

CHAPTER 6

PHONOLOGICAL DESCRIPTION OF KIM MUN, VIETNAM VARIETY

6.1 Inventory of Phonemes

This section will provide an analysis and description of the phonemes in the Vietnam variety of Kim Mun, organized by consonants, vowels, and tones.

A distribution of phonemes will follow.

6.1.1 Consonants

The Vietnam variety of Kim Mun has twenty-one distinctive consonants with four major places of articulation which can be slightly modified according to specific places of articulation, i.e. labial includes bilabial and labiodental segments, pre-palatal includes dental and alveolar segments, palatal includes alveolo-palatal and palatal segments as well as the alveolar sibilant²⁰, and post-palatal includes velar and glottal segments. Each place of articulation is also modified according to the manner of articulation. The consonant

²⁰ The alveolar sibilant sounds like the English /s/ which is produced through an alveolar constriction and groove in the alveolo-palatal area with an alveolar release (cf. Ladefoged/Maddieson 1996: 146f)

inventory is shown in Table 17 and will be exemplified in the following sections.²¹

Table 17. Inventory of Consonantal Phonemes in Vietnam Kim Mun

Place Manner	Labial	Pre- Palatal	Palatal	Post- Palatal
Plosives	p	t	t̚	k
	b	d	d̚	g
Fricatives	f	θ	s	h
	v			
Nasals	m	n	ɲ	ŋ
Lateral Approximants		l	ɭ	
Central Approximants			j	w

Evidence of contrast is provided in Appendix E. As already mentioned in Section 4.3.2.2, the Chinese symbols are used following Mao (2004) for alveolo-palatal stops in both the Lao and the Vietnam data.

6.1.1.1 Plosives

There are sets of voiced and voiceless plosives in all four possible places of articulation for a total of eight plosives. Bilabial and alveolar stops are produced with stiff voice. Only voiceless plosives occur syllable-final and are unreleased in this position, see Figure 5. There is no alveolo-palatal or velar unreleased final stop.

²¹ The major places of articulation labeled pre-palatal and post-palatal are phonological categories not phonetic categories.

$$\left\{ \begin{array}{c} p \\ t \\ ʈ \\ k \end{array} \right\} \rightarrow \left\{ \begin{array}{c} p^h \\ t^h \\ \emptyset \\ \emptyset \end{array} \right\}$$

Figure 5. Final Plosives in Vietnam Kim Mun

Next to the alveolo-palatal plosive (See initial discussion in Section 5.1.1.1), the velar plosive deviates from this pattern. A possible solution could be that the final velar plosive has become a final glottal stop in Vietnam Kim Mun. Furthermore, only voiceless and voiced initial bilabial and alveolar plosives have stiff voice, the alveolo-palatal and velar variants have modal voice.

The syllable-final glottal stop is a phonetic feature of individual tones (cf. Section 6.1.3) and has no phonemic status as a consonant. The glottal stop also occurs word-initial as a predictable vowel onset, as in #022 ‘duck’ [ʔa:p¹¹].

The contrastive plosives with examples and their exact phonetic description are listed below.

/p/ stiff voiceless bilabial plosive [p* ~ pʻ]

Examples:

/pja:⁴⁴/ 'fire tongs'

/pew⁴⁴/ 'hammer'

/tɔp³³/ 'bean'

The stiff voiceless bilabial stop is not released if in syllable-final position.

/b/ stiff voiced bilabial plosive [b]

Examples:

/blɛw¹¹/ 'rice'

/be³⁵/ 'dream'

/biŋ²¹⁴/ 'monkey'

/t/ stiff voiceless alveolar plosive [t* ~ tʻ]

Examples:

/ti³³/ 'bag'

/tɛw³¹/ 'fire'

/pit³¹/ 'turtle'

The stiff voiceless alveolar stop is not released if in syllable-final position.

/d/ stiff voiced alveolar plosive [d]

Examples:

/di⁴⁴/ 'mother's mother'

/dej⁴⁴/ 'excrement'

/daŋ³³/ 'boat'

/t̚/ voiceless alveolo-palatal plosive [t̚]

Examples:

/t̚ɛŋ⁴⁴/ 'frog'

/t̚o¹¹/ 'bridge'

/t̚ɛ⁵²/ 'guest'

/d̚/ voiced alveolo-palatal plosive [d̚]

Examples:

/d̚im⁴⁴/ 'thorn'

/d̚i³⁴¹/ 'mother'

/d̚ɛt³³/ 'mouth'

/k/ voiceless velar plosive:

Examples:

/klum⁵²/ 'lungs'

/kjɛŋ²¹⁴/ 'insect'

/kɔj³³/ 'river'

The voiceless post-palatal unreleased plosive [k̚] was not found in the data, however, due to symmetry it is possible that it does exist or it has become a final glottal stop.

/g/ voiced velar plosive [g]

Examples:

/gɔŋ¹¹/ 'sky'

/gjen³⁴¹/ 'village'

/gja:⁵²/ 'iron'

As a summary, only bilabial and alveolar plosives in Vietnam Kim Mun are pronounced with an audible stiff voice. This is not surprising as the

limitation to these two most front occlusives has been observed in Thai, where stiff voice occurs only on bilabial and alveolar voiced plosives (Ladefoged/Maddieson 1996). It is also only the bilabial and alveolar voiceless stops that occur unreleased in syllable-final position. The alveolo-palatal plosives identified in the Vietnam data have as little friction on release as in the Lao data and as such are analyzed as plosives.

6.1.1.2 Fricatives

There are five syllable-initial fricatives in the Vietnam variety of Kim Mun, i.e. a voiced and a voiceless labiodental fricative as well as voiceless dental, alveolar and glottal fricatives. The contrastive fricatives with examples and their exact phonetic description are listed below.

