

DIGITIZATION AND DEVELOPMENT OF PANTOK MELODY THEMES TONGKEK USING LEON STEIN'S THEORY APPROACH

Muhammad Alfian Nur Khair

muhammadalfiannurkhair12@gmail.com, Universitas Pendidikan Sultan Idris Malaysia

ABSTRACT

This paper presents a study on the composition of traditional music performance in Pancor Village, East Lombok, Indonesia with a focus on the creation of digitalized compositions based on traditional music. The study employs the approach of Leon Stein's theory of composition, which emphasizes the importance of understanding the cultural and historical context of musical works in order to create innovative and meaningful compositions. The study involves field research, where traditional music performances in Pancor Village are recorded, transcribed, and analyzed using Stein's approach to composition. The analysis focuses on identifying the characteristic elements of the traditional music, such as melody, rhythm, and instrumentation, and exploring how these elements can be integrated with digital technology to create new compositions. The results of the study show that the integration of traditional music with digital technology, while employing Stein's approach to composition, can lead to the creation of innovative and compelling musical works that are relevant to contemporary audiences. The digital compositions created in this study demonstrate how traditional music can be transformed and reimagined in new and exciting ways, while still respecting the cultural and historical context of the original works.

Keywords: *approach to composition, digital composition, East Lombok, Leon Stein, Pancor Village, traditional music*

ABSTRAK

Tulisan ini menyajikan kajian komposisi pertunjukan musik tradisional di Desa Pancor, Lombok Timur, Indonesia dengan fokus pada penciptaan komposisi digital berbasis musik tradisional. Penelitian ini menggunakan pendekatan teori komposisi Leon Stein, yang menekankan pentingnya memahami konteks budaya dan sejarah karya musik untuk menciptakan komposisi yang inovatif dan bermakna. Penelitian ini melibatkan penelitian lapangan, dimana pertunjukan musik tradisional di Desa Pancor direkam, ditranskrip, dan dianalisis menggunakan pendekatan komposisi Stein. Analisisnya berfokus pada identifikasi unsur-unsur karakteristik musik tradisional, seperti melodi, ritme, dan instrumentasi, serta mengeksplorasi bagaimana unsur-unsur tersebut dapat diintegrasikan dengan teknologi digital untuk menghasilkan komposisi baru. Hasil penelitian menunjukkan bahwa integrasi musik tradisional dengan teknologi digital, sembari menggunakan pendekatan Stein terhadap komposisi, dapat mengarah pada penciptaan karya musik yang inovatif dan menarik yang relevan dengan penonton kontemporer. Komposisi digital yang dibuat dalam penelitian ini menunjukkan bagaimana musik tradisional dapat ditransformasikan dan ditata ulang dengan cara yang baru dan menarik, dengan tetap menghormati konteks budaya dan sejarah dari karya aslinya.

Kata Kunci: *Musik Tradisional, Komposisi Digital, Desa Pancor Lombok timur, Pendekatan Teori Leon Stein*

Introduction

The composition of this study is based on the *Bedodok* tradition, which originates from Pancor Village, Selong District, East Lombok Regency, West Nusa Tenggara, Indonesia. According to the Indonesian Sasak dictionary (2020;), the words *bedodok* mean to wake up. According to Amir in Mutiarani (2014) that the *Tongkek* musical instrument functions as a communication tool to awaken the Pancor community to perform the morning and dawn prayers in the month of Ramadan which are carried out by young people to adults who are held together in Pancor village.

I chose this digital platform because the idioms of *Tongkek* music can be developed, composed and expressed in various modern instrumentation or western music instrumentation. This is also my attempt so that through this study, the *Tongkek* tradition can be accessed easily. This ease of achievement has allowed *Tongkek's* musical traditions to be disseminated to the wider community as well as providing motivation to the younger generation to develop further investigations.

Problem Statements

The problem statement of this study are as follows:

1. References related to *Tongkek* musical instruments are very limited. So far there are only two references related to *Tongkek* music. The first reference is based on a study conducted by Alfian (2018) related to organology and tuning systems. While the second reference is based on a study conducted by Amir (2014) related to rhythm patterns, game techniques and functions in society. However, these two studies do not explain the development and implementation of *Tongkek* musical instruments in the form of notated compositions.
2. Digitizing *Tongkek* compositions requires an understanding of existing composition development techniques. In relation to that, there are two aspects which is an artistic challenge in this work.

