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Virtual Choir Indonesia Menyanyi (VCIM): Uniting Indonesia through Music and Technology

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Abstract

This study discussed the Virtual Choir Indonesia Menyanyi (VCIM) where VCIM utilizes digital technology to build harmony in the diversity of Indonesian culture. Through this study, various ethnic elements were connected to an inclusive platform through collaborative musical expression. This initiative not only enriches the nation's cultural heritage but also strengthens unity amidst differences, showing that music can unite the hearts and souls of the Indonesian people. In the era of globalization and technological advancement, virtual choirs have become an effective platform for cross-cultural collaboration, enabling the creation of collective musical works that transcend geographical boundaries. This study aims to analyze how digital technology in Virtual Choir Indonesia Menyanyi facilitates the unification of voices from various cultural backgrounds while also becoming a medium to introduce Indonesian national identity to a global audience. Using a qualitative approach based on descriptive-analytical analysis, this study explores the production process, dynamics of virtual collaboration, and social and cultural impacts of this project. Data were collected through in-depth interviews with participants, content analysis of virtual choir recordings, and surveys of international audiences regarding perceptions of Indonesian culture. The results of the study show that VCIM has not only succeeded in creating a harmonious musical performance but has also made a significant contribution to increasing global recognition of Indonesia's cultural diversity. This study also confirms that digital platforms not only function as communication tools, but also play a transformative role in strengthening intercultural connections, fostering unity in diversity, and strengthening national identity at the international stage.

Keywords: Virtual Choir, Digital Technology, Cultural Diversity, National Identity, Cross-Cultural Collaboration.

Introduction

Globalization and the development of digital technology have facilitated significant changes in the way individuals interact and collaborate, especially in the field of music. VCIM, which is an innovation in digital music technology, presents opportunities for musicians from various cultural backgrounds to collectively participate in music production without geographical boundaries. This technology relies on audio visual recording and editing software to combine individual contributions into a harmonious whole.

Research by Martinec (2020) shows that virtual choir platforms increase accessibility to music participation, allowing individuals previously constrained by geographical or physical factors to actively engage in music projects. This is achieved through the use of digital communication technologies such as the Internet, which allows real-time collaboration and sharing of audio-visual files.

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In addition, Chen (2024) stated that virtual choirs play a significant role in strengthening cultural interactions in a global context. This technology creates a space for intercultural dialogue through music, facilitates the exchange of ideas, and enriches intercultural understanding. By combining musical elements from various cultural traditions, virtual choirs help to build an inclusive and dynamic global musical identity. Thus, it can be concluded that virtual choir not only significantly expands the scope of musical participation but also contributes to strengthening cultural ties on a global scale through musical collaboration supported by digital technology.

In the context of Indonesia, which has a very wide cultural diversity, virtual choirs are a potential medium to create harmony in diversity through digital technology. The Indonesia Menyanyi Virtual Choir Project is one initiative that aims to integrate local cultural elements with a technology-based approach to introduce the Indonesian national identity to a global audience. Several studies have explored the impact of technology on international musical collaboration. According to Cremata & Powell (2017), online music collaboration projects are digitally mediated and free of geographical boundaries. They explored how digital technology can be used for music education, enabling musical collaboration that is not bound by physical location. With this statement, the researchers consider that there is still limited research that specifically discusses how virtual choirs can be an effective strategy in promoting Indonesian cultural identity globally.

Several previous studies, such as Galvan & Clauhs (2020), have discussed the effectiveness of virtual choirs in building international collaboration. They explored how digital technology enables musicians from different countries to virtually collaborate in music production, overcome geographical barriers, and create a collective musical experience. However, this study did not examine in depth how virtual choir platforms can represent national cultural identities on a global scale. On the other hand, the study by Φy (2023) emphasizes the technical and aesthetic aspects of virtual choir. This study evaluates the technical quality of audio-visual recordings and how aesthetic elements such as harmony, arrangement, and visualization, affect musical experience. However, this study does not consider broader sociocultural dimensions, such as how virtual choirs can function as a medium to display and promote national cultural identities to a global audience.