/f/ voiceless labiodental fricative [f]

Examples:

/faŋ¹¹/ 'flower'

/fa⁴⁴/ 'husband'

/fej³⁵/ 'to sleep'

The voiceless labiodental fricative occurs only seven times and is restricted to preceding the central vowels /a/ and /ɛ/. Three of those occurrences are found in compound words with the root 'man'.

/v/ voiced labiodental fricative [v]

Examples:

/vən³⁵/ 'cloud'

/laŋ³⁵vin⁵²/ 'rope'

/gɔŋ³³ve³⁴¹/ 'good'

The voiced labiodental fricative only occurs three times in the data but with different vowels.

/θ/ voiceless dental fricative [θ]

Examples:

/θɛw³³/ 'ant'

/θim⁵²/ 'needle'

/θap⁵²/ 'centipede'

/s/ voiceless alveolar fricative [s]

Examples:

/si³³/ 'mat'

/so²¹⁴/ 'mushroom'

/saŋ⁵²/ 'basket'

/h/ voiceless glottal fricative [h]

Examples:

/ho³³bu³³/ 'taro'

/ham⁵²/ 'short'

/hɔp⁵²/ 'to drink'

The glottal fricative is rare, it only occurs eight times in the data.

In summary, only two of the five fricatives occur frequently, i.e. the voiceless dental fricative and the voiceless alveolar sibilant.

6.1.1.3 Nasals

The Vietnam Kim Mun variety shows four nasals, one for each major place of articulation. Except from the alveolo-palatal nasal, which is found only as a syllable onset, all nasals occur in syllable-initial and syllable-final position. A description of all four nasals with examples is listed below.

/m/ bilabial nasal [m]

Examples:

/min⁵²/ 'face'

/mej³⁴¹/ 'wasp'

/ma:³³/ 'medicine'

/n/ alveolar nasal [n]

Examples:

/ni⁵²/ 'earth'

/nuŋ³³/ 'pus'

/naw³⁴¹/ 'mother's brother'

/ɲ/ alveolo-palatal nasal [ɲ]

Examples:

/ɲew²¹⁴/ 'hoe'

/ɲaŋ⁵²/ 'year'

/ɲa:¹¹/ 'tusk'

/ŋ/ velar nasal [ŋ]

Examples:

/ŋɔŋ¹¹/ ‘buffalo’

/ŋa:m¹¹/ ‘cave’

/biŋ²¹⁴/ ‘monkey’

Syllable-initial, the velar nasal is rare in the Vietnam data; the phoneme only occurs syllable-initial six times out of the one hundred and seventeen times it occurs in the data.

In summary, except the alveolo-palatal nasal, Vietnam Kim Mun nasals are found both syllable-initial and syllable-final. Syllable-initial, the velar nasal is rare.

6.1.1.4 Approximants

Vietnam Kim Mun has four approximants, i.e. a labiovelar and palatal central approximant and an alveolar and alveolo-palatal lateral approximant. These approximants with examples are listed below.

/w/ voiced labial approximant [w]

Examples:

/wem²¹⁴/ ‘water’

/kwa⁵²/ ‘trousers’

/ŋew²¹⁴/ ‘hoe’

The labiovelar approximant occurs syllable-initial, medial, and final.

/l/ voiced alveolar lateral approximant [l]

Examples:

/lɛ³³/ 'fishnet'

/klu⁴⁴/ 'dog'

/la:ŋ¹¹/ 'groom'

The alveolar lateral approximant occurs syllable-initial and as the medial consonant in clusters, but not syllable-final.

/ɭ/ voiced alveolo-palatal lateral approximant [ɭ]

Examples:

/ɭu³¹to²¹⁴/ 'sickle'

The alveolo-palatal lateral approximant only occurs once in the data.

/j/ voiced palatal approximant [j]

Examples:

/juŋ¹¹/ 'goat'

/mej³³/ 'eye'

/pje⁴⁴/ 'head'

The palatal approximant occurs in all three possible consonant positions, i.e. syllable-initial, medial, and final.

To summarize the section on approximants, they all occur syllable-initial and with the exception of the alveolo-palatal lateral, they all occur as the medial consonant in clusters. The central approximants also occur syllable-final, whereas the lateral approximants do not appear syllable-final.

6.1.2 Vowels

The Vietnam variety of Kim Mun has eight distinctive vowel qualities with three front vowels, two mid vowels, and three back vowels. For one vowel, the open central vowel /a/, length is distinctive, adding up to a total of nine vowel phonemes as demonstrated in Figure 6. Each of these vowels show environmentally conditioned variation in length, dependant on the word structure discussed in Section 6.2.

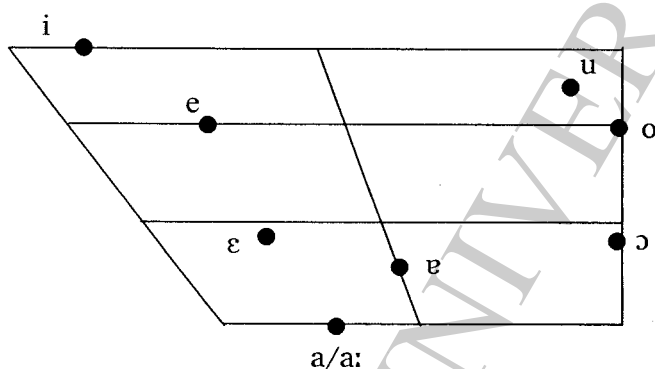


Figure 6. Distribution of Vowels in Vietnam Kim Mun

The environmental conditions for long and short vowels are discussed in Section 6.1.2.4. Evidence of contrast is provided in Appendix F.

