The preservation of Isan folk music with digital sound technology

Weerayut Seekhunlio[a] | **Sayam Chuangprakhon**[a] | **Kittichai Phiwphuy**[a]

[a]College of Music, Mahasarakham University, Thailand.

Abstract The preservation of Isan Folk Music is of the utmost significance for preserving the rich cultural heritage of the region and nurturing artistic innovation. Digital sound technology has emerged as a potent instrument for this endeavor, allowing for the construction of an exhaustive and diverse digital sound library. In this study, traditional Isan Folk Music instruments were meticulously recorded using the cutting-edge Logic Pro X software, capturing their nuances in volume and dynamics. The authenticity of each instrument's timbre and unique characteristics were preserved through the use of sound adjustment and editing techniques. The appropriate organization and note nomenclature within the Kontakt software contributed to the library's well-structured and user-friendly design. The process of importing the sounds of musical instruments into Kontakt was seamless, involving selection, customization, and modification, resulting in a vast repository of sounds that are available for exploration. A user-friendly interface was thoughtfully designed to enhance the user's experience exploring the captivating sounds of traditional Isan Folk Music instruments. This digital sound library stands as a testament to the preservation and celebration of Isan Folk Music, providing artists and enthusiasts alike with a resourceful outlet for artistic expression and promoting global appreciation for this distinctive musical tradition, demonstrating the important role of music in cultural preservation and human evolution.

Keywords: Isan Folk Music, digital sound technology, preservation, sound recording

1. Introduction

Music is an art form cherished by humanity and deeply connected to their way of life. It is intertwined with daily life from birth to death and harmoniously blends with the customs and cultures of each society. It has evolved through time and generations and has been passed down continuously. In Thai society, the development of musical culture has been influenced by various civilizations in the region, shaping the music throughout one's life. Nevertheless, with the evolution of civilization, the importance of conventional rituals has progressively waned, leading to a transformation in the purpose of music from a solemn ritualistic function to a kind of amusement (Wongthet, 1999). Traditional folk music originates from the creative ideas of local people, who utilize available materials from their surroundings to craft musical instruments that reflect their wisdom (Chonpairot, 1983; Seekhunlio and Chuangprakhon, 2022) for the purpose of entertainment and to fulfill their beliefs. Initially, traditional folk music was simply accompanied by singing, but later on, people created musical instruments to accompany their singing (Thammawatt, 2000). However, with the rise of Isan Folk Music and food, the region's image has been positively impacted. Factors such as Westernization, modernization, and commercialization have helped develop Isan's musical heritage, creating neotraditional and popular styles. The popular genres have been supported by the Isan working class, resulting in a more positive image and increased self-confidence (Nanongkham, 2011).

The creation of music is a significant objective in music education, whether it be Thai or Western music. It emphasizes the importance of developing students' experiences in creating sound, rhythm, melody, and various song compositions (Sutjittajit, 2012; Seeyo et al., 2023). The evolution of music creation has been continuous since the invention of sound recording devices by Thomas Elva Edison in the year 1880, where he achieved the first successful sound recording with the song "Mary Had a Little Lamb," which he sang himself (Amatayakul, 1980). Since the inception of sound recording devices, they have been utilized in various fields, and music is one of them that has undergone significant changes and developments in both educational and ethnographic aspects. Sound recording has played a crucial role in the emergence of comparative ethnomusicology or music anthropology because it allows the collection of music from various places for further study and comparison, leading to rapid advancements in the field of music anthropology (Matthamnan, 2019).

As recording technology has evolved, music production in recording studios has also undergone significant developments (Pras et al., 2013). In the past, when creating musical compositions, songwriters would write down the lyrics on paper and experiment with various melodies and rhythms using the musical instruments they were skilled in. If the song required multiple instruments, additional musicians were needed to complete the composition (Gibson, 2005). However, in

modern times, songwriters can now experiment with different melodies using just one musical instrument. Moreover, the early recording process required all instruments to be recorded simultaneously in a room with good sound isolation to prevent unwanted external and internal noises. Imagine the process of recording an orchestra; it would require a large room and multiple equipment such as microphones and various cables. Additionally, it would involve many musicians, and rehearsal time would be extensive, leading to higher costs (Thompson and Lashua, 2014).

However, with today's technology, we can simulate the sounds of different instruments or even mimic the performance of skilled musicians using just one instrument. This reduces the need for rehearsal time and lowers the budget. Furthermore, the quality of the sound produced can be excellent (Sansasri, 2006).

In the 21st century, as we stride into the true digital age, technology is being utilized to increase productivity and replace traditional labor (Katz, 2010). It fosters knowledge creation and innovation, giving rise to numerous new ideas to replace old ones. Technology acts as the key that opens up the world to global connectivity, allowing the exchange of scientific data and information across the globe within a short period (Pacey and Bray, 2021). People from all corners of the world can now communicate and exchange information rapidly. The current world is thus an amalgamation of communication and the internet, with new media being digital, using technology to combine text, graphics, animation, sound, and video, transforming and linking them together for practical use (Metheekul, 2018). Software and code have ushered in a regime of distributed musical creativity, which is having significant impacts on the organization of the musical economy (Leyshonn, 2009).

In conclusion, it is evident that music technology in the present world is continuously evolving, both in terms of live concert performances and sound recordings. Therefore, the researchers are interested in studying the creative process of Isan Folk Music in the digital sound format. They aim to record the sounds of Isan folk musical instruments and create a digital sound repository of Isan Folk Music. This repository can then be used with music software, allowing for the creation and composition of traditional Isan folk melodies using digital sound technology. This approach offers convenience and speed, leading to further developments in the field of creative Isan Folk Music.

