A Study of Acoustic-phonetic of "Saat Terakhir" Song by ST12 in Dangdut and Pop Versions

Nuny Sulistiany Idris*, Undang Sudana, Rahmawati

Universitas Pendidikan Indonesia, Bandung, Indonesia
**Corresponding author. Email: nuny@upi.edu*

ABSTRACT
This study is carried out due to the differences in the pronunciation of song lyrics between dangdut and pop singers. For example, dangdut singers pronounce the word /*cinta*/ in "Saat Terakhir" by ST12 as [cInta], while pop singers pronounce it as [c^{h}Inc^{h}a]. The data were from "Saat Terakhir" by ST12 sung by Charly Van Houten and Lesti Kejora as they have a quite similar voice color. This study focuses on the acoustic-phonetic differences of the two singers including (a) duration, (b) frequency or pitch, and (3) intensity or voice. The data were obtained through downloading the song and analyzed using acoustic-phonetic theory with the help of the International Phonetic Alphabet (IPA) for phonetic transcription and Praat software for acoustic-phonetic analysis. The results indicate that in terms of pronunciation, the pop singer adds aspirated sounds of [^{h}] to phonemes of /c/, /t/, and /d/ and pronounce the sound /t/ to [c^h] and [t^h], while the Dangdut singer tends to pronounce them in accordance with the rules of the language. The Dangdut singer tend to sing longer than pop singers with a duration of 42.067394 microseconds. Further, the Dangdut singer has a higher tone frequency than the pop singer of 533.2434584525848 Hz. Meanwhile, the pop singer has a higher voice loudness than the Dangdut singer with a scale of 86.16124255533789 dB.

Keywords: *Acoustic-phonetics, dangdut singer, duration, frequency, intensity, pop singer.*

1. INTRODUCTION

Indonesia has many genres of music and two of them are dangdut music and pop music. Setiaji (2017) mentions that dangdut has been an exist music genre since the 60s to present. Setiyan (2021) also mentions that dangdut and pop music are two of the many existing music genres in Indonesia. Even, these genres are still presented at national-scale music festivals, such as the Synchronize Festival.

This study chose a song entitled "Saat Terakhir" by ST12 which was sung by Charly Van Houten as a pop singer and Lesti Kejora as a dangdut singer. Both singers sang the same song and were popular on YouTube. Besides, their pronunciation is suspected to be different because of the different genres of music they practice. For example, in the song "Saat Terakhir", Lesti pronounces the word /*tɛrjadi*/ as [tɛrjadi], while Charly pronounces it as [chɛ̞rjadhi]. Therefore, this study can show that each genre of music has a different way of pronunciation and not all singers pronounce songs according to the sound rules of the language.

This shows that not all singers follow a good and correct pronunciation. Indeed, songs do not only serve as a mere entertainment. Nowadays, many people learn languages either in terms of pronunciation or vocabulary through songs. Songs with the correct pronunciation can be used as learning media. This is reinforced by the results of studies by Ifadah and Aimah (2012), Hasan (2017), and Ranuntu and Tulung (2018) in which songs are very effective in teaching pronunciation and enriching vocabulary. Thus, the analysis of pronunciation, tone frequency, and intensity of a song is highly considered in language teaching.

There are 3 relevant previous studies with the present study. First, a study by Alimi and Kassin (2018) which showed that phonological analysis in native Malay songs can help to assess the singer's pronunciation adherence to Malay. Pronunciation of original Malay songs meets the rules of the Malay language, such as glottis, nasal assimilation, and others. Second, a study by Osatananda and Thinchan (2021) used Software Praat to identify teaching English pronunciation of 6 college students in Thailand. The results showed that Praat can help students to learn how to pronounce language authentically.

Thus, a study by Rahmatunisa and Syarifudin (2021) used Praat software to analyze suprasegmental sound elements in English debate and it showed that intonation and stress can affect the meaning of speech, especially in debating.

The difference between this present study and the previous studies are the data, instrument, and focus of the study. This study uses Praat software to analyze the duration, tone frequency, and intensity of a song sung by two singers with different musical genre backgrounds. Besides, this study also focuses on the pronunciation of pop and dangdut singers based on the International Phonetic Alphabet (IPA). There is no acoustic phonetic analysis of songs using Praat software as a data analysis instrument thus far.

1.1. Phonology

Phonology is a linguistic study that studies, discusses, and analyzes the sounds of language produced by the human speech organs (Chaer, 2013; Katamba, 1992). Phonology is associated with the organization of speech in a particular language or with sound systems and patterns of a particular language. An important feature of the sentence structure is the pronunciation, the structure of the sound. Odden (2005) states that the pronunciation of certain words is a fundamental part of word structure. Indeed, the principles of pronunciation in languages can change over time. The study of phonology even touches on other linguistic domains. A common characterization of phonetics is related to physical "actual" sound as manifested in human speech and concentrates on acoustic waveforms, formant values, duration measurements in milliseconds, amplitude, and frequency, or in the physical principles underlying sound production.