The Vietnam variety of Kim Mun has no contrastive diphthongs. Vowels can only be followed by the ambiguous closed front and back vowels [i] and [u], which are analyzed as approximants rather than vowels. They are interpreted as labiovelar and palatal approximants /j/ and /w/ since there are other syllables ending with unambiguous voiceless plosives and nasals.

There is one allophonic diphthong with a predictable environment, which will be discussed below.

The following sections provide examples and a description for each vowel.

6.1.2.1 Front Vowels

/i/ close front unrounded vowel [i ~ ɪ]

Examples:

/pɪ⁴⁴le⁴⁴/ 'brain'

/bɪŋ²¹⁴/ 'monkey'

/ɬi³⁴¹/ 'mother'

The close front unrounded vowel is slightly retracted. In closed syllables ending on labial, dental, or alveolar consonants, this vowel is realized as a near-close near-front unrounded [ɪ]. Examples for the occurrence of this allophone are #050 'turtle' [p*it⁴¹] and #231 'needle' [θɪm⁴³].

$$i \rightarrow [ɪ] / _C \left(\begin{array}{l} + \text{labial} \\ + \text{dental} \\ + \text{alveolar} \end{array} \right)$$

[i] elsewhere

/e/ close-mid front unrounded vowel [ɘ ~ ɚ]

Examples:

/se⁵²θun²¹⁴/ 'descendant'

/nɛ³¹gɟaj³⁵/ 'cabbage'

/tɛ²¹⁴kow⁵²/ 'coop'

The close-mid front unrounded vowel is strongly retracted. It occurs mostly in open syllables. In open word-final syllables, or in open monosyllabic words, it is realized with a palatal off-glide [ɤʲ], as in [p*ⁱ³³lɤʲ⁴³] ‘brain’.

/e/ → [ɤʲ]/ __#
[ɤ] elsewhere

/ɛ/ open-mid front unrounded vowel [ɛɾ]

Examples:

/lɛ³³/ ‘fishnet’

/tɛŋ⁴⁴/ ‘frog’

/gjet³³/ ‘to sit’

The open-mid front unrounded vowel is slightly retracted and lowered. It tends to occur in closed syllables, which leads to the conclusion that Vietnam Kim Mun might be undergoing a vowel merge. In a few instances there is still a clear contrast with the close-mid front vowel /e/, as in /pɛ²¹⁴/ ‘father’s older brother’ vs. /pe²¹⁴/ ‘to know’.

6.1.2.2 Central Vowels

/ɐ/ near-open central unrounded vowel [ɐ]

Examples:

/pɛw⁴⁴/ ‘hammer’

/mɛj³⁴¹/ ‘wasp’

/ven³⁵/ ‘cloud’

The near-open central unrounded vowel appears in any possible environment, including minor syllables (cf. Section 6.2.2) where it is extra short and not distinctive.

/a/ open central unrounded vowel [a]

Examples:

/θat³³/ ‘near’

/ma³⁴¹/ ‘horse’

/təw³¹tan⁵²/ ‘charcoal’

/a:/ long open central vowel [a:]

In the Vietnam data there is one instance of contrast between long and short open central vowels that cannot be explained by the vowel-length conditioning word structure. This is /gjaŋ³⁵/ ‘plot, dry’ vs. /gja:ŋ³⁵/ ‘tree’.

6.1.2.3 Back Vowels

/u/ close back rounded [u]

Examples:

/mɛj³³bu³³/ ‘blind’

/mɛj³⁴¹muŋ³³/ ‘bee’

/blut³³/ ‘mucus’

/o/ close-mid back rounded vowel [o ~ o^w]

Examples:

/goj⁵²wem²¹⁴/ 'lizard'

/toŋ¹¹dam³⁵/ 'pillow'

/θo⁴⁴/ 'grave'

The close-mid back rounded vowel usually occurs in open syllables. Just like the close-mid front counterpart, it is realized with an off-glide, in this case the labiovelar off-glide [o^w] in word-final open syllables or in open monosyllabic words, e.g. [so^{w214}] 'mushroom'.

/o/ → [o^w]/ _#

[o] elsewhere

/ɔ/ open-mid back rounded vowel [ɔ^r ~ aʊ]

Examples:

/tɔŋ²¹⁴/ 'mountain'

/nɔ¹¹kej¹¹/ 'sparrow'

/tɔp¹¹/ 'bean'

The close-mid back rounded vowel is slightly lowered. The combination with preceding non-back consonants and a following velar nasal is realized as the diphthong starting with a central vowel and moving into a rounded back vowel [aʊ], as in [ɸaʊŋ⁵²] 'full' and [saʊŋ⁴⁴] 'cold'. However, if the preceding consonant is alveolo-palatal or velar the vowel remains unaffected, as in [tʃɔ^rŋ²¹⁴] 'mountain' or [gɔ^rŋ²¹⁴vəj³⁴¹] 'good'.

/ɔ/ → [aʊ] / C [-alveolo-palatal] [-velar] _C [+velar] [+nasal]
 [ɔɾ] elsewhere

6.1.2.4 Vowel Length

With the exception of the open central vowel /a/, vowel length is not contrastive in Vietnam Kim Mun and therefore it is not marked in the data. The general word pattern shows initial and medial syllables with short vowels, and a long vowel in the final syllable. If such a word-pattern conditioned syllable-final vowel is combined with other syllables so that it is no longer final, the vowel length undergoes neutralization and changes from long to short.

In minor syllables, the non-contrastive vowel is always short, such as in [p*ě.laj⁵²] ‘price’, [mě.nɔɾm²¹] ‘ears’, and [kě.t*an⁴⁴] ‘eggplant’ (cf. Section 6.2.2).

6.1.3 Tones

Vietnam Kim Mun has eight distinctive tones, i.e. three level tones, three contour tones, and two complex tones, with the latter tonal annotation following Yip (2002). Tonal alternation occurs for the mid rising and the falling-rising tone. Syllable-final glottalization can occur on all tone-bearing units that end with a falling contour, i.e. high falling, mid falling, and rising-falling. For an overview, see Table 18.

