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Digitization Method of Palompong Musical Instruments Using Passive Transducer (Passive Pick-Up)

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Abstract

The purpose of this research is how to digitize palompong musical instruments using passive transducers (passive pick-up) on each palompong blade. This study uses the practice-based research method in understanding and deepening each research problem and findings. The results of the research show that: Traditional palompong musical instruments can be implemented digitally. Through the digitization method of Palompong's authentic voice with the exploration of effects has produced an acousmatic sound form. The researchers have tried to answer the research questions based on the research results in making a conclusion, which is the digitization of palompong musical instruments from acoustic to electric. The research questions include; How to explore the digitization method of palompong musical instruments using a passive transducer (passive pick-up) on each palompong blade.

Keywords: Music Traditional, Musical Instruments, Digitalization

Introduction

Each ethnic in Nusantara has a variety of art types, they are; performance art, literary art, and art. Most of them have their respective beauty. The beauty is present through the characteristics of the uniqueness affected by the local community knowledge system in terms of designing, one of the most popular art branches is the traditional music (Basri, 2021). Traditional music art is one of the branches of individual soul expressions or groups that playing through the media of human body or music instrumen, so it produces sound composition or sound of tone based on the knowledge of the culture owners. One of the traditional musics of Sumbawa that popular in West Nusa Tenggara is *Palompong*.

Palompong is a rhythmic musical instrument that the source comes from the musical instrument itself. The technique is hit by right hand and left hand with wooden batter. On its development, *Palompong* was not in less interested by the youtgs. This is undeniable is influenced by technological advances so that makes youths prefer today's music.

Today's music is the right choice to entertain yourself at the time of the activities. The technical advance makes it easier for the village community or the city to access digital technology music of *Palompong*. So the author is trying to popularize music *Palompong*

through the digital technology media then promote it through social media corporate accounts such as *YouTube, Spotify, Deezer, iTunes, Amazon, Beatport, Emusic, Juno Download, Nasper, Bleep, Boomkat.com*, and so on (Sukiman et al., 2019)

From the above description then present the research question is how the process of creating the music *effect digital Palompong* which is from traditional Sumbawa music. The purpose of this research; 1. Knowing how to the process of creating music recording of *effect digital Palompong* as well as adding to the discourse new music in technology music. While the benefits of this study, it is expected to be a source of new knowledge ideas for the academics of the art of music and the general public of Sumbawa West Nusa Tenggara and Indonesia (Harnish, 2021).

The library study on the writing was aiming to see the differences in research as well as the results of previous research related to the musical instrument *Palompong*. Research I.G.N Arinton Pudja and friendship titled " *Alat Hiburan dan Kesenian Nusa Tenggara Barat* " published by (The Departemen Pendidikan dan Kebudayaan, 1988). The result of the research is that all the art in Sumbawa Island have the beauty and uniqueness based on the wisdom of the local community. It is influenced by knowledge and understanding of local musical concept (added explanation of conclusion).

Research of I.G.N Arinton and the friends are still having field notes is talking to where the research location, the name of the musical instrument, how to play, as well as the art function. The edge of the course includes history, usage and function, organiology, ethnomusicology is still not discussed in detail and still in field data. While the difference of research in *Palompong music is to be* the idea of the music creation of digital effect. The writer tries to explore through Recording Technology Digital Musical Instruments of Palompong. So it became the source of the new Music idea in the world as music digital technology.

Research journal of Wimbrayardi Entitled "Tradition Music as one of the source of development of copyright". The results of the research are the creativity of music artists in creating new music can increase music treasures so it becomes a pride of supporting society or vice versa. Regardless of it, what is the music of music *effect digital* technology becomes pro and cons, of course this has been the consideration of the author for the progress of the present industry music.

