



Composition Music Gamelan with VSTi

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Abstract. The purpose of this study is to describe the process and results of using VSTi (Virtual Studio Technology Instrument) in making gamelan accompaniment. The type of research used is descriptive-qualitative. Data collection techniques with observation, interviews, and documentation. Its data analysis goes through the stages of reduction, presentation, drawing conclusions, then tested by triangulation of techniques and sources. The results of the research obtained were in the form of audio accompaniment of gamelan salendro embat sawilet. The results of this study can be used well because the type of instrument and the accompaniment pattern used refer to conventional kiliningan performances.

Keywords: VSTi · Gamelan · DAW

1 Introduction

Kiliningan is a form of karawitan dish in the form of sekar gending. The gamelan pelog salendro ensemble is a device commonly used in accompanying kiliningan performances. A set of gamelan pelog salendro consists of waditra saron one, saron 2, demung, peking, bonang, detailk, kenong lanang, kenong wadon, selentem, goong, gambang, rebab, kecrek, and kendang. The complexity of this dish is not only limited to the large number of instruments, but the variety of wasps that differ between one and another. The existence of pelog salendro gamelan in the West Java region is relatively small. The majority of gamelan salendro ownership is owned by wayang golek padepokan, government institutions, and Art Higher Education Institutions. Among artists or art students, access to play and having gamelan salendro is certainly very few who have when compared to the number of artists or students themselves. In addition to the expensive price of gamelan, the number of instruments and the size of the gamelan are also aspects that also affect. In addition to the technical reasons above musically, gamelan games involve many growers because it is a big ensemble show.

Based on the above conditions, the effectiveness in training the vocal ability of the leadership is constrained by the availability of accompaniment music. This certainly affects the integrity of the show in kiliningan as a form of performance. In overcoming the above problems, an alternative accompaniment media is needed that can accommodate the position of accompaniment as an accommension in the process of vocal learning of leadership. In line with this, the development of digital technology in music today is becoming increasingly popular. In the current development of music technology, it is

possible that Gamelan Salendro as a traditional musical instrument can enter the realm of multimedia music. Many musicians at this time, especially those who play modern music, are switching to using Virtual Studio Technology (VST) as a medium or means of creativity. Almost all recording studio equipment is equipped with MIDI facilities (musical instrument digital interface) [1]. This allows the various equipment contained within the recording studio to be connected as well as send sound commands between one source to another. In the sense of a pattern of work that uses many sound idioms, it is worked on using computerized techniques that are enough to use only one software, one of which is the Virtual Instrument Software. Virtual Instrument is computer software that produces the sound of a musical instrument [2] or often also called VST (Virtual Studio Technology). VST is specifically used to make music whose function is to replace the original musical instrument (instrument sound). In general, VSTs are played using a set of computers, and MIDI controllers are; midi controller keyboard, wind MIDI controller and grid MIDI controller.

The point that the author discusses in this article is to transform the concept of gamelan accompaniment using VST contact with the gamelan library. The things that are of concern are the effectiveness of VST in producing gamelan accompaniment, the ability of VST in simulating the variety of articulation of gamelan sounds, and the quality of the sound produced by VST. Therefore, this article will explain the stages that need to be done in the application process. This VST Kontakt basically acts as a medium for the transformation of sounds in gamelan compositions digitally. The concept of composition can certainly be developed in accordance with the rules of gamelan salendro wasps in Sundanese karawitan.

Karawitan Sunda is a term commonly used in referring to traditional arts located in several regions in the archipelago, one of which is the West Java region. In terms of presentation, the term karawitan Sunda is divided into three major parts, namely karawitan sekar, karawitan gending, and karawitan sekar gending. As Natapradja [3] points out, "karawitan science means the science that studies sekar and gending. Sekar is the art of janaswara (vocal), and gending means the art of waditraswara (instrumental). Both sekar and gending can be played together called sekar-gending."

