The rise of artificial intelligence as the future of Korean culture diplomacy

Ridha Nahdhiyah Alma Amaliyah[*], Sidik Jatmika, Surwandono

Department of International Relations,
Universitas Muhammadiyah Yogyakarta
Brawijaya Street, Bantul, Yogyakarta, Indonesia
Email: ralmaamaliyah@gmail.com, Phone +62 274 387656

Abstract The COVID-19 pandemic ushered in a new era of technology, pushing everything online and necessitating human adaptation to computers. Industry 4.0 proved invaluable during this pandemic, with Artificial Intelligence (AI) emerging as a key player, particularly in the beloved South Korean music industry, which enjoys international acclaim. The pandemic played a significant role in the increased use of AI within the K-POP industry, with the emergence of the Aespa Girl Group being a pivotal moment in shaping a futuristic concept. This research aims to investigate the recent surge in AI usage as a futuristic K-Pop concept through a qualitative literature study method. This paper contends that AI has the potential to profoundly impact Korean cultural diplomacy, serving as a game-changing element in the realm of digital diplomacy. While AI has traditionally been applied in high-context scenarios, such as search engines or high-tech automotive control systems, its application in cultural contexts could propel South Korea's cultural diplomacy to unprecedented heights, rendering the concept difficult for other nations to replicate.

Keywords: artificial intelligence; diplomacy; Korean wave; pop culture

INTRODUCTION

Globalisation has had far-reaching effects, both positive and negative, one of which is digitisation. This phenomenon is called Industry 4.0, or the cyber-physical system, characterised by a synergy of automation and advanced technology (Andrew, 2022). It represents a transformative period for companies, enabling them to manufacture, enhance, and distribute products by integrating cutting-edge technologies. Digital technologies have paved the way for enhanced automation, predictive maintenance, process optimisation, and, most importantly, unprecedented levels of efficiency and responsiveness (Chen, 2020). Four key technologies underpin Industry 4.0: the Internet of Things (IoT), Cloud Computing, Artificial Intelligence (AI) and Machine Learning, and Edge Computing.

[*] Corresponding Author

The COVID-19 pandemic further bolstered this industry as it swept across the globe. Consequently, platforms like Zoom and Google Meet emerged as alternative communication tools for various sectors, from businesses to education. For instance, China utilised AI technology as an identification tool to differentiate pneumonia scan results among medical professionals (KOMPAS.com, 2020). South Korea has embarked on a journey to enhance its artificial intelligence (AI) capabilities, with aspirations to become a prominent global player in AI technologies (International Trade Administration, 2022).

A survey conducted by the Korea Development Institute (KDI) involved 1,000 companies. According to a report from January 2021, 91.7% of AI-utilising companies in South Korea were large conglomerates, while small and medium-sized businesses accounted for 8.3% of AI implementation. The most concerning revelation was the low adoption rate of AI technology among Korean companies, standing at a mere 3.6 per cent (Kim, 2021).

Players in the Korean entertainment industry have harnessed AI Technology to maintain competitiveness in challenging circumstances. Companies like SM Entertainment and HYBE Lab have begun developing paid applications to enable fans to enjoy their favourite idols' concerts via their mobile devices, with the concert recordings taking place in studios to minimise COVID-19 transmission risks. This underscores the pandemic's role as a catalyst for adopting advanced technologies during and after the crisis.

The rapid pace of technological advancement is undeniable, obliging us to adapt to the changing times. The key differentiator lies in how we utilise these technologies. South Korea, for instance, is leveraging digital diplomacy to continue drawing global attention through cultural diplomacy. South Korea's rich K-pop culture is a valuable asset in this regard, initially promoted through social media and official government channels (Marwiyah, 2021). Over time, there is a growing need for innovative digital diplomacy strategies to capture the international community's interest. This raises the question of whether the emerging digital diplomacy approach incorporates Artificial Intelligence (AI).