1.2. Phonetics

Marsono (2013) states that phonetics is a study of language sound. It covers the frequency, intensity, timbre as air vibrations, and how the sound is received by the ear. Irawan (2017) states phonetics is the study of language sounds at the surface level and it is also called lower-level phonology. The sound of the language needs to be transcribed into phonetic transcription to identify the form of the sound of the language. Chaer (2013) states that phonetic transcription is the writing of language sounds accurately or precisely by using letters or phonetic writing. Phonetic letters are made based on modified Latin letters (alphabet) or with diacritical marks.

Further, Irawan (2017) explains that after the sounds of the language are transcribed, then the sounds are described with sound symbols referring to the International Phonetic Alphabet. Davenport and Hannahs (2005) state that articulatory phonetics relates to speech sounds and how they are made; auditory phonetics relates to how they are perceived; and acoustic phonetics relates to the physics involved. However, this study only focuses on acoustic-phonetic analysis.

1.3. Acoustic Phonetics

Irawan (2017) states that acoustic phonetics is an interdisciplinary science of phonetics and acoustics. The object of acoustic-phonetic study is the sound of language when it propagates in the air and this study discusses sound waves and the frequency, pressure, and sound intensity (Chaer, 2013; Marsono, 2013). Further, it also examines the decibel scale, resonance, acoustics of sound production, and acoustic measurements.

Davenport and Hannahs (2005) mention that acoustic phonetics does not only focus on the physical properties of speech sounds, but also the linguistically relevant acoustic properties of speech sounds. Not all sounds produced by the human vocal are linguistic, for example, belching, coughing, and hiccups. Fry (1976) explains that acoustics in its wider use refers primarily to the study of the formation and measurement of sound waves, and acoustic phonetics have to use acoustic physical methods for the same objective that is to establish the nature of sound stimuli to the ear.

Salmani and Birjandi (2005) explain that acoustic phonetics can be defined as the study of sound waves produced by human vocal organs for communication. Speech sounds, like sound in general, are transmitted through the air as small, rapid variations in air pressure that propagate in longitudinal waves from the speaker's mouth and can be heard, recorded, visualized, and measured.

2. METHOD

This study is a qualitative descriptive study. It describes qualitatively the pronunciation, duration, frequency, and intensity of a song "Saat Terakhir" sung by dangdut and pop singers. The data were from a song entitled "Saat Terakhir" sung by Lesti Kejora and Charly Van Houten on the Trinity YouTube channel. The data were collected by downloading, note-taking, and listening techniques. Then, the data were analyzed using phonetic analysis with the help of the International Phonetic Alphabet (IPA) and acoustic-phonetic analysis with the help of Praat software.

The steps of the note-taking technique in this study were 1) watching the video, 2) downloading the video, 3) recording the phonetic transcription of the pronunciation of Lesti Kejora and Charly Van Houten, and 4) recording the duration, the Hertz scale, and the decibel scale. Then, the steps of the listening technique covered 1) watching the video and 2) listening to the pronunciation, length of duration, vocal cord vibrations (frequency), and intensity of voice.

3. FINDINGS AND DISCUSSION

3.1. Findings

3.1.1 Phonetic Transcription of the Song

Table 1. Phonetic transcription of the song

Lyrics	Phonetic Transcription by Lesti	Phonetic Transcription by Charly
Tak pernah terpikir olehku	[ta? pɛrnah tɛrfikIr olɛhku]	[c^{h}a? pɛrnah tɛrpikIr olɛhku]
Tak sedikitpun kubayangkan	[ta? sədikItpUn kubayaŋkan]	[ta? sədikItpUn kubayaŋkan]
Kau akan pergi tinggalkanku sendiri	[ka$_w$ akan pərgi tIŋgalkanku sɛndiri]	[ka$_w$ akan pɛrgi tIŋgalkanku sɛndiri]
Di bawah batu nisan kini kau tlah sandarkan	[di bawah batu nisan kini ka$_w$ tlah sandarkan]	[di bawah bat^{h}u nisan kini ka$_w$ tlah sandarkan]
Kasih sayang kamu begitu dalam	[kasIh sayaŋ kamu bəgitu dalam]	[kasIh sayaŋ kamu bəgit^{h}u d^{h}alam]
Sungguh ku tak sanggup ini terjadi	[sUŋgUh ku ta? saŋgUp ini tɛrjadi]	[sUŋgUh ku t^{h}a? saŋgUp ini c^{h}ɛrjad^{h}i]
Karena ku sangat cinta	[karəna ku saŋat cInta]	[karəna ku saŋat c^{h}Inc^{h}a]