The first is related to the *Tongkek* musical instrument which is played repeatedly and only consists of five notes that are played as many as 2 octaves starting from the low G tone to the high C tone. Because *Tongkek* is played by at least 7 people in a group according to the number of tones found in the *Tongkek* instrument so it is not possible to perform.

The second is related to the selection of musical composition development techniques that feature some features of simple motif development. Based on this problem, the implementation of Leon Stein's composition technique is the platform I use because In his book *Structure and Style: The Study and Analysis of Musical Form* (143) Leon Stein explains 22 approaches that can be used in developing variation themes. The application of Leon Stein's theory to this composition was chosen because it can provide a more structured guide to develop the *Tongkek* melody theme. So that it can help me organize ideas in a more logical and effective way.

Research Objectives

- 1) To develop the *Tongkek* musical idiom by using a theoretical approach, Leon Stein.
- 2) To Digitalize *Tongkek's* musical compositions to be further documented into a digital platform.

Traditional Music *Tongkek*



Figure 1. *Tongkek* instrument

References related to *Tongkek* musical instruments are very limited. So far there are only two references related to *Tongkek* music. The first reference is based on a study conducted by Alfian (2018) related to the manufacturing process and adjustment system on *Tongkek* musical instruments. While the second reference is based on a study conducted by Amir (2014) related to rhythm patterns, game techniques and functions in society. However, there are some studies on traditional local instruments in Southeast Asia that have similarities with the work I do. One of them is the study by Mohd Nasir and Ismail (2014) focusing on Indonesian Gamelan music, which is played using a set of traditional instruments made of bronze or bamboo. This study examines the influence of gamelan music on contemporary music in Indonesia and finds that many contemporary Indonesian musicians incorporate gamelan music into their compositions.

Further research conducted by Wong and Tan (2017) explores the use of traditional Malay musical instruments in contemporary music production in Malaysia. The author found that traditional instruments such as *Rembab*, *Kompang*, and *Genga* are used in new and innovative ways in contemporary music, and this helps preserve and promote traditional Malay music.

Further research conducted by Nguyen and Ninh (2019), the authors investigate traditional Vietnamese music, including the use of instruments Dan Bau, a visiting zither, and Dan Tranh, who is sixteen years old. This study explores the importance of traditional music culture in Vietnam and the challenges faced in preserving and promoting this music in modern times.

Although the references related to the *bedodok* tradition are limited, the literature related to the *Tongkek* musical instrument is displayed below. In his playing, *Tongkek* musical instruments bring a minimalist concept, where *Tongkek* uses a melodic motif that repeats continuously. According to Amir in Mutiariani (2014) The form of melody used in the *Tongkek* music game is:



Figure 2. *Tongkek* motif

This rhythm is a rhythm that is always attached to the *Tongkek* music game and is played repeatedly. In further development, based on research conducted by Amir 2014, it was found that an artist and maker of *Tongkek* musical instruments named Rauf developed the rhythm of *Tongkek* music into 5 tones as shown in figure 3 below:

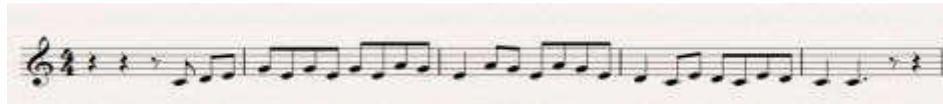


Figure 3 Motive developed by Ra'uf

In the rhythm developed by Ra'uf, the sound is more varied, Rauf fills the gaps in the *Tongkek* music that is played so that it sounds like reciprocating or Canon. Along with its development, the Pancor community called *Tongkek* developed by Rauf as *Tongkek* doremisola. The pronunciation of doremisola is based on the number of notes contained in the *Tongkek*, which is 5 tones. According to Rubiono (2012) 'Pentatonic comes from two words, *Pente* or *Penta* (Greek) = five, and *Tonos* = tone which means a scale consisting of five tones.