Research journal of Yunanto Tri Laksono titled "Technology Digital development in developing composition and arrangement in music using *Software Cubase*". The result of his research is the use of a valid writing methodology review, in which cubase is used as a tool in making music and in mapping out very simple concepts, this is because cubase is a bit easy to use in making new compositions or arrangements. the use of Cubase software can help students to develop creativity and practitioners from outside the institution to develop music writing concepts, so that they can be read by the academic community or the general public (Laksono, 2018)

Research Yunantolt's interesting according to the research on this paper, where the author uses *software* DAW Mixcraf Pro studio 764 bit. The progress of digital technology music always draw the attention of musicians, composers, and arrangers in creating a music work. It is inseparable from the ideas of the musician idioms of the tradition that is a source of music creation *effect Digital*, author.

This research is a qualitative research-based on method *Practice Based Research* or research-based practice. Where the writer rewards the creation of music *effect Digital*

technology through science theory of music when he encountered education in Falkutas Music and Offering in Upsi. *Practice Based Research* is the resulting activity through Creator's experience in music creation.

Given the experience as a musician, a songwriter, and traditional music arrangement of Sumbawa became the source of the idea of creation on the work of music *effect this* digital. Also with theoretical knowledge of understanding of technology music during education in UPSI that influences creative processes. The identification of this research is; Exploration, effects, *Palompong*, digitalization.

Exploration is field exploration aims to gain more knowledge of a traditional musical instrument of *Palompong*. The idea is about life through the music game did by the local community by developing sound sources or instruments, as well as through the development of music symbols, such as rhythm and exploration tones that source from *Palompong*.

As for expenses the sound source that can be done by utilizing objects in the environment and modify percussion musical instruments *Palompong* which can be used to talk about the needs in revealing ideas or idea as creation of music *effect* digital technology.

Further creation of effects or many sounds Real who displays the power of interpretation of the music through digital technology is background music taken from the original voice music *Palompong*. Then, added to the other sound music. Effect can also give The picture of the atmosphere or setting, time, place of an activity or event. Sound effect is an artificial voice that displays the strength of imagination and interpretation of experience about the situation shown by the music creator *effect* Digital Technology.

Creation of the effect then followed by digitization. Digital comes from the Greek word *digitus* which means fingers (Anonymous, 2012). According to the Big Indonesian Dictionary, digital deals with numbers for certain calculating systems (Depdiknas, 2000). Digitalization is the conversion process of all physics or analogous into the form of digital defining digitization as transcript of data into the form of digital so that it can be processed directly using the computer.

The development of digital technology reflects the development of music. This development also reflects traditional musical instruments, which is a lot of researchers who try to record Traditional musical instruments in digital form. Thus, digitizing music Traditional has two paradigms, first digitalization of music as digital products, both traditional digitalization of musical instruments from physical forms to digital shapes. Of the two paradigms, this study focuses on the first paradigm, which is how Traditional musical instruments *Palompong* packed as well as played on a Music Technology digital (Gunawan, 2018)

Music *effect* Digital Technology *Palompong* is one of way to men answer challenge of the diagram lighted today. How is the tool music traditional can be continues to grow. Following the development of today, so the young generations of Sumbawa can now appreciate, know, and learn without eliminating the philosophical meaning of the traditional musical instrument.

History of Palompong Musical Instrument Sumbawa West Nusa Tenggara

Palompong is a traditional rhythmic musical instrument from Sumbawa Island. Once upon nearly every village had a traditional musical instrument, but as the time of the musical instrument *Palompong* nearly extinct. This is due to many of the youths to take into the city that earn a living or a higher education to improve better economic levels.

The past time *Palompong* serves as a means of entertainment from the sidelines of planting activities in rice fields or arranging. Usually players are *Palompong* while concerning tells about the social life experienced by the farmers in the past. *Palompong* musical instruments can also stand alone or become part of other ensuvenated traditional instruments such as Serunai and Gong Genang (Esabella et al., 2020)

Classification of musical instruments *Palompong* including the Idiophone music made of wood. How to play it, the player seated with two feet in a straight forward position and put on the thigh and then the bathed was hit with two batter. The cavity between the thighs and the *palompong* blades serves as a resonator, there is *Palompong* is a pentatonist (Sukiman, 2018)

Musical instruments *Palompong* there are also in some areas of the archipelago. For example in Java called the Gambang music instrument, in Betawi called Gambang Kromong, in Batak called Gangung, in Jambi called wooden gambang. Musical instruments *Palompong* also a have function as a rhythmic musical instrument who can accompany Traditional Music Sumbawacother like Gong Genang and serunai (Gasbanter Journal, 2021).