Gamelan is one of the musical devices found in Sundanese karawitan. Gamelan is a set of ricikan consisting mainly of punching or percussion instruments, made from the main material of metal (bronze, brass, iron or other materials) complemented by ricikan with wood, leather or a mixture of two or all three materials [4].

2 Methods

This paper uses qualitative research methods that are presented through explanations and narratives. Data collection is carried out through the collection of primary and secondary data. Primary data is data obtained through interviews with sources or informants. Secondary data is data obtained from literature and videos on YouTube channels.

The main focus in qualitative research used is to collect data and analyze. According to Hebert in Nabila [5] methods are various techniques that are well generalized so that they can be accepted and used equally in a provision such as one discipline, practice, or field of discipline and practice.

Qualitative methods according to Sugiyono in *Qualitative Quantitative Research Methods and R&D* [5] are as follows:

methods are often called naturalistic research methods because the research is carried out in natural conditions (natural setting); ethnography, since initially this method was more widely used for research in the field of cultural anthropology; referred to as a qualitative method because the data collected, and the analysis are more qualitative results of the data analysis are presented in a descriptive manner that explains the entirety of the research. This qualitative research is expected to be able to describe the use of VSTI in making gamelan accompaniment.

3 Discussion

Processing is a process of receiving and issuing data into other forms of information. While a virtual instrument is a simulation of a musical instrument in a computer program, it can be sounded like the original musical instrument. Virtual instrument data processing is the process of receiving data from the original musical instrument and then outputting results in the form of simulations of the instrument [6].

3.1 Native Instruments Kontakt 5

Kontakt 5 Is one of the VST plugin applications (Virtual Studio Technology) developed by the company Native Instruments, this application can process sound libraries on certain instruments such as violins, trumpets, cello, flutes, drums, guitars, pianos. Using the Kontakt player can trigger the majority of the sound produced from the output audio signal. [7] It used Kontakt 5 to produce gamelan sounds taken from The Ethno World 6 library, Javanese Gamelan, which then selected MIDI tones into digital sounds.

Kontakt Library is a sample library, which is run using the Kontakt VST. Based on what has been described earlier, the purpose and purpose of the media in the form of the Gamelan Kontakt Library is to virtualize the salendro gamelan instrument into the form of a sample library, to be used as a VST (or a sound software), so that the user can play the gamelan with a computer.

3.2 Library Gamelan

The gamelan library used by Ethno World 6 with instruments is a set of salendro barreled gamelan. In the library package, the gamelan sampling used is Javanese gamelan. The type of instrument used in general can accommodate the accompaniment composition of the Sundanese gamelan. The scale adjustment can be adjusted again to the pitch with the features in the library. Barrel exploration can be done by equating the frequency of each instrument with other salendro gamelan in West Java that has been validated for barrel accuracy.

3.3 Digital Audio Workstation

Digital Audio Workstation (DAW) is a software that replaces the function of analog audio/music recording equipment into computer-based digital recording. By using DAW to produce music works more effectively and efficiently, the recording process can be done quickly, editing, sequencing, mixing, transferring audio organizing recording projects between sound engineers is more practical and easier, music production and distribution costs can be more affordable [7].

In the world of music education, the use of computer technology and gadgets is not limited to playing CDs, MP3s, videos, or presentations. Computer technology has many capabilities that can be utilized by music educators. Nowadays, many software and applications have been developed to help write or make music works, as well as help the process of learning music that is more attractive.

3.4 Gamelan Pelog Salendro

Gamelan is one of the musical devices contained in the Sundanese karawitan. Gamelan is a set of *ricikan* consisting mainly of musical instruments or percussion, made from the main material of metal (bronze, brass, iron or other materials) equipped with *ricikan-ricikan* with wood, leather or a mixture of two or three materials. The complete gamelan pélog saléndro in Sundanese karawitan consists of: *waditra rebab*, *kendang*, *gambang*, *bonang*, *detailk*, *kenong*, *selentem*, *saron pangbarep*, *saron pangbarung*, *demung*, *peking*, *tap*, *satu kempul*, a *goong*. Although the complete instruments in the saléndro pélog gamelan are as above, it is not always that the entire complete gamelan instrument must be present in one presentation. In Sundanese karawitan, the number of instruments in gamelan devices is conditional, few instruments are used, under certain conditions it does not become a disturbance of the integrity of the dish. A small number of *diditra* can still be used for the presentation of whole karawitan, both independent karawitan, dance karawitan, and karawitan wayang golék.