The convergence of culture and digitalisation presents an intriguing prospect. In recent years, particularly following the onset of the COVID-19 pandemic, the world witnessed the emergence of the first AI-powered K-Pop group, Aespa, affiliated with the SM Entertainment agency. Aespa introduced a unique concept where each member possesses an AI avatar, with "Aespa" representing "Avatar, Experience, and Aspect." According to Lee Soo Man, the founder of SM Entertainment, the futuristic AI concept has been a long-standing aspiration (CNN Indonesia, 2020). This innovative concept generated a spectrum of responses on Korean social media, ranging from positivity to criticism. Subsequently, several other companies began launching K-

pop groups with AI-themed concepts, including AI entities designed to become K-pop idols themselves.

Many industries worldwide use Artificial Intelligence, but recently, AI has been rife in K-pop, which has increasingly seen its rapid development. In the previous argument, AI is only used as a translation tool on social media or to analyse certain data. Researchers want to discuss how this Artificial Intelligence (AI) technology can impact South Korea. Especially since 2021, many AI trends have been used as futuristic concepts in K-pop. The author argues that AI can have a huge impact, especially on South Korea's digital diplomacy and, thus, its economy. We can see the rapid development of technology in South Korea. While others are still holding concerts offline, the Korean music industry has dared to take a risky step with online concerts and using AI as an Idol.

The rapid technological advancements in South Korea are evident. While some industries continue to host offline concerts, the Korean music industry has taken a bold step by venturing into online concerts and employing AI in entertainment. As highlighted in the introduction, AI was previously utilised primarily as a social media content reading tool or for data analysis, often requiring AI program assistance. For example, Parc and Kim (2020) noted that music sales and marketing predominantly occurred offline in the past, requiring consumers to visit physical stores. However, in today's digital era, music is widely accessible through online platforms like Spotify, Joox, iTunes, and others, with AI algorithms playing a significant role in recommendations and search results. Additionally,   Kang, J. H. & Park (2020) harnessed AI as a predictive tool for music video popularity, similar to Jabade et al. (2019), where AI was employed to gauge song popularity. These studies underscore the pivotal role of AI in data collection and analysis.

Furthermore, Yae and Kim (2021) delved into the perception of AI Translate tools on social media, particularly on platforms like Twitter, among K-pop fans. Their research revealed that K-pop enthusiasts often mistrusted AI translations on Twitter, citing inaccuracies in translating Korean to English and other languages. This scepticism led many users to prefer human translators over AI-based options.

Another study by Kang et al. (2022) examined the use of 'AI Private Call' as a case study, where fans listen to voice messages from idols generated by AI voice technology. In the realm of Artificial Intelligence applications in the K-Pop industry, most existing studies have a somewhat 'static' focus, primarily utilising AI as a database or solely as an analytical tool.

Marvin et al. (2022) use those debates to reflect on experiments with Urban AI in China. The key issue is whether AI offers something distinctive or different compared with the logic and imaginary ideas of the smart city. This research provides a distinctive framework for situating future applications of urban AI management in China and identifies future urban research priorities.

Diplomacy encompasses various forms, including Gastro Diplomacy, Cultural Diplomacy, Public Diplomacy, and the recent emergence of Digital Diplomacy. These diplomatic forms are interconnected in different ways. Cultural diplomacy, a subset of public diplomacy, is a form of soft power diplomacy employed by countries to advance and safeguard their national interests. Cultural diplomacy encompasses various elements such as art, language, and information (KEMLU, 2021).

Drawing from the perspective of Warsito & Kartikasari (2007), cultural diplomacy involves a country's efforts to advocate for its national interests through cultural dimensions, spanning from micro-level domains like education, science, sports, and the arts to macro-level aspects like propaganda. The primary objective of cultural diplomacy is to shape the public opinion of individuals from other countries in favour of a specific foreign policy. The actors involved in cultural diplomacy are diverse, extending beyond traditional state-to-state interactions to include celebrities, influential academics, and non-governmental organisations.

Consistent with the aforementioned viewpoint, Cummings (2003) states that cultural diplomacy plays a pivotal role in enhancing international relations by fostering mutual understanding and trust among nations by promoting arts, education, and cultural exchanges. States can actively or indirectly promote their culture. Direct promotion involves government-to-government initiatives, while indirect promotion involves various actors, with K-pop idols being particularly influential through mass media platforms like YouTube and other social media channels. The rapid growth of K-pop establishes an indirect connection between cultural and digital diplomacy.

