Cultural Futurists: Empowering Cultural Workers' Upskilling for Extended Reality (XR) Integration in Performative Arts

Jazmi Izwan Jamal[1*], Siti Noraisyah Abd Rahman[2], Mohd Firdaus Yahaya[3], & Ruslan Abdul Rahim[4]

[1] *Future Creative School, Akademi Seni Budaya dan Warisan Kebangsaan (ASWARA)*

[2] *Faculty of Animation and Multimedia, Akademi Seni Budaya dan Warisan Kebangsaan (ASWARA)*

[3] *Future Creative School, Akademi Seni Budaya dan Warisan Kebangsaan (ASWARA)*

[4] *Independent Researcher*

Corresponding author[1]: jazmi@aswara.edu.my*

ABSTRACT

Emerging Extended Reality (XR) technologies are rapidly evolving as the post-pandemic shift accelerates digital adoption in the cultural sector. However, cultural workers, particularly in the performative arts, face skill gaps and adaptation challenges in integrating these technologies effectively. This study explores the Cultural Futurists concept to examine how XR technologies can enhance the adaptability and skillsets of cultural workers. Using a cross-sectional survey (N=32) and thematic analysis of interviews with cultural workers participating in XR-related upskilling programmes, the study identifies key competencies such as self-motivation, reflectiveness, ambiguity competence, perseverance, digital literacy, adaptability, effective communication, coexist collaboration, and sense-making. Findings suggest that embedding lifelong learning, interdisciplinary collaboration, and ethical digital governance within training frameworks significantly improves cultural workers' ability to thrive in a

digitalised environment. Applying the Triple Helix Model, the study demonstrates how academia, industry, and government can collectively sustain future skills development. Recommendations include establishing cultural futurist labs, fostering cross-disciplinary collaboration, and integrating reflective practices into professionals. This research provides a strategic roadmap for digital adaptation, ensuring cultural heritage remains relevant, resilient, and accessible in an evolving technological landscape. Future research should explore the impact of XR on cultural digital recreation and the adaptability of cultural futurists across diverse socio-economic contexts.

Keywords: Cultural Futurists, Cultural Workers, Future-skilling

Introduction

The post COVID-19 pandemic has significantly impacted the cultural sector, exacerbating existing challenges for cultural workers, particularly early-career professionals and freelancers in the performing arts field (Shaughnessy et al., 2022; Røyseng et al., 2022). The crisis has highlighted structural inequalities, precarious working conditions, and gaps in support for grassroots organisations (Lu, 2023). However, it has also emphasised the importance of arts in supporting community wellbeing and togetherness (Shaughnessy et al., 2022).

Cultural workers have adapted by embracing digital technologies, reflecting on work patterns, and building resilience with perseverance (Lu, 2023). The post-pandemic has revealed conflicting moral outlooks in understanding cultural workers responsibilities necessitate a shift towards digital technologies (Røyseng et al., 2022). It has also triggered potential structural and behaviour

changes in cultural sectors, including a shift to digital platforms, increased focus on local provision, and greater audience engagement to enhance experiences and overcome barriers in live performances (Del Vecchio et al., 2022; Lu, 2023). These changes raise questions about necessary policy interventions, organisational adaptations, and the future skills of cultural work (Lu, 2023). Malaysia Cultural Policy (DAKEN) (2021) has been established to holistically address future-proof policy on creating sustainable high value culture. Concurrently, the policy addresses four (4) focus areas that encompass Heritage (language and literature, customs and culture, local wisdom, and cultural site), Arts (visual arts, and traditional and contemporary performing arts), Media (print and electronic media, audiovisual, and new media), and Creation (design, and creative service).

Introduction on Performative Arts

Digital transformation is reshaping the cultural sector, necessitating new skills and approaches. Lifelong learning has become crucial for cultural organisations to adapt to upskill and re-skill for future-proof (Lacedelli et al., 2019). Workshop and masterclass training programmes can update digital skills and trigger organisational transformation for cultural institutions. The digital competencies of cultural sector employees are vital for engaging with digital culture. Youth digital skills are particularly relevant for future employability and cultural consumption (Vujičić et al., 2020). This shift requires a balanced approach, fostering analytical thinking while preserving creative cultural skills (Pilege et al., 2021). As the cultural sector evolves in the digital era, understanding and responding to these technological challenges is essential for organisation to evolve.

Cultural futurism is an emerging conceptual domain rather than formally established academic discipline. It is a speculative design that intersects cultural studies, intangible cultural heritage, and artistic movements. The concept is to explore how cultural workers can anticipate and navigate future uncertainties. Powers (2020) advocates for integrating futurism into cultural studies to enhance its future-oriented perspective by adapting digital transformation. Spennemann (2023) emphasises the use of strategic foresight in preserving intangible cultural heritage maintained by the community and sustainably personal agencies from a future standpoint. Picchione (2022) examines futurism's role in revolutionising human identity through technology, prefiguring concepts like posthumanism (the idea of transcending traditional human limits through technology) and intermediality (the blending of different media). Cultural futurists advocate for inter- and transdisciplinary approaches, incorporating diverse fields such as cultural anthropology, sociology, bioethics, and emerging technology (Bachmann-Medick et al, 2020). These concepts highlight the importance of forward-thinking approaches in shaping future cultural landscapes amidst digital transformation.