Based on Table 1, Lesti's pronunciation remains consistent with the proper pronunciation of the letter sounds, for example, she pronounced the letter /d/ into [d], /t/ into [t] not [t^h], /b/ into [b], and so does for other letters. Besides, she glottaling the sound of the letter /k/ at the end of the word /*tak*/ into [ta?]. Meanwhile, Charly added an aspirated sound in the form of [^{h}] when pronouncing the sounds of the letters /d/, /t/ and /c, for example the letter /d/ into [d^h] in the word /*terjadi*/ which is pronounced as [c^{h}ɛrjad^{h}i] and the sound of the letter /t/ into [t^h] and [c^h], for example, the word /*batu*/ into [bat^{h}u] and the word /*cinta*/ into [c^{h}Inc^{h}a]. He also eliminated the letter /k/ in the word /*tak*/ into [t^{h}a?].

Table 2. Phonetic transcription of the song

Lyrics	Phonetic Transcription by Lesti	Phonetic Transcription by Charly
Inilah saat terakhirku melihat kamu	[inilah saat tɛraxIrku məlihat kamu]	[inilah saat c^{h}eraxIrku məlihat kamu]
Jatuh air mataku menangis pilu	[jatUh air mataku mənaŋIs pilu]	[jat^{h}Uh air mac^{h}aku mənaŋIs pilu]
Hanya mampu ucapkan selamat jalan kasih	[haŋa mampu ucapkan səlamat jalan kasIh]	[haŋa mampu ucapkan səlamat jalan kasIh]
Satu jam saja ku telah bisa	satu jam saja ku təlah bisa	[satu jam saja ku c^{h}əlah bisa]
Sayangi kamu di hatiku	sayaŋi kamu di hatiku	[sayaŋi kamu di hac^{h}iku]
Namun bagiku lupakanmu	namUn bagiku lupakanmu	[namUn bagiku lupakanmu]
Butuh waktuku seumur hidup	butUh waktuku səumUr hidUp	[buc^{h}Uh wakc^{h}uku səumUr hid^{h}Up]

Based on Table 2, Lesti's pronunciation of the song "Saat Terakhir" tended to be in accordance with how the sound should be pronounced, for example, she pronounced the letter /t/ into [t] not [t^h] or [c^h] as Charly did. Charly pronounced the letters the same as Lesti, but the difference is that Charly pronounced the letter /t/ into [c^h] and the letter /d/ into [d^h]. Charly pronounced the letters /t/ into [t^h] and [c^h] as in the word /*jatuh*/ into [jat^{h}Uh], /*mataku*/ into [mac^{h}aku], and the word /*terakhirku*/ into [c^{h}eraxIrku].

3.1.2 Duration of the Song

Based on the total duration data on Table 3, the duration spent by Lesti is longer than Charly with a difference of 3.409010 microseconds. It means Lesti sang it with a longer duration than the original singer of the song, Charly. The difference in singing duration is because Lesti often uses *cengkok* at the beginning, middle, or end of song lyrics. Thus, her singing duration becomes longer than Charly's.

3.1.3 Frequency of the Song

The contour of the tone or commonly referred to as the frequency can indicate the density of the sound. The denser the spectrum, the higher the density and the sound. The clearer the dark band on the spectrogram, the higher the Hz. Observe the image of the frequency below to see the density and highs and lows of the sound.

Table 3. Duration of the song

Lyrics	Charly	Lesti
Inilah	0.780317	1.087581
Saat	0.629576	0.679139
Terakhirku	1.658395	1.550034
Melihat	1.274507	1.302348
Kamu	0.850117	0.967814
Jatuh	0.807691	0.696946
Air	0.680194	0.636173
Mataku	1.534391	1.698955
Menangis	1.415753	1.369642
Pilu	1.092503	0.831740
Inilah	1.041395	1.062395
Saat	0.685751	0.582040
Terakhirku	1.552792	1.592051
Melihat	1.339973	1.369506
Kamu	0.891713	1.379179
Selamat	0.793723	1.169767
Jalan	1.320708	0.775681
Kasih	2.384556	5.098640
Lupakanmu	2.075181	1.998976
Butuh	1.229313	1.310428
Waktuku	1.974352	2.099229
Seumur	1.713588	1.959281
Hidup	1.690370	1.528368
Total Duration	**29.445110**	**32.854120**

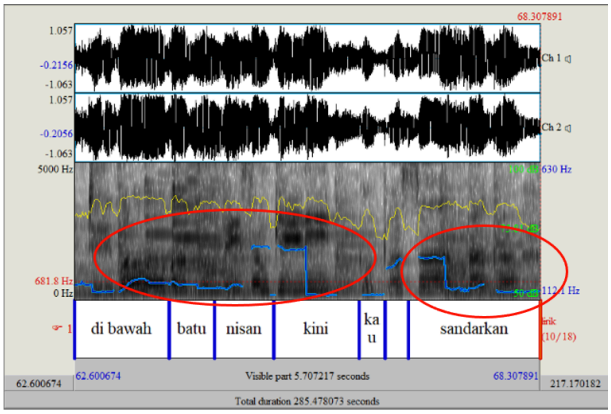

Figure 1 Frequency of the song by Charly Van Houten.

