International Journal of Music Science, Technology and Art
(IJMSTA) 3 (2): 44-51, Music Academy "Studio Musica", 2021 ISSN: 2612-2146 (Online)

# Audio Engineering Technology in the K-pop Industry

M.K. Shim ✉

International School Manila, Taguig
✉ Corresponding author: shimmk19@gmail.com

**ARTICLE INFO**

Received: December 5, 2021
Accepted: December 20, 2021
Published: December 30, 2021
**DOI**: https://doi.org/10.48293/IJMSTA-80

**Keywords:**
K-pop;
Audio Engineering Techniques;
Distinctiveness of K-pop Audio Engineering.

**ABSTRACT**

This research involves the identification of unique audio engineering techniques used in one of the major music-industries, K-pop. The distinctiveness of audio engineering techniques manifested in K-pop music has not been deeply explored in previous K-pop related research. Using the case study method, this paper will analyze two songs, "Magic Shop" and "Fake Love" from the K-pop group BTS. BTS was chosen for both case studies as they are one of the biggest K-pop groups that propelled K-pop culture. Secondly, this research involves an in-depth analysis of both songs. By assessing both songs instrument-by-instrument and analyzing its weight, tone, and richness the paper broke down each track involving the actual engineering techniques that the audio engineers implemented for each song. To achieve the results, the paper extracted multiple identical engineering techniques used from the case study. Results show that K-pop audio engineers prioritize overall richness and brightness in the song while having enough space for the bass and kicks to emphasize its heaviness. Furthermore, this research may also suggest a reason for how the key concept of "uniqueness" has led to the success of the K-pop industry.



## 1 Introduction

K-pop has now become one of the biggest areas of the music industry ultimately promoting Korean culture to the world. From PSY's "Gangnam Style" reaching second place on Billboard Hot 100 Charts in 2012, and BTS placing their songs at number one on the same chart in 2020, K-pop has been growing over the years. By their vocals, uncountable number of performances, and wide field of entertainment including original variety shows, active development of original variety shows, K-pop caught the attention of people around the world. However, among those different components of the music industry, K-pop has been repetitively complemented by their uniqueness in musical identity and it is fairly true to say that audio engineering has had a major role in building that identity.

K-pop's expanding popularity has been abetted by various t factors. This includes the performer's talent, various concepts of their performances, music videos, and many others. Among these components, K-pop's musical identity played a significant role in promoting K-pop culture. Every K-pop band focuses on the integration of dance performances and music itself. Additionally, to attract the public, K-pop artists and composers make sure that the rhythm and melody of the music is intense and catchy enough to follow along. For example, "Nobody But You" by Wonder girls, released in 2009, became the very first K-pop music that has made progress in the Billboard Charts. To analyze the song, "Nobody But You" first had a very catchy melody and beat as it had a rhythm that everybody could clap along with a chorus in English repeating, "I want nobody nobody but you". As the song was written in simple English vocabulary, every Korean was able to sing along while it was able to make a friendly approach to foreign listeners. Additionally, with a choreography that everybody can dance along to, "Nobody But You" was able to become the very first hit song of K-pop around the globe.

As the genre of K-pop music always involves catchy melodies, strong beats, and enough space for dance breaks, despite the fact that almost none of the songs are fully sung in English, anyone around the globe can enjoy listening to K-pop. K-pop has expanded its audience from South Korea to the whole globe as the uniqueness of culture overcame the restrictions emanating from cultural differences. However, to make its expansion possible, the role of the audio engineers has proven important, becoming the very last step for a song to be released and attract listeners.

So, what is audio engineering? Audio engineering is the act of balancing and adjusting sound sources using multiple techniques to produce the best output that can be created from a track. For a song to be released and gain popularity, the song should be enjoyable to attract listeners with high quality soundings. Therefore, Audio engineers go through every single instrument, including the vocals, and process each of them to create the best output they can create. Becoming the very last stage before releasing a song, audio engineering controls the overall texture of the song. Sometimes, not only one but even multiple audio engineers cooperate together for a single track. Moreover, the popularity of a song sometimes heavily relies on the quality of audio engineering. Hence, this paper focused on the unique audio engineering techniques used in K-pop music.