2. Materials and Methods

The qualitative research approach was employed for this investigation. The steps are outlined in the following process:

2.1. Study of documents and research works

Begin by researching and studying documents related to Isan Folk Music available in Thailand and other countries. This includes academic textbooks, research papers, master's theses, and doctoral dissertations that pertain to the content and research methods related to Isan Folk Music. These sources will provide valuable knowledge and insights about Isan Folk Music.

2.2. Objective setting

Define the objectives for creating a digital sound library of Isan Folk Music. Determine whether it will focus on solo instruments or encompass multiple instrument samples. Specify the types of traditional musical instruments to include in the sound library.

2.3. Recording of musical instruments

Record the sounds of Isan Folk Music instruments by Logic pro X program to be included in the digital sound library. Ensure that the recordings are of high quality and represent the diverse range of musical instruments.

2.4. Adjustments and Sound Editing

During this step, fine-tune the instrument sounds to achieve accuracy and completeness. Arrange the sounds to create a comprehensive and well-organized sound library.

2.5. Importing instrument sounds into Kontakt

Utilize Kontakt software to import the recorded sounds of Isan Folk Music instruments and structure them into a digital sound library. Arrange the sounds to represent different playing styles and variations.

2.6. Interface design

Create a user-friendly interface for playing the Isan Folk Music instrument sounds in the digital library. Design an interface that is suitable for exploring the diverse sounds available.

2.7. Creating the digital sound library

Organize and compile the instrument sounds in a finalized digital sound library format that is ready for use.

2.8. Distribution and application

Distribute the digital sound library of Isan Folk Music to be utilized in various projects, activities, and ventures related to Isan Folk Music .

The goal of this research project is to preserve and make accessible the rich cultural heritage of Isan Folk Music through the use of digital sound technology and comprehensive research methods.

3. Results

Preserving Isan Folk Music with digital sound technology is a beneficial process for maintaining the identity and valuable for aspects of local culture. Simultaneously, it also opens opportunities for creative applications. The process involves the following steps:

3.1 Recording Isan Folk Music Instruments in Logic Pro X for a Digital Sound Library

The utilization of Logic Pro X software for recording traditional Isan Folk Music instruments and compiling them into a digital sound library is pivotal in the preservation of the inherent diversity and authenticity of Isan Folk Music. It ensures that the recorded sounds are of high quality and this approach guarantees the authentic essence of each musical instrument. The verification process should guarantee faithful capture and precision. Without any discrepancies caused by incorrect recording techniques. Additionally, giving importance to configuring parameters related to sound recording in Logic Pro X will result in the most satisfactory outcomes (Figure 1).
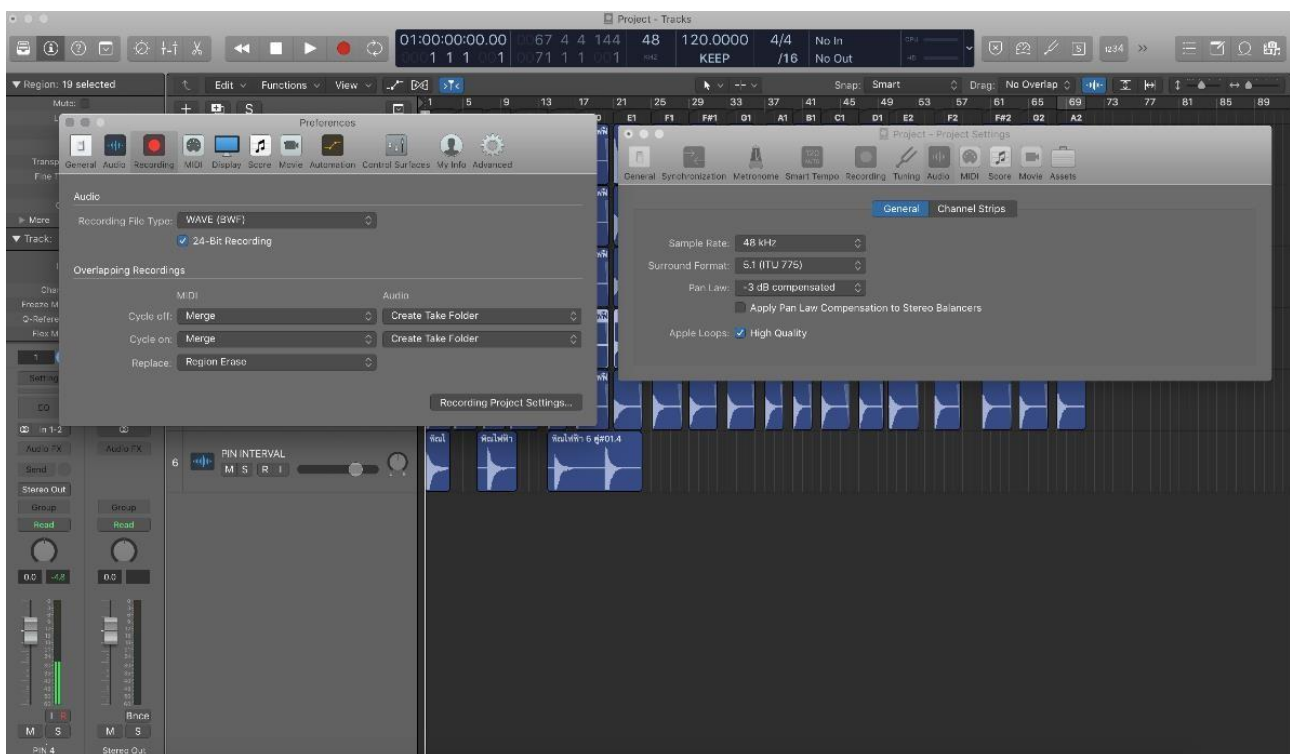
Figure 1 Logic Pro X software settings sample rate: 48000 KHz, 24 bit.