Cultural futurist principles addressing Epstein's (2012) Transformative Humanities presents a forward-thinking approach that reconceptualises the role of the humanities beyond traditional analytical paradigms, advocating for their active participation in shaping cultural and intellectual futures. This perspective aligns with discussions in Cultural Futurists, where the role of cultural theorists in forecasting and constructing alternative futures is explored. Epstein (2012) argues that the humanities should not merely interpret past and present cultural phenomena but should also

innovate by generating new conceptual frameworks and transformative methodologies. This aligns with the broader discourse on cultural futurism, which positions cultural analysis as a tool for envisioning and influencing future societal structures. The synthesis of these perspectives highlights the necessity of integrating speculative methodologies and interdisciplinary approaches to expand the humanities' relevance in an increasingly complex and rapidly evolving global landscape.

Researchers have proposed integrating emerging digital technology such as Extended Reality (XR) that includes the spectrum of Augmented Reality (AR), Mixed Reality (MR), and Virtual Reality (VR) with performing arts adaptation needs while creating new opportunities for artists and cultural workers (Jamal & Abd Rahman, 2020; Lu & Lin, 2023). These Extended Reality (XR) advancements aim to provide more immersive experiences, accessible, and aesthetically digital presence for audiences while helping artists adapt the changing landscape of live events (Tsioutas & Petratou, 2020). XR technologies are increasingly being integrated into performing arts, offering new creative possibilities and audience experiences. XR allows for innovative content delivery, especially from remote locations, and has gained prominence as a deliverables method post-pandemic (Kojić et al., 2023). These technologies provide novel visual experiences, realise imaginative concepts, and enable audience participation, potentially establishing XR performance as a new art form (Lee & Kim, 2023). Practical applications of XR in performing arts include live concerts, music videos, and fashion shows (Lee & Kim, 2023). XR demonstrates the integration of metaverse platforms, motion capture, haptics, and volumetric scanning in immersive performances (Lee

et al., 2022). The intersection of XR and performing arts has sparked discussions on access, spectatorship, and ethics, reinvigorating familiar topics in a new context (Fung et al., 2022: Abd Rahman et al., 2023). Empathetically ethical scopes such as accessibility beyond the able-bodied, prosocial mannerism as well as the use of XR for social engineering, require to also be identified in ensuring equity, inclusion, and reducing bias in XR/ metaverse implementation (Fox & Guenette, 2024). As XR technology continues to develop, it is expected to play an increasingly significant role in shaping the future of performing arts.

Related Works

A recent study explores innovative approaches for cultural workers to curate, preserve and promote intangible cultural heritage using XR technologies. For instance, the digital storytelling of "Nine Dissidents" through virtual and augmented reality applications creates immersive experiences that allow users to engage with historical events, traditions, and cultural practices (Rizvić et al., 2021). Metaverse platforms and VR applications, such as the "Italian Resistance" project, demonstrate promise in safeguarding cultural assets while providing educational and entertaining experiences (Innocente et al., 2024). Moreover, "*Makyung* in Metaverse" project indicates the traditional performance using social VR which can be accessed cross-platforms to address deliverable analysis (Abd Rahman et al., 2023). Additionally, Spatial Augmented Reality (SAR) techniques like projection mapping have been employed in the Mastic Museum in Greece, creating interactive installations that connect tangible and intangible heritage elements (Nikolakopoulou et al., 2022). User studies have shown the effectiveness of these XR applications in improving accessibility and engagement in cultural

heritage preservation. These innovative approaches offer new possibilities for experiencing and preserving intangible cultural heritage, demanding the needs of skills due to the growing digital transformation in cultural fields.

Several overlooked aspects of project development utilising emerging technologies still lack the necessary skills and competencies, particularly when it comes to cultural workers adapting to transformative processes. This gap underscores the need to commit to preserving, safeguarding, and evolving cultural heritage in the face of rapid technological transformation.

The skill gaps in XR project development among cultural workers present significant challenges to the preservation and evolution of cultural heritage in the digital age. A lack of digital literacy and technical proficiency in XR tools such as 3D modelling virtual curation and immersive storytelling limits the ability of cultural workers to accurately recreate and safeguard heritage experiences. Limited interdisciplinary collaboration skills further create barriers between cultural workers, technologists and policymakers which reduces opportunities for co-created and authentic digital preservation initiatives. The inability to navigate intellectual property rights and digital ethics increases the risk of cultural misrepresentation and the loss of autonomy in heritage digitisation. These deficiencies contribute to a reliance on external creative media developers which diminishes the capacity of the cultural sector to independently lead and sustain its digital transformation. Structured training interventions are necessary to provide cultural workers with hands-on practice-based XR practical experience that fosters technical competence in a cross-disciplinary collaboration.

The integration of lifelong learning frameworks and digital capacity-building programmes will enable cultural workers to adapt to technological advancements while ensuring that cultural heritage remains authentic, relevant, and accessible in an increasingly digitised world.