Table 18. Vietnam Kim Mun Tone Schema

Tone	Chao Tone Number	Examples
High	/44/	/kjaw ⁴⁴ / 'road'
Mid	/33/	/da:w ³³ / 'salt'
Low	/11/	/pɛ.taw ¹¹ / 'shoulder'
High Falling	/52/	/taw ⁵² / 'to come'
Mid Falling	/31/	/θin. ²¹⁴ taw ³¹ / 'heart'
Mid Rising	/35/	/ɗaw ³⁵ / 'wind'
Mid Rising-Falling	/341/	/gjaw ³⁴¹ / 'nest'
Low Falling-Rising	/214/	/gjaw ²¹⁴ / 'stone'

The Vietnam Kim Mun tones and their phonetic features will be presented in the following three sections.

6.1.3.1 Level Tones

The three level tones in Vietnam Kim Mun are high, mid, and low tones.

Only the mid and the low tones can occur on syllables with final plosives.

/44/ high tone [43]

Examples:

/ɗim⁴⁴/ 'thorn'

/tej⁴⁴/ 'tail'

/θo⁴⁴/ 'grave'

The high tone is pronounced with a breathy voice and a high pitch level ending with a slight drop in pitch.

/33/ mid tone [33]

Examples:

/kɛp³³/ 'bear'

/pa:m³³/ 'mud'

/ti³³/ 'bag'

The mid tone is pronounced with creaky voice and often has a moderate final glottal stop. The laryngealization could be an artifact of the syllable-final glottal constriction.

/11/ low tone [21]

Examples:

/a:p¹¹/ 'duck'

/sam¹¹/ 'bracelet'

/tɔ¹¹/ 'bridge'

The low tone is pronounced with modal voice and has a pitch level that begins low and has a slight drop.

6.1.3.2 Contour Tones

There are three contour tones in Vietnam Kim Mun, two falling tones and one rising tone. Each of the contour tones can occur with syllable-final plosives. The mid rising tone undergoes tone alternation.

/52/ high falling tone [52]

Examples:

/θap⁵²/ 'centipede'

/θəm⁵²/ 'beard'

/ni⁵²/ 'earth'

The high falling tone is pronounced with breathy voice and has the highest starting pitch of all the Vietnam Kim Mun tones. Open syllables and syllables ending with a final sonorant that bear the high falling tone can undergo postglottalization, which results in a shortened syllable.

/31/ mid falling tone [41]

Examples:

/gat³¹/ 'to cut (with a knife)'

/naŋ³¹su³⁵/ 'porridge'

/ku.a:³¹/ 'crow'

The mid falling tone is pronounced with modal voice. It begins slightly higher than the mid tone and exhibits a strong drop in pitch. Like with the high falling tone, final vowels and final consonantal sonorants can occur postglottalized, accompanied with a shortened syllable.

/35/ mid rising tone [35 ~ 33]

Examples:

/twəm¹¹kət³⁵/ 'water well'

/vən³⁵/ 'cloud'

/bu³⁵/ 'name'

The mid rising tone is pronounced with modal voice. It starts at about mid level pitch and shows a strong rise. In non-word final syllables where the vowel is shortened, only the target pitch level is produced. Examples are [gja:ŋ³⁵] ‘tree’ vs. [gjaŋ³³θm⁵²] ‘tree trunk’, or [θaw³⁵] ‘leg’ vs. [θaw³³p*ən⁴³] ‘foot’.

/35/ → [33]/ _.(C)(C)V(C)#
 [35] elsewhere

6.1.3.3 Complex Tones

There are two complex tones in Vietnam Kim Mun, a concave and a convex tone. The concave tone refers to a low falling-rising tone and the convex tone refers to a mid rising-falling tone (Yip 2002). The low falling-rising tone undergoes tone alternation.

/341/ mid rising-falling tone [341?]

Examples:

/kliŋ³⁴¹/ ‘to fall down’

/law³⁴¹/ ‘to return’

/jo³⁴¹/ ‘father’s younger brother’

The convex tone is pronounced with creaky voice. The convex tone is also a checked tone. This might be a reflex of a possible former checked and unchecked distinction of the mid rising tone. Future Kim Mun tonal comparison with Kim Mun data from other varieties may reveal a correlation

between the Vietnam convex and mid rising tones with the checked and unchecked tones as reported by other researchers (Mao 2004; He 1999).

/214/ low falling-rising tone [214 ~ 33]

Examples:

/guj²¹⁴/ 'shirt/tunic'

/kla:ŋ²¹⁴/ 'neck'

/du²¹⁴/ 'rat'

The concave tone is pronounced with modal voice. The pitch begins slightly lower than the mid tone, then often drops quite low before rising to a pitch similar to the pitch level of the high tone. Like the mid rising tone, the low falling-rising tone also undergoes tone neutralization on shortened non-word final syllables where it is realized with a mid level tone. Evidence of this is found in examples like [kjɛŋ²¹⁴] 'insect' vs. [kjɛŋ³³bo^{w41}] 'grasshopper', or [kwɑ²¹⁴] 'melon' vs. [kwɑ³³kjo^{w41}] 'cucumber'.