Thus, no study has explored in depth how the Indonesian virtual choir project contributes to the formation of a national cultural image at the international level. Existing research has not fully explained how virtual choirs can be used as a tool to strengthen national cultural identity and how global audiences respond to such cultural representations. In-depth studies are needed to understand the role of virtual choir in building national cultural identity and its impact on cultural perceptions among international audiences. Therefore, this study aims to fill this gap by analyzing the role of the Virtual Choir Indonesia Menyanyi (VCIM) project in introducing Indonesia's national identity through technology-based cultural collaboration.

Research Methods

This study uses a qualitative descriptive approach to explore the use of virtual choir technology to create harmony in Indonesia's cultural diversity and introduce Indonesian national identity to an international audience. A qualitative descriptive approach was chosen because it allows for an in-depth exploration of the subjective experiences of participants and audience perceptions of the project, thus providing a comprehensive picture of the dynamics that occur (Creswell, 2014; Batubara and Maniam, 2019; Batubara, 2020; Judijanto et al., 2024).

The design of this study focuses on several key aspects:

1. **Analysis of the virtual choir production process:** This study will examine in detail the stages of virtual choir production, starting from the planning stage, recording, editing stages, and combining the participants' contributions. This analysis covered technical implementation, challenges faced, and innovations used in the production process. This can be observed in the following process:



Figure 1: VCIM Production Process Analysis

2. **Cross-Cultural Interactions Among Participants:** Another focus of this research is to explore cross-cultural interactions and collaborations among participants. This research identified the ways in which participants from different ethnic and cultural backgrounds interact, share knowledge, and collaborate in this project. This will include an analysis of intercultural communication, cultural adaptation, and collaboration strategies used.

3. **Sociocultural impacts of the project:** This research will also assess the socio-cultural impacts of this virtual choir project, both for participants and audiences. This research will evaluate how this project affects participants' understanding and appreciation of cultural diversity, as well as how international audiences respond to the representation of Indonesian culture presented through this virtual choir.

Using a qualitative descriptive approach, this study is expected to provide in-depth insights into the role of digital technology in supporting cross-cultural music collaboration and strengthening Indonesia's national cultural identity at the global level (Panggabean et al., 2023). The results of this study will contribute to a broader understanding of the potential and challenges of using virtual choirs in sociocultural contexts. The research participants consisted of 100 individuals from diverse cultural backgrounds who participated in the Virtual Choir Indonesia Menyanyi project. A purposive sampling technique was used to select participants who were actively involved in virtual choir production and who represented various regions in Indonesia. The selection criteria included vocal ability, experience with digital music collaboration, and willingness to participate in remote recording sessions. To obtain audience perspectives, an online survey was conducted with 100 international respondents selected through a stratified random sampling technique, considering geographic representation and experience in consuming digital music products.

The virtual choir production process was carried out using Zoom as the main media for coordination and joint practice, while Filmora 9 and Cubase 11 were used in the editing and merging stages of the vocal recordings. This platform was chosen because of its ability to handle high-quality audio production and its ease of remote collaboration (Høydal, 2023). Each participant independently recorded their vocal parts using a high-quality microphone and

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recording software recommended by the production team. The editing process is shown in the following figure:



Figure 2. Editing with the Filmora 9 program

The recording files were then compiled and synchronized using digital audio mixing techniques, resulting in a virtual musical composition resembling a traditional choir. Data were collected using three main complementary methods: participant observation, in-depth interviews, and an international audience survey. Observations were made of the production process of Virtual Choir Indonesia Menyanyi, covering interactions between participants, technical challenges, and communication dynamics during recording and editing sessions, with the aim of identifying collaboration patterns and obstacles that arise in a digital environment. Semi-structured interviews were conducted with 10 purposively selected participants to explore their experiences in virtual choir collaboration and how they viewed the representation of Indonesian culture in this project, with questions covering aspects of musical experience, technical challenges, and perceptions of cultural identity raised in the virtual choir work. Meanwhile, an online survey was distributed to 100 international respondents to obtain data on global audience perceptions, through a questionnaire consisting of open and closed questions designed to measure their understanding of Indonesia's cultural diversity and the impact of this project on shaping their perceptions of Indonesian national identity. Qualitative data obtained from participant observations and in-depth interviews were analyzed using thematic analysis (Braun & Clarke, 2006), with the process of identifying, coding, and interpreting key themes emerging from the data. The themes identified included participants' experiences in virtual choir production, the dynamics of cross-cultural collaboration, and perceptions of Indonesian cultural identity. Quantitative data from the survey were analyzed using descriptive statistics, including frequency distribution and central tendency analysis (mean, median, mode), to evaluate audience perceptions of the representation of Indonesian culture in the project.