The concept of a cultural futurist reflects a forward-thinking approach that goes beyond mere cultural preservation and creative content creation (Abd Rahman & Sidek, 2023). It seeks to balance the safeguarding of traditional culture with the need to strengthen cultural identity, making it resilient in the face of globalisation and digitalisation. Jamal & Abd Rahman (2024) support the cultural futurists' aim to ensure that while cultural heritage is safeguarded, it also evolves in a way that embraces modern advancements, allowing it to remain relevant and vibrant in a rapidly changing world.

Research Direction

Realising the study gap, this study examines the concept, characteristics, and skillset in defining cultural futurists that describes individuals or experts who specialise in studying and practising future cultural trends including valuable insights and guidance to cultural institutions facing the challenges of evolving technology and shifting audience expectations. The research question is as follows "What future skillsets do cultural futurist concepts provide for cultural workers in the performative arts to enhance adaptability?". This research objective is to identify how cultural futurist emerging concepts can be leveraged to improve the adaptability and skillsets of cultural workers in the performative arts in the context of digital transformation. The study aims to identify effective strategies and practices that can support the integration of emerging technologies into the preservation, curation, and promotion of cultural heritage.

The Malaysia Future Skills Framework (2024) for the financial sectors focuses on future-proofing talent by adopting digital transformation strategies that amplify technological capabilities and foster innovation to increase efficiency in productivity. Building on this framework the study adopts the Future Skills model (Ehlers, 2024), which categories future-oriented competencies into three dimensions; (1) individual development, (2) objectives, and (3) social organisation. These dimensions provide a structured approach to fostering adaptability in a rapidly evolving digital landscape.

To enhance future-proof skillset, this study specifically focuses on the digital dimension, which is intrinsically linked to creativity, social reflectiveness, and ethical certainty. These competencies are critical in navigating the complexities of digital transformation while ensuring responsible and inclusive technological advancements. The Triple Helix Model (Etzkowitz & Leydesdorff, 2000) serves as a theoretical lens to contextualise how innovation ecosystems formed by the interaction between academia, industry, and government can facilitate the continuous development of these future skills. Through the academic sector, interdisciplinary education fosters critical thinking and creativity, equipping individuals with the ability to integrate technological and artistic perspectives. The industry sector drives the application of these skills in real-world digital environments, ensuring that adaptability remains at the core of professional development. Meanwhile, government policies shape ethical and socially responsible digital frameworks, reinforcing the alignment of future skills with societal needs.

Furthermore, this study aligns with Epstein's (2012) transformative humanities, which advocates

for interdisciplinary integration between the arts and emerging technologies. This interdisciplinary approach is essential for fostering socially reflective and ethically sound digital innovations, ensuring that technological progress is harmonised with human-centric values. By bridging the humanities with digital expertise, individuals can cultivate adaptive competencies that are not only technologically proficient but also socially and ethically resilient.

Through this expanded perspective, the Triple Helix Model strengthens the Future Skills framework by embedding adaptability within innovation networks, interdisciplinary learning, and ethical digital governance, ultimately enhancing individuals' ability to thrive in an uncertain and technology-driven future.

Methods

Study Design

A cross-sectional survey was conducted involving a selected group of cultural workers (manager or officer) who participated in cultural lifelong learning programmes organised by the National Academy of Arts, Culture and Heritage (ASWARA), Malaysia. Data were collected from events held between 2017 to 2024. Participants volunteered based on their work experience as cultural workers in the creative arts discipline within their respective countries. Purposive sampling was used to determine the study group that suits the research objectives. Ethical approval for this study was obtained from the institutional research committee, and the interviews were initiated once the approval letter was granted.

Data Collection

A semi-structured interview was conducted with each participant after the completion of the lifelong learning programmes. Data were collected on-site in a designated room with the associate researcher. Participants were invited to share their testimony, which was recorded using audio recorders with additional notes taken in writing. The recorded materials were then uploaded to Google Drive for storage and later transcription. Once transcribed by the associate researcher, the data underwent a cross-checking procedure with the participants to verify its accuracy and quality.

Data Analysis

Interview data were manually transcribed and carried out thematic analysis, a method used to identify themes within data. It involves systematically coding the data to capture significant elements related to the research question and organising these codes into themes (Braun & Clarke, 2006). This method is particularly effective for exploring complex experiences or perspectives, allowing for a flexible yet rigorous analysis that is applicable for participants' testimony (Nowell et al., 2017).

The themes were clustered into three domains as outlined by Ehler (2024): individual development, objectives, and social organisation. Sub-themes from the domains were elaborated based on the future skills map illustrated on Ehler's Triple Helix model (2020) (Figure 1). Additionally, the adaptation to digital transformation within the cultural futurists concept is acknowledged beyond these domains. This is to ensure the theme is flexible to correlate with the existing future skills framework.