/214/ → [33]/ _(C)(C)V(C)#

[214] elsewhere

6.1.3.4 Tone Summary

The tonal behavior for Vietnam Kim Mun can be summarized as follows:

Table 19. Tonal Impact on the Vietnam Kim Mun Syllable

Tone	Impact on Syllable
High /44/	Breathy voice Long and short = > No impact on vowel length
Mid /33/	Creaky voice (moderate glottal stop as artifact) Long and short = > No impact on vowel length
Low /11/	Modal voice Long and short = > No impact on vowel length
High Falling /52/	Breathy voice Postglottalization on open syllables and final sonorants = > Shorter rhyme Absence of glottal stop = > Longer rhyme Long and short = > No impact on vowel length
Mid Falling /31/	Modal voice Postglottalization on open syllables and final sonorants = > Shorter rhyme Absence of glottal stop = > Longer rhyme Long and short = > No impact on vowel length
Mid Rising /35/	Modal voice Long and short vowels = > No impact on vowel length
Mid Rising- Falling /341/	Creaky voice Syllable final glottalization in any position within a word Always short vowels = > Shortens vowels
Low Falling- Rising /214/	Modal voice Long and short vowels = > No impact on vowel length

Tones in Vietnam Kim Mun are accompanied by predictable phonation types.

The mid falling, mid rising, low, and low falling-rising tones show non-distinctive modal voice. The high and high falling tones always exhibit breathy voice. The mid and mid rising-falling tones are pronounced with creaky voice. The creaky voice may be an outcome of a following glottal

stop. Furthermore, only the mid rising-falling tone occurs with only short vowels.

A summary of all the tones and allotones in the Lao variety is provided in Table 20. The abbreviation Ms. stands for monosyllabic and Son. for sonorants. Evidence of tonal contrast is also provided in Appendix G.

Table 20. Vietnam Kim Mun Tonal Summary

Tones/Allotones		Syllable Structures	Syllable Positions	Types of Codas	Examples			
L e v e l	High /44/	V	Ms		#215	older sister	/o ⁴⁴ /	
			C ₁ V	Initial		#200	descendant	/se ⁴⁴ θun ²¹⁴ /
				Medial		#218	widow	/gjem ³³ fa ⁴⁴ aw ⁴⁴ /
				Final		#063	brain	/pi ⁴⁴ le ⁴⁴ /
		C ₁ C ₂ V	Ms		#090	milk	/nu ⁴⁴ /	
			C ₁ V C ₃	Ms		#019	dog	/klu ⁴⁴ /
				Initial	Son	#168	rice spike	/nin ⁴⁴ bla:w ³¹ /
		C ₁ C ₂ V C ₃	Medial	Son	#097	ribs	/nɔ ¹¹ tam ⁴⁴ θuŋ ⁴⁴ /	
			Final	Son	#021	dragon fly	/kjer ²¹⁴ nuŋ ⁴⁴ /	
			Ms	Son	#062	bone	/θuŋ ⁴⁴ /	
			Initial	Son	#281	stairs/ladder	/kjaw ⁴⁴ ka ³⁵ /	
			Medial	Son	#083	hip	/ke.tlaj ⁴⁴ tuj ⁴⁴ /	
			Ms	Son	#024	eagle	/kla:ŋ ⁴⁴ /	

Tones/Allotones		Syllable Structures	Syllable Positions	Types of Codas	Examples		
C o n t o u r	Mid /33/	V	Initial		#297	ripe	/a ³³ su ³⁵ /
			Initial		#079	hair of head	/pi ³³ dɔŋ ²¹⁴ /
			Final		#171	taro	/ho ³³ bu ³³ /
		C ₁ V C ₃	Ms		#239	bag	/ti ³³ /
			Initial	p/t/m/ŋ	#128	rain	/buŋ ³³ lu ⁵² /
			Medial	p/t/m/ŋ	#396	to work	/aj ³³ guŋ ³³ po ⁵³ /
			Final	p/t/m/ŋ	#253	plane	/tuŋ ¹¹ paw ³³ /
			Ms	p/t/m/ŋ	#126	mud	/pa:m ³³ /
			C ₁ C ₂ V C ₃	Initial	p/t/m/ŋ	#298	right side
	Final	p, t/m/ŋ		#164	glutinous rice	/me ³³ blet ³³ /	
	Ms	p/t/m/ŋ		#293	slick	/blaŋ ³³ /	
	Low /11/	C ₁ V	Initial		#408	to arise	/θe ¹¹ kwɛ ³⁴¹ /
			Final		#249	harrow	/tuŋ ¹¹ pa ¹¹ /
			Ms		#196	o. brother	/ta ¹¹ /
		C ₁ C ₂ V	Ms		#340	to swim	/kjo ¹¹ /
C ₁ V C ₃			Initial	p/m/n/ŋ	#143	banana leaf	/θiw ¹¹ nɔm ³¹ /
			Medial	p/m/n/ŋ	#035	lizard	/be.koŋ ¹¹ sa: ⁵² /
		Final	p/m/n/ŋ	#099	shoulder	/pe.taw ¹¹ /	
C ₁ C ₂ V C ₃		Ms	p/m/n/ŋ	#377	go	/niŋ ¹¹ /	
		Initial	n/ŋ	#240	basket	/gjaŋ ¹¹ maw ³¹ /	
		Final	n/ŋ	#254	plow	/tuŋ ¹¹ kjaŋ ¹¹ /	
Ms		n/ŋ	#086	intestine	/kla:ŋ ¹¹ /		
High Falling /52/		C ₁ V	Initial		#374	to hone knife	/to ⁵² tu ³³ /
	Final			#199	daughter	/mun ¹¹ sa ⁵² /	
	Ms			#299	red	/θi ⁵² /	
	C ₁ C ₂ V	Final		#228	clothing	/ŋuj ²¹⁴ kwa ⁵² /	
		Ms		#236	trousers	/kwa ⁵² /	
	C ₁ V C ₃	Initial	p/t/Son	#390	to drain	/goj ⁵² wɛm ²¹⁴ /	
		Medial	p/t/Son	#186	day	/me.nɔj ⁵² ta: ³⁵ /	
		Final	p/t/Son	#026	flea	/kle.muŋ ⁵² /	
	C ₁ C ₂ V C ₃	Ms	p/t/Son	#072	face	/min ⁵² /	
		Final	t/m/n/ŋ	#232	ring	/pu.do ¹¹ kwin ⁵² /	
Ms		t/m/n/ŋ	#089	lungs	/klum ⁵² /		