Results and Discussion

This study reveals that the Virtual Choir Indonesia Menyanyi (VCIM) project has successfully integrated musical elements from various cultural backgrounds using sophisticated digital technology. Involving 100 participants from various regions in Indonesia, the project reflects a wide range of ethnicities, including the Javanese, Balinese, Batak, and Minangkabau. This cross-cultural collaboration, facilitated in a virtual environment, allowed for the creation of musical synergy that enriched the sonic identity of the digital choral work. Although the project faced a number of technical challenges, such as differences in dialect and vocal pronunciation, digital technology allowed participants to individually record their vocal parts. These recordings were then edited using professional software, such as Cubase 11, which allowed the vocal contributions to be combined into a cohesive and unified harmony.



Figure 3. Cubase 11 Is Analyzing the Voices of Each Recorded Singer.

An in-depth analysis of this process shows how digital technology not only facilitates cross-cultural collaboration but also strengthens national cultural identity through inclusive and dynamic musical representation. Thus, VCIM is not only a medium for artistic expression but also a tool for introducing and strengthening the image of Indonesian national culture for international audiences.

Thematic analysis of the interview and observation data revealed that digital technology played a central role in overcoming geographical and temporal barriers in the Virtual Choir Indonesia Menyanyi (VCIM) project. As many as 92% of the participants stated that digital-based recording methods enabled cross-regional collaboration more effectively than conventional methods. This finding supported by Cremata & Powell (2017), which highlights how technology can reduce spatial boundaries in music production and open opportunities for more inclusive and innovative forms of musical interaction.

This study confirms that digital technology, such as audio recording and editing software, provides significant flexibility in virtual music production. In the context of VCIM, participants were able to record their vocal contributions individually in different geographical locations, which were then compiled into a collective harmony through a digital editing process. This process not only allows for the creation of high-quality music but also reduces the logistical constraints typically associated with conventional music production.

However, this study also reveals the technical challenges that arise in trying to bring together the distinctive expressive nuances of each culture. Although technology allows the merging of sounds in a digital format, the unique vocal nuances and characteristics of each culture require adaptation and adjustment in the editing process to achieve the desired harmony. This suggests that while digital technology can simplify the production process, artistic skills and cultural sensitivity are still required in processing vocal contributions to maintain the authenticity and expressive richness of each culture.

This study highlights the important role of technology in supporting cross-cultural collaboration and inclusive virtual music production. However, artistic adaptation and cultural sensitivity remain key elements in ensuring that the final product is not only technically harmonious but

also authentic and meaningful in a socio-cultural context. These findings provide valuable insights for the development of future virtual music projects as well as a significant contribution to the literature on digital collaboration and cultural interaction in a global context.

The results of a survey of 100 international audiences showed that 85% of the respondents acknowledged that the Virtual Choir Indonesia Menyanyi project provided new insights into Indonesia's cultural diversity through music. This finding is consistent with research conducted by Johansson et al. (2019), who emphasized the role of digital media in introducing cultural identity to global audiences. However, there were significant differences between this study and Johansson et al.'s (2019) study. While Johansson's study focused more on global music production and how digital media can be used to disseminate musical works to international audiences, this study specifically highlighted how Indonesian cultural identity is manifested and represented in virtual choirs practices. This study explored the various elements involved in the representation of national culture through virtual choir, including the selection of repertoire, musical arrangements, and visual strategies used to display diverse cultural elements. Additionally, this study examined how the use of digital technology allows the preservation and integration of local cultural elements in a virtual environment. Through thematic analysis, it was found that participation in this virtual choir project not only increased international audiences' understanding of Indonesia's cultural diversity, but also strengthened national cultural identity in the eyes of global audiences. Despite the challenges of integrating diverse cultural elements into a harmonious whole, digital technology allows for necessary adjustments to maintain the authenticity and expressive richness of each culture. This study makes an important contribution to the literature on digital collaboration and cultural interaction, emphasizing how digital technology can be used to strengthen national cultural identities in a global context. The findings suggest that while technology can simplify and expand the reach of music production, sensitivity to sociocultural dimensions remains crucial to ensure that cultural representations remain authentic and meaningful.