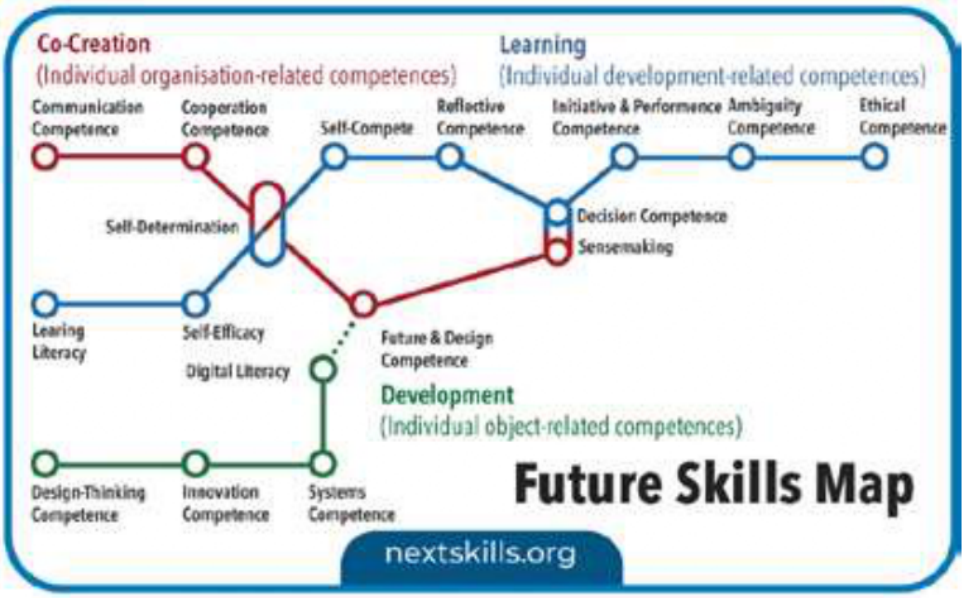

Figure 1. Triple Helix Model for Future Skills Map (Ehler, 2020).

Analysis

Results from Interview

Ministry Tourism, Arts, and Culture Malaysia (MOTAC) has been recognised by the ASEAN Committee of Cultural and Information (ASEAN-COCI) as the hub for upskilling in cultural digitalisation in the Southeast Asia (SEA) region. This aligns with the ASEAN Socio-Cultural Community Blueprint 2025 (2012), which aims to create a creative, innovative, and responsive ASEAN by enhancing the competitiveness of its human resources through lifelong learning, skills development, and the use of information and communication technologies across all age groups.

The sample profile was pre-determined based on five existing international lifelong learning programmes related to cultural heritage digitalisation efforts conducted by ASWARA between 2017 and 2024. These programmes shared the objective of nurturing digital transformation

among cultural workers by providing training in XR technologies. The event was validated by local and foreign funders as a valuable contribution to upskilling human capital for global digitalisation initiatives. Table 1 shows the programmes list.

Table 1. Lifelong Learning Programmes by ASWARA from 2017-2024

Lifelong Learning Programmes	*Year*	*Funder*	*Technology theme*	*Participation by country*	*Sample (N=32)*
Virtual Reality Cultural Heritage Storytelling Masterclass (VR17)	2017	ASEAN-COCI	Virtual Reality	Australia, Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Singapore, Thailand	8
Augmented Reality SARONG Diplomacy Workshop	2022	ASEAN-COCI	Augmented Reality	Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand	8
TERANG: Malaysia Projection Mapping Competition	2023	MOTAC, AirAsia, Epson International	Projection Mapping	Indonesia, Malaysia, Russia, Singapore, Thailand	5
Southeast Asia Futurists in Arts and Cultural Exchange Programme (SEA Futurist)	2023	MOTAC	Augmented Reality	Belgium, Indonesia, Malaysia, Philippines, South Korea, Thailand, Vietnam,	7
'GoPaint' Digital Illustration Contest	2024	Huawei Global	Digital Painting	China, Kuwait, Malaysia, UAE	4

Demographic analysis of the respondent (N=32) indicates that more than half were male (n = 20, 62.6%). The average age ranged between 25 to 30 years old. All respondents were currently employed as cultural workers serving the government or the creative industries. Additionally, over half of the respondents had more than 5 years working experience in related fields (n = 23, 71.9%). Most respondents had limited experience in utilising XR technology (n = 28, 87.5%).

Virtual Reality Cultural Heritage Storytelling was a seven day masterclass held at Kuala Lumpur, organised by Faculty of Animation and Multimedia, ASWARA. The module covered in-situ narrative construction in traditional performing arts, such as *Wayang Kulit*, Malacca historical narrative for interactive storytelling, as well as 3D modelling asset development, and Virtual Reality integration in game engine. Eleven multinational participants, consisting of cultural workers, managers, and lecturers took part in the masterclass. Moreover, twelve panellists from various institutes, companies, and associations contributed to the programme. The primary outcome of the masterclass was to train cultural workers in producing intangible cultural heritage narratives within Virtual Reality.

Figure 2. Virtual Reality Cultural Heritage Storytelling Masterclass.

Feedback from interviews with eight respondents was analysed. The majority highlighted the importance of digital technology, such as virtual reality in enhancing the narrative of heritage in a more meaningful way. They noted that the non-linear style inherent in virtual reality aligns well with the overall concept of traditional storytelling. Cultural managers addressed their unfamiliarity with using 3D tools and integrating them into virtual reality, which has motivated them to learn the productivity pipeline. Whereby, cultural workers were enthusiastic to learn more about virtual reality concepts to preserve their heritage in the form of virtual museums. Most respondents indicated willingness to adapt to new technology by recognising that virtual reality has the potential to preserve heritage through storytelling.