## 2 Method

This research utilized the case study method studying two songs, “Magic Shop " and “Fake Love” by the group BTS. The songs from BTS have been chosen as BTS has been one of the most effective boy bands that contributed to the outstanding expansion of K-pop. BTS made their first appearance on the Billboard charts from 2015, entering 171th on the Billboard 200 Albums Chart with their album, “The Most Beautiful Moment in Life (화양연화), Part 2.” Progressing on the billboard charts overtime, finally in September, 2020, their very first English single, “DYNAMITE” entered first place on the Billboard Hot 100 Album proving their boundless impacts on the current generation. Therefore, by studying two songs from BTS, this paper first assessed each track instrument-by-instrument analyzing their weight, tone, and richness. Breaking down each track, every single track has been supported by the exact audio engineering techniques the actual audio engineers implemented for each song. To achieve the results, the paper then extracted the identical audio engineering techniques used in both songs.

The case study has been conducted by listening to the song repetitively and evaluating each instrument about it’s weight, tone, and richness. Then, a research has been made to find the actual audio engineer of each track and find out the actual processing the engineers have placed on each track. Each engineering technique was supported by various sources including the actual audio engineer’s comments in the case study. Elaborating on the weightings and tone form the self-assessment, to get some specific plug-in names and frequential data for each track, the case study refers to multiple sources featuring each audio engineer. Comparing the self-assessed data and researched data for each track, two case studies have been made for each song, “Magic Shop” and “Fake Love.” The first case study is all about the song, “Magic Shop” by BTS, being reflected on Table 1 below. The second case study is all about “Fake Love” by BTS, being reflected on Table 2 below.

In this paper, we presented three tables to convey the results of this research, one for each song. Table 1 and Table 2 was for the analysis of the two songs, divided into two columns. The first column analyzed the basic soundings about their richness, tone, and weight of each major instrument: kick drums, primary accent drums (snare/clap/snap), bass, and one melodical instrument. The other column contains the accurate engineering techniques used that have been stated by the actual audio engineers of each track. Table 1 only focused on the first case study which is the analysis of the song, “Magic Shop " by BTS. The main instruments used in this song are the kick drum, primary accent drum: snare,clap, and snaps, bass, and lastly the hook synths (Swivel, 2020)[1]. Table 2 contains the analysis of the second case study which is the song, “Fake Love” by BTS (Reynolds, 2018)[2]. The main instruments that have been chosen for this song include the kick drum, bass, and an electric guitar. Additionally, Figure 2 included a column about an overall instrumental bus where all instruments are connected to support one of the results (Reynolds, 2018). Then, the research compared the two songs by looking at Figure 1 and 2 and found the identical audio engineering techniques used in both songs. The identical techniques from them will be the main information used in the Table 3 at the very bottom. Table 3 will be formed with two columns under each unique audio engineering technique where each column would contain the information of one song. Hence, Table 3 shows the results of this comparison.

**Table 1**. This figure is the case study of the song, "Magic Shop" by BTS. Table 1 compares the sounding of each major instrument and the actual audio engineering technique utilized by the engineers for 4 major instruments: Kick Drum, Primary Accent Drums, Bass, Hook Synths.