Tones/Allotones		Syllable Structures	Syllable Positions	Types of Codas	Examples			
C o m p l e x	Mid Falling /31/	C ₁ V	Initial		#056	arm	/tə ³¹ kəŋ ²¹⁴ /	
			Medial		#084	hoof	/θaw ³⁵ də ³¹ waj ³⁵ /	
			Final		#030	grasshopper	/kjerŋ ²¹⁴ bo ³¹ /	
		C ₁ C ₂ V	Final		#115	cliff	/gjaw ²¹⁴ pje ³¹ /	
			C ₁ VC ₃	Initial	p/t/Son	#173	tobacco	/jin ³¹ taj ³⁴¹ /
				Medial	p/t/Son	#124	lightening	/buŋ ²¹ bit ³¹ to ⁵² /
		C ₁ C ₂ VC ₃	Final	p/t/Son	#149	cotton	/buŋ ³³ min ³¹ /	
			Ms	p/t/Son	#050	turtle	/pit ³¹ /	
			I	w	#207	host/owner	/pjaw ³¹ mun ³¹ /	
	Mid Rising /35/	V	Ms		#420	2	/i ³⁵ /	
			C ₁ V	Final		#344	to steal	/aj ³³ θa ³⁵ /
				Ms		#182	to dream	/be ³⁵ /
		C ₁ C ₂ V	Ms		#120	fog	/kja ³⁵ /	
			C ₁ VC ₃	Final	t/Son	#103	thigh	/θaw ³⁵ bəŋ ³⁵ /
		Ms		t/Son	#227	cloth	/buŋ ³⁵ /	
		C ₁ C ₂ VC ₃	Final	Son	#042	pig sow	/tuŋ ³¹ kjan ³⁵ /	
			Ms	Son	#069	egg	/kjaw ³⁵ /	
		-Allotone [33]	C ₁ V C ₁ VC ₃ C ₁ C ₂ VC ₃	Initial		#301	old	[lo ³³ ŋ ⁴¹ ar ⁴¹]
Initial	Son			#076	foot	[θaw ³³ p [*] ən ⁴³]		
Initial	m/ŋ			#175	tree trunk	[gjan ³³ θin ⁵²]		
Low Falling- Rising /214/	C ₁ V	Final		#257	sickle	/lu ³¹ to ²¹⁴ /		
		Ms		#358	to roast	/si ²¹⁴ /		
	C ₁ C ₂ V	Ms		#288	sticky	/bla ²¹⁴ /		
		C ₁ VC ₃	Final	Son	#200	descendant	/se ⁴⁴ θun ²¹⁴ /	
	Ms		Son	#037	monkey	/biŋ ²¹⁴ /		
	C ₁ C ₂ VC ₃	Final	Son	#041	piglet	/tuŋ ³¹ kjen ²¹⁴ /		
Ms		Son	#093	neck	/kla:ŋ ²¹⁴ /			

Tones/Allotones	Syllable Structures	Syllable Positions	Types of Codas	Examples		
-Allotone [33]	C ₁ V	Initial		#268	coop	[tʰə ³³ ko ^{w52}]
	C ₁ C ₂ V	Initial		#150	cucumber	[kwa ³³ kjo ^{w31}]
		Medial		#162	pumpkin	[kje·ŋ ²¹ kwa ³³ waŋ ⁴¹]
	C ₁ VC ₃	Initial	Son	#082	heart	[θm ³³ t* ^a w ⁴¹]
		Medial	Son	#190	morning	[bɛ̃.t* ^ɔ ·m ³³ gjo ^{w41}]
C ₁ C ₂ VC ₃	Initial	ŋ/w	#048	spider	[kje·ŋ ³³ ŋ ^a : ⁴³]	
Mid Rising- Falling /341/	C ₁ V	Final		#307	left	/θaj ³³ bu ³⁴¹ /
		Ms		#213	mother	/di ³⁴¹ /
	C ₁ C ₂ V	Final		#408	to arise	/θe ¹¹ kwe ³⁴¹ /
		Initial	m/ŋ/w/j	#004	bee	/mej ³⁴¹ muŋ ⁴⁴ /
	C ₁ VC ₃	Final	m/ŋ/w/j	#300	raw	/a ⁴⁴ ŋim ³⁴¹ /
		Ms	m/ŋ/w/j	#401	to buy	/maj ³⁴¹ /
	C ₁ C ₂ VC ₃	Initial	m/ŋ/w	#127	pond	/bjaw ³⁴¹ kla:ŋ ¹¹ /
		Final	m/ŋ/w	#008	caterpillar	/buŋ ³³ blew ³⁴¹ /
Ms		m/ŋ/w	#241	basket	/gjem ³⁴¹ /	

The interaction of Vietnam Kim Mun tones and phonotactics will be described under the Vietnam Kim Mun syllable structure in Sections 6.2.5 through 6.2.7.

6.2 Syllable and Word Structure

This section will provide an overview of the syllable structure of the Vietnam variety of Kim Mun and the general rules that apply. Words are made up by one major syllable or a combination of one possible minor and up to three major syllables.²² The most frequent word length is one to two syllables.

²² This analysis is limited to a wordlist with minimal access to native speakers, therefore a more detailed analysis of the syllable and word structure using criteria such as Kroeger (2005) is for future Kim Mun studies.

Syllables can be open and closed. The Vietnam Kim Mun word structure is $(C_1)(C_2)V(C_3)T$, with the non-distinctive vowel in the possible word-initial minor syllable not being marked.