In Indonesia, there are 2 types of Pentatonic Scales, namely *Pelog* and *Slendro*, both of these scales are based on gamelan barrels that are spread in Java and Bali. In the beginning, the regular frequency of gamelan is not the same as the diatonic (modern) frequency, and also the interval. But both then fill the diatonic scale until the gamelan scale gradually adapts to the diatonic frequency. Therefore, if these two pentatonic scales are expressed in modern notation as follows: 1) *Pelog* 1-3-4-5-7 (Do, Mi, FA, So, Ti) or C-E-F-G-B and *Slendro*: 1-2-3-5- 6 (Do, Re, Mi, So, La) or C-D-E-G-A (Rubiono: 2012). Based on this, the *Tongkek* musical instrument tuning system can be said to have been adapted from the *Slendro* tuning system on the pentatonic system, although the *Tongkek* musical instrument frequency tuning system does not have standardization in the tuning system. The tuning of *Tongkek* musical instruments only depends on the feeling of the *Tongkek* craftsman so that the basic tone can change according to the wishes of the *Tongkek* musical instrument craftsman. The lowest to highest notes in *Tongkek* musical instruments are *sol bewek*, *la bewek*, *do tengek*, *re tengek*, *mi tengek*, *sol tengek*, *la tengek*, *do atas*, *re atas*, *mi atas*, *sol atas*, and *la atas*. *Bewek* means bottom or low, *Tenek* means middle and *atas* means top or high which all represent octaves on the *Tongkek* musical instrument. For more details about *Tongkek* music, you can see the following YouTube link <https://youtu.be/pqUbeF6hUuc>

Leon Stein Theory

In his book *Structure and Style: The Study and Analysis of Musical Form* (143) describes 22 approaches that may be used in developing the theme of variation, However, in this composition I used six techniques that are suitable for the *Tongkek* melody, that is (1) Use the same harmony with a new melody (2) Figuration of harmony (3) imitation (4) Diminuation (5) Augmentation (6) Register Treatment.

In this regard, Leonstein provides an example in Brahms Variations on a Theme by Haydn for orchestra, op. 56a. Some of these procedures include:

1. Use of same harmony with a new melody found in bars 40-43



Figure 4. An example of the same harmonic use with a new melody is found in bars 40-43 of Brahms's variation on a Theme by Haydn for orchestra, op. 56a.

2. Embellishment of melody or making decorations on the melody found in the variation 1 Bar 30-34.



Figure 5. Examples of Embellishment of melodies or making decorations on melodies are found in variation 1 Brahms's variation on a Theme by Haydn for orchestra, op. 56a

3. Figuration of harmony or the use of figures in the harmony found in bars 98-100.



Figure 6. Examples of the use of figures in the harmony found in bars 98-100. on Brahms's variation on a Theme by for orchestra, op. 56a

4. Register Treatment, use of a high or low register throughout a variation or in contrasting sections of a variation.

Variations on a Theme by Haydn
Var. VIII
Presto non troppo

322
Kl.F1
Fl.
Ob.
Klar.
Fag.
1.Viol.
2.Viol.
Br.
Vcl.
Presto non troppo

330
K
Kl.F1
Fl.
Ob.
Klar.
Fag.
K.Fag.
Hr.
Pk.
1.Viol.
2.Viol.
Br.
Vcl.
K

2A

Figure 7. Examples of using Register Treatment, use of a high or low register throughout a variation or in contrasting sections of a variation. orchestra, op.56a

Computer music technology

The previous research which is Exploring the Creative Process of Music Composition Using Digital Audio Workstations was conducted by Scholtz (2021). This research explores the use of Digital Audio Workstation (DAW) can influence the creative process in music making. Researchers found that DAWs can help reduce some obstacles in the creative process, such as organizing musical structures, repeating and recording musical parts. As well as exploring new musical ideas.

Further research conducted by Machover (2021). With the research title From Sound Objects to Musical Narratives: Composing with granular Synthesis and AI Tools. This research discusses the use of granular synthesis techniques and artificial intelligence (AI) tools in creating music. Researchers found that the use of granular synthesis techniques can help create new and unique musical structures and patterns. In addition, the use of AI can help in producing more and more complex musical variations.

Further research Creating Music with Artificial intelligence: Challenges and Opportunities conducted by Scholtz, Santos et al (2020) this research discusses the challenges and opportunities in creating music using artificial intelligence (AI) Researchers found that the use of AI in creating music can help in producing musical variations which are more and more complex, but also face challenges such as the lack of human skills in evaluating and choosing the most appropriate music.