Based on Figure 1, the highest density is in the words "*nisan*" and "*kini*" in accordance with the red circle above. Besides, the density of sound also lies in the words "*di bawah*", "*stone*", and "*sandarkan*" because the dark band is quite dense, but not as dense as the words "*nisan*" and "*kini*". Meanwhile, no dark band on lyrics "*kau*" indicates that there is no density, and Charly's voice is not at a high pitch.

The dark band of the frequency of Lesti Kejora is clearer in the vibration of her vocal cords. Almost all the words in the lyrics of "*di bawah batu nisan kini kau tlah sandarkan*" have a very thick concentration. It indicates that Lesti Kejora sings the lyrics in a high tone.

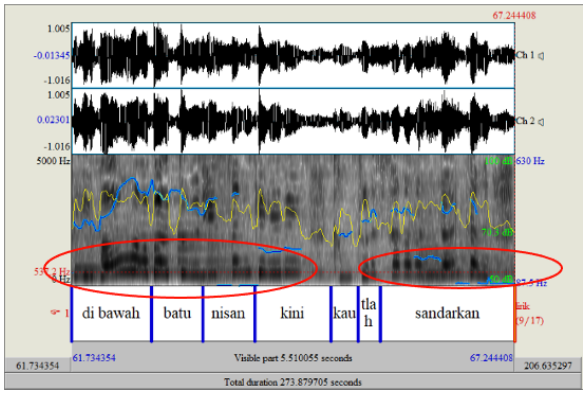

Figure 2 Frequency of the song by Lesti Kejora.

Table 4. Frequency of the song

Lyrics	Charly	Lesti
Di bawah	136.02594355996754 Hz	367.8091985892726 Hz
Batu	136.19029727681882 Hz	442.4129223181451 Hz
Nisan	182.53035152898622 Hz	225.41334101885988 Hz
Kini	187.22812917336785 Hz	215.64133542890528 Hz
Kau	97.74466219454082 Hz	293.6148764005714 Hz
Tlah	222.5675036521646 Hz	364.82022313836035 Hz
Sandarkan	152.4610920492718 Hz	248.19917810742487 Hz

Based on Table 4, the highest frequency of Charly reaches 222.5675036521646 Hz in the word "*tlah*". But that word has a very short duration of 0.285667 microseconds so that the dark band is not visible. Then, the highest frequency can also be found in the words "*nisan*" and "*kini*". It is in line with Figure 1 which shows that the word "*nisan*" and "*kini*" have a thick sound density. Besides, the word "*tlah*" becomes the lowest frequency with 97.74466219454082 Hz. Meanwhile, the highest frequency of Lesti is 442.4129223181451 Hz in the word "*batu*". Besides, the word "*di bawah*" also has a high frequency of 367.8091985892726 Hz.

Figure 2 shows the visualization of the frequency of Lesti that the word "*di bawah*" and "*batu*" have a very dense spectrogram, even the vibrations of the sound can be seen. Lesti also has a large frequency for the word "*tlah*" which is 364,82022313836035 Hz. Both have the shortest duration of the lyrics of other words. However, apart from density and frequency, Lesti's tone density is higher than Charly's, and even Lesti Kejora's highest frequency is twice Charly Van Houten's.

Based on Figure 3 and 4, on the words "*inilah*", "*saat*", "*terakhirku*", "*menangis*", and "*pilu*" have dark band on the spectrogram. The same with the previous figure, the dark band on the spectrogram can be an indicator of a higher density and tone in that part.

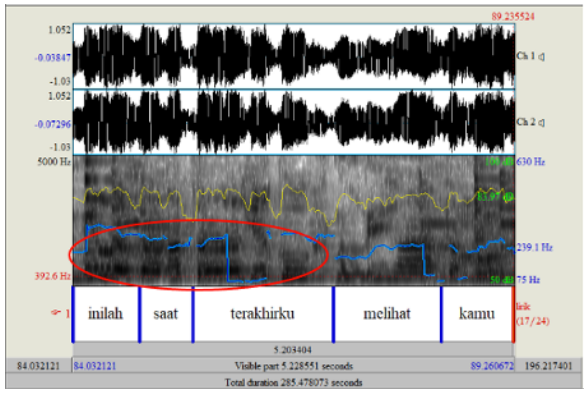

Figure 3 Frequency of the song by Charly Van Houten.