6.2.1 Major Syllables

There are three open templates and three closed templates allowed in the Vietnam variety of Kim Mun. The most basic syllable is a preglottalized vowel and the most common syllable template is the C_1VC_3T . The maximal syllable template is $(C_1)(C_2)V(C_3)T$.

The Vietnam variety allows a complex onset but not a complex nucleus.

There are no examples of a complex coda and the C_3 is restricted to the final labial and alveolar stops, the final labial, alveolar, and velar nasals, and the final labiovelar and palatal approximants.

Table 21 provides an overview of the Vietnam Kim Mun syllable structure for both open and closed syllables.

Table 21. Vietnam Kim Mun Syllable Template

Syllable Type	Onset	Rhyme		Examples		
		Nucleus	Coda			
Open Syllable		V		#016	crow	/ku.a: ³¹ /
	C_1	V		#063	to know	/pe ²¹⁴ /
	C_1C_2	V		#246	fire tongs	/pja: ⁴⁴ /
Closed Syllable		V	C_3	#022	duck	/a:p ¹¹ /
	C_1	V	C_3	#050	turtle	/pit ³¹ /
	C_1C_2	V	C_3	#089	lungs	/klum ⁵² /

6.2.2 Minor Syllables

Minor syllables in Vietnam Kim Mun are always word-initial. They consist of a restricted set of initial consonants followed by a shortened near-open central /ɛ/ or the close back /u/, and do not carry tone. An exception to these restrictions for minor syllables is the occurrence of a syllable-initial cluster, as in #026 ‘flea’ /klě.muŋ⁵²/ and #002 ‘bat’ /klě.buj⁵²/. This might be a newer minor syllable that shows the typical shortened vowel but has not undergone any simplification of the onset yet. Two other examples for a possible current semantic reduction of the first syllable in a compound word is the word /pũ.kəŋ²¹⁴/ ‘thunder’ and /kũ.a:³¹/ ‘crow’.

There may be four different semantic domains for Vietnam Kim Mun minor syllables discovered in the data, related to the upper body, the mid to lower body, vegetables, and animals.

pũ- used with upper body parts

/pũ.pen⁴⁴/ ‘hand’

/pũ.θe⁵²/ ‘arm’

/pũ.də³¹/ ‘finger’

/pũ.taw¹¹/ ‘shoulder’

/pũ.də³¹waj³⁵/ ‘fingernail’

/pũ.təŋ²¹⁴/ ‘nose’

kě- used with mid body parts

/kě.tlai⁴⁴kəʔ⁵²/ ‘butt’

/kě.tlai⁴⁴tui⁴⁴/ ‘hip’

/kě.tan⁴⁴kaŋ²¹⁴/ ‘back’

kě- used with some vegetables

/kě.taŋ⁴⁴/ ‘eggplant’

/kě.ɬu²¹⁴/ ‘banana flower’

klě- used with some animals

/klě.muŋ⁵²/ ‘flea’

/klě.buj⁵²/ ‘bat’

Further examples not grouped into semantic domains include:

/pě.laj⁵²/ ‘price’

/bě.təm²¹⁴gjo³¹/ ‘morning’

/bě.koŋ¹¹sa:⁵²/ ‘lizard’

/mě.nɔ:m¹¹/ ‘ears’

/mě.nɔj⁵²ta:³⁵/ ‘day’

/tě.dup³¹/ ‘skin’

/ně.muŋ⁵²/ ‘carrying pole’

6.2.3 Consonant Clusters

Table 22 illustrates the different consonant clusters that are possible in

Vietnam Kim Mun. There are three possible phonemes for the C₂ position:

/l, w, j/. The C₁ position can have either one of five phonemes: /p, b, t, k,

g/.

Table 22. Initial Consonant – Medial Consonant Sequences in Vietnam Kim Mun

C ₁ \ C ₂	p	b	t	k	g
l		+	+	+	
w			+	+	+
j	+	+	+	+	+

Consonant clusters starting with the alveolar stop are rare. /tl/ only occurs in one morpheme which occurs twice in the wordlist in /kɛ.tlaj³³kɛ⁵²/ ‘butt’ and /kɛ.tlaj³³tui⁴⁴/ ‘hip’. The /tj/ and /tw/ also only occur once in the wordlist in /tju⁵²/ ‘to run’ and /twɛm¹¹kɔt³⁵/ ‘water well’ respectively. As can be observed from Table 22 above, the consonant clusters /pl, pw, bw, gl/ do not occur in the data, however, due to symmetry, it can be predicted that there may be /pl, pw, bw, gl/ clusters in a bigger data corpus. It is also possible Vietnam Kim Mun is losing consonant clusters. In the recording of the wordlist, the language informant at one point inserted the central vowel /ɛ/ between the consonant cluster /kl/.

6.2.4 Consonant – Vowel Sequences

There are no obvious restrictions on vowels following initial consonants and medial consonants. The strongest limitation is found with the glottal fricative, which is not found with front vowels, and the labiodental fricative, which only occurs after central vowels. It also can be observed that alveolar and velar consonants do not occur with front vowels other than the close /i/.

The more open front vowels /e, ε/ are quite restricted in their environment compared to the rest of the Vietnam Kim Mun vowel spectrum. This may reflect the possibility that the close-mid and open-mid front vowels /e/ and /ε/ are merging (cf. Section 6.1.2). The alveolo-palatal lateral only occurs once in the data preceding the back vowel /u/. Table 23 illustrates the consonant-vowel-sequences accounted for in Vietnam Kim Mun.