This paper marks the first instance of a discussion regarding the potential of AI in cultural diplomacy, especially given the recent surge in K-pop's popularity, where AI serves as a groundbreaking medium to capture greater global attention. As South Korea emerges as a rising star, it garners significant interest worldwide. The nation's remarkable advancements in cultural diplomacy have had a substantial impact, compelling many individuals worldwide to express eagerness to learn the Korean language and engage with Korean culture on a massive scale.

METHODOLOGY

In this paper, the author employs qualitative research methods. According to Lofland et al. (2006), primary data sources in research encompass words, actions, and information derived from various documents. These resources include data obtained from books, scientific journals, news outlets, archives, and official manuscripts (Moleong, 2010). The research in question will examine the emergence of the AI trend as a futuristic concept in K-pop and its potential role as a catalyst for the advancement of future cultural diplomacy.

RESULTS AND DISCUSSION
### The Emergence of AI in K-pop

Recently, South Korea has emerged as a nation that excels in leveraging cultural diplomacy, surpassing Japan's Cool Japan initiative. South Korea epitomises the essence of Soft Power, steadily and quietly ascending to the pinnacle of global recognition. As per Martin Roll (2021), the term "Hallyu" is a Chinese word that means "Korean Wave". It is a collective term used to refer to the phenomenal growth of Korean culture and popular culture, including everything from music, movies, and dramas to online games and Korean cuisine. Roll further identifies five crucial factors essential for sustaining Hallyu's popularity and expanding its reach into other markets: heightened popularity within Korea, increased investment in research and development to enhance design, production, and overall quality, efficient management of all touchpoints, ongoing support from the Korean government, and a lack of animosity towards Korea in the Southeast Asian region.

Walsh (2014) asserts that Hallyu has profoundly impacted Asian societies, reshaping their perception and positioning Korea as an integral part of the developed Western world. This shift in perception has empowered the Korean government to pursue its national interests across various domains, including diplomacy, investment, education, and trade. Notably, Korean has recently become a sought-after language for international learners (Yeung, 2023), underscoring South Korea's success in promoting its cultural diplomacy to the extent that the global community expresses interest in acquiring the language. The rapid rise in popularity, particularly in K-pop music, has significantly contributed to the South Korean economy, providing relief during the 1997 Asian financial crisis. Hallyu has played a pivotal role in boosting the South Korean economy, with exports reaching USD 9.48 billion. K-Pop merchandise, in particular, substantially contributes to this figure, generating revenues of USD 114.5 million (Nensee, 2022).

South Korea has effectively capitalised on the situation to bolster its financial resources. During the COVID-19 pandemic, when regulations mandated people to stay home, the K-pop industry emerged as South Korea's saviour, preventing a financial downturn. As reported by CNN Indonesia (2020), sales of K-pop albums experienced a significant surge, with fans favouring album purchases amid the absence of live concerts (Figure 1). This circumstance underscored the growing importance of technological advancement. Many industrial companies endeavoured to ensure a continuous financial inflow through innovative ideas like online concerts, a strategy other music companies did not initially embrace, but South Korea seized the opportunity.

Pahlevi (2022) elaborates in his article that K-pop album sales consistently increased over time. The number of albums sold reached 22.47 million in 2018, rising further to 24.15 million in 2019. Despite the challenges posed by the pandemic in 2020, sales remarkably soared by 60.25%, reaching 38.69 million albums. South Korea's adept