In recording each musical instrument and during the sound recording process, the volume and naturalness of each instrument are captured to create dynamic sounds. This approach is used to generate a nuanced and expressive sound that represents the dynamics and variations of each instrument's performance. By recording the instruments with varying volumes and dynamics, the resulting sound captures the natural and dynamic characteristics of the musical performance, creating a more authentic and expressive representation of traditional Isan Folk Music.

The results of the recording process individually showed that meticulous sound capture, accurate pitch representation, and dynamic range adjustments led to high-quality and authentic recordings of the musical instruments. The carefully adjusted sound parameters ensured that each instrument's unique characteristics were accurately portrayed, resulting in a comprehensive and diverse digital sound library. The recorded sounds were aligned with the desired objectives, providing an excellent resource for creative endeavors and preserving the rich cultural heritage of Isan Folk Music (Figure 2).
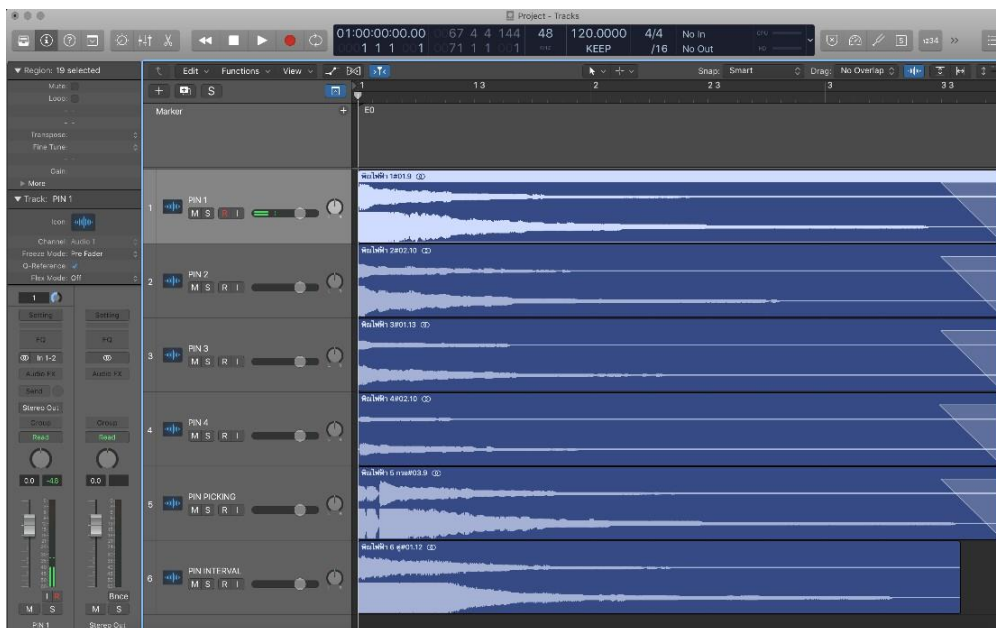
Figure 2 The process of recording the sound, pitch, and dynamics of each instrument.

3.2 Importance of Sound Adjustment and Editing in Musical Instrument Recording

The process of sound adjustment and editing is crucial and has a significant impact on the quality of demonstrated musical instrument sound recording in research. Proper and comprehensive sound adjustments and modifications help increase the accuracy of playing the musical instruments and align the sound with recorded musical instrument sounds within research contexts. It has been found that precise and natural-sounding adjustments are essential in sound recording for musical instruments. Modifying the volume and pitch of the sound helps achieve the desired results and user-defined specifications. Additionally, the adept modulation of tempo imparts dynamism and engagement to the auditory experience. Adding additional sound effects enhances the listening experience and adds variety to the sound. Moreover, editing techniques, such as removing unwanted sections or combining segments, contribute to creating a well-structured and all-encompassing sound collection that faithfully represents the authentic characteristics of the original musical instruments.