Further research done by Kramarz and Schmieder (2019) on the use of music technology in contemporary music composition. The authors find that music technology has become an important tool for composers, allowing them to experiment with new sounds, create complex arrangements, and produce high-quality recordings.

Further research conducted by Han and Park (2017) explores the use of computer-based music software in the composition of electronic dance music. The authors find that music software has revolutionized the production of electronic dance music, allowing composers to create complex arrangements and produce high-quality recordings without the need for expensive studio equipment.

Finally, research conducted by Tanaka and Kato (2017) investigates the use of artificial intelligence (AI) in music composition. The authors found that AI-based music composition systems are becoming increasingly sophisticated and can produce music that is indistinguishable from that created by human composers.

The literature highlights above discuss various aspects in making music compositions using music technology, starting from the use of digital Audio Workstations (DAW), the use of artificial intelligence (Artificial Intelligence) in creating music, to the use of computer-based music software used in making music compositions. Although a lot of research has been done related to the use of technology in making music compositions, there is still little research that examines the use of music technology in acoustic music or traditional music, especially the *Tongkek* musical instrument.

Conceptual Framework of Composition

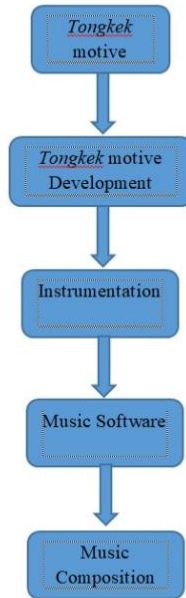


Figure 8. Conceptual Framework of Composition

Score Transcription

The original rhythm pattern transcription of the *Tongkek* instrument is based on <https://www.youtube.com/watch?v=t03OrYAsds&t=1s> and Batua's article (2014). The score transcription show the three staff in treble clef. Since, the *Tongkek* instrument played by 3 persons as illustrated at figure 4



Figure 9. *Tongkek* Melodi 1



Figure 10 . *Tongkek* melodic theme performance

Development of composition Pantok Telu

This work composed based on the development of the four *Tongkek* themes. This work has a total duration of Nine minutes and forty one seconds which consists of 6 expansions of variation. For more clarity on the description of this work will be explained as follows. The shape and structure of the composition were created by the development of the *Tongkek* theme using Leon Stein's theoretical approach. Which will be explained as follows:

1. The original *Tongkek* motive melody and chord accompaniment



Figure 11. The original *Tongkek* motive melody and chord accompaniment

The figure above is the basic theme of Pantok Telu's composition which is transcribed from the playing technique and arrangement of the *Tongkek* Do-re-mi motif. The above melodic pattern can be identified as the Slendro scale. This theme has a range of tones that are close or also called a disjunction consisting of the M2 interval. The intended movement is as shown in the figure below.

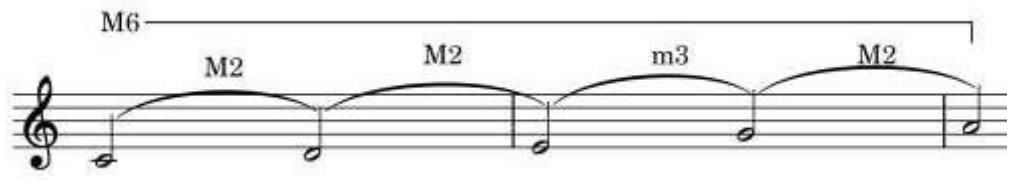


Figure. 12

Harmonious Movement



Figure. 13

Development of ideas based on the Leon Stein Theory approach

Intro *Pantok Telu*

1. Diminution

The application of diminution techniques based on Leon Stein approach in bar 1 to 8 illustrated at figure 15-16



Figure.14 Full Score in Bar 1-12



Figure 15. original theme in Bar 9



Figure 16. Diminuation Theme in Bar 1-8

2. Augmentation

The application of Augmentation techniques based on Leon Stein approach in bar 29 to 31 illustrated at figure 18 and 19