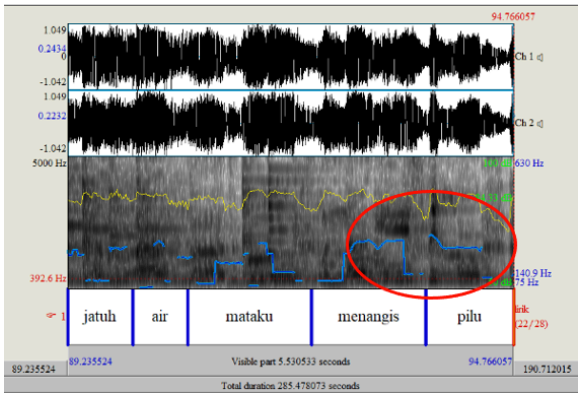

Figure 4 Frequency of the song by Charly Van Houten.

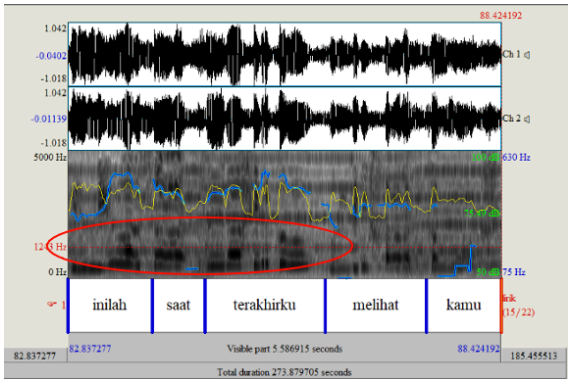

Figure 5 Frequency of the song by Lesti Kejora.

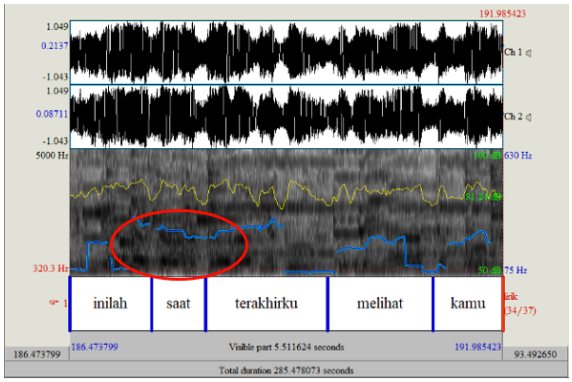

Figure 7 Frequency of the song by Charly Van Houten.

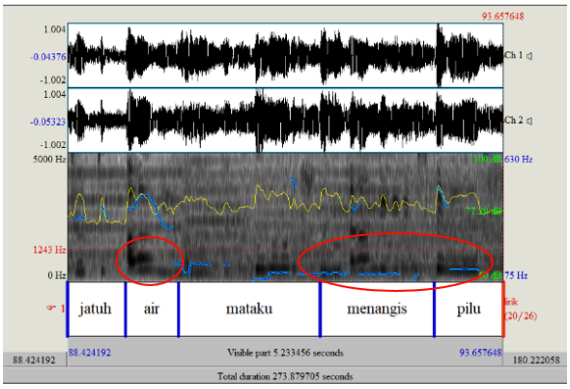

Figure 6 Frequency of the song by Lesti Kejora.

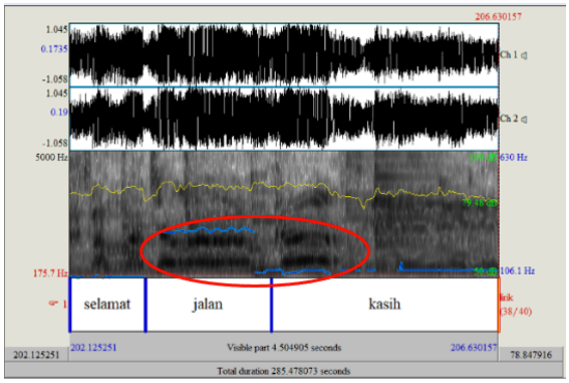

Figure 8 Frequency of the song by Charly Van Houten.

Based on Figure 5 and 6, the lyrics of "*inilah*", "*saat*", "*terakhirku*", and "*air*" show a concentrated spectrogram. In particular, in the lyric "*inilah saat terakhirku*" the density is very visible when compared to the lyric of "*air*". It shows that the frequency (Hz) in the lyric of "*inilah saat terakhirku*" and the lyrics of "*air*" is different because the darker the dark band on the spectrogram, the higher the frequency (Hz).

Based on the frequency data in Table 5, the highest frequency of Charly is 272.5434960153962 Hz for the word "*inilah*", 268.8739827473333 Hz for the word "*saat*", 226.2608128629321 Hz for the word "*terakhirku*", and 236.24945416612942 Hz for the word "*pilu*". Meanwhile, the highest frequency of Lesti's frequency is 426.145870433368 Hz for the word "*inilah*", 352.36422216561186 Hz for the word "*saat*", 471.426392119308 Hz for the word "*terakhirku*", and 383.9726533754091 Hz for the word "*air.*" Lesti's frequency is presented in Figure 6 with the density on the words of "*inilah*", "*saat*", "*terakhirku*", and "*air*".