management of the K-pop industry played a crucial role in stimulating the global economy during a challenging period, with online sales playing a pivotal role in this success.
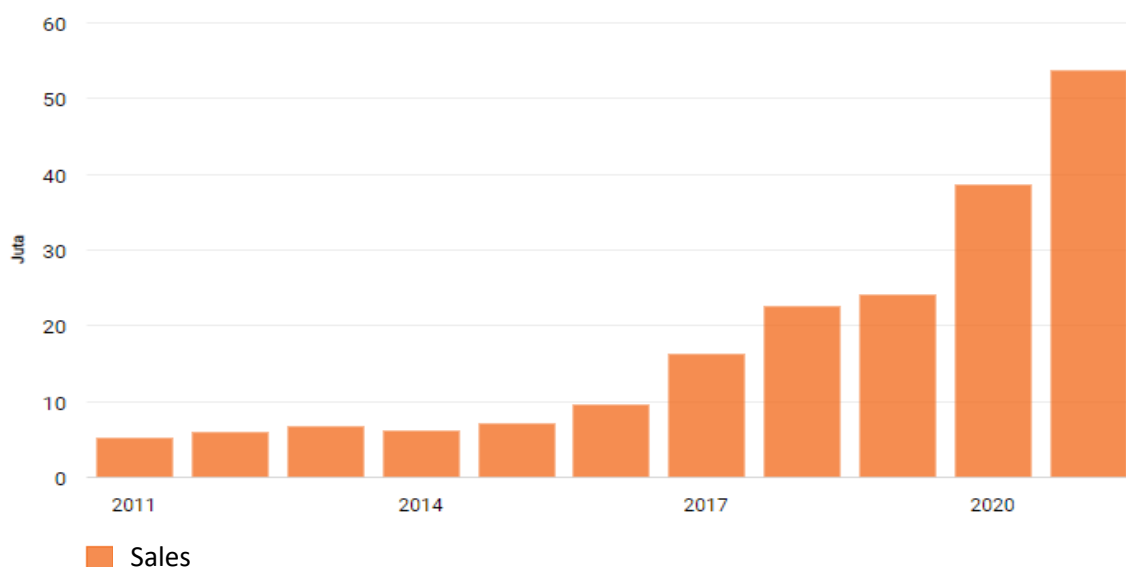
Figure 1. K-pop Physical Album Sales Data
Source: Databoks (2023)

In 2020, BTS introduced a groundbreaking concept using Extended Reality (XR) technology, a fusion of VR, AR, and MR technology, to conduct online concerts. As reported by Wuwur (2022), BTS's online concerts in 2020 offered a visually spectacular experience, creating the illusion of the audience being in a different location. Additionally, NCT 127 held a profitable online concert on a V-live fan application platform (POPBELA, 2020). In 2021, at the ALIVE event, Lim Yoon Taek, a singer who passed away nine years ago, was resurrected as a hologram, appearing alongside Ulala Session members and Lee Seung Cheol, with AI technology contributing to this innovative presentation (Han Sol, 2021). Recognising the profit potential, idol group agencies have engaged in fierce competition to develop fan applications that facilitate interactions, offer free concert services, and provide insights into the daily lives of artists through monthly or yearly subscriptions.

As mentioned in the introduction, South Korea is actively positioning itself as a global contender in the AI technology market. Notably, there has been a noticeable surge in adopting AI as a futuristic concept in K-pop. This emerging trend is a significant catalyst for integrating Artificial Intelligence (AI) into South Korean cultural diplomacy.

Towards the end of 2020, SM Entertainment unveiled a novel eight-member girl group that has garnered considerable attention due to its distinctive concept, as reported by Azzahra (2022). Its futuristic approach sets this group apart from previous K-pop generations,

featuring four Aespa members alongside four AI-generated avatar members. AsiaQuest Indonesia (2020) elaborates that Lee Soo Man, the chief producer at SM Entertainment, expressed his intention to elevate K-Pop to new heights. Embracing the digital era, SM Entertainment launched an innovative initiative, the SM Culture Universe, aiming to bridge the gap between human life and AI-driven robots. Aespa represents a seamless connection between the tangible and virtual realms, envisioning a future where fans can uniquely idolise human and virtual idols (Figure 2). Unsurprisingly, Aespa has earned the distinction of being the industry's first metaverse girl group (Dong, 2023).

Figure 2. Aespa with their AI counterparts
Source: NYLON (2023)

Figure 3. Members of the MAVE girl group
Source: AllKpop (2023)

Moreover, as a testament to the success of the metaverse and AI concepts, Aespa received an invitation to address the United Nations (UN) under the title "Next Generation Next Level" during the High-Political Forum Annual Meeting held at the UN General Assembly Hall in New York. E. Cha (2022) reported that their speech revolved around Sustainable Development, highlighting how the metaverse connection could contribute to future sustainability efforts.

Following this milestone, subsequent years witnessed a proliferation of K-pop groups featuring AI members or incorporating AI technology (Figure 3). For instance, the SUPERKIND Boy Group includes an AI member (Koreaboo, 2022). In early February, the girl group MAVE resurfaced, boasting four AI members capable of communicating in four different languages (Reuters, 2023b).