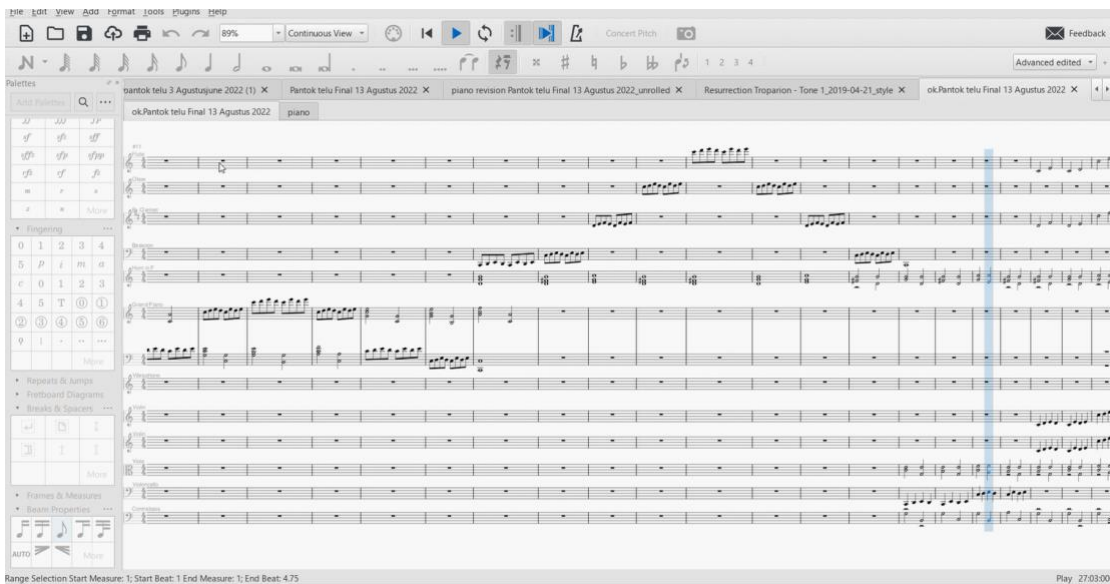


Figure 17. Full Score Bar 29 to 31



Figure 18. Original Theme



Figure 19. Augmentation Theme

3. Register Treatment

The application of Register Treatment techniques based on Leon Stein approach in bar 17 to 24 illustrated at figure 13 and 14



Figure 20. Register Treatment Theme

Table. 1 Compositional form and structure

No	Composition al form	Instrumentation	Number of Bar	Theme Developmen t	Leon Stein Theory approach
1	Theme	Piano	1-17	Repetition based on the theme melodic pattern	<i>Imitation and diminution</i>
2	Variation 1	String	25-40	Extending the rhythm on theme	<i>Augmentatio n of theme or thematic</i>
3	Variation 2	Basson,oboe,Clarinet Flute	17-25	Repetition melodic theme	<i>Immitation And register treatment</i>
4	Variation 3	Horn,flute,oboe,clari net Basson	27-41	To create the melodic figure based on harmonic of theme	<i>Figuration of harmony</i>
5	Variation 4	piano	41-56	To create the new	<i>Use same harmony with</i>

				melody based on the initial harmony	<i>a new melody</i>
6	Variation 5	Basson,oboe,Clarinet dan flute	57-64	Repetition melodic theme	<i>Immitation</i>
7	Variation 6	String	57-64	To create the melodic figure based on harmonic of them	<i>Figuration of harmony</i>

The Process of digitizing Works

The digization process for this work goes through three stages, namely the track creation process in Studio One by moving the score data in Midi form into Studio One and changing the sound of the Midi data using *Virtual Instrument*.



Figure 21. The process of tracking and inserting Virtual Instrument in Studio One

The next stage is *Mixing*, at this stage the sound from the Virtual Instrument is added to effect to produce the desired sound character. At this stage, *Panning* and *Balancing* are also carried out, namely adjusting the sound volume on each instrument so that it sounds in harmony



Figure 22. *Mixing Process*

The final stage is mastering, in this process the sound of all the tracks that have been combined during mixing is adjusted again by adding effects and adjusting the sound volume according to predetermined standards.