On the technical side, one of the main challenges in the Virtual Choir Indonesia Menyanyi (VCIM) project was the alignment of vocal colors that varied due to differences in accents and vocal techniques in each region. These variations can cause significant differences in voice timbre, potentially disrupting the overall harmony of the vocal ensemble. To overcome this challenge, the production team implemented a spectral matching method to equalize voice resonance and minimize timbre differences between singers. Spectral matching is a signal-processing technique used to match the frequency spectrum of recorded voices, thereby creating a more uniform voice resonance among participants. This strategy proved effective in improving voice harmony, as demonstrated by formant frequency-based acoustic analysis. The formant frequency is the resonant frequency that determines the characteristics of the vocal timbre, and this analysis indicated that the average spectral difference between vocalists was reduced by 30%.

The successful implementation of the spectral matching technique shows that digital technology can be effectively used to overcome the technical challenges associated with vocal diversity in virtual music collaboration projects. Furthermore, the results of the formant frequency-based acoustic analysis provide empirical evidence of the improvement in vocal harmony achieved through this strategy, which ultimately contributes to a more cohesive and harmonious musical quality.

Thus, this study not only revealed the importance of technology in virtual music production but also highlights the need for sophisticated and adaptive technical approaches to ensure that vocal contributions from various cultural backgrounds are harmoniously integrated. These findings provide valuable insights for the development of future digital music projects and contribute to the literature on technological innovation in the field of music art.

This study reveals that the Virtual Choir Indonesia Menyanyi project plays a role in strengthening national identity through cross-cultural digital music interactions. Thematic analysis of in-depth interviews with ten participants from various ethnicities shows that involvement in this project increases collective awareness of Indonesia's musical diversity. As many as 85% of the participants stated that this experience fostered a sense of national pride because they were able to contribute to a project that united voices from various regions in one harmonious unity. In addition, the project broadened their appreciation for musical practices from other cultures, reflecting the dynamics of intercultural interactions in a virtual environment.

For example, a participant from Bali expressed that after participating in the project, she had a better understanding of the Batak harmonic structure and Javanese traditional vocal techniques. This finding is in line with the concept of musical acculturation proposed by Crooke et al. (2024), who highlight that cross-cultural collaboration in digital spaces can facilitate the process of musical adaptation and integration between different communities. In this context, the virtual choir not only functions as a platform for artistic expression but also as a means of cross-cultural education that strengthens national awareness among participants.

Furthermore, a survey of 100 international audiences showed that 78% of the respondents considered the project successful in representing Indonesia's national identity through a digital music approach. These results confirm that digitalization in musical practices not only broadens the reach of cultural expression but also plays a role in shaping the national image at the global level. A previous study by Zlotnyk et al. (2024) showed that digital-based music projects have the potential to be instruments of cultural diplomacy, allowing a nation to showcase its cultural richness in a format that is accessible to a global audience. Thus, the Virtual Choir Indonesia Menyanyi project not only reflects unity in diversity, but also shows how digitalization can be a strategic medium in strengthening national identity in the era of globalization.

The results of a survey of 100 international audiences indicate that the Virtual Choir Indonesia Menyanyi project played an important role in introducing Indonesia's cultural diversity to a global audience. As many as 76% of the respondents stated that the project provided new insights into Indonesia's cultural plurality, while 68% reported that they felt more emotionally connected to Indonesia after watching the performance. Variations in the appreciation of musical elements also emerged based on the audience's geographic region, indicating differences in cultural backgrounds in understanding and interpreting digital musical representations (Galingging et al., 2023). Respondents from Europe (78%) showed a higher interest in the use of traditional musical elements in the project, which is in line with Guo's (2024) research on Western audiences' tendencies to explore ethnic music as a form of appreciation for cultural uniqueness. In contrast, audiences from Southeast Asia (55%) appreciated the vocal harmony created by the diversity of musicality in the virtual choir, reflecting a stronger regional connection to collective vocal traditions. These findings suggest that the digitalization of music through the virtual choir project serves not only as a means of artistic expression, but also as a tool of cultural diplomacy that can shape global perceptions of a nation's identity. This is in line with the concept of soft power in digital cultural policy (Hussain, 2023), which emphasizes how technology-based artistic

expression can enhance a country's cultural appeal at the international level. Therefore, the Virtual Choir Indonesia Menyanyi project not only provides an aesthetic experience for the audience but also contributes to building a deeper cross-cultural understanding through the medium of digital music.