3.5 Gending Form

If *sekar* is a song composition to be sung by *juru kawih* and *juru tembang* (either *sinden* or *wiraswara*) while *gending* is a song composition played by gamelan [3]. *Gending* or accompaniment that is commonly used in a series of *kepesindenan* is *Rérénggongan*. The *Rérénggongan* *gending* form can be served on *dry embats*, *mustard embats*, and *two-wilet embats*.

The concept of a *mustard embat* that will serve as a frame for vocal presentation, in one period, which is characterized by the location of the *goong* stroke, consists of 16 beats. Judging from the side of the game, the 16 beats are divided into four regions, in one region consisting of four beats, which are bounded by a line of dimensions. The first four beats (the first dimension) are called the 1st *Pancer* region, so the fourth note of the first dimension is called the *Pancer* tone; the second four beats (the second dimension) are called the *Kenongan* region, so the fourth note of the second dimension is called the *Kenongan* tone; the third four notes (the third dimension) are called the 2nd *Pancer* region, the fourth note tone of the third dimension is called the *Pancer* tone; and the last

four beats (the fourth dimension) are called the Goongan region, so the fourth note of the last dimension is called the Goongan tone. Look at the following embat scheme (Fig. 1).

Description: **P** location of wasps of Kempul instruments, **Ng** location of wasps of Goong instruments, **G** location of Pangagét tones, **C** location of Pancer tones, **N** location of Kenongan tones, **NG** location of Goongan tones.

When presented on a mustard embat and a two-wilet embat, it is usually filled with vocals, both vocals of the finished type of song, as well as vocals of the type of street song. When presented with the type of finished song, the basic melodic aspects, barrel, rumpaka, even up to the embat and tempo will be ‘standard’, and the title of the song is usually taken based on thematic of the content of the song. Meanwhile, when filled with the type of road song, the basic melodic aspects, barrel, rumpaka, even up to the embat and tempo are not standard. Likewise, the title of the song is also the title of the composition of the notes of the snobbery and goongan notes presented on the accompaniment device (such as salendro’s pelog gamelan), for example the song Gendu, Sinyur, and so on.

In the Sundanese karawitan theory there is a term for the position of the song’s song known as the street song (Table 1).

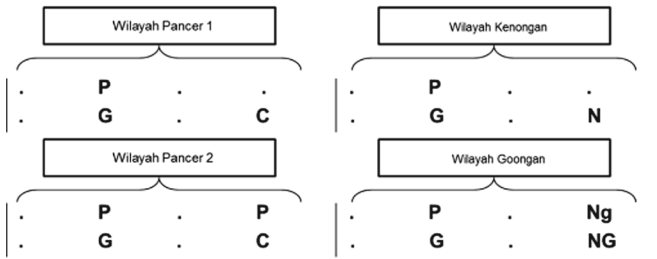


Fig. 1. Embat scheme.

Table 1. Position name and song snob.

