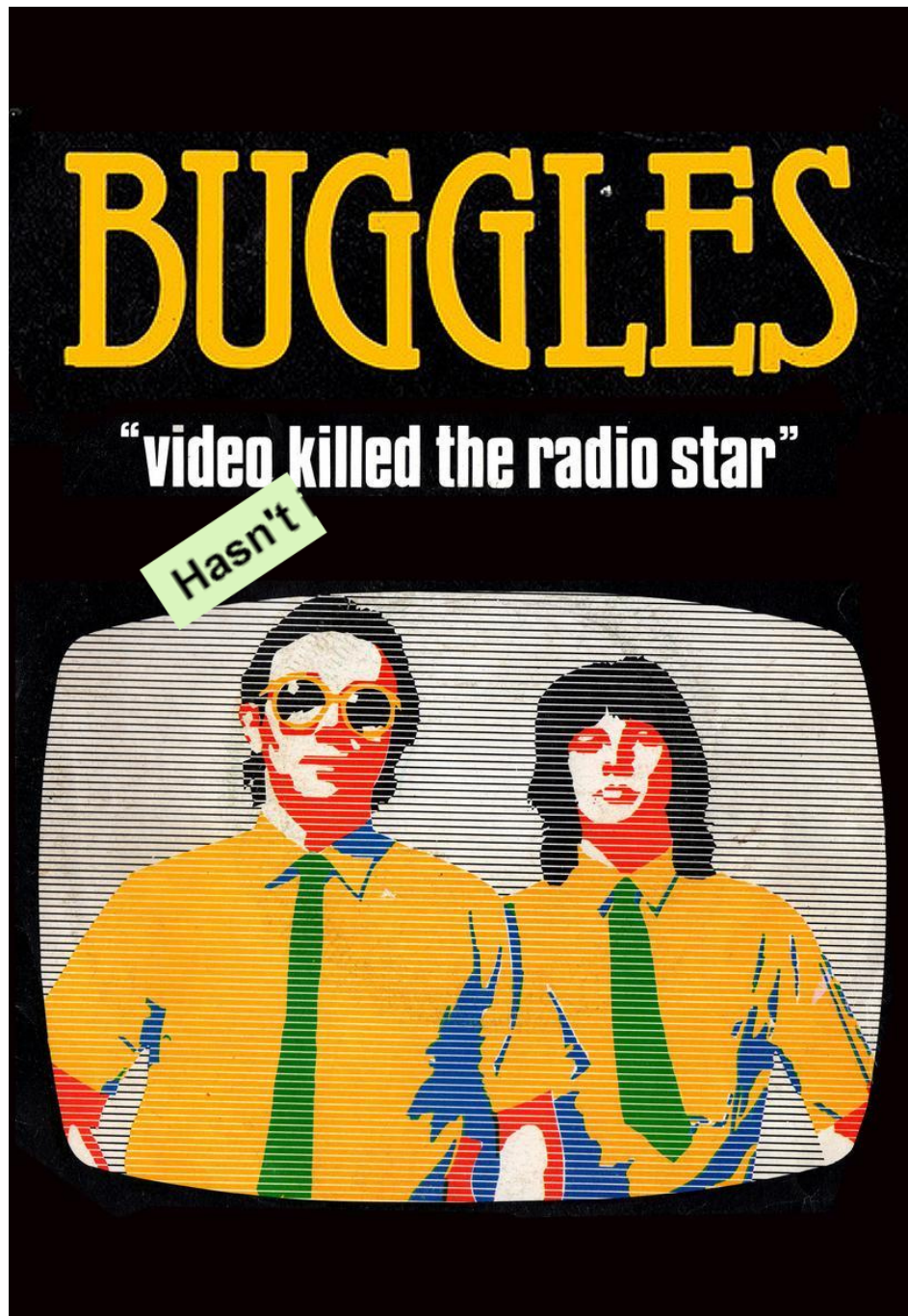


RESEARCH PROPOSAL MASTER THESIS MARKETING

MARKETING ANALYTICS FALL 2022



Video Killed The Radio Star (The Buggles, 1979)

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1. Business Problem: Background

Music sales have generated 26 billion dollars in 2022 (IFPI, 2022). But regardless of this success, the music industry is still struggling, specifically the independent part of it (Chiftalaryan, 2019). A report of the Intellectual Property Office showed that the top 1% artists account for 80% of all online streams (The Guardian, 2021). The rest of the artists are having a harder time getting online streams and making revenue. There might be a way to tackle this problem.