Table 5. Frequency of the song

Lyrics	Charly	Lesti
Inilah	272.5434960153962 Hz	426.1415870433368 Hz
Saat	268.8739827473333 Hz	352.36422216561186 Hz
Terakhirku	226.2608128629321 Hz	471.426392119308 Hz
Melihat	210.47274603925084 Hz	332.1981732221228 Hz
Kamu	226.29243678308492 Hz	156.11500536055868 Hz
Jatuh	189.48342328723757 Hz	360.4354424583988 Hz
Air	168.84040746516402 Hz	383.9726533754091 Hz
Mataku	176.3151139913008 Hz	140.1237354653436 Hz
Menangis	209.45557001326017 Hz	134.66437488556517 Hz
Pilu	236.24945416612942 Hz	224.35518530064516 Hz

Based on Figure 7 and 8, a dark band can be seen in the spectrogram, especially in the lyrics of "*saat*", "*terakhirku*" and "*jalan*." The lyrics shows a density and high voice. The density can be determined based on the presence of the dark band on the spectrogram.

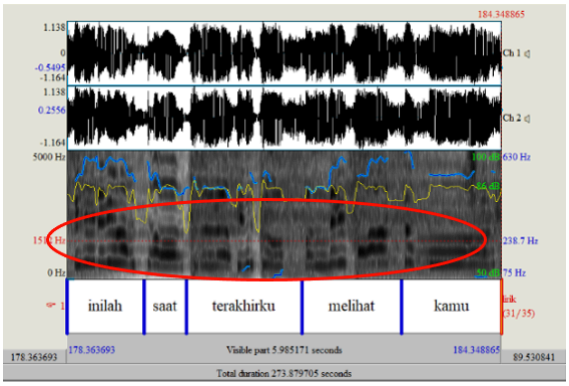

Figure 9 Frequency of the song by Lesti Kejora.

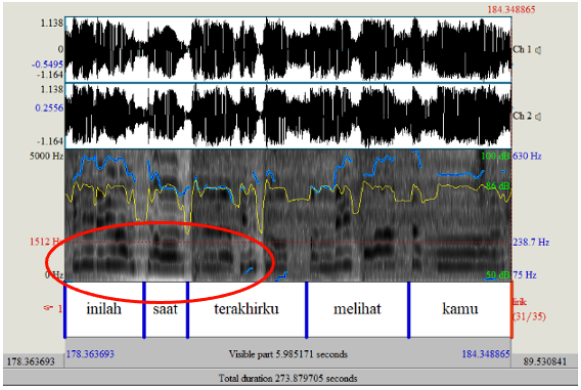

Figure 10 Frequency of the song by Lesti Kejora.

Table 6. Frequency of the song

Lyrics	Charly	Lesti
Inilah	199.22143185419395 Hz	514.815103806664 Hz
Saat	267.65867197648856 Hz	480.0300809841492 Hz
Terakhirku	216.05764516835785 Hz	399.4380914441164 Hz
Melihat	183.93162682912796 Hz	533.2434584525848 Hz
Kamu	212.73367318799114 Hz	457.7674385113408 Hz
Selamat	81.73568161507606 Hz	464.15593671628557 Hz
Jalan	265.6443133234369 Hz	434.13139142618866 Hz
Kasih	108.48239302905434 Hz	169.9494216265146 Hz

Based on Lesti's frequency on Figure 9 and Figure 10, there are many dark bands in the spectrogram. The dark band on the spectrogram and blue wavy lines indicate that Lesti's vocal cords are vibrating. The more vibrating the vocal cords, the higher the pitch frequency.

As seen in Table 6, the highest frequency of Charly's is 267.65867197648856 Hz for the word "*saat*", 216.05764516835785 Hz for the word "*terakhirku*", and 265.6443133234369 Hz for the word "*jalan*". Meanwhile, Lesti's highest frequency is higher than Charly's. For example, in the word "*melihat*", her frequency is 533.2434584525848 Hz, while his frequency is 83.93162682912796 Hz. Differences in density, vibration, and high and low sound are visible from the image and frequency data.