No	Position	Kenongan			
1	Gendu	I	(IV)		
2	Kulu-Kulu	II	(IV)		
3	Banjaran	I	(II)	I	(IV)
4	Panglima	IV	(II)	I	(I)
5	Karang Nunggal	II	(I)	II	(IV)
6	Bandrong	(I)	(II)		
7	Angle	(I)	(II)	IV	
8	Samarangan	(II)	(IV)		
9	Renggong Gancang	II	(I)	I	(II)
10	Belenderan	I	(II)	I	(I)

3.6 Macan Ucul

Sekar's medium of expression is the same as other vocal arts, namely songs, so the karawitan experts say the function of pesinden is as a pamurba of the song, that is, it functions as a full-fledged song bearer. There are two forms of songs that are commonly presented in Sekar kepesindenanan, including the form of songs that are free of wirahma, and songs that are rhythmic signs [9]. The wirahma-free form of song is usually used as an introduction to the song in the form of sekar which is commonly called bawa sekar. Meanwhile, the form of tandak in the kawih kepeh kepesindenanan is the main song that has wiletan, or rhythmic tandak which is divided into three forms, namely the Réringgongan form, which can be presented in two levels of embat (equivalent to rhythm), namely the Sawilet embat, embat and Dua Wilet, the Lenyepan form, and the Lalamba form.

The results of Suparli's analysis [9] of the forms of the song, are divided into four types, including:

- Types of Finished Songs that have a basic melody, barrel, and rumpaka (lyrics) that are 'standard'. This type of song integrity of identity is formed on the basic melody, barrel, and rumpaka, so that if one of them changes, the identity of the song will change as well. Examples of this type of song include the songs Sriwedari and Bangbung Hideung.
- The type of finished song that only has a basic melody and a standard barrel, while the rumpaka aspect can be alternated. Therefore, the integrity of the identity of his songs is formed only on the basic melody and barrel alone. If the barrel or melody changes, the identity of the song will change. Examples of this type of song include the songs Tablo and Kulu-kulu Bem.
- Type of Finished Song that only has a basic melody, while the barrel and rumpaka can be alternated. Even the basic melody only retains the contours of the melodic form, while the elements of the melody itself can change, it is because the barrel can change. Thus, the integrity of the identities of this type of song lies only in its basic melody alone. Examples of this type of song include the songs Kawitan and Gunung Sari.
- Road Song Type, which is a type of song that does not have a basic melody, barrel, and standard rumpaka. This means that every aspect can be alternated. This type of song is only presented in the form of Réringgongan gending, Sawilet embat and Two Wilet embat only. If the basic melody, barrel and rumpaka presented are non-standard, the question is what aspect does the benchmark and marker of its identity lie in? The aspect that characterizes the identity of the type of road song is that it lies in the composition of the final notes in each phrase or sentence of its song, which is played on its accompaniment device, for example a gamelan device. Therefore, the composition of the final notes is called the tone of the snobbery and the tone of the goongan, which some artists call the song monument. The melodies he presents are often referred to as sénggol. Examples of this type of song include sinyur and gendu songs.

Macan ucul is part of the position of Gendu patet nem one of the forms of songs that fall into the category of rerenggongan which is usually presented in the embat sawilet, two wilets, and half mustard. The function of gending macan ucul can be presented in various types of karawitan such as kiliningan and dance accompaniment. In this article, the accompaniment that will be made focuses on the macan ucul in the one-wilet rolling type.

- Making Gamelan Accompaniment Patterns of Macan ucul Songs With VST Kontakt. The first step of making accompaniment is the preparation stage. Things that need to be prepared are computer hardware with a minimum specification of 4 GB core i5 RAM, soundcard, midi controller, monitor speakers/headphones, APPROPRIATE DAW software that is compatible with vst kontakt, kontakt software, and gamelan libraries. The use of external soundcards, midi controllers and monitor speakers is optional, this can be unused with the consequence that the effectiveness of audio creation becomes more difficult. If all of the components above are ready, the next step is the stage of making an accompaniment pattern. Sound source, which is vsti gamelan. To carry out the recording process, it requires premeditated preparation [10], the important things to consider in the recording process are: how, where/where, and when/when. After this stage, then proceed to the editing stage.

At this stage, the thing that needs to be done is to open the DAW cubase software then select the new project menu. At this stage the system will direct the user to the worksheet interface for the audio recorder. The next step is to insert all the instruments one by one according to the required instruments (Fig. 2).