Augmented Reality *Sarong* Diplomacy was a three day cultural mapping programme through a series of workshops to upskill dancers, musicians, and creative media technologists to integrate artistic embodiment through interdisciplinary media technology performance. The theme revolved on unity in cultural diversity whereby the programme aimed to raise the profile of *Sarong* as a cultural embodiment (traditional outfit) shared by the people of the ASEAN region. The module covers traditional and contemporary experimental approaches to promote cultural heritage within technoculture implementation specifically using AR technology. Nine Southeast Asian participants, consisting of creative media practitioners, took part in the workshop. Additionally, three panellists from private organisations contributed to the programme. The objective of the masterclass was to upskill creative practitioners to utilise AR capabilities in preserving cultural heritage.

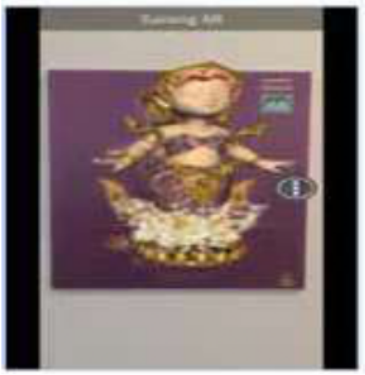

Figure 3. Augmented Reality Sarong Diplomacy Masterclass

Feedback from interviews with eight respondents expressed enthusiasm about the ease of implementing AR technology in promoting and preserving culture. They appreciate the conversion of *Sarong* textile patterns into cultural coding, which effectively triggers contextual media content. Three respondents addressed their ability to adapt and develop strategies for integrating artistic embodiment with media technology across various cultural patterns and symbols. Additionally, four respondents emphasised that the cross-disciplinary collaboration between dancers, musicians, and media technologists significantly impacted their overall approach, learning a new way of thinking about working culture. The innovations introduced not only supported a reduction in execution time but also ensured that technology was carefully utilised for preservation in both digital and physical contexts.

The first international Malaysia Projection Mapping Competition (TERANG) held at the Malaysia Tourism Centre (MaTiC) in Kuala Lumpur co-organised by ASWARA and Filamen (new media art collective). The projection mapping was displayed for nine days in October 2023, illuminating the colonial historical building. A total of fourty eight media artworks were submitted from around the world. The objective of this

competition was to promote Malaysia's heritage building through cultural narrative enhancement using luminous technology grounded in the fundamentals of motion graphics.

Figure 4. Projection Mapping Competition (Indian Heritage Theme) Showcase at Matic

Five respondents highlighted the importance of reviving historical values through creative technologies while preserving the building structure. Two respondents mentioned that, due to international distance, they could not attend physically but managed to participate remotely. They gathered information from the website, social media, and geolocation application to deepen their understanding of the subject. One international respondent mentioned, "*I search the building on wiki, then I use Google Maps to estimate the facade size, and MaTiC Instagram to see night conditions*". Another respondent emphasised that the competition should continue because it helps preserve and promote the national heritage building, while simultaneously creating opportunities for creative practitioners to play vital roles in these efforts.

The Southeast Asia Futurists in Arts and Cultural Exchange Programme (SEA Futurist) is a cultural mobility initiative designed to share best practices in digitalising

intangible cultural heritage artwork using cutting-edge technology. This five-day module covers a series of masterclasses on traditional dance, *Wayang Kulit* motion characteristics, and AR technology. Nine multinational participants including creative practitioners, cultural workers, and lecturers were invited to participate in this programme. Eighteen panellists consisting of industry practitioners, academicians, performing artists, and technology collectives, contributed to the sessions. This programme deliberately preserves cultural performance characters through the discipline of motion data capture and its application in AR. The programme outcome culminated in a showcase of the artists' AR character designs, which were then exhibited at the Kuala Lumpur city centre.

Figure 5. Augmented Reality Dance Artwork During SEA Futurist

The majority of respondents expressed feeling overwhelmed by the focus on core traditional performance values, which they believe are often missing in most technology-based workshops. They highlighted the workshop modules successfully balanced cultural identity with technological advancement that creates a harmonious communication between purists ideology and technologist. Three respondents specifically addressed the importance of learning from local wisdom, such as

the spiritual element of *angin* (motion), which is divided into seven stages that can be applied to self-improvement. All of the respondents were highly motivated to learn how the transformation of culture can be embedded in modern technology while maintaining authenticity.

The digital illustration 'GoPaint' is a visual art contest conducted using the Huawei MatePad tablet, which received more than six hundred entries globally. The competition's theme was culture, city, character, and *Batik* which aligned with digital cultural promotion efforts associated with cultural policy (DAKEN, 2021). Malaysian participants won several international prizes because of their creativity, quality, and authenticity. The artworks won encompassed from depiction of diverse characters of a lion dance performance, scenic illustration of a historic city, and to variation patterns of *Batik* design. Furthermore, the contest served as a catalyst for cross-cultural exchange, encouraging young artists and cultural workers to showcase their interpretations of cultural themes through digital media.