Implementing these adjustments and modifications is critical for a comprehensive sound library that covers a diverse range of sounds and synchronizes with the establishment of actual timing. Moreover, the resulting auditory output of the musical instruments complements the existing digital sound library for artistic endeavors. The process of sound adjustment and editing is essential to ensuring the production of high-quality recordings that accurately capture the timbre and characteristics of the real-time performance timing of musical instruments (Figure 3).
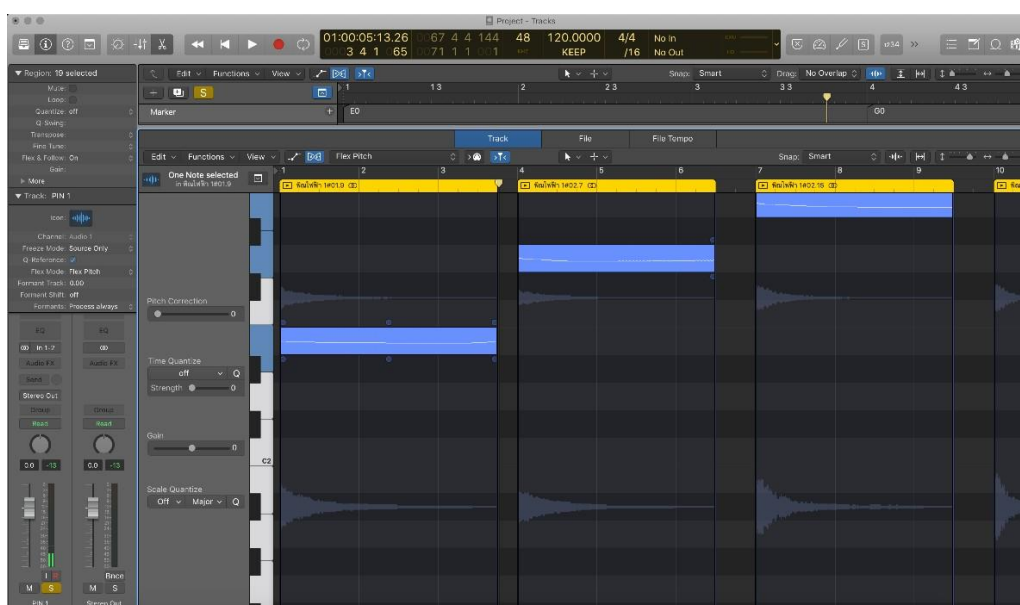
Figure 3 Precision tuning using Flex pitch in Logic Pro X software.

The results of employing arranging and designating the name of the notes before mapping them to the keyboard in the Kontakt program are highly beneficial for organization, arrangement and nomenclature ease of use. By assigning proper note names, users can easily identify and enhance user friendliness by locating specific sounds within the library. This helps streamline the creative process and facilitates the integration of the instrument into various compositions. Additionally, proper note naming ensures that the instrument is compatible with standard MIDI mappings and other virtual instruments, enhancing its usability in different musical contexts. Overall, the process of arranging and naming notes in Kontakt yields a well-structured and user-friendly digital sound library, providing a retrieval and efficient experience for composers and musicians (Figure 4).
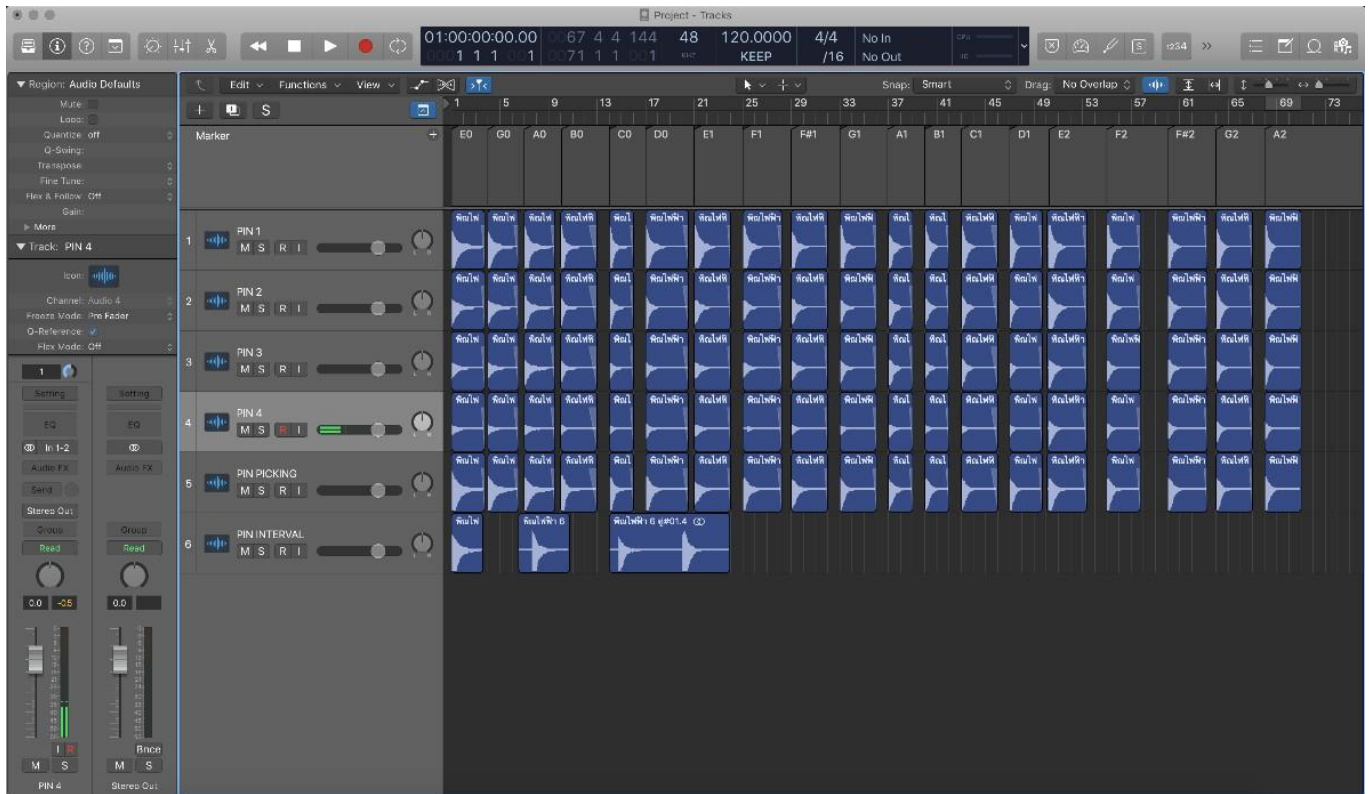

Figure 4 Arranging to designate the name of the note before bringing it down to the keyboard in the Kontakt plugin.