In this project, the accompaniment pattern that will be made is the accompaniment of gamelan embat one wilet macan song ucul. In one goong phrase the accompaniment of one wilet consists of 16 beats. The phrase is commonly called balunganing gending as stated in the following notation:

P	N	P	G
3 2 1 5̣	1 3 2 1	3 2 1 5̣	4 2 3 4
x x x x	x x x x	x x x x	x x x x
Bar 1	Bar 2	Bar 3	Bar 4

1 bar consists of 4 beats denoted by the letter "x" where in the first bar is the pancar region (P), the bar to the two regions of the kenongan (N), the bar to the three regions of pancar (P) and the bar to the four regions of goong (G).

- In making this gamelan accompaniment, a metronome is needed to determine the tempo of the accompaniment to be made. The determination of the speed of the metronome can be adjusted to the needs of the accompaniment of the composition. The gamelan accompaniment of the macan song ucul in kiliningan uses a sedeng tempo with an average speed of 110 Bpm (Fig. 3).
- The next step is to record the midi data of each instrument according to the gamelan accompaniment pattern of the ucul macan song. The step of making the accompaniment composition is closely related to the gamelan tabuh pattern on conventional macan ucul songs. The following figure is midi data that has been recorded according to the gamelan tabuh pattern on the macan ucul song based on tempo and gending baluganing (Fig. 4 and 5).



Fig. 2. Track waditra.

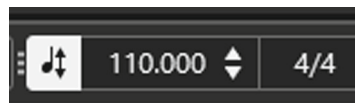


Fig. 3. Tempo on daw cubase image.

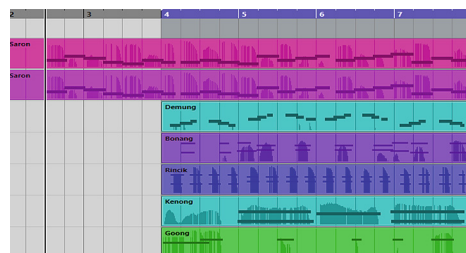


Fig. 4. Track midi gamelan song macan ucul.

Balunganing Gending
Lagu Macan Ucul

	Pangkat Saron															
	0	3	1	2	4	5	3	4								
Saron 1	5	5	2	5	1	1	3	1	5	5	2	5	4	4	2	4
Saron 2	0 ¹	0 ³	0 ¹	5	0 ²	0 ⁴	0 ²	1	0 ¹	0 ³	0 ¹	5	0 ³	0 ¹	0 ³	4
Demung	3 ²	0 ²	3 ⁴	0 ¹	2 ³	0 ³	2 ¹	0 ¹	2 ³	0 ³	2 ¹	0 ⁴	3 ²	0 ²	3 ⁴	0 ⁴
Bonang	4/4	0	4/4	5/5	1/1	0	1/1	0	1/1	0	1/1	5/5	4/4	0	4/4	0
Rincik	0 ⁴	0 ⁴	0 ⁴	0 ¹	0 ¹	0 ¹	0 ¹	0 ¹	0 ¹	0 ¹	0 ¹	0 ⁴	0 ⁴	0 ⁴	0 ⁴	0 ⁴
Kenong	.	.	.	5	.	.	.	1	.	.	.	5	.	.	.	4
Goong	0	P	0	0	0	P	0	0	0	P	0	P	0	P	0	G

Fig. 5. Balunganing gending macan ucul.

4 Conclusion

One of the common problems with the lack of development of gamelan salendro is triggered by the limited access of people to gamelan salendro itself. In facing the above situation, the application of VST in the production of gamelan accompaniment is expected to be a solution. Productivity in a confined space is an expression that can describe the role of technology in dealing with the situation. VST's ability to simulate gamelan instrument play makes gamelan accompaniment production more effective. The expected end result is the use of gamelan VST in making this accompaniment can be used as a medium to develop the gamelan salendro treasure in West Java.

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