Table 23. Consonant – Vowel Sequences in Vietnam Kim Mun

$C_{1/2}$ V	p	b	m	w	f	v	t	d	n	l	s	ʃ	ɕ	ɲ	ʎ	j	k	g	ŋ	θ	h	
i	+	+	+	+		+	+	+	+	+	+		+	+		+	+	+	+	+	+	
e	+	+	+			+					+	+	+			+						+
ε	+	+	+	+								+				+						
ɐ	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+	+	+			+	
a	+		+	+	+		+	+	+	+	+	+	+	+		+	+	+	+	+	+	+
u	+	+	+				+	+	+	+	+	+	+		+	+	+	+	+	+	+	
o	+	+					+			+	+	+		+		+	+	+	+	+	+	+
ɔ		+		+			+	+	+	+	+	+		+		+	+	+	+	+	+	+

The back vowel /o/ also has a slightly restricted environment, but there does not seem to be any correlation with the other back vowels that would explain the restriction. The two central vowels /ɐ/ and /a/ and the front vowel /i/ have the least restricted environments among Vietnam Kim Mun vowels, followed by the back vowels /u/ and /ɔ/.

6.2.5 Syllable Onset – Tone Patterns

There are no clear restrictions between syllable onsets and tones in Vietnam Kim Mun. The strongest limitation is with the velar nasal /ŋ/ on only low tones, which reflects the fact that it rarely occurs syllable-initial. The labiodental and glottal fricatives /f, v, h/ also have a restricted environment, which is also due to their rare occurrence in the data. All that can be noted is that the voiced labial fricative /v/ never occurs with level tones whereas the glottal fricative /h/ only occurs with level tones. Generally, fricatives, except the alveolar sibilant, along with the labiovelar approximant and the alveolar stops occur with fewer tones than the other consonants. The alveolo-palatal lateral only occurs once in the data on a mid falling tone.

Table 24 illustrates the syllable onset tone patterns accounted for in Vietnam Kim Mun.

Table 24. Syllable Onset – Tone Patterns in Vietnam Kim Mun

$C_{1/2}$ V	p	b	m	w	f	v	t	d	n	l	s	ʃ	ʒ	ɲ	ʎ	j	k	g	ŋ	θ	h
44	+		+	+	+		+	+	+	+	+	+	+			+	+	+		+	
33	+	+	+				+	+	+		+	+	+	+		+	+	+		+	+
11	+	+	+	+	+		+	+	+	+	+	+	+	+		+	+	+	+	+	+
52		+	+	+	+	+	+	+	+	+	+	+	+	+		+	+	+			+
31	+	+	+				+	+	+	+	+	+		+	+	+	+	+			
35		+	+		+	+		+	+	+	+	+	+			+	+	+			+
214	+	+	+	+	+		+	+	+	+	+	+	+	+		+	+	+	+	+	+
341		+	+	+		+			+	+		+	+	+		+	+	+			

The labiovelar approximant does not occur with mid tones at all, whether level or contour tones. The reason probably is that the mid falling tone and the mid rising-falling tone are the most restricted among Vietnam Kim Mun tones, due to the fact that these two tones are used the least among all the tones. The high falling, high, low falling-rising, and low tones are the least restricted tones in Vietnam Kim Mun and occur more frequently than other tones.

6.2.6 Vowel – Tone Patterns

There are no clear restrictions between vowels and tones in Vietnam Kim Mun. It can be observed that the front vowel / ϵ / cannot occur with the mid falling, the mid rising, and the mid rising-falling tones. The rounded back vowels show a gap for only one of the mid tones. All the other Vietnam Kim Mun vowels can occur with any tone. Table 25 illustrates the nucleus tone patterns accounted for in Vietnam Kim Mun.

Table 25. Nucleus – Tone Patterns in Vietnam Kim Mun

V T	i	e	ɛ	ɐ	a	u	o	ɔ
44	+	+	+	+	+	+	+	+
33	+	+	+	+	+	+	+	+
11	+	+	+	+	+	+	+	+
52	+	+	+	+	+	+	+	+
31	+	+		+	+	+		+
35	+	+		+	+	+	+	+
214	+	+	+	+	+	+	+	+
341	+	+			+	+	+	

6.2.7 Coda – Tone Patterns

Each tone in Vietnam Kim Mun can occur on open syllables, and there are no clear restrictions between the coda and tones in Vietnam Kim Mun. Table 26 does reflect that the final velar plosive is not found in syllable-final position. It also can be observed that syllables ending with stops do not occur with the high level and the two complex tones.

Table 26. Coda – Tone Patterns in Vietnam Kim Mun

C ₃ T	p	t	k	m	n	ŋ	j	w
44				+	+	+	+	+
33	+	+		+	+	+	+	+
11	+	+		+	+	+	+	+
52	+	+		+	+	+	+	+
31	+	+		+	+	+	+	+
35		+		+	+	+	+	+
214				+	+	+	+	+
341				+		+	+	+

6.3 Summary

As shown in this chapter, the phoneme inventory of Kim Mun in Vietnam includes twenty-one consonants, nine vowels, and eight tones.

Vietnam Kim Mun has both voiced and voiceless stops with stiff voice as a non-contrastive feature.

There is a higher functional load on plosives and nasals than on fricatives or approximants. All eight vowels phonetically show environmentally conditioned vowel length, whereas merely the open central vowel /a/ has one example of contrast for length distinction. This is implying that Vietnam Kim Mun has almost entirely lost a possible older long and short vowel distinction. However, Vietnam Kim Mun has a large informational load on tones with a total of three level tones, two contour tones, and two complex tones. The shortest possible syllable is made up by a preglottalized vowel, and the maximal syllable is made up by a consonant cluster and a plosive or central approximant following the vowel. Consonant clusters are restricted to plosives followed by approximants. Closed syllables with initial onsets are most frequent. There are a small number of minor syllables with a restricted set of oral and nasal stops followed by a non-distinctive vowel. The maximal word length is one minor syllable followed by up to three major syllables. The typical word has one or two syllables.