3.3 Importing Musical Instrument Sounds into Kontakt

To import musical instrument sounds into Kontakt, follow these steps:

1. Open Kontakt: Launch the Kontakt software on your computer.

2. Select a Patch or Instrument: In the main screen menu of Kontakt, click on "Files" to access the sound library. Then, choose a Patch or Instrument to work with by selecting it from the menu or searching for the desired sound in the library.

3. Choose the Import Location: After selecting the desired Instrument, click on the location within the Instrument to import the sound. Use the Import options available in Kontakt to do this.

4. Select Sound Files: When you click on the import location within the Instrument, choose the recorded sound files of the traditional Isan musical instruments that have Import these sound files into the Instrument using the Import options in Kontakt.

5. Customize and Edit the Sound: Once the sounds are imported into the instrument, users can customize and edit their preferences. You can adjust the volume, pitch, and tempo of the sounds or add sound effects to make the listening experience more interesting and diverse. Use the built-in tools in Kontakt to modify various aspects of the sounds according to your needs.

6. Save and Streamlined Use: After completing the customization and editing process, save the sound library created and use it in music compositions or instrumental performances within the Kontakt software.

By following these steps, it is possible to effectively import traditional Isan musical instrument sounds into KONTAKT, arrange them into a structured digital sound library, and showcase various playing styles and formats to enhance creative endeavors in music production and performance (Figure 5).

Figure 5 Bringing each volume of the audio file to the piano wedge by producing the sound from the lowest to the loudest.

3.4 Creating an Interface for Exploring Traditional Isan Folk Music Instrument Sounds in a Digital Library

Creating a user-friendly interface for playing traditional Isan Folk Music instrument sounds in a digital library is a crucial step in preserving and building a comprehensive and diverse sound repository of local culture. Designing an interface that facilitates the exploration of various instrument sounds is essential to enabling users to easily select and use desired sounds. Utilizing Kontakt software in this process allows for the creation of a high-quality interface that can produce unique and customized sounds according to specific needs. The process of adjusting and modifying the sounds to align with user preferences is vital to crafting an attractive and engaging user interface. This interface promises to be exciting and aesthetically pleasing, enhancing the exploration of diverse sounds from Isan Folk Music instruments and providing users with a fun and convenient experience (Figure 6).
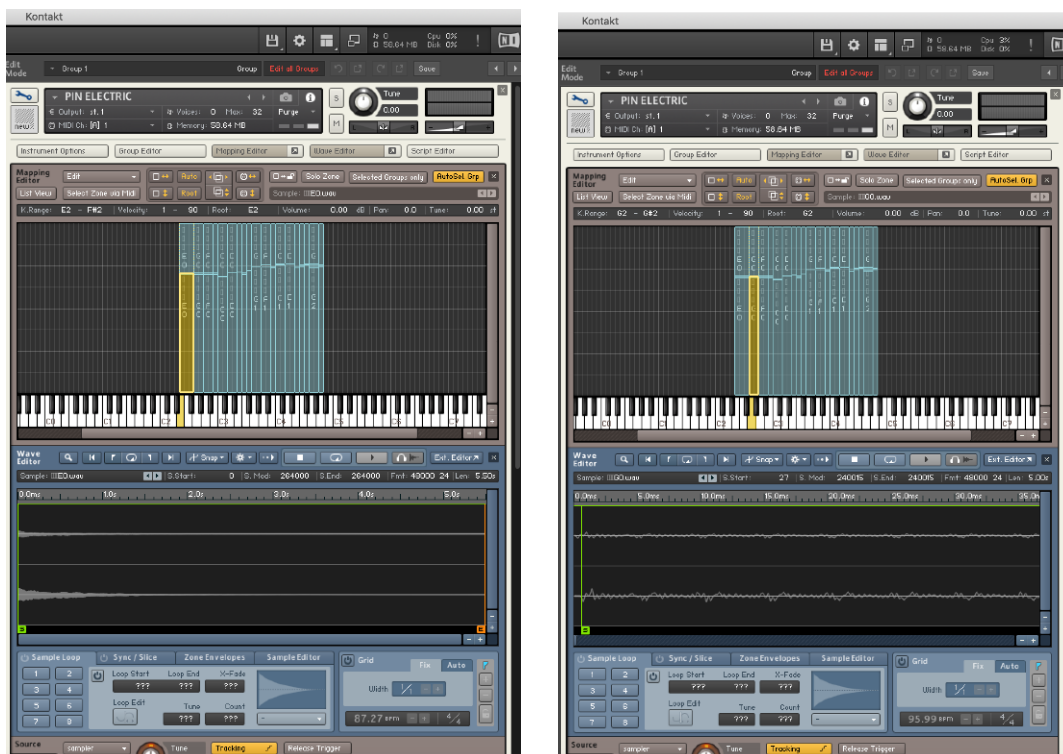

Figure 6 Editing audio files in the wave editor makes the sound as close as possible so as not to disturb the use of the instrument.