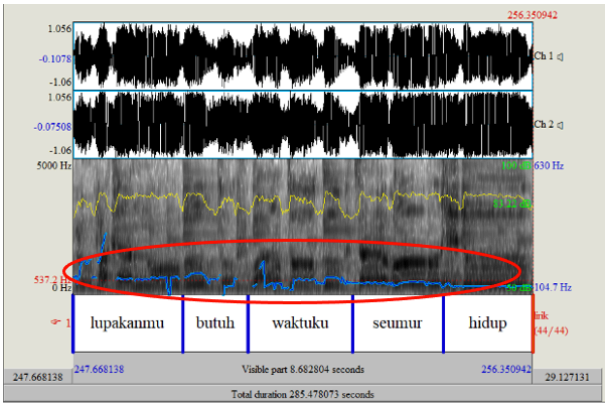

Figure 11 Frequency of the song by Charly Van Houten.

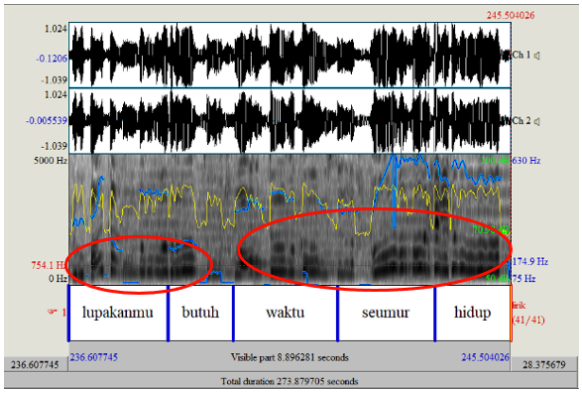

Figure 12 Frequency of the song by Lesti Kejora.

Table 7. Frequency of the song

Lyrics	Charly	Lesti
Lupakanmu	159.1075883664097 Hz	317.3241527693762 Hz
Butuh	139.7353969500439 Hz	166.7459964401929 Hz
Waktuku	130.89985618906144 Hz	324.3902597198768 Hz
Seumur	123.83958926154735 Hz	465.0161978583005 Hz
Hidup	110.40277072145003 Hz	528.3917548852684 Hz

Based on Figure 11, there is a dark band on Charly's spectrogram. However, the dark band is not clear when compared to Lesti's. In Figure 12, the dark band on the spectrogram is very clear, especially in the lyrics "*hidup*", dark band and sound vibrations are clear and dense.

Based on Table 7, the frequency of Charly in each of his words is not too much of a difference. His highest frequency is 159.1075883664097 Hz in the word "*lupakanmu*", and the lowest frequency is 110.40277072145003 Hz in the word "*hidup*." Meanwhile, the frequency of Lesti's tone is quite high and the difference from one word to another is quite significant. Her highest frequency is 528.3917548852684 Hz in the word "*hidup*" and her lowest frequency is 166,7459964401929 Hz in the word "*butuh*". When compared, the lowest frequency of Lesti is higher than the highest frequency of Charly. In other words, the word "*hidup*" is the lowest frequency of Charly, but this word has the highest frequency for Lesti. The highest frequency of Lesti is even three times higher than that of Charly.

3.1.4 Intensity of the Song

Intensity can indicate loudness of voice. The larger the decibel scale (dB), the louder the sound and vice versa. Based on Table 8, Charly's highest decibel scale is 85.55663681273677 dB on the word "*di bawah*", while the lowest decibel scale is 78.92998148378989 dB on the word "*tlah*".

Table 8. Intensity of the song

Lyrics	Charly	Lesti
Di bawah	85.55663681273677 dB	82.629442556414 dB
Batu	85.10677538477125 dB	82.14093155562736 dB
Nisan	84.85577175493462 dB	79.48348905098789 dB
Kini	83.87060073273509 dB	79.88786245327705 dB
Kau	78.95820782911686 dB	75.2074433031461 dB
Tlah	78.92998148378989 dB	78.10920730557145 dB
Sandarkan	83.81536777989025 dB	80.18184229355839 dB
Kamu	81.12662227896804 dB	83.40854820152993 dB
Kamu	80.69640851343543 dB	83.54625157759298 dB
Kamu	79.91490426509253 dB	82.08564534325569 dB
Di hatiku	82.0489467931982 dB	82.84965579760214 dB

In contrast to Charly, Lesti's highest decibel scale is 83.54625157759298 dB for the word "*kamu*", while the lowest decibel scale is 75.2074433031461 dB for the word "*kau*" The intensity and frequency of the tone between dangdut and pop singers are contradictory. In terms of frequency, Lesti's tone has a higher Hz scale than Charly's, then the decibel scale is the exact opposite. Charly has a decibel scale higher than Lesti.

Based on Table 9, Charly's highest decibel scale is 86.16124255533789 dB for the word "*jalan*", while the lowest decibel scale is 83.24356352711888 dB for the word "*pilu*". Meanwhile, Lesti's highest decibel scale is 85.07487013039524 dB for the word "*selamat*", while the lowest decibel scale is 77.61912396226836 dB for the word "*jatuh*". The same with the previous table, Charly's intensity or decibel scale is higher than Lesti's. It shows that Charly's voice sounded louder than Lesti's.