Music has always been an important factor in film. Ellis and Simons (2005) showed that a film with a soundtrack (versus muted volume) has more influence on valence and arousal. Music shapes the understanding of a character, and their actions, emotions, and intentions (Tan et al., 2007). It is safe to say that music enhances a film scene, but does this also work the other way around? Does a film soundtrack enhance music popularity?

When watching a compelling film, you might also be extra interested in the music that comes with it. Considering upcoming platforms such as Shazam, Spotify, and Snapchat you can generate the name of a soundtrack within seconds (Business Insider, 2020). This can then be used to explore a song and creates a way to discover ‘new’ music. Hence, technology plays a major role in this boost of music. As content of on-demand platforms such as Netflix has grown, and their shows have gotten more audience, fans are tracking down music of their favorite shows via Shazam and Tunefind (The Guardian, 2019).

Previous research has focused a lot about film music emotion (Juslin & Sloboda, 2011) and psychology (Nagari, 2015), which is more based on the performance of the film. There is a lack of research based around the performance of music enhanced by a film. Recently there has been a new phenomenon called “The Netflix-effect”. Which means that an old, and sometimes even ‘forgotten’ song, gets (back) in the top rankings because it was used in a popular TV series. A song of Kate Bush “Running Up That Hill” was featured in the Netflix series called “Stranger Things” and the song started to climb the charts again, with huge number of streams on TikTok and Spotify (57.2 million streams) in a matter of days.

The same happened with “Dreams” of Fleetwood Mac in 2020, when it became a streaming hit after an Idaho potato worker made a TikTok video of himself listening to it while drinking Cran-Raspberry juice. Also, Nirvana’s 31-year-old “Something in the Way” made its first appearance on the Hot 100 after the song was used in “The Batman.” (New York Times, 2022). “That is a true game-changer, as it lays down a precedent for other music to do the same if circumstances meet.” (The Guardian, 2022).

Against this background, we set out to assess the relationship between film soundtracks and music popularity. Since this research is trying to capture a new phenomenon, literature is rather scarce. Beaster-Jones (2009) studied the relationship between Indian film songs and popular music in India and found a positive relationship. Film soundtracks serve as a representative for a film. The soundtrack sales indicated that both the music and the film were a success. According to Beaster-Jones, film soundtracks are also used as a promotional tool, which shows their importance and generates profits and streams for the music label (Beaster-Jones, 2009). Another research of Simon Frith (2002) takes a closer look on the relationship between television and music. It discusses the impact of television on music culture and that television can change perceptions about music (Frith, 2002). Simon's research is not directly in line with this research, but it suggests that film can strengthen perceptions about music and in this matter influence the outcome variable, music popularity. This research suggests that the relationship between film soundtracks and music popularity is strengthened by the featured song duration (in seconds) and featured song order (start/middle/end). Which indicates that music popularity differs for the length that a song is featured in a film and for the order that a song is featured in a film.

Current studies mainly focus on the effect music has on films. Research about film music emotion (Juslin & Sloboda, 2011), psychology (Nagari, 2015) and arousal (Ellis & Simons, 2005) indicate that music has a positive influence on film performance. They have not analyzed the reversed effect of a film having influence on music performance (music popularity). This research is relevant for music labels that are interested in enrolling film soundtracks, also as a promotional tool (Beaster-Jones, 2009). If this research shows that making an appearance in a film significantly increases music popularity, then the music label industry can use this in their strategic marketing implications to increase music popularity, music streams and revenue (Spilker, 2017). Because this research is based on a new phenomenon, there is a gap between the current literature and this research. This gap is caused because the topic is new and there is no recent research linking film soundtracks to music popularity. In this study, the relationship between film soundtracks and music popularity will be investigated.

2. Problem statement and research questions

To what extent does the featuring of a song in a film (yes/no) relate to their music popularity, and to what extent does the featured song duration (seconds) and featured song order (start/middle/end) have an influence on this relationship?