The rapid advancement of technology can turn what was once deemed impossible into reality. Presently, the concepts of the metaverse and AI are not widely embraced. However, the prominence of groups like Aespa and MAVE has demonstrated the surging popularity of these two girl groups. The K-pop landscape could be teeming with high-tech entities in the coming five to ten years. Consequently, it can be inferred that the South Korean government has the opportunity to elevate its cultural diplomacy using the metaverse or AI to promote national interests. The government has outlined plans to invest approximately $1 billion in establishing a prestigious research centre, poised to become the nation's primary hub for research and development in the AI domain (Marquart, 2020).

In the contemporary era, the digital realm has become non-negotiable. As the saying goes, modern problems necessitate modern solutions. Thus, in the digital age, countries have the option to engage with AI or collaborate with AI as a pragmatic approach. For instance, China has initiated the integration of Artificial Intelligence into its military, as Allen (2022) observed. Therefore, it is not unwarranted for Kļaviņš (2021) to assert that AI technology holds the potential to introduce political and economic shifts. Kļaviņš further elucidates that diplomacy, an integral component of foreign policy and international policymaking, is profoundly affected by the promise of AI as a public good and a sustainable competitive advantage. However, it is essential to note that the application of AI objectives varies among countries and is not exclusively linked to competitive aspects. AI can serve practical purposes, such as expediting information dissemination or enhancing citizen services. AI technology is believed to reshape diplomatic practices by mitigating language barriers between nations through language processing algorithms and identifying potential risks and vulnerabilities for diplomats. Additionally, it can facilitate mission recovery through image collection, recognition, and information sorting (Kļaviņš, 2021).

With the ascent of AI technology as the future of South Korean cultural diplomacy, the realm of digital cultural diplomacy is poised to

reach new heights, provided that South Korea effectively taps into the significant potential of AI. This aspiration is no longer confined to mere speculation. According to the International Trade Administration (2022), Republic of Korea (ROK) officials recognise AI as a pivotal element in enhancing the country's standing in the ICT sector. They are dedicated to establishing Korea as an AI powerhouse.

In support of this endeavour, the ROK Government unveiled its inaugural national AI strategy in 2019, emphasising substantial investments in AI infrastructure and the widespread application of AI technologies across various industries. Additionally, in 2020, the government launched the Digital New Deal, a national strategy geared towards digital transformation. This initiative envisions state-led endeavours in industry and education aimed at harnessing the potential opportunities presented by AI. Furthermore, the country has outlined a fiscal 2022 budget plan earmarking nearly $3 billion for AI technology-related projects. Korean companies actively contribute to the country's AI research and development efforts, with many AI startups emerging. Prominent Korean ICT companies, including Samsung, LG Electronics, internet giants Kakao and Naver, and major telecom companies such as SK and KT, have significantly invested in Artificial Intelligence (International Trade Administration, 2022).

South Korean President Yoon Suk Yeol met with OpenAI CEO Sam Altman to encourage domestic competition in artificial intelligence (AI), a development currently pending parliamentary approval (Reuters, 2023). Should this initiative come to fruition, South Korea's digital diplomacy may experience rapid growth, parallel to the enduring ascension of its cultural diplomacy.

Despite its status being subject to ongoing agreement negotiations, it has come to light that South Korea enacted an Artificial Intelligence (AI) law on February 23, 2023. In essence, the AI Act is designed with dual objectives: to bolster the AI industry and related technologies while simultaneously safeguarding users of AI-based services. This safeguarding is achieved by ensuring the reliability of AI systems, including imposing stricter notification requirements for high-risk AI and introducing certification systems for AI trust (Roh & Nam, 2023). In principle, the legislation is anticipated to encompass the following key aspects: a) The AI law explicitly stipulates that, as a fundamental principle, AI regulations should facilitate the development of new AI technologies without necessitating prior government approval. b) It delineates specific categories of AI directly impacting human life and safety as "high-risk AI," mandating these high-risk AI systems to attain a certain level of confidence. c) The AI Act extends support to innovative enterprises operating in the AI sector. d) It establishes a legal foundation for crafting "ethical guidelines for AI." e) Furthermore, the Artificial Intelligence Act lays the statutory groundwork for creating (i) a "Basic Plan for Artificial Intelligence," likely serving as a policy roadmap

for the development of AI technologies in Korea, and (ii) an "Artificial Intelligence Committee" overseen by the Prime Minister.