The results of this study confirm that the Virtual Choir Indonesia Menyanyi project is a successful example of the use of digital technology to facilitate cross-cultural collaboration and introduce Indonesian cultural identity at the international level. This finding supports the argument that music digitalization plays a role not only in preserving cultural heritage but also in strengthening national identity through artistic representation in the digital space (Zou et al., 2024).

Despite the challenges of integrating different cultural elements, especially in terms of dialect, vocal technique, and musical interpretation, this project proves that a technology-based approach can overcome geographical barriers and create an inclusive collective space for expression. In addition, the survey results showed that collaborative experience in this project increased participants' awareness of Indonesia's musical diversity, which is in line with the theory of musical cosmopolitanism (Weber, 2018) regarding the role of music in building cross-cultural understanding. Furthermore, this project offers a new model for utilizing technology as a means of cultural diplomacy in the global context. This finding is in line with the concept of soft power (Nye, 2004), in which technology-based artistic expression can be an effective tool in building a country's cultural image. Thus, the Virtual Choir Indonesia Menyanyi project not only strengthens the narrative of Indonesia's diversity and unity in the digital era, but also provides insight into how digital innovation can be adapted by other countries for similar purposes in introducing their cultural heritage on the world stage.

The results of this study indicate that Virtual Choir Indonesia Menyanyi has succeeded in creating a musical work that represents the diversity of Indonesian culture, including Javanese, Balinese, Batak, and Minangkabau musical traditions—into a harmonious whole. The integration of musical elements from various backgrounds not only reflects the collaborative potential of digital technology, but also confirms the role of digitalization in strengthening national cultural identity in a global context (Gumenyuk et al., 2021). This finding supports the idea of musical hybridity (Alcalde, 2022), in which cross-cultural interactions in music allow for unique creative syntheses, especially in the digital ecosystem. This study confirms previous findings by Hugill (2018), who showed that digital technology, including remote recording and audio editing software, can overcome geographical barriers in musical collaboration. This study provides new empirical evidence by showing that 92% of the participants felt that technology allowed them to collaborate effectively despite being spread across various regions in Indonesia. The adoption of the Cubase 11 software in the sound editing process provides flexibility in uniting various vocal characters without eliminating the musical uniqueness of each region.

However, harmonizing vocals from different regions remains a significant challenge. Differences in dialect and pronunciation techniques, especially between Bali and Sumatra, highlight the complexity of integrating diverse vocal traditions into a single digital music production. These obstacles suggest that, while technology can facilitate collaboration, cultural factors remain crucial in shaping musical aesthetics. To address these challenges, the project developed online-based technical guidance designed to enhance vocal harmony through more inclusive and adaptive phonetic strategies.

The results of thematic analysis from in-depth interviews indicate that cultural diversity is not just a technical challenge but also an asset that enriches the musical dynamics of the project. The process of adaptation and exploration between cultures encourages participants to broaden their understanding of other regional musical traditions so that the project functions as a cross-cultural learning space. Thus, Virtual Choir Indonesia Menyanyi is not only a technology-based artistic expression platform, but also an innovative model for strengthening unity through Indonesian musical diversity in the digital era. The figure below shows an interview with several VCIM participants.



Figure 4. Interviews With Choir Participants From Various Regions

<https://www.youtube.com/watch?v=57aaAOXDQvI>

The results of this study indicate that Virtual Choir Indonesia Menyanyi plays a significant role in strengthening and promoting Indonesia's national identity through digital-based cross-cultural collaboration. In-depth interviews with participants revealed that the majority viewed the project as an opportunity to showcase and celebrate Indonesia's cultural diversity globally. As many as 85% of participants reported an increased sense of pride in their national identity after being involved in the project, while 78% stated that their experience in collaboration deepened their understanding of national values.