| **[CASE STUDY #1: MAGIC SHOP - BTS]** | |
|---|---|
| Sounding of Each Major Instrument | Actual Audio Engineering Used |
| 1. Kick Drum | |
| Verse Kick: Occupies the lower frequencies with its richness. As there is no bass used in the verse, the kick is the only one occupying the lower frequencies making it possible to deliver richness to the whole verse.<br><br>Chorus Kick: Extremely rich and does not get undermined by the multiple layers of strong synths. It seems to have a side-chain effect where the kick stays vivid and has enough space for it to express while the heavy layers of synth would duck down for it. | Verse Kick: Channel Strip used to add a bit of compression boosting a lot of 1.5 K , 8K, and boosting a lot about a 100 Hertz. R Bass (Audio-Plug-in) used to boost a bit of sub harmonics around 60 hertz and add a little bit of boominess to the Kick drum. (Swivel, 2020)<br><br>Chorus Kick: 3 KICKS LAYERED, Add more brightness. Cutting out the boxiness around 380 hertz. Added another kick where all the high-ends are filtered out just for the purpose of adding richness (Swivel, 2020) |
| 2. Primary Accent Drums (SNARE/SNAP/CLAP) | |
| The snares maintain their richness in every section of the song efficiently completing their own role. Overall around the song, it maintains its brightness even though it has been undermined by layers of other instruments in particular sections. | A little bit of brightness at 8 k and only a bit of compression added. Using a plug-in the engineer wided up the stereo soundings of the clap. Filtered out all the low end, add some bit of compression and brightness. (Swivel, 2020) |
| 3. Bass | |
| Pre-hook bass: The bass could be clearly heard by the listeners as there are no significant kick sounds or instruments occupying the lower frequency area — leaving the vacancy for the bass.<br><br>Chorus: The bass in the chorus is just a synth bass which is quite heavy but actually it seems to play its role supporting the richer chorus synths rather than standing independent on top of the other synths. | Pre-Hook: SYNTH BASS, Low end BOOSTED around 60 hertz (Swivel, 2020)<br><br>Chorus: Heavy Synth Bass Used. Filtered out some of the high and add a little bit of boosting near 100hz-120hz SIDE-CHAIN to the kick drum just to make sure there is space for each other not making any collisions and peaks in the song's master volume. (Swivel, 2020) |
| 4. Hook Synths | |
| Has a strong and heavy sound. Occupies most of the mid frequencies and outweighs the vocals in the main chorus. Seems to have multiple synths layered as it really hits hard and could be clearly heard to the listeners. Additionally, it has a really bright and forefronted sound. | Synth 1: Added some more stereo imaging to the main synth and boosted up a little bit of the high frequencies to deliver more brightness to the synths. (Swivel, 2020)<br>Synth 2: No such processing but only a side-chain compressor that would pull out 6 DB to give space to the KICK (Swivel, 2020)<br>Synth 3: Low-end filtered out and side-chain compressor (Swivel, |

| | |
|---|---|
| | 2020)<br>OVERALL SYNTH BUS: ADDS MORE BRIGHTNESS AND STEREO IMAGING (RICHER, AGGRESSIVE). (Swivel, 2020) |

**Table 2**. This figure is the case study of the song, "Fake Love" by BTS. Figure 2 compares the sounding of each major instrument and the actual audio engineering technique utilized by the engineers for 3 major instruments: Kick Drum, Bass, and electric guitar. Additionally, there is a row explaining the overall instrumental bus which is a control center where every instrument is linked to.

| **[CASE STUDY #2: FAKE LOVE - BTS]** | |
|---|---|
| Sounding of Each Major Instrument | Actual Audio Engineering Used |
| 1. Kick Drum | |
| The sound of the Kick seems to contain a strong texture where it could be clearly heard in every structure of the song. It hits at the same time with the bass which delivers weight to the bass occupying the very lower frequencies of the song. | Through the use of the external plug-in called "EQuillibrium", the engineer first arranges the lower frequencies of the Kick. To make the kick sound more punchy and richer the engineer used multiple plugins including, "spectre" ,which allows the engineer to enhance a specific frequency to add on more weight and richness around 84.86 hz, and "K-Clip" giving 2-3 dbs of clipping (Waveform Distortion that occurs when an amplifier is overdriven) with a bit of saturation. (Reynolds, 2018) |
| 2. Bass | |
| Usually Prolonged and seems to be sidechained that it does not collide in terms of frequency with the KICK. Heavy and rich delivering an overly dark and settled down tone. | Several Saturation and Harmonic booster Plug-ins were used. First of all the engineer used a plug-in called "voice of god" to fatten the lower end. Then, the engineer added multiple saturation plugins to boost up the mid and the lows. Finally, the engineer added an overdrive plugin making it possible that the bass could be heard every time. (Reynolds, 2018) |
| 3. Electric Guitar | |
| A lead distorted guitar is used in the chorus of the song. The lead distorted guitar is the main instrument of the chorus giving a rock genre type of feeling -as distorted guitar playing a sustained chord is one of the main aspects of a "ROCK" song- to the song. Even though it is blurry under the strong vocals of the chorus, it still plays its role making the sound of the song richer. | To make sure the engineer has control over the types of overdrive used in different frequencies, the engineer used a plug-in called "Trash 2" which delivers overall richness to the song by controlling specific frequencies. . By using two other plug-ins called "Echoboy" and "Crystallizer" giving overall space around the guitar making sure that it makes the chorus way more rich and heavy. Then, the engineer used a plug-in called, "Noveltech Character" to deliver presence and enhance the sound of the guitar. (Reynolds, 2018) |
| OVERALL INSTRUMENT BUS | |