3.5 Creating a digital audio library

Organizing and compiling musical instrument sounds into a comprehensive digital sound library are crucial for the preservation and creation of a diverse repository that represents the essence of the local culture. This user-friendly digital sound library enables easy and convenient access to desired instrument sounds. The process of organizing and collecting the sounds is essential in creating an aesthetically pleasing and engaging user interface, making the exploration of diverse Isan Folk Music instrument sounds enjoyable and exciting. This digital sound library enhances the authenticity and quality of preserving and utilizing the local Isan Folk Music instrument sounds, utilizing digital technology to create a comprehensive and diverse repository for easy navigation and enjoyable exploration (Figure 7).
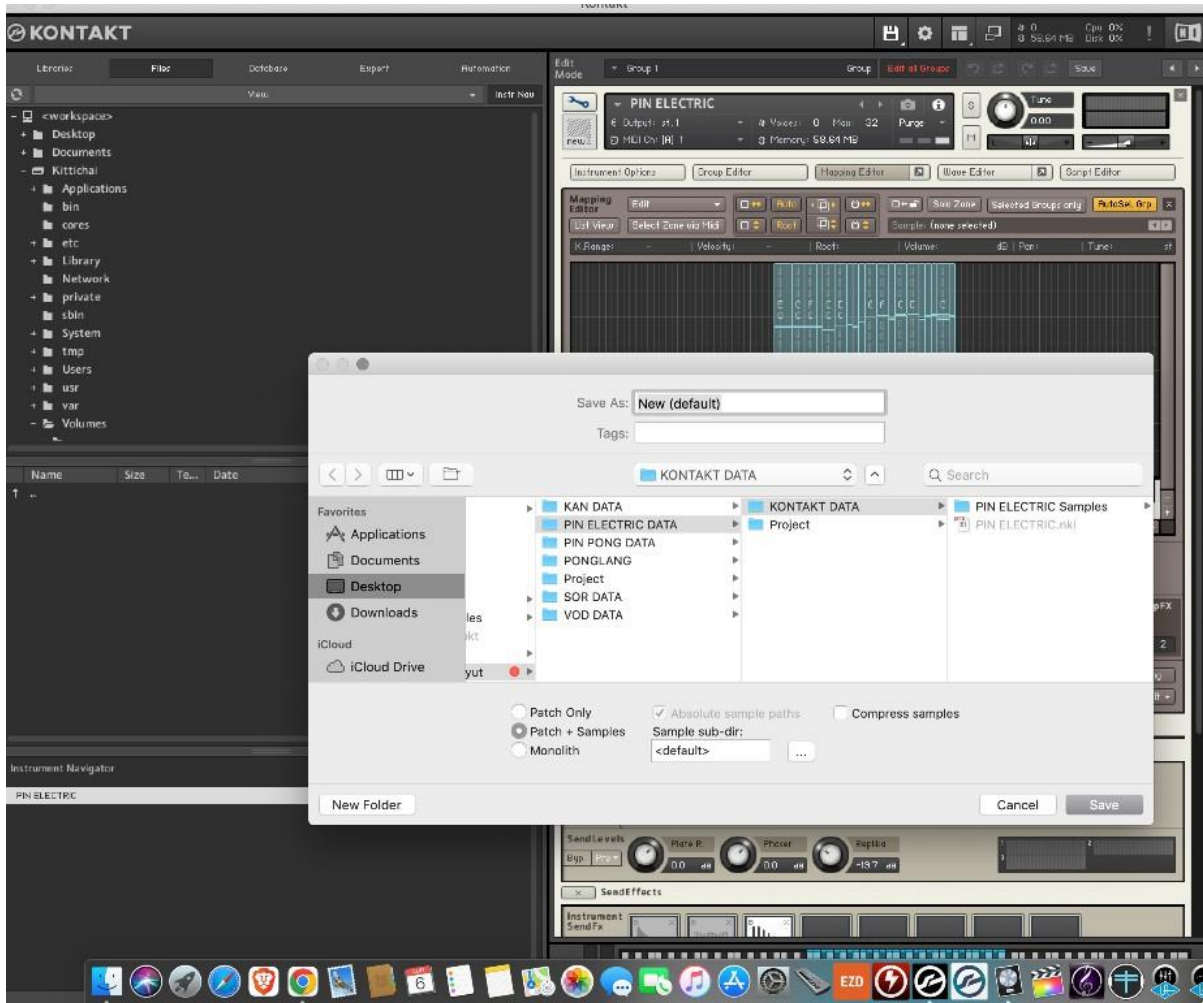

Figure 7 Create a digital music library to use by saving it as a folder.

3.6 How to Use a Digital Sound Library in Logic Pro X

1. In Logic Pro X, create an instrument track and use the Kontakt plugin to load the desired digital sound library (Figure 8).

2. Arrange the musical instruments in accordance with the original song template. Begin with the rhythm instruments and work your way through the melody instruments. Then, using the digital sound library, build distinct recordings for each instrument.

3. Create MIDI files from the digital sound library, capturing the sounds in the sequence of the rhythm and melody instruments without requiring quantization software. This stresses a natural sense of performance from the directly developed digital sound resource.

4. After recording the MIDI files, organize the places of each instrument's sound such that they do not overlap, mirroring the actual performance arrangement in the Isan Folk Music.