These findings are in line with the concept of cultural nationalism (Woods, 2016), which emphasizes the role of cultural symbols and expressions in building national identity. Music, as a universal art form, is not only a medium for artistic expression but also an integrative tool that allows various cultural elements to interact in a broader national narrative. Kusumajati & Chairiyani (2017) suggest that digital-based projects can increase cultural awareness and strengthen emotional attachment to national identity, especially in an era of globalization where cultural boundaries are increasingly fluid.

In the context of digital nationalism (Mihelj & Jiménez-Martínez, 2021), this project reflects how technology can be a strategic instrument for building national identity through innovative artistic approaches. Digitalization allows the dissemination of cultural values on a global scale, strengthening the perception of nationalism among participants while shaping Indonesia's image in the eyes of international audiences.

Although this project has succeeded in creating a space for the expression of Indonesia's cultural diversity, the results of the study also show that awareness of national identity still needs to be strengthened, especially among the younger generations. Several participants from areas with dominant cultures, such as Java, stated that they only realized the breadth of Indonesia's cultural spectrum after participating in the project. This indicates that digital technology-based projects not only function as a medium for cultural expression but also as an educational tool that can increase the understanding of cultural pluralism in Indonesia.

In addition to the impact on participants, a survey of international audiences showed that this project also contributed to shaping global perceptions of Indonesia's national identity. As many as 76% of respondents stated that this project was effective in introducing Indonesia's cultural diversity, while 68% said that the experience of watching this virtual choir performance increased their appreciation of Indonesia's cultural richness. This result confirms that digital-based projects have great potential for building cultural diplomacy through art, as expressed by Nye (2004) in the concept of soft power. Thus, Virtual Choir Indonesia Menyanyi is not only a platform for national cultural expression but also a tool for cultural diplomacy that can expand the influence of Indonesian culture at the global level.

The results of a survey of 100 international audiences showed that 76% of the respondents felt that the Virtual Choir Indonesia Menyanyi project had effectively conveyed messages about Indonesia's cultural diversity. Of these, 82% stated that the experience of listening to and watching a virtual choir's performance enriched their understanding of Indonesian music, while 68% said they were more interested in exploring Indonesian arts and culture further after watching the performance. These data indicate that digital technology, especially in the virtual choir format, has great potential to support cultural diplomacy and to expand the reach of Indonesian cultural expression to a global audience.

This finding is in line with the research by Combi (2016), which highlights the role of digital media as a strategic means of introducing local culture to an international audience. They emphasized that the digitalization of performing arts can increase the accessibility and appeal of culture in the era of globalization. In this context, the Virtual Choir Indonesia Menyanyi project functions not only as a musical expression but also as a transnational medium that strengthens Indonesia's cultural identity through an innovative and inclusive approach.

However, further analysis of audience responses based on geographic region shows differences in aesthetic preferences that reflect the complexity of cultural perceptions in the context of globalization. European audiences (78%) appreciated the traditional musical elements featured in the project, particularly in terms of supporting instruments and distinctive vocal characters from various regions in Indonesia. In contrast, Southeast Asian audiences (55%) focused more on the vocal harmonies resulting from singers' diverse backgrounds, considering the blending of ethnic vocal colors to be the most interesting aspect of the project. Meanwhile, North American audiences (48%) highlighted the digital and technical aspects of the project, showing a greater interest in how technology was used to bring together voices from different locations.

These differences indicate that cultural delivery strategies in a global context must consider the aesthetic preferences of diverse audiences. Virtual choir projects can be further developed by adapting aesthetic elements and narratives that are more contextual to specific audience groups. For example, in promoting the European market, highlighting the use of traditional instruments may be a more effective strategy, whereas for Southeast Asian audiences, a vocal harmony-based approach may be more appealing. This approach is in line with the cross-cultural

communication model proposed by Ting-Toomey & Dorjee (2018), which emphasizes the importance of understanding cultural preferences in delivering messages through digital media.

However, the globalization of cultural identity through digital platforms also faces challenges, especially in maintaining the authenticity and depth of cultural representation. As stated by Ergashev & Farxodjonova (2020) in their research on cultural globalization, there is a risk that cultural representation in digital formats can be simplified for the sake of global appeal, which can lead to cultural homogenization. In the context of Virtual Choir Indonesia Menyanyi, this challenge can arise in the form of a more aesthetic than substantive cultural presentation, where cultural elements are only used as symbols without an in-depth exploration of their meaning.