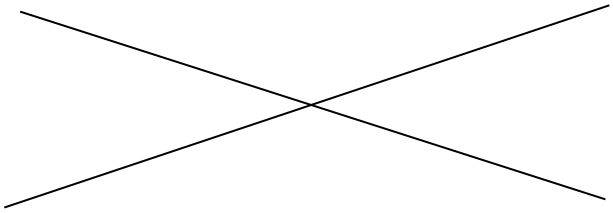
| | |
|---|---|
|  | A plug-in called "DMG Audio Track Control" is used to organize the frequencies and volume of each instrument to have a neat sounding. Another plug-in called "FabFilter Simplon" is used to deliver more richness to the chorus. Lastly, a plug-in called "Pro-MB" is used to make enough space for the kick to project its sound among all other instruments. (Reynolds, 2018) |

**Table 3**. Table 3 is formed with two columns under each identical audio engineering technique utilized for both songs; where each column would contain the information of one song. Table 3 is the results of the comparison between Table 1 and Table 2.

| | |
|---|---|
| 1. STRONG SYNTHS/INSTRUMENTS IN HOOK | |
| CS 1 [SYNTHS] : Through multiple layers of synths containing stereo imaging and boosting on top of one instrument chain adding brightness to the instruments, the main chorus of the song sounds extremely rich —sometimes outweighing the vocals. | CS 2 [ELECTRIC GUITAR] : By using multiple plug-ins to give overdrive in certain frequencies and deliver presence/space/richness to the overall guitar, the engineer surely gave some weight to the main chorus making sure it's richer than other sections in the song. |
| 2. HEAVY KICK DRUMS USED | |
| CS 1: 3 Kicks are layered in this song while two of them have their higher frequencies filtered to emphasize the lower frequencies with a slight brightness added near the end of the processing. | CS 2: In terms of the second study, the engineer actually used almost all the plug-ins possible that delivers richness to the kick. By using a distressor, the engineer gave overall punchiness and added a plug-in called "spectre" the engineer enhanced some of the lower frequencies and lastly added a clipper giving both the punchiness and heaviness to the kick. (Reynolds, 2018) |
| 3. OVERALL BRIGHTNESS | |
| CS 1: Primary accent drums had a slight boost in 8k adding overall brightness to the snare. The engineer also had one kick among the 3 layers that contained only it's high frequencies making sure that kick has its own brightness as well. More importantly, the engineer had a whole instrument bus that added stereo imaging and brightness to the instruments making sure every synth maintain's it brightness controlling the overall tone of the song | CS 2: For the electric guitar, the engineer used a plug-in called, "Noveltech Character" to deliver presence and enhance the sound of the guitar. By using a plug-in called "Eiosis Air EQ Premium," the engineer has added excitement and richness to the vocals by putting it on full-strength for the pre-chorus and the chorus. (Reynolds, 2018) |
| 4. Makes sure to provide enough space for the kicks | |
| KEY TERM<br>SIDE CHAIN: Audio mixing technique that triggers one audio signal to duck down and provide space for another sound; usually used to mix the instruments occupying the similar frequencies. | |
| CS 1: In the chorus of Magic Shop, a SIDE-CHAIN on the bass track was placed to the kick drum just to make sure there is space for each other not making any collisions and peaks in the song's master volume. Just like | CS 2: By adding saturation, clipping, frequency boosting, the engineer always made sure there is enough space for the kicks to express their sound and not get muffled up by other sounds. |

| | |
|---|---|
| the bass tracks, most of the hook synth tracks in Magic Shop had some type of side chain effect placed so that there is enough space for the kick to express its richness. (Swivel, 2020) | |
| 5. OVERALL RICHNESS OF SOUND:<br>Through the use of stereo imaging, doublers, frequency boosting, and other boosting plugins, the engineers made sure that every single track expresses its own richness which eventually elaborates to the overall richness of a track. | |
| CS 1: A Plug-in called "R Bass" used to boost a bit of sub harmonics around 60 hertz and add a little bit of boominess to the Kick drum. Additionally, all of the tracks include at least one plug-in that enhances their sounding to become richer. (Swivel, 2020) | CS 2: On the kick, the engineer used a plugin called "spectre" which allows the engineer to enhance a specific frequency to add on more weight and richness around 84.86 hz. A Plug-in called "FabFilter Simplon" has been used in the overall instrument bus which is a plugin that delivers more richness to the chorus (Reynolds, 2018) |

## 3 Results

Through the comparison between Figure 1 and Figure 2, Figure 3 was able to extract 5 identical audio engineering techniques that respond to the research question of the unique audio engineering techniques in K-pop music.