5. Export the audio files to various formats as needed.

Following these methods will assist in efficiently using digital sounds from a digital sound library in Logic Pro X (Figure 9).
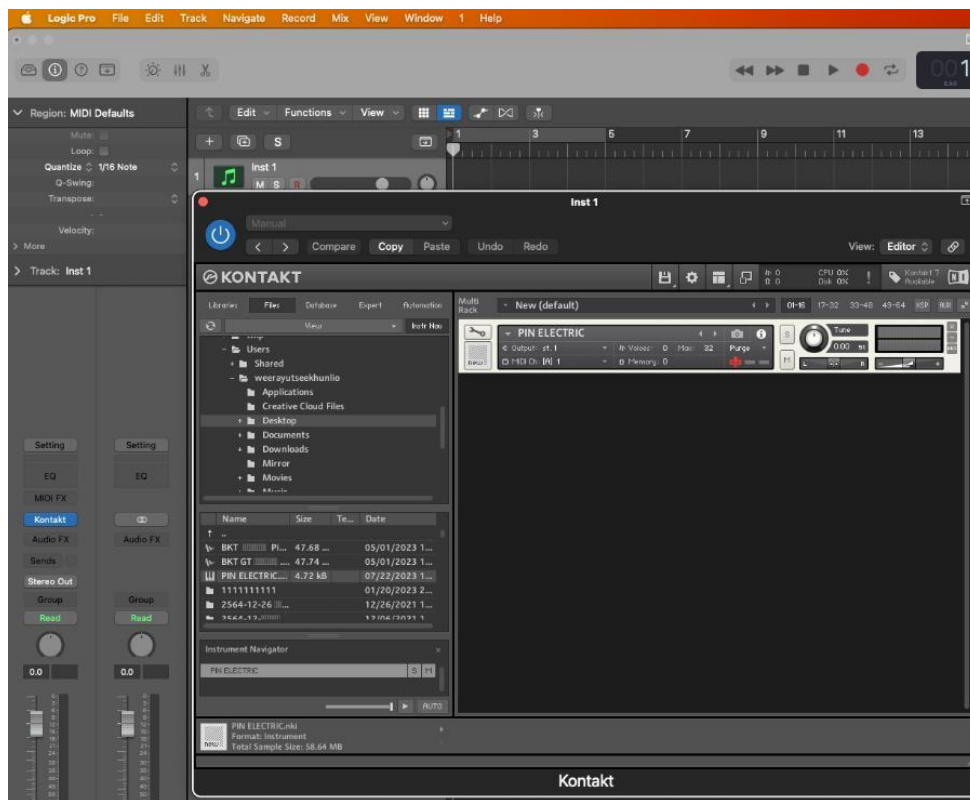
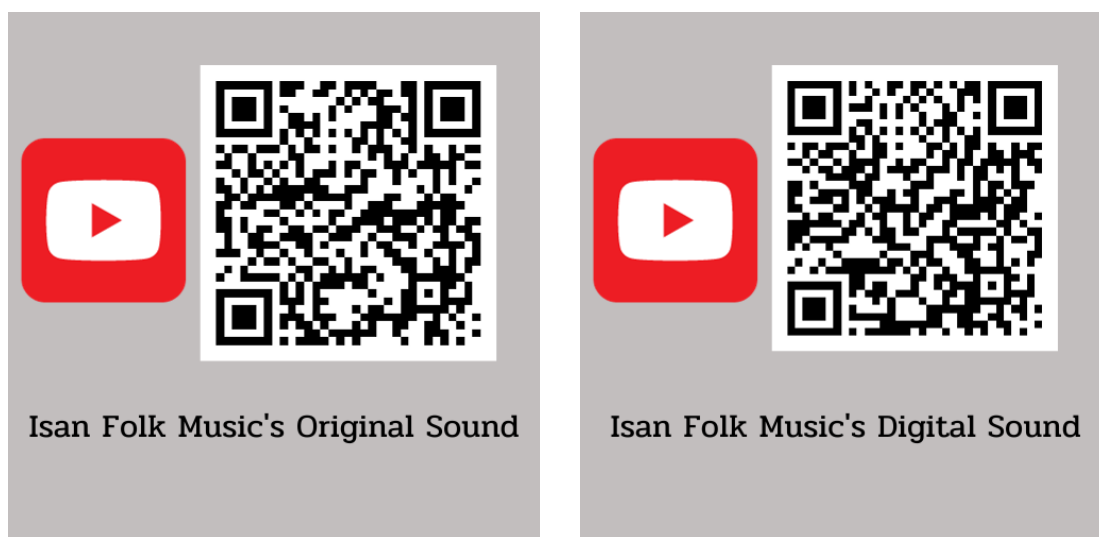**Figure 8** Use the Kontakt plugin in Logic Pro X software.

Figure 9 QR Code links a comparison between the original sound and the digital sound.

4. Discussion

The integration of Isan Folk Music into a digital sound library has had significant implications for the preservation and dissemination of this traditional musical heritage. The digital format allows for greater accessibility to a diverse audience, transcending geographical and cultural boundaries. By researchers, educators, students, musicians, and enthusiasts Consequently, people worldwide now have the opportunity to explore and study the unique musical traditions of Isan.

By creating a user-friendly interface for playing Isan Folk Music instrument sounds, the digital library enhances the learning experience and deepens understanding and appreciation of this cultural heritage. It serves as a valuable resource for the preservation and transmission of Isan's musical knowledge and practices to future generations. By categorizing musical instruments according to four types of playing methods, Taekhanmark (1987) focuses on the exploration of Isan Folk Music by categorizing musical instruments based on their playing techniques. The research findings align with the work of Bunrod (2017), who explored the influence of traditional Isan Folk Music on human transformation. The article demonstrated the scientific mechanisms underlying the interaction between music and human physiology, which leads to changes in internal

systems and mental states. Furthermore, which corresponds Chuangprakhon (2023) has studied the creation of contemporary Isan Folk Music that is unique. Contribute to the creative progression of music and are a valuable resource. The integration of Isan Folk Music represents the harmonious blending of Thai and Lao ethnic customs and traditions, creating a unique musical genre that resonates with the emotions and feelings of individuals. And also corresponds to Tavares and Schiavoni's (2020) work in the field of computer music, as presented at the SBCM 2019 conference on computer music in Brazil. Both studies aim to facilitate the use of digital technology in music creation and make it more accessible to musicians and artists. According to Lazzarini (2000), a study of the SndObj Sound Object Library revealed that possible future upgrades and uses are taken into account. The library has been demonstrated to be a useful basis for the research and development of audio processing applications.