The material to make *Palompong* is a light type of wood. In Sumbawa, this type of wood is called Kabong. Another type that can be used to make *Palompong* are nickname and the coast. The past time *Palompong* played alone, when alone in the middle of the field, or in the field, then *Palompong* is played to expel the lonely (Mawarni & Suwandi, 2019)

If you want to play a help, usually men, the leg is straightened forward while sitting. Then the wooden barbecue is denominated by the horizontals on Both thighs (without alas). The cavity between the thighs and the pelvane serves as a resonator. Resonators are media that helps generate resonance on instruments / musical instruments according to (yusuf and beny, 2015)

The distance between the One with other complaints is arranged in such a way that it can produce the desired tone. From these tones can be compiled an improvisation or play the desired songs. In the past, only important hearing musical. Now, both the auditor or elevated musical elements are equally considered (Wahyudi, 2014).

Therefore, *Palompong* given a container called bale *Palompong* As a resonator, under the blades, *Palompong* made a tube from a large and small can that will determine the production of the sound. So if it is played without a container, the resulting tone is determined by the distance between the other bar, then then to be played with the container, the resulting tone is determined by the size of the resonator can.

Bale Palompong is usually decorated with various ornaments of various carving ornaments, such as *lonto engal* means plants spread, *kemang setange* means flower set and so on. On the blades *Palompong* Under Created Cock (Pent) to get the desired tone. More deep it will produces low voice. The blades are different in the sound in high tones, medium and low (Dra.Sri Yaningsih Umar Siradz I Gusti Bagus Mahartha, 1992)

Procession of music creation Effect Digital *Palompong*

As part of effort to make the tool *Palompong* Known the wider community, the process of digitizing into the option we will take. Basic consideration with the process of exposure of media digitalization (*Expose Media Digilization*) can be done in the form of social media. So this will have a significant function in the preservation of traditional music *Palompong* that's itself.

The process of music research *Palompong* itself refers to a practice-based research. Which is the research process making musical instruments *Palompong* as a source of sound.

Digitalization and exploitation of effects will be done as part of the creative process. The findings of this study are digitizing and exploration of musical instruments *Palompong* (Mantja & Lalu, 2011).

Here are metode digital of Palompong music from acoustic to digital. At this stage of this recording will be done the research process as below. In this research work chart, research complements some the main components should be prepared in this process, componentsThe question is a drum instrument, mixer, audio interface, computer and, speaker monitor (Idam Ragil Widiyanto Atmojo, 2022)

The first step of the researcher on this work chart is the sound of the line out on each *blade* It will be connected to the line in the mixer using the microphone / pick to forward to the line in the audio interface to reduce the risk of latency. Between theadvance audio that is inwill be a 48 USB focusrite.

USB Out of Audio Interface will be connected to USB on the computer to enter the recording stage. The software used is DAW Mixcraft 7 64 bit. From the authentic sound that has been generated through the recording process will enter into the Mixcraft software track to perform the creative process of effective exploration. The monitor used to listen to the audio in the process is the flat monitor speaker.

The stages of research results based on the Practice Base Research in the method of digitalization of Paltomp Musical Instruments from Acoustics to Digital There are several stages that are as follows:

Palompong has five bars made of Kaleang wood with very light texture so it produces better sound. Here is a *Palampongon* picture Below:



Figure 1. Instrument Palompong

Stage I: Setting up the instrument component *Palompong*, mixer, audio interface, computer, audio aux, interface, cable jack, computer, flat monitor, spelle tweeter, stereo female jack, usb soundcut, usb port, and ice cream stick.

At the next stage there is a tool such as audio mixers that work for mixing sound results recording. Audio MIXER Audio is an electronic equipmentwhich serves to combine (mixing), the routing settings and change the level, as well as dynamic harmonization of Darl the audio signal is generated.