3.2. Discussion

Based on the findings, this study shows that dangdut singer tends to pronounce language sounds according to the sound rules of the language. It can be seen through the results of phonetic transcription. Meanwhile, the pop singer tends to add aspirated sounds in the form of [^{h}] to the phonemes /c/, /t/, and /d/ and pronounce the sound /t/ into [c^h] and [t^h], for example, the word /*tak*/ into [c^{h}a?], the word /*tɛrjadi*/ into [c^{h}ɛrjad^{h}i], the word /*cInta*/ into [c^{h}Inc^{h}a], the word /*jatUh*/ into [jat^{h}Uh], and the word /hidUp/ into [hid^{h}Up]. A study by Andriyana (2020) also shows that the addition of aspirated sounds occurs in the phoneme /r/, such as the word /*rumah*/ which becomes [r^{h}umah]. Based on the results of the transcription of the words, the pop singer's pronunciation is different. Then, from the transcription, it can be seen that pop singers mostly pronounce the sound of the letter /t/ into [c^h]. The data shows that the singer's compliance in pronouncing the sounds of the letters can be seen from the way of sings. Alimi and Kassin (2018) showed that phonological analysis in the original Malay song can help to assess the singer's pronunciation compliance with the Malay language.

Table 9. Intensity of the song

Lyrics	Charly	Lesti
Inilah	84.8615486410138 dB	84.7794616244387 dB
Saat	84.10009329666515 dB	82.06998119368484 dB
Terakhirku	84.55916425535428 dB	83.33278918621681 dB
Melihat	83.30274717261476 dB	80.18924583333657 dB
Kamu	84.91042895658669 dB	80.7972190026 dB
Jatuh	84.78220434915458 dB	77.61912396226836 dB
Air	84.52882601103161 dB	81.62539184240865 dB
Mataku	84.55017180088355 dB	81.75822315524727 dB
Menangis	84.85502893517574 dB	81.24892183096394 dB
Pilu	83.24356352711888 dB	83.292043835407 dB
Inilah	85.05105927451608 dB	84.5057321547872 dB
Saat	84.4642083031797 dB	83.32861033492422 dB
Terakhirku	84.00823705911992 dB	84.47360781404568 dB
Melihat	83.3923098024186 dB	84.24191597377659 dB
Kamu	83.46672380569038 dB	84.82612625595075 dB
Selamat	84.7260204635299 dB	85.07487013039524 dB
Jalan	86.16124255533789 dB	84.87972727439994 dB
Kasih	84.0606707968209 dB	84.03193046245585 dB

The duration of the dangdut singer's singing in the song "Saat Terakhir" is longer than that of a pop singer. The dangdut singer spent 32.854120 microseconds, while pop singers spent 29.445110 microseconds. The biggest factor that affects the duration of singing is the use of *cengkok* by the dangdut singer. Besides affecting the duration of singing, *cengkok* also affects the frequency or vibration of the vocal cords of the dangdut singer. The frequency of the dangdut singer is higher than the pop singer with the highest frequency of 533.2434584525848 Hz in the word "*melihat*" and the pop singer's highest frequency is 272.5434960153962 Hz in the word "*inilah*". The frequency shows the vibrations of the vocal cords which are indicated by the Hertz (Hz) scale. The larger the Hertz scale, the more vibrating the vocal cords. If visualized through the Praat software, it can be indicated by the dark band on the spectrogram.

In contrast to the frequency, the intensity or loudness of the pop singer's voice is greater than the dangdut singer with 86.16124255533789 dB in the word "*jalan*" while the intensity of the dangdut singers is 85.07487013039524 dB in the word "*selamat*". The higher the decibel scale, the greater the sound received by the ear. The human hearing threshold is 0 dB, while the human pain threshold is 120 dB (Salmani & Birjandi, 2005).

The average decibel scale of the pop singer in each lyric also tends to have a larger decibel scale than the dangdut singer. It shows that the higher the intensity (dB) does not mean the larger the frequency (Hz). There is no study on acoustic phonetics that uses songs as data and compares them based on song genres so the findings of this study cannot be associated with the previous study.

4. CONCLUSION

Based on the results of the analysis above, it can be concluded that the pronunciation of the sound /t/ between

pop singers and dangdut singers is different. The pop singer pronounces the sound of the letter /t/ into [t^h] and [c^h], while the dangdut singer pronounces the sound of the letter according to the language rules. The duration of the singing of the dangdut singer is relatively longer as at the end of the lyrics, the dangdut singer often inserts *cengkok*. Then, the frequency, the density of the voice of Lesti are higher than that of Charly. Furthermore, the intensity or loudness of Charly's voice is greater than Lesti. Therefore, it can be concluded that the higher the frequency (Hz) does not mean the greater the intensity (dB).

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