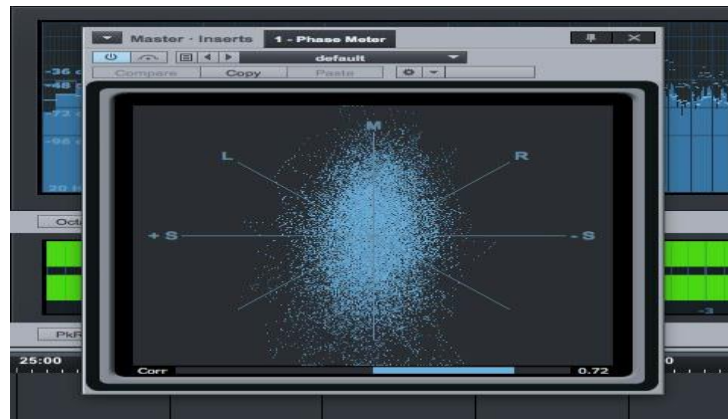


Figure 23. *Mastering Process*

Conclusion

This study demonstrates the application of Leon Stein's theoretical approach to the development of *Tongkek's* original melodic idea. The findings of this study contribute to our understanding of *Tongkek* music, particularly in the domains of notation documentation, composition development using western theoretical approaches, and digitization. For future research, it is strongly suggested to focus on compositional development utilizing alternative theoretical approaches.

References

- Castelo-Branco, S. E. (2017). The Politics of Music Revitalization in a Globalized World: Heritage and Identity in Portuguese Fado. *Ethnomusicology Forum*, 26(1), 68-90.
- Fober, T., Oberdoerfer, T., & Steinmetz, R. (2016). Performance impact of VST audio plugins on digital audio workstations. In *Proceedings of the 2016 IEEE International Conference on Consumer Electronics (ICCE)* (pp. 462-463). IEEE.
- Han, S. J., & Park, S. (2017). Computer-based music software and the composition of electronic dance music. *Journal of the Audio Engineering Society*, 65(7/8), 599-607.
- Hendarto, S. (2011). *Organologi & Akustika I & II*, Bandung: CV. Lubuk Agung.
- Kramarz, T., & Schmieder, F. (2019). The role of technology in contemporary music composition. *Contemporary Music Review*, 38(2), 119-132.
- Kramer, J. (2002). The nature and origins of Muzikal postmodernism. In J. Lochhead & J. Under (Eds.). *Postmoden Muzik/Postmoden Thought*, (pp. 13-26). Location: Publisher.



- Luo, Y., Hu, M., & Wei, Y. (2019). Design of a VST plugin for automatic audio mixing. In 2019 8th International Conference on Audio, Language and Image Processing (ICALIP) (pp. 59-62). IEEE.
- NUR KHAIK, M. A. (2018). *ORGANOLOGI ALAT MUSIK TONGKEK DI KELURAHAN PANCOR KECAMATAN SELONG KABUPATEN LOMBOK TIMUR-NTB* (Thesis dissertation, UNIVERSITAS HAMZANWADI).
- Mohd Nasir, N., & Ismail, A. (2014). Gamelan music: Its influence on contemporary music in Indonesia. *Procedia-Social and Behavioral Sciences*, 112, 945-953.
- Niedderer, K., & Rowirth-Stokes, S. (2007). *Peranan dan penggunaan amalan kreatif dalam penyelidikan dan sumbangannya kepada pengetahuan*. Persatuan penyelidikan penyelidikan reka bentuk antarabangsa. Universiti Politeknik Hong Kong. Diperolehi dari <http://www.sd.polyu.edu.hk/iasdr/proceeding.papers>
- Nguyen, V. H., & Ninh, T. H. (2019). Traditional music in Vietnam: The cultural significance and challenges. *International Journal of Innovation, Creativity and Change*, 8(2), 107-118.
- Odam, G., & Baily, J. (2004). The relevance of western music education models to the teaching of Indian classical music. *International Journal of Music Education*, 22(3), 237-247.
- Prabhu, M. M., & Satheesh, S. (2015). The relevance of Leon Stein's theory in the teaching of Carnatic music. *International Journal of Music Education*, 33(4), 512-523. <https://doi.org/10.24114/jpkm.v19i72.4729> Rubiono, P. (2012)
- Stock, J. (2015). Finding the Right Mix: Authenticity and Innovation in Composing New Music for the Balinese Gamelan. *Music Research Annual*, 16, 1-15.
- Tanaka, A., & Kato, H. (2017). Artificial intelligence in music composition: A review. *Journal of New Music Research*, 46(4), 333-351.
- Totu, A., & Yakin H.S.M. (2018). Perbandingan pengalaman budaya Pelajar antar bangsa di university Malaysia sabah dalam satu dekad 2006-2016. *Malaysian journal of communication*, 34(4) 250-270. <https://doi.org/10.17576/JKMJC2018-3404-15>