Figure 6. *Batik* Theme Digital Illustration Exhibition Using Huawei Matepad Tablet

All respondents strongly supported the idea that digital drawing activities are part of preservation and promotion efforts to represent cultural identity. One respondent enhanced authenticity through capturing a moment at a specific location by mentioning:

> "*When I walk on the street and stop for a while to take my tablet and draw. I do this because I (can) feel the place. This tech has the basic tools as (an) artist to draw.*"

All respondents agreed that through this drawing, the audience can appreciate the artists' narrative and intention to communicate their cultural experiences to the world. Moreover, three respondents suggested that this visual appreciation process could transform the perception of cultural identity, particularly in relation to specific location and festivals.

Thematic Analysis

Thematic development involves systematically categorising data into patterns to facilitate in-depth analysis. From the thirty two interviews data were extruded into the predominant three dimensions of individual development, objectives, and social organisation.

Individual development dimensions revealed four predominant themes: (1) self motivation, (2) reflective, (3) ambiguous, and (4) perseverance. Self motivation reflects a strong desire to gain a deeper understanding of cultural identity that can enhance an individual's intellectual and moral development. This motivation is rooted in a deep respect for one's cultural roots and a sense of responsibility to maintain cultural continuity. Reflectiveness in a multicultural environment, especially

with the advancement of globalisation, increases awareness of the personal tendency towards spontaneous reaction. There is a shared sentiment that technology can ease the process of digital preservation, a perspective that should be embraced by every cultural worker. Ambiguity competence involves adapting to and being flexible with technological advancement. It requires an open-minded approach to different perspectives and a willingness to negotiate collective solutions. Perseverance emphasises the importance of sustained effort and commitment to long term goals. Cultural workers must be resilient in the face of globalisation and digitalisation challenges while maintaining individuals adaptability and persistence.

Individual object-related competence for development indicated two key subcomponents that are understanding (5) digital literacy processes and (6) adapting to a new process. Respondents highlighted the importance of utilising digital tools for cultural preservation in a more innovative way to communicate ubiquitously. This exploration is essential for cultural workers to learn, discuss, and effectively engage with digital platforms in the digital age. Digital platforms offer omni-channel communication when integrated with the metaverse, and provide a highly immersive experience through the use of XR technology. Therefore, adaptability is crucial for cultural workers as they learn about the tools, processes, and transform their ways of thinking. It is important for the mind to remain open to change, allowing individuals to learn new things in a short period of time. Adopting a lifelong learning approach is one of the strategies to embrace a growth mindset and evolve together in the digital landscape.

Dimensions on social organisation revealed three components that were (7) communication, (8)

coexist collaboration, and (9) sense-making realisation. Respondents emphasised that effective communication among peers and with the audience is fundamental to any cultural projects. The dissemination of particular identities, when properly documented and shared, helps break down the barriers of cultural divides. Inclusivity in cross-cultural training ensures equitable access to both culture identity and digital technology, fostering coordinated efforts for cultural preservation. Then, this leads to coexist cultural collaboration, enabling the adaptation of diverse perspectives from cultural purists, technologists, and futurists. Coexistence in this context addresses imbalances through mutual respect of shared decision making. This collaboration strengthens the sense-making realisation within the cultural community, enabling them to interpret complex situations of cultural survival in the digital era. This realisation is key to creating a shared vision and understanding within multicultural communities, aiding them to adapt to new cultural practices in response to societal changes.

Findings and Discussion

The thematic analysis of the data derived from thirty two interviews revealed key insights into three predominant dimensions: individual development, objectives, and social organisation. Each dimension provides a deeper understanding of the competencies and challenges faced by cultural workers in the context of globalisation and technological advancement.

The analysis identified of individual development comprises four predominant themes within the dimension of individual development: self-motivation, reflectiveness, ambiguity competence, and perseverance. Self-motivation emerged as a crucial factor, reflecting a strong intrinsic drive among cultural workers to deepen their

understanding of cultural identity. This drive is rooted in a profound respect for one's cultural heritage and a responsibility to ensure its continuity.

The findings suggest that this motivation is integral to enhancing both intellectual and moral development, positioning cultural workers as stewards of their cultural legacy. Reflectiveness was highlighted as particularly important in the increasingly globalised and multicultural environment. Respondents noted that globalisation heightens the need for cultural workers to be aware of their spontaneous reactions and biases.

The integration of technology into cultural preservation efforts was seen as beneficial, with a shared belief that digital tools can simplify and enhance the process of maintaining cultural heritage. The implication is that reflectiveness allows cultural workers to navigate the complexities of a multicultural world more effectively. Ambiguity competence is essential for adapting to the rapid technological advancements that define the digital age.

The ability to remain open-minded and flexible, while negotiating collective solutions, was identified as a key competence for cultural workers. This theme underscores the importance of being able to operate in uncertain environments, suggesting that those who can embrace ambiguity are better equipped to innovate and sustain cultural practices in a changing world.

Perseverance was also a significant theme, emphasising the need for sustained effort and commitment to long-term goals. Cultural workers must exhibit resilience, particularly in the face of the challenges posed by globalisation and digitalisation. The findings

suggest that perseverance is not only about enduring hardships but also about maintaining adaptability and a persistent focus on cultural preservation.