The first result found is that every single K-pop track has strong synthesizers or instruments used in the chorus of the song. Looking at the first case study, "Magic Shop" by BTS, multiple layers of synthesizers containing stereo imaging have been played in the chorus of the song. Specifically, layered synthesizers would obviously make a richer sound as each synthesizer will build on top of each other. In terms of the stereo imaging, the "imaging" here means to control the projection of sound where the sound can be heard solidly in the center, and both the right and left. For the second case study, "Fake Love" by BTS, placing multiple plug-ins including overdrive, equalizers, and many others, the engineer made sure there is enough weight, presence, space in the Electric Guitar at the chorus. Since the chorus is the heaviest section of a song, there must be a lot more presence and space for each instrument. Hence, the engineer used a plug-in called overdrive, and a few equalizers to make sure the electric guitar is strong enough and by controlling certain frequencies, the engineer made sure the electric guitar is projecting its sound in the correct frequency area where it will still sound heavy and solid, not interfering with the vocals.

The second result found is the use of heavy kick drums. For the first case study, the engineer layered multiple kicks just like what he did for the synthesizers. 3 kicks were layered in the track. 2 kicks out of the 3 had their low frequencies filtered out, meaning that they are just placed to give presence to the kick occupying the higher frequencies. Then, the engineer added one strong kick occupying most of the low ends creating a hard kick sound as a result. For the second case study, the engineer had one kick used but multiple plug-ins used. By using a plug-in called "distressor" the engineer gave an overall punchiness to the kick, and then added a "clipper" that builds on to the heaviness and punchiness of the kick. To explain, clipping is basically distorting a waveform which will end up with a more harsh sound. Even though the two case studies utilized a different way to process their sound, it can be acknowledged that K-pop music uses heavy kick drums for their song.
The third result found is that K-pop music makes sure of the brightness of the song. In the first case study, the engineer made a lot of small processings to each track enhancing the brightness of the overall song. Specifically, the primary accent drums including the snap,snare, and claps had a slight boosting in the 8k frequency area delivering brightness. As aforementioned, the engineer also made sure that even the kick has its own brightness by layering a kick with no low frequencies but only occupying the high frequencies. Most importantly, the engineer had an instrument bus where every instrument was connected to that added stereo imaging to all tracks, delivering presence. For the second case study, the engineer used a plug-in called "Noveltech Character" delivering presence to the electric guitar sounds while a plug-in called "Eiosis Air EQ Premium" kept up with the brightness of all the vocals.

The fourth result found through comparison is connected to the second result which is about making sure of enough space for

the kick to project its sound. An important musical term here is “Side-chain”: an audio engineering technique that triggers an audio signal to duck down for another sound, usually made for mixing sounds occupying similar frequencies. Side-chain is simply used to reduce the amount of collisions between each instrument that produces useless peaks in the master volume. For the first case study, the engineer placed a side-chain on the bass and synthesizers for its sound to duck down when the kick comes in. By doing this, even though each track will project a hard sound, there will be enough space for the kick to come in and it may be easily heard by the listeners. In the second case study, the engineer placed saturation, clipping, or frequency boosting on the kick to make sure it is heard clear and solid under all the layered instruments in the track.

Lastly, K-pop songs are engineered to have overall richness in sound. In both case studies, through the use of stereo imaging, doublers, frequency boosting, and other boosting plugins, the engineers made sure that every single track expresses its own richness which eventually elaborates to the overall richness of a track. For example, in the first case study, the engineer used a plug-in called “R Bass” used to boost a bit of the sub harmonics around 60 hertz for the kicks. Looking at the second case study, a Plug-in called “FabFilter Simplon” has been used in the overall instrument bus which is a plugin that delivers more richness to the chorus.

## 6 Conclusions

This research conveyed the distinctiveness of audio engineering techniques manifested in K-pop music. Considering the recent global expansion of Korean culture, this research focused on the musical identity K-pop comprehends. The research has been conducted through the method of case study, studying the tracks of BTS, who are one of the most effective groups that propelled K-pop. By analyzing the two songs, Magic Shop (2018) engineered by DJ Swivel and Fake Love (2018) engineered by James F Reynolds, instrument-by-instrument assessing the weight, tone, texture, and also by including the exact plug-in effects utilized by the engineers, it was able to construct a table containing the identical engineering techniques applied in both tracks.