Audio MIXER has a series of inputs that receive sound sources to be manipulated and the output circuit to transmit the existing signal is unitated and.Below is a picture of branded Mixer Ashley FX402i



Figure 2. Ashley Mixer

Audio interface is a device that is connecting the musical instrument *Palompong* on the computer through an audio mixer. Audio Interface Function to Get Recording Musical Instruments *Palompong* which is included in the audio input then turns it into digital audio data.

Audio interface obtains all audio inputs and converts it into digital audio data. Audio Interface Studio is an external hardware connected via USB or FireWire. In general musicians Digital technology also calls it *Heyexternal'soundC.ARD*. Below is an audio interface image.



Figure 3. Audio Interface

Audio Jack is a connector on the Earphone or headphones with devices that can generate audio like audio player, smartphone or ponsel, and komputer PC. Laptop and electric musical instruments or device that receives audio inputs from such a microphone a MPlifier (speaker). Another name of the audio jack included phone jack, phone connector, headphone jack, Heyarphone jack or pluga jack. Below is the Audio Jack image.



Figure 4. Audio Jack

Audio'soundcard is one of the hardware (hardware) computer that is the function to maizel Data for audio and sound. Audio or sounds that appear through speakers or headsets on computers or laptops are the result of data source card. Sound Card is connected to the computer via SlotISA or PCI on the motherboard.

But as the development of the technology and needs of technology, audio sound Card has a USB slot or plugged in a socket commonly called an external sound card. Here's a computer image which has audio sound card.



Figure 5. Audio Interface

USB port or a place to enter the cable. The USB port function is to connect external devices such as scanner, printer, mouse, keyboard (keyboard), data storage device (zip drive), flash disk, digital camera or other device to our computer.



Figure 6. USB port

Personal computer (PC) this time has a USB port with a minimum at least 2 ports. When compared to parallel ports and serial port, USB port usage is easier to use. Connectivity between PC (Personal Computer) and USB devices are connected with special cables. Cables containing four cables connecting peripherals to PC via USB port located in both. Inside the cable, two cables will handle data transmission, others will handle ground and others will supply the power of five volts to peripherals. In principle the computer has 4 basic functions, among which are data processing, data storage, Data transfer and control.



Figure 5. Computer

Pickup piezo is kind of type pick up Acoustic guitar. Piezo own often too used on the various fields. Of them for the sensor alarm, or even buzzer or audio signal device. Piezo catch

all the vibrations generated by the guitar body, strings, and on the Paltomp Musical Instrument. Position Piezo in place on very left a tip or even right up is flexible.



Figure 7. Piezo

Flat Speaker is a type of speaker who has 3 way with high audio frequency capabilities of about 5000-20,000 Hz. Then the not wonder if the resulting sound slightly shrimp or sounds louds in a sound basshis. On practice Natural use of this type of speaker does not need to use the box because theThis speaker can work well and produce a clear voice.

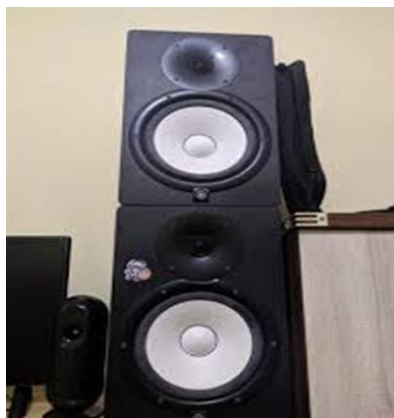


Figure 8. Flat speakers

Railway Bel audioa AKK Type TRS (TIB-SINGLE) 3.5 mm has three conductors elements, namely the end conductor, ring conductor, and cellular conductor. In general, the element of the conductor is torn into the left audio channel and the ring elements are connected to the right audio channel while the arm conductor is connected to the ground. Jack AudioThis TRS for Supports audio with stereo mode.



Figure 9. Audio Cable Jack TRS

The AS ASI-Table SPEAC (06.5 mm) is a audio jack consisting of two conductors alone, namely the tip conductor and elements of the cells. The tip is often connected to the audio signal while the selong is connected to the ground. Audio sockets this is often used for microphone or audio model monoThe right and left sound is the same.