The analysis of object-related competence focused on two key subcomponents: understanding digital literacy processes and adapting to new processes. Respondents highlighted the importance of digital literacy in cultural preservation, noting that effective use of digital tools can facilitate more innovative and ubiquitous communication. The integration of digital platforms, especially when linked with emerging technologies like the metaverse and XR, was seen as a critical development for cultural workers. This suggests that digital literacy is becoming increasingly central to the effectiveness of cultural preservation efforts. The ability to adapt to new processes was also emphasised as crucial. Cultural workers must not only learn about new tools and technologies but also transform their ways of thinking to embrace these changes. The findings indicate that a lifelong learning approach, which fosters a growth mindset, is essential for evolving within the digital landscape. This adaptability ensures that cultural workers remain relevant and effective as the digital environment continues to evolve.

The dimension of social organisation revealed three components: communication, coexist collaboration, and sense-making realisation. Communication was identified as fundamental to the success of cultural projects. Effective communication among peers and with the audience is necessary for the dissemination of cultural identities. When cultural identities are properly documented and shared, they help to break down barriers and promote cultural understanding. This underscores the role of communication in bridging cultural divides and ensuring that cultural preservation efforts are inclusive and accessible.

Coexist Collaboration focuses on the importance of working together across diverse cultural perspectives, particularly between cultural purists, technologists, and futurists. This type of collaboration requires mutual respect and shared decision-making, allowing different viewpoints to coexist and contribute to a richer, more nuanced approach to cultural preservation. The findings suggest that coexist collaboration is vital for addressing imbalances and fostering innovation within cultural work.

Sense-making realisation involves the collective interpretation of complex situations related to cultural survival in the digital era. This component highlights the need for a shared vision and understanding within multicultural communities, enabling them to adapt to new cultural practices and respond effectively to societal changes. The findings indicate that sense-making is critical for aligning community efforts and ensuring that cultural practices are resilient and adaptable in the face of change.

The multifaceted competencies that are essential for cultural workers to effectively navigate the challenges of globalisation and digital transformation. The findings underscore the importance of self-motivation, reflectiveness, ambiguity competence, perseverance, digital literacy, adaptability, effective communication, coexist collaboration, and sense-making. These competencies, when aligned with cultural futurist concepts, can significantly enhance the adaptability and skillsets of cultural workers. By leveraging these concepts, cultural workers can better preserve and promote cultural heritage in a rapidly changing digital landscape, ensuring that cultural practices remain relevant, resilient, and inclusive. The research demonstrates that integrating cultural futurist principles into the development of

these competencies will empower cultural workers to thrive amidst the complexities of digital transformation, ultimately enabling them to contribute more effectively to the evolution of cultural practices in the modern world.

To effectively integrate cultural futurist concepts into the adaptability and skills development of cultural workers in the performative arts, a three-tiered strategy can be implemented. First, establishing Future Cultural Futurist Labs for both physical and virtual spaces will enable cultural workers to experiment with emerging technologies such as XR, AI-driven storytelling, cultural IP protection, and metaverse performances. This should be developed in partnership with tech firms, universities, and cultural institutions, offering structured hands-on training in digital literacy through workshops and short-term fellowships. Second, embedding reflective and ambiguity competence training into professional development programmes will strengthen self-motivation, adaptability, and innovation. This can be done by integrating interactive case studies and live simulation exercises that allow cultural workers to engage with real-world digital challenges while fostering a growth mindset. Lastly, launching coexist collaboration hubs platforms that bring together cultural workers, technologists, and futurists will enhance sense-making realisation and cross-disciplinary innovation. These hubs will facilitate joint cultural-technology projects, mentorship programmes, and think-tank discussions, ensuring cultural workers are not only technologically skilled but also equipped with the resilience and strategic vision to navigate the evolving digital landscape while preserving cultural integrity.

Limitations

This study for exploratory interviews often involves a small number of participants, which can limit the generalisability of the findings. The insights gained

may be highly specific to cultural workers and towards major samples within the Southeast Asia region, and may not represent the broader population. Predominantly, the samples may be subjected to scenarios such as social privilege or technological infrastructure within the specified developing countries. The nature of semi-structured interview may be affected by bias into the data collection process because it can lead to subjective interpretations. This may not provide the depth needed for a comprehensive analysis. Also, the insights gathered during the interview may be influenced by the specific time and context which they are conducted. Changes in external conditions (social, economy, COVID, and technological factors) can render the findings less relevant over time. By acknowledging these limitations, researchers can provide a more nuanced interpretation of their findings and suggest areas for further study or methodological improvements in future research.

Conclusions and Recommendations

Digital transformation in the cultural sector has created both challenges and opportunities for cultural workers, particularly in the performative arts. The concept of cultural futurist plays a crucial role in enhancing adaptability and developing essential skillsets for navigating this shift. By focusing on individual development, objectives, and social organisation, cultural workers can build competencies that support innovation, resilience, and interdisciplinary collaboration. Integrating emerging technologies with artistic practices ensures that cultural heritage remains relevant, inclusive, and adaptable in a rapidly evolving digital landscape.