Idols like Aespa and MAVE have embraced AI technology as a global means of communication, representing South Korea. While numerous idols are exploring AI technology, South Korea stands out by presenting futuristic K-pop AI with remarkable designs (Herman, 2021a). Many international fans find the AI and Metaverse concepts particularly captivating (Yoon, 2022). Furthermore, an AI law in South Korea and the government's initiative to establish relevant research centres have elevated the nation's standing. This support benefits K-pop and positions South Korea at the forefront. Integrating artificial intelligence (AI) into K-pop can be a significant catalyst for advancing AI as a pivotal component of South Korea's future cultural diplomacy.

The Boundaries of AI in K-pop

The integration of AI technology into the realm of K-pop has been a refreshing development for fans and the South Korean music industry. However, this advancement also comes with its complexities. Aespa and MAVE represent just two idol groups incorporating AI into their compositions. Aespa, as a pioneer, introduced the metaverse concept to the girl group genre at the dawn of the AI era, and it has since navigated this path successfully. Nevertheless, its journey, like other AI-driven idol groups, has encountered numerous obstacles, not only for the idols but also for fans and aspiring idols (BBC, 2022).

As technology's influence continues to expand, certain limitations become apparent. Some fans may need help to grasp the intricacies of the metaverse or find it cumbersome to access idols through paid service applications in virtual settings. These challenges may lead fans to perceive that K-pop idols are leaning too heavily on AI, potentially prematurely (Herman, 2021b). Conversely, when discussing K-pop idols, authenticity is often associated with human beauty, dancing and singing talents, attributes typically honed through relentless training by aspiring trainees. The intervention of AI technology in this process raises concerns that the dreams of these trainees may face unexpected hurdles (BBC, 2022).

Additionally, many entertainment companies recognise that the presence of AI can mitigate inappropriate behaviour among idols. Virtual idols may also find it easier to take stances on controversial topics or address issues that real human artists might hesitate to comment on, fearing repercussions such as cancellation (Chakraborty, 2022). However, despite potential negative impacts on the K-pop industry, this does not necessarily pose an insurmountable obstacle to the South Korean government's continued development of cultural diplomacy for the better.

CONCLUSION

Hence, it can be deduced that the increasing prevalence of technology owes much to the influence of COVID-19, which acted as the primary catalyst for the surge in online activities during the pandemic. People had to adapt rapidly to the changing landscape. However, the key difference lies in our ability to harness and leverage these technological advancements as newfound strengths. K-pop, for instance, has experienced rapid growth and adaptation during this period. Cultural diplomacy is a non-violent approach country employ to pursue their national interests. South Korea strategically employs K-pop as a medium to further its national objectives. Additionally, the recent proliferation of artificial intelligence (AI) offers an alternative avenue to advance South Korea's state interests.

The emergence of girl groups such as Aespa, introducing the Metaverse concept, and MAVE, a representation of AI itself, has been nothing short of spectacular. Despite the anticipated wave of changes, many fans express reservations regarding the premature integration of AI technology into K-pop. Furthermore, a significant portion of fans find it challenging to comprehend the intricacies of the metaverse. With the growing presence of AI in K-pop, some young individuals may feel disheartened, as many entertainment companies favour using K-pop to avoid scandals that might tarnish their public image.

Nevertheless, it is essential to acknowledge that this represents a groundbreaking development. The forthcoming meeting between President Yoon Suk Yeol and OpenAI CEO Sam Altman signals a commitment to enhancing domestic AI competition. If parliament approves, South Korea can reap substantial benefits from this endeavour. Moreover, South Korea already has specific legislation governing artificial intelligence (AI). The convergence of cultural and digital diplomacy is entirely attainable, each drawing from distinct disciplinary knowledge fields. For a nation as technologically advanced as South Korea, realising a "Generation Next Level," as proclaimed by Aespa during a United Nations General Assembly meeting, is well within reach.

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