5. Conclusions

The preservation of Isan folk music through the use of digital sound technology is critical for preserving local culture and developing innovative applications. Traditional Isan Folk Music instruments are recorded using Logic Pro X software, recording loudness and dynamics in order to build a complete and diversified digital sound collection. Sound tuning and editing are critical for building a broad library, aligning with user needs, and guaranteeing appropriate timbre and characteristics. Correct note naming and arrangement in Kontakt software contribute to a well-structured and user-friendly library. To import musical instrument sounds into Kontakt, start the program, choose a patch or instrument, choose the import location, select sound files, personalize and adjust the sounds, save and utilize the library, and build an interface for exploring traditional Isan Folk Music instrument sounds. This user-friendly interface enhances the authenticity and quality of preserving and using native Isan Folk Music instrument sounds.

In conclusion, the creation of a digital sound library for Isan Folk Music not only safeguards its intangible cultural heritage but also fosters a greater understanding and appreciation of this unique musical tradition among a global audience. It exemplifies the powerful influence of music on cultural preservation and human transformation, making it a valuable resource for researchers, educators, and enthusiasts alike.

Acknowledgment

Ethical considerations

Not applicable.

Conflict of Interest

The authors declare no conflicts of interest.

References

Amatayakul, P. (1980). Sound Recordings of the Royal College of Music: An Unprecedented Performance Unaffected by War Crisis. *Siam Rath Daily*, August 9, 2523.

Bunrod, V. (2017). Isan Folk Music: Its Influence on Human Transformation. *Journal of Ethnomusicology, 41*(2), 123-137.

Chonpairot, J. (1983). Isan Folk Music. Mahasarakham: Department of Music, Srinakharinwirot University, Mahasarakham.

Chuangprakhon, S. (2023). Compositions of Song Nakhon Champasri for Creative Research and Music Instruction in Contemporary Isan Folk Music Ensemble. *Research Journal in Advanced Humanities, 4*(3). DOI: 10.58256/rjah.v4i3.1149

Gibson, C. (2005). Recording Studios: Relational Spaces of Creativity in the City. *Built Environment, 31*(3), 192-207. DOI: 10.2148/benv.31.3.192

Katz, M. (2010). Capturing sound: How technology has changed music. Univ of California Press.

Lazzarini, V. E. P. (2000). The SndObj Sound Object Library. *Organised Sound, 5*(1), 35-49. DOI: 10.1017/S1355771800001060

Leyshon, A. (2009). The Software Slump?: Digital Music, the Democratisation of Technology, and the Decline of the Recording Studio Sector within the Musical Economy. *Environment and Planning A, 41*(6), 1309-1331. DOI: 10.1068/a40352

Matayomnan, J. (2019). The development of music creation with analog and digital systems. *Bansomdej Music Journal, 1*(2), 117-134.

Metheekul, P. (2018). Development program for digital literacy and digital media utilization behavior for instruction of preservice teachers in the twenty-first century. Doctoral dissertation (Applied Behavioral Science Research). Bangkok, Graduate School, Srinakharinwirot University.

Nanongkham, P. (2011). Modern Isan Music as Image: A Positive Identity for the People of Northeast Thailand [Doctoral dissertation, Kent State University]. OhioLINK Electronic Theses and Dissertations Center.

Pacey, A., Bray, F. (2021). Technology in World Civilization, revised and expanded edition: A Thousand-Year History. Mit Press.

Pras, A., Guastavino, C., Lavoie, M. (2013). The impact of technological advances on recording studio practices. *Journal of the American Society for Information Science and Technology, 64*(3), 511-522. DOI: 10.1002/asi.22840

Sansasri, N. (2006). The Use of Technology in the Creative Music Composition Process. Master's thesis. Mahabandit, Srinakharinwirot University.

Seekhunlio, W., Chuangprakhon, S. (2022). New Music for the Isan Phin Plucked Lute for the Boon Phawet Ceremony.Doctoral dissertation, Mahasarakham University.

Seeyo, W., Seekhunlio, W., Choatchamrat, S., Phulaiyaw, A., Noknoi, K. (2023). Ram Tone's Knowledge Preservation and Literacy Transmission in Mahasarakham Province, Thailand. *International Journal of Education and Literacy Studies, 11*(2), 39-44. DOI: 10.7575/aiac.ijels.v.11n.2p.39

Suwitjit, N. (2012). Music Education: Principles and Key Concepts (9th ed.). Bangkok, Chulalongkorn University Press.

Taekhanmark, K. (1987). "Pong Lang Identity of Isan Music." In Culture. Bangkok, Chao Phraya.

Tavares, T. F., Schiavoni, F. L. (2020.) Computerized music from SBCM 2019 *Revista de Informática Teórica e Aplicada, 27*(4).

Thammawatt, J. (2000). Isan Wisdom. Maha Sarakham: Thammarat Project, Faculty of Humanities and Social Sciences, Mahasarakham University.

Thompson, P., Lashua, B. (2014). Getting It on Record: Issues and Strategies for Ethnographic Practice in Recording Studios. *Journal of Contemporary Ethnography, 43*(6), 721-739. DOI: 10.1177/0891241614530158

Wongthet, S. (1999). Folk Singing, Music, and Arts of the Siamese People. Bangkok, Matichon Publishing House.