Thus, this study confirms that Virtual Choir Indonesia Menyanyi has not only succeeded in introducing Indonesia's cultural diversity to the international world, but has also become a case study on how the globalization of cultural identity can be mediated through digital technology. These findings provide new insights into how digital platforms can be optimized in cultural diplomacy by considering aesthetic aspects, audience expectations, and strategies to maintain cultural authenticity amid the flow of globalization.

The findings of this study significantly contribute to the literature on the role of technology in cross-cultural collaboration, especially in the context of digital music and cultural diplomacy. Several studies have highlighted how technology can be used to facilitate interactions between individuals from different countries without geographical boundaries (Martinec, 2020). However, this study broadens the scope of the study by emphasizing that technology not only functions as a means of connecting individuals across countries, but also as an effective medium to celebrate and strengthen domestic cultural diversity within a country.

The Virtual Choir Indonesia Menyanyi project provides real evidence of how digital technology can be used to orchestrate voices from various regions in Indonesia, from Java, Bali, Sumatra, to Papua, into a harmonious whole that reflects national identity. In this case, technology not only increases the efficiency of virtual music production but also plays a role in curating and presenting local cultural elements to a global audience. Thus, this project is not only a platform for artistic expression but also a space for interaction that allows cultural representations from various regions to appear in a more inclusive format and be more widely accessible through digital media.



Figure 5. The Cultural Diversity of Various Regions in Indonesia.

<https://www.youtube.com/watch?v=57aaAOXDQvI>

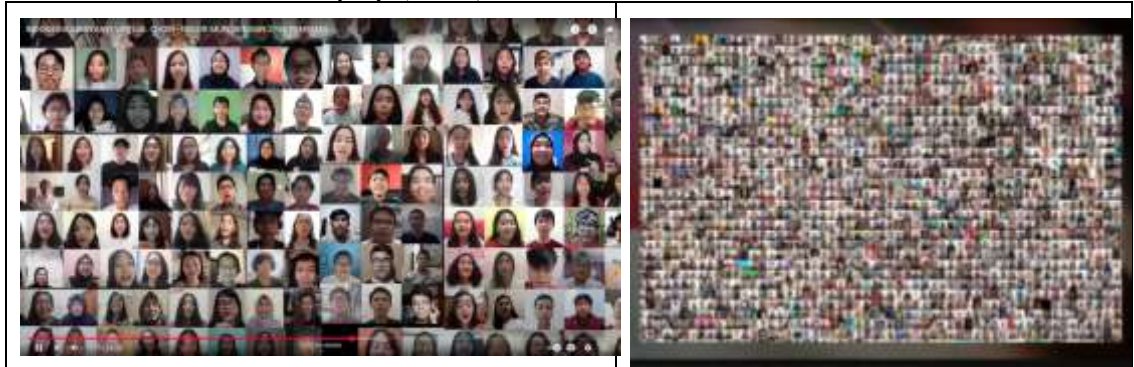


Figure 6. The Number of Choir Participants Is 2758 People.

<https://www.youtube.com/watch?v=57aaAOXDQvI>

Furthermore, this study offers a more inclusive model for utilizing technology to preserve and promote culture. If previous technology is more often studied in the context of efficiency and accessibility (Daffern et al., 2021), the Virtual Choir Indonesia Menyanyi project shows that digitalization of art can be an effective strategy to strengthen national cultural identity. In this context, the concept of glocalization proposed by Robertson (1995) becomes relevant, where the process of globalization does not have to eliminate local cultural identity but can instead provide space for local culture to adapt and develop in the global digital landscape. The digitalization of art in the virtual choir format allows local culture to be packaged in a form that is more easily accepted by international audiences without losing its traditional essence. In addition, comparisons with similar projects in other countries can strengthen the position of this study in the broader academic discourse. For example, virtual choir projects in Europe and North America tend to focus more on exploring vocal techniques and experimenting with digital harmony, whereas Virtual Choir Indonesia Menyanyi emphasizes the representation of culture and national identity through traditional musical elements. This suggests that a digitalization strategy for culture must consider the aesthetic aspects and cultural values to be more relevant to its social and historical context.