The case study was able to extract five results about the unique audio engineering techniques manifested in K-pop music. First, K-pop tracks use strong synthesizers or other instruments for the richness in the chorus. Mainly by utilizing stereo imaging and also layering multiple instruments, K-pop music always produces a strong sound in the chorus. Secondly, K-pop music always uses heavy kick drums occupying the very low frequencies of the track. By using clippers or by simply layering multiple kicks, the engineers develop the heaviness of the kick. Third, K-pop music always makes sure of the brightness of the song. Mainly through enhancing certain frequencies, K-pop music engineers ensure that every single instrument possesses their own brightness. Fourthly, connecting to the first result found, K-pop music always ensures space for the kick to express its sound. Using an effect called side-chain, the engineers make sure that the instruments occupying the lower frequencies are not interfering with each other’s soundings. Lastly, K-pop music is engineered to have overall richness in sound. Through the use of sound boosting plug-ins the engineers make sure to elaborate the richness of each instrument used in a track.

Through the case studies and multiple comparisons that have been made in this paper, it was also able to have a sneak peak into K-pop’s musical identity. By this, the research also suggests how the uniqueness of K-pop’s musical identity led to its success around the globe. As distinctiveness and uniqueness become key components of success nowadays, K-pop has been efficiently keeping up with its own identity being able to attract more music enthusiasts. Therefore, this research mainly conveys the unique audio engineering techniques used in K-pop music while it also discloses the musical identity of K-pop music that has been a key component of K-pop music’s success.

## References

[1] Cho, J.K. (2017). “Sure It’s Foreign Music, but It’s Not Foreign to Me” Understanding K-Pop’s Popularity in the U.S. Using Q Sort. School of Communications Brigham Young University Master of Arts.

[2] Marchand, K. (2017) Pop Cultures: A Comparative Analysis of the American and South Korean Record Industries. Florida Atlantic University Master of Science.

[3] Mclntyre, H. (2021) BTS Keep Rewriting History On Billboard’s Pop Chart With “Butter”. Forbes Hollywood & Entertainment

[4] Messerlin, P., Shin, W. (2017). The Success of K-pop: How Big and Why so Fast? Asian Journal of Social Science The emergence, success and challenges of Hallyu: Korea as a “game changer” in global cultural industries: 1,2,3
[5] Michel, T. (2017). PSY’s “Gangnam Style” Changed Pop Music, Whether You Like It Or Not. Pitchfork Music Industry
[6] Reynolds, J.F. (2018). Inside Track: BTS “Fake Love” Secrets Of The Mix Engineers: James F Reynolds. Sound on Sound Mixing/Production.
[7] Romano, A. (2018). How K-pop became a global phenomenon Vox.
[8] Swivel, DJ (2020). In The Mix: BTS - Magic Shop. Youtube DJ Swivel.
[9] Yuchang, F. (2021). 11 Asian acts who broke into the Billboard Hot 100: BTS, CL, PSY, Wonder Girls, BLACKPINK, Pinkfong and more. 10 years of bandwagon Music Feature.
[10] (2021) All About K-Pop: Inside K-Pop’s History and Signature Sound. Master Class Music.
[11] What does an audio engineer do? Career Explorer Music.
[12] Chng, (2021) This is how K-Pop works and how to be a part of it. Audio Mentor Business & Money.
[13] (2021) What is Kpop? Here is everything you need to know. 90 Day Korean.
[14] (2020) BTS: Who are they and how did they become so successful? BBC Newsround .
[15] Ryzik, (2012). His Style Is Gangnam, and Viral Too. The New York Times Playlist | PSY.
[16] Liu, T., Shin, N.K. (2021). How K-pop Conquered the Universe. The Washington Post Art & Entertainment.
[17] Yusifzai, T. (2021). Why K-Pop Is so Popular Worldwide: A Geographical Breakdown of K-Pop Fans. How Music Charts Long Reads.
[18] Romano, A. (2021). BTS, the band that changed K-pop, explained. Vox.
[19] Jenol, A., Pazil, N.H.A. (2020). K-pop Fans' Identity and The Meaning of Being a Fan. Universiti Sains Malaysia.
[20] (2021) BTS Chart History. Billboard Chart History.
.