern of same vowels (2 sounds) occur in one morpheme order. The vowel /ɛ/that remains mid-central turns into /a/ which is a low central vowel. Thus, lowering height is occurring, but the position is still in the central. The same metathesis is also found in /unduk/into /indik/.

However, all the data findings never show data that changes drastically a low back vowel into a high front vowel. Instead, the alternation occurs when the vowel changes into the other vowel close to it, either lowering or raising the height. Thus, it can be concluded that in Balinese, the vowel alternation can occur by backing the formation of vowel, but it has never been occurring in terms of articulation from high to low or mid vowel.

Consonant Mutation in Balinese

In the consonant mutation, it can be seen that the most frequent data shows that the change of consonant or the modification of the consonant mostly happened in the initial position of the root. Notice that it is mostly the first syllable being modified. It is shown in the syllable structure tree below;

Figure 8. Consonant Mutation



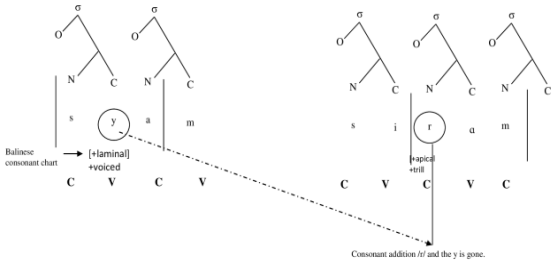
The sound changes in the initial sound in the first syllable. The sound /b/ is turned into /w/ by the alternation. The Balinese consonant chart invented and claimed by Clynes (1995) shows the difference between the IPA chart of consonant and Balinese chart where the Balinese is mentioned right under the sound transcription. From the internal syllabic structure, it can be seen that the bilabial sound changes into labial sound in Balinese. The other data formed like this are as follows.

[3-4]	Alus Sor	Alus Singgih	Gloss
	bales	wales	‘reply’
	buta	wuta	‘blind’
	basuh	wasuh	‘wipe’
	sibak	siwah	‘cut into two’

The marked blue list shows an exception for verbs cut in a half in which the alternation of /b/ into /w/occurs in the second syllable. Moreover, the consonant modification in Balinese shows an additional phonological modification in the second syllable for the data below.

[3-5]	Alus Sor	Alus Singgih	Gloss
	siam	siram	‘watered’

Figure 9. Consonant Mutation



The data transcription shows that the SOR only consists of four different sounds but has an addition sound of trilling into five sounds for the SINGGIH level. Thus, sound or consonant modification changes in the second syllable of the alternate singgih level. It can be described in the syllabic structure above. There is an additional sound process in pronouncing /ia/ into /iya/ in Balinese as seen in the root /siam/. However, the sound /y/ that was previously added is lost in /siram/, but the second addition happens in the position of /y/ into /r/.

Multiple Phonological Changes

The alternation for vowel and consonant does not occur only for a single change or transform; in certain cases, several phonological changes happened into a word in

Journal of Language and Literature
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Balinese. Pay attention on the given table below.

Table 2. Balinese Morpheme with Multiple Phonological Processes

Alus Sor	Alus Singgih	Gloss
Baas	Beras	'rice'(N)
Kaca	Kasna	'mirror' (N)
Sliwah	Siwah	'unsuitable' (Adj)
Bedik	Kidik	'less' (Adj)

The multiple processes by then, are defined as the complicated phonological changes in the structure of internal morpheme. In Balinese, the alternation happens by the addition, alternate consonant, or multiple phonological processes.

First, notice the data /baas/ into /beras/. Historically, the process from *baas* into *beras* is not precisely an addition of consonant /r/ between the vowel, but the alternate vowel occurs first. The changing process is by baas it turns into /bəhɑs/. It can be seen that the change is by vowel /a/ turns into /ə/ which remains rising height from back-central into mid-central. Thus, in Balinese there is no cluster of vowels but the addition of /h/ instead turns into /bəhas/. The notion *behas* is mainly spoken by Balinese native dialect, Nusa Penida. However, in the South area, especially Gianyar, Denpasar, Badung, known for their trilling, the consonant /h/ is replaced by /r/ following the Indonesian name of the rice paddy itself into /beras/.

Second, the word /kasna/alternates from /c/ into /s/ and the addition of /n/ in the middle structure. In Balinese, the phoneme /c/ and /s/ is in the laminal position, but it can be seen from the table that /s/ is fricative, but /c/ is considered voiceless. Thus, the consonant alternates into fricative, but then the phoneme /n/ is added. This process is by Clynes said as the nasal stop addition. Most consonant distribution in Balinese morpheme's middle and final position will be added by nasal stop.

Third, looking at the data, phoneme deletion occurs in /sliwah/ into /siwah/. However, the alternate is mentioned explicitly by the data /bedik/ into /kidik/. The consonant alternates from voiced into voiceless and from the labial position into back position. Thus, it is followed by the alternate pra-final vowel following the voiceless sound /e/ It turns from /ə/ into /i/, which remains a fronting vowel. Thus, the hypothesis is that the fronting vowel will be followed by voiceless consonant alternation.

Moreover, specific consonant addition /r/is also found in consonant mutation in the internal structure of a morpheme, as mentioned in the table below.

Table 3. Addition to the Root

Alus Sor	Alus Singgih	Gloss
Ane	Sane	'in which'
Uap	Urap	'traditional body mask' (N)
Siam	Siram	'watered' (V)
Ibi	Dibi	'yesterday' (Temporal)
Paum	Parum	'meeting' (N)
Puik	Purik	'don't talk to each other'
Lais	Laris	'salable' (Adj)

Conclusion

In Balinese, there are several patterns of a root (a formal morpheme element) that show a pattern of alternation apophony for vowels and consonant mutation that change the language's speech level related to cultural value. The meaning is still the same, but the language level is different. From the analysis, it seen that the dominant process for vowel alternation is fronting vowel from the sound /ɑ/; /ɔ/; /u/; or /ə/ into /i/ and /ɛ/. However, specific data findings show that there is a possibility of backening vowel form. Thus, it is seen in the data /keber//kebur/ and

/adep//adol/. The sound /ə/ is positioned in the central mid vowel, but it alternates back formation to /ɔ/, a high back vowel. In a consonant modification, the modification of the consonant mostly happens in the initial position of the root. Notice that it is mostly the first syllable being modified. Moreover, there is also a possibility of multiple changes phonologically in Balinese, seen from the voiced to voiceless consonant changes.

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