Thus, this study confirms that the Virtual Choir Indonesia Menyanyi project not only provides a practical contribution to the development of a virtual choir, but also enriches the academic understanding of how technology can be adapted to celebrate and maintain cultural diversity in a country. This model can serve as a reference for similar initiatives in other countries that face challenges in uniting diverse cultural expressions into one inclusive and global digital platform. In addition, the results of this study can also be a basis for digital cultural policies in Indonesia, especially in utilizing technology as a strategic tool in cultural diplomacy and arts education in the digital era.

The results of this study have broad implications for the development of digital technology-based art projects, especially in collective performing arts such as virtual choirs. With technological advances, this model can be a solution to overcome geographical limitations while strengthening cultural diversity in harmonious artistic unity. Technology in this context not only plays a role as a facilitator but also as a catalyst in expanding access to inclusive and participatory artistic expressions, as well as building cultural awareness at the local and global levels.

To increase the effectiveness of similar projects, a systematic approach that integrates technical and artistic aspects is needed. Strategies that can be applied include the development of digital-based vocal training that is adaptive to the vocal characteristics of various regional music traditions, as well as the optimization of sound editing techniques to achieve homogeneous audio quality without eliminating the uniqueness of each participant. In addition, the curatorial aspect in repertoire selection is crucial to ensure a balanced representation of cultural diversity in each virtual choir production. Beyond the realm of performance, this study confirms the potential of virtual choirs as an educational tool in music learning, both at the formal and non-formal levels. The integration of technology in music education allows for an in-depth exploration of the richness of traditional music, while building cultural awareness and strengthening national identity among the younger generation. Therefore, collaboration between educational institutions, arts communities, and technology developers must be strengthened to create a more adaptive and inclusive digital-based learning model.

In the future, the development of virtual choir projects can be directed toward creating a more interactive and global participation-based platform. The use of artificial intelligence and data analytics can enhance audience experience by tailoring content based on cultural preferences. In addition, a user-generated content-based approach can be applied to expand the involvement of the international community in the production of collaborative works, so that virtual choirs become not only a medium for art documentation but also a space for dynamic and ongoing cultural dialogue.

Conclusion

This study confirms that the Virtual Choir Indonesia Menyanyi project serves as an innovative model for building harmony amid Indonesia's cultural diversity through digital technology-based musical collaboration. By combining traditional and contemporary musical elements from various ethnicities in Indonesia, this project has succeeded in creating an inclusive space of expression where individuals from different cultural backgrounds can participate in the production of collective artworks. This shows that digital technology not only functions as a facilitation tool but also as a transformative medium that allows cross-cultural interaction without geographical boundaries. Furthermore, this study confirms that virtual choirs can be an effective strategy for introducing local cultural identities to global audiences. By using digital technology as a means of cultural curation and presentation, this project shows that cultural representation in a virtual format can have a broad impact, both for participants involved in the creative process and for international audiences who appreciate Indonesia's cultural diversity. It also strengthens the argument that technology can be used to maintain and promote cultural expression in an era of globalization. This study also highlights how digital technology plays a role in the transformation of musical experiences. Data obtained from the audience survey showed a high appreciation for the representation of Indonesian culture in this project, with respondents indicating an increased understanding of and connection to Indonesian culture after participating in or watching this virtual choir production. These results suggest that the virtual choir model serves not only as a means of artistic expression but also as an instrument of music-based cultural diplomacy that is able to reach a global audience in a more interactive and accessible format.

As a broader implication, this research opens up opportunities for the development of similar projects that adapt digital technology to strengthen cultural awareness at both the domestic and international levels. The model applied to Virtual Choir Indonesia Menyanyi can be replicated

and further developed in various contexts, including music education, cultural diplomacy, and strategies for strengthening national identity through digital art. With increasing access to technology and increasing global participation in art-based digital platforms, the future of virtual choirs can be directed towards a more dynamic and interactive model. The use of artificial intelligence and data analytics in virtual choir production has the potential to enhance the personalization of audience experiences and expand the involvement of the international community in digital art collaborations. Therefore, this research contributes to the academic understanding of the relationship between technology, music, and cultural diplomacy, and offers new perspectives on how digital transformation can be utilized to strengthen cultural diversity in an increasingly digitalized society.

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