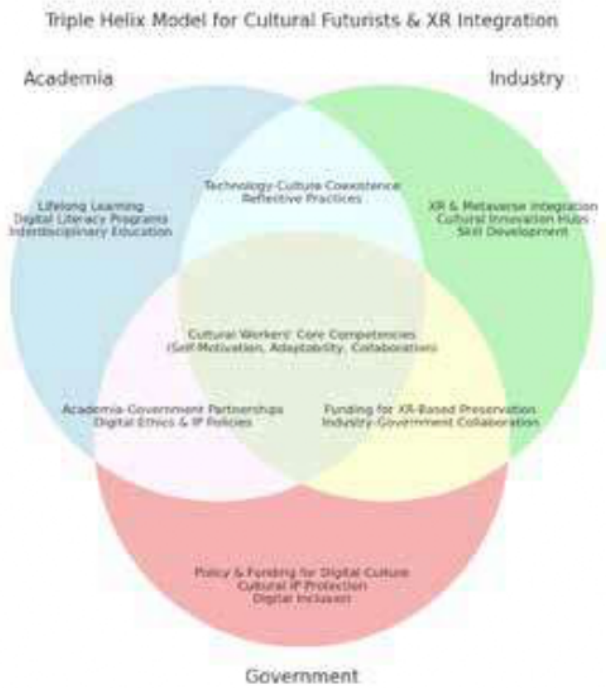

Figure 7. Recommendations for Core Competencies of Cultural Workers In-Relating With Academia, Industry, and Government.

To enhance the adaptability and competencies of cultural workers in the performative arts, cultural futurist concepts should be embedded into training programmes. These recommendations focus on developing key skillsets such as self-motivation, reflectiveness, ambiguity, competence, perseverance, digital literacy, and adaptability, ensuring cultural workers remain resilient and innovative in the face of digital transformation.

a. Implement Lifelong Learning in Digital Literacy Programmes

i. Encourage a culture of lifelong learning by offering continuous education opportunities, workshops, and resources tailored for cultural workers.

ii. Provide structured digital literacy training focused on emerging technologies such as XR, AI-driven storytelling, blockchain for cultural IP protection, and the metaverse

iii. Develop modular learning pathways that allow cultural workers to gain certifications and hands-on experience in digital tools while fostering adaptability in the evolving digital landscape.
iv. Facilitate partnerships with tech firms, universities, and cultural institutions to ensure access to the latest methodologies and platforms.

b. Establish Cross-Disciplinary Collaborative Networks.

i. Create collaborative networks that bring together cultural purists, technologists, and futurists to work on joint projects that balance cultural preservation with technological innovation.
ii. Facilitate coexist collaboration hubs where diverse perspectives can coexist leading to the development of inclusive and future-proof cultural projects
iii. Encourage interdisciplinary mentorship programmes that connect experienced cultural workers with digital transformation specialists to exchange knowledge and strategies.

c. Integrate Reflective Practices into Professional Development.

i. Incorporate structured reflective practices such as journaling, peer discussions, and guided reflection sessions into daily routines.
ii. Develop frameworks for critical self-assessment that encourage cultural workers to analyse their decisions and actions in the context of cultural preservation and digital transformation.
iii. Provide digital reflection tools and platforms where cultural workers can document, share, and evaluate their experiences to enhance learning and adaptability

d. Develop Sense Making Frameworks for Digital Cultural Adaptation.

i. Implement organisational sense-making frameworks that help cultural workers collectively interpret and respond to the complexities of cultural survival in the digital age.
ii. Guide decision-making processes by aligning organisational visions and strategies with emerging cultural trends and societal changes
iii. Encourage participatory decision-making structures that allow cultural workers to contribute insights on navigating digital disruption while maintaining cultural continuity.

e. Advocate for Inclusive Policy Implementation in Cultural Institutions and Governmental Practices.

i. Engage policymakers and institutional leaders to integrate cultural futurist principles into national and regional cultural policies.
ii. Develop policy frameworks that promote accessibility, digital equity, and innovation in cultural work.
iii. Encourage funding for research and development initiatives that support cultural workers in leveraging digital tools for cultural preservation.

By embedding these strategies into professional development programmes, cultural workers in the performative arts can effectively adapt to digital transformation, foster innovation, and ensure cultural resilience in an ever-evolving global landscape. These recommendations aim to provide cultural futurists with the skills, resources, and support needed to successfully navigate digital transformation while preserving and promoting cultural heritage in a way that is relevant, resilient, and forward-looking.

The study highlights how XR can transform the performative arts by equipping cultural workers with essential skills for digital adaptation. It emphasises the importance of interdisciplinary learning, where academia, industry, and government collaborate to support lifelong skill development. By merging artistic traditions with emerging technologies, cultural workers can create socially reflective and ethically responsible digital innovations. To sustain this transition, fostering continuous learning, building collaborative networks, and integrating reflective practices are key strategies. These efforts will empower cultural workers to preserve, promote, and redefine cultural expressions in the evolving digital landscape. Future research should explore the long-term impact of XR on cultural preservation and the adaptability of cultural futurists across diverse socio-economic contexts. Investigating interdisciplinary collaborations between artists, technologists, and policymakers can provide insights into fostering technology innovation and cultural resilience.

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