Figure 10. Audio Cable Jack TS

Ice cream stick is used as a tool or container place *pizeo* installed to catch vibe from Musical instruments Palompong who then send Signal to other input electronic channels.



Figure 11. Stick ice cream

The second step, connect sound bar from line out on each the palompong to line in mixer using microphone / pick then forwarded to line in audio interface to reduce latest risk

The author has assembled on some tool components to be connected to each other. A pair of transducer / mixer installed there is the fifth blade tool on the trunk tool with the aim to record the vibration generated by the trunk tool when hit. Cable TransducerorMix is re-connected from the Line Out Transducer Pizoo to the Line in Sound Card that has been

tailored to the needs. Line out to sound card is usb then line on USB computer. The result of the assembly process can be seen in Figure 4.13 below as follows:



Figure 12. Installation of assembly results for Paltomp recording

Recording Using DAW Mixcraft 7 64 bit. At this third stage the researchers performed the sound recording resulting from Musical instruments drum. The process of recording every Palompong, as follows

Blade 1 *Palompong* Generate 5 levels of analysis using the WaveLab 6.10 app (340) 64 bit, namely peak analysis, loudness analysis, pitch analysis, extra analysis, and analysis. Here's one of the digital recording results using the WaveLab 6.10 application.

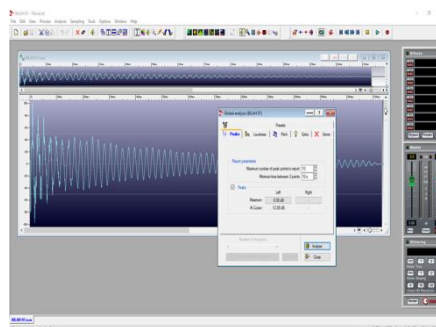


Figure 13. Loudness analysis

Bilah 2 Palompong Generate 5 levels of analysis using the WaveLab 6.10 app (340) 64 bit, namely peak analysis, loudness analysis, pitch analysis, extra analysis, and error analysis. Here is one of the images of digital remote.

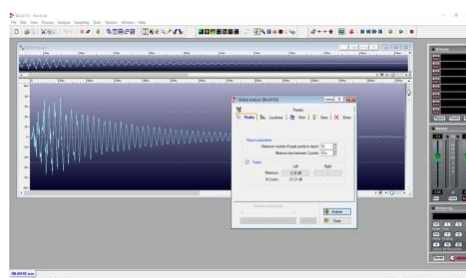


Figure 14. Loudness analysis

Bilah 3 Palompong Generate 5 levels of analysis using the WaveLab 6.10 app (340) 64 bit, namely peak analysis, loudness analysis, pitch analysis, extra analysis, and error analysis. Here is one of the images of digital recording results.

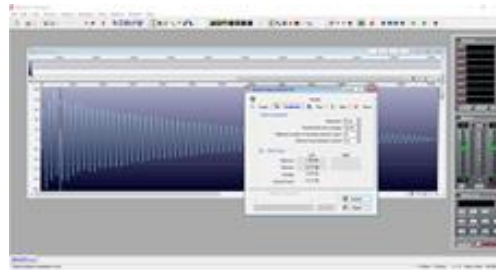


Figure 15. Peacck analysis

Bilah 4 Palompong can be generate 5 levels of analysis using the WaveLab 6.10 app (340) 64 bit, namely peacck analysis, loudness analysis, pitch analysis, extra analysis, and error analysis. Here's one of the results of the resultsanalysis of.

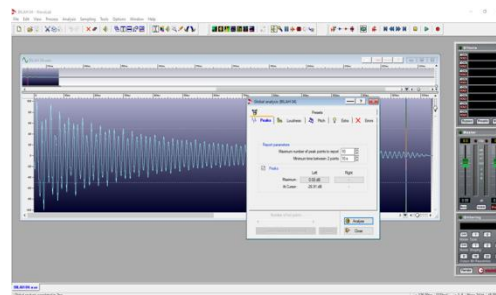


Figure 16. Analysis Peack

Bilah 5 Palompong generate 5 levels of analysis using the WaveLab 6.10 app (340) 64 bit, namely peack analysis, loudness analysis, pitch analysis, extra analysis, and error analysis. Here is one of the digital recording of Palompong musical instruments.

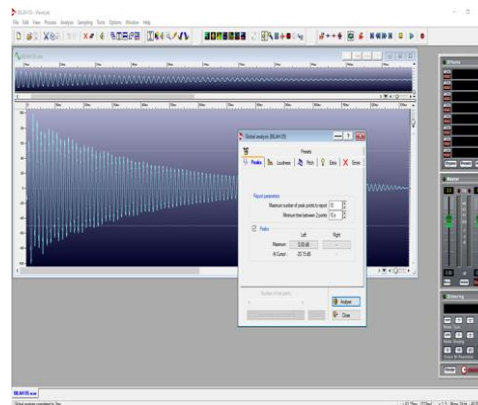


Figure 17. Peace analysis

Conclusion

The development of modern musical instruments along with the time mutually influence each other. The existence of musical instruments will give a new color to the development of music, as well as the ideas of development or variation of a type of music will encourage composers or musicians to create and develop new musical instruments that can help or facilitate the realization of these ideas of variation on the instrument rhythmic music in the form of palompong as one of the percussion instruments known to the Sumbawa community in particular. From the past until now has experienced development. Currently, various shapes, sizes, materials and uses have been known, even the palompong has become

one of the most popular rhythmic musical instruments used by the young people of Sumbawa in collaboration with various other modern musical instruments. As in this research which is the Digitization Method Of Palompong Musical Instruments Using Passive Transducer (Passive Pick-Up) on each palompong blade comes from Kaleang wood material to produce a better sound. In addition to Palompong, some support devices are also needed. Next, install several component devices to connect to each other. On the five palompong blades, a transducer (Passive Pick-Up) is installed to record the vibrations produced by the palompong when struck and the transducer/mic cable is connected back from the line out of the pizeo transducer to the line in of the soundcard that has been adapted to the needs. Line out to the sound card in the form of USB and then continue to line in the computer's USB. The conclusion to this is that the creative process cannot be limited by the equipment used, the combined effects, and what musical instruments are explored. This is certainly something that can open our thinking that creativity is not only in the work but also in the creation process. as the implications of this research are :

1. For the Community

In its development, the researcher understands that modern life is heavily influenced by western culture which includes all aspects of life including art and culture. There are people, especially the younger generation, who still do not know the form of the Palompong musical instrument as a traditional Sumbawa musical instrument. The type of music they like today is also more western music such as Jazz, hip-hop and EDM (electronic dance music) that use more modern instruments. The researcher hopes that the general public appreciates the existence of Palompong, at least they know that this musical instrument exists. Because at this time to get information about art and culture can be easily accessed through technological media such as the internet. Through this study, it is hoped that it will be particularly beneficial to the Sumbawa community to recognize and cultivate a sense of love for the traditional Sumbawa musical instrument, the palompong.

2. Member of the Palompong Music Art Collection

The musical taste of the people who now like modern music should be used as a reference to be more creative in producing music. It is hoped that references to the songs performed during the show will feature songs that are more contemporary but still use traditional instruments as a musical feature. So that traditional music lovers will increase. In addition, the socialization of traditional musical instruments is also becoming more active, because currently there are still people who do not know about the traditional musical instrument palompong, which is a traditional musical instrument of Sumbawa with activities and workshops that are more culturally themed. is being held. often. Through this study it is also hoped to benefit Palompong traditional music performers as a motivational tool so that they can continue to preserve Palompong traditional music as a cultural asset and traditional characteristic of the region, especially Sumbawa, West Nusa Tenggara. Southeast, Indonesia.

3. Regional Government

This investigation is expected to benefit the government, especially the Department of Culture and Planning to give more space and attention to traditional music performers in Sumbawa. This can also be used as a reference to establish a foundation or organize a program related to art and social activities in Sumbawa to include the Palompong music art collection in their activities.

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