Theoretical research questions:

- How does the featuring of a song in a film (yes/no) affect music popularity?
- How does the duration (seconds) of a featured song influence the relationship between the featuring of a song in a film (yes/no) and music popularity?
- How does the order (start/middle/end) of a featured song influence the relationship between the featuring of a song in a film (yes/no) and music popularity?

Practical research questions:

- To what extent does the featuring of a song in a film (yes/no) affect music popularity?
- To what extent does the duration (seconds) of a featured song influence the relationship between the featuring of a song in a film (yes/no) and music popularity?
- To what extent does the order (start/middle/end) of a featured song influence the relationship between the featuring of a song in a film (yes/no) and music popularity?
- To what extent can music labels increase their music popularity by making an appearance in a film?

3. Theoretical background

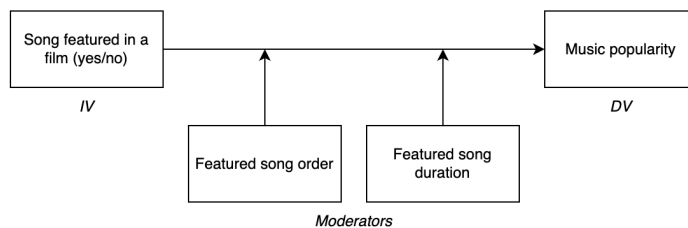


Figure 1 Conceptual model

The figure above illustrates the conceptual model of this research. The goal of this study is to examine the relationship between film soundtracks and music popularity, and to see if this relationship is significantly positive. Furthermore, this research suggests that this relationship is influenced by the order of a featured song and by the duration of a featured song.

Direct main effect

A film soundtrack is suggested in the literature as “an intentional sound which accompanies moving images in narrative film”. A soundtrack can be literal (a voice or footsteps) or emotive (music), in this study we focus on ‘emotive sounds’, which indicates the way of emotion for a particular film scene. Music is most always used as an emotive sound (Deutsch, 2008). As stated before, the literature recognizes a positive relationship between film music and music popularity (Beaster-Jones, 2009). More research justifies this relationship by proving that film music has an impact on culture. They state that film music has an impact on emotions (emotive sounds), and this can lead to change of perception and behavior (Navarro,

2019) (Frith, 2002). Change in behavior could suggest that because of the emotion connected to a film soundtrack, a person could start liking and streaming a song, which would have an impact on music popularity. Furthermore, film is a way to discover/distribute new music (Tepper & Hargittai, 2009), and this could also impact music popularity. Regarding this literature, it is expected that a featuring of a song in a film increases their music popularity. H1: Songs that are featured in films have more music popularity than songs that are not.

Moderating effects

Every film soundtrack has different circumstances. This research takes a closer look into the circumstances of order and duration. Which means that this research suggests that the relationship between songs that are featured in a film and music popularity differs for the order that songs are played in and differs for the duration that a song is featured in a film. When looking at the order of songs, there is psychological evidence. A theory called ‘the serial position effect’ explains that humans have higher awareness and memory qualities and the beginning and ending of a list (Feigenbaum & Simon, 1962). This would indicate that songs featured at the beginning and ending of film have a bigger effect on the relationship between film soundtracks and music popularity. Considering the duration of a song featured in a film, it is expected that a higher amount of duration in seconds has a bigger influence on the relationship between film soundtracks and music popularity. Because when the duration is longer, a song gets more exposure and more chance to get noticed by the viewer.

H2: The relationship between a song getting featured in a film and music popularity differs between the order that featured songs are played in (start/middle/end).

H3: The relationship between a song getting featured in a film and music popularity is strengthened by the song duration (in seconds).

4. Research design

This research objective is to identify a causal relationship between film soundtracks and music popularity. One major challenge is that causality is very hard to satisfy without a ‘randomized control trial’. By conducting a DID model without conditional independence, this research would include endogeneity due to self-selection. This research will follow a quasi-experimental approach, with aiming to identify exogenous shocks that can approximate random assignment. The treatment- and control group need to differ as untroubling as possible to mimic random assignment (Goldfarb et al., 2022). It is assumed that controlling for unobserved needs of variety can be done by conditioning a rich set of observed elements (Bronnenberg et al. 2010).

Variable	Metric	Effect	Measurement	Collection
Film soundtrack	Nominal	IV	Featured song in a film (yes/no)	Web scraping Tunefind
Featured track duration	Ratio	Moderation	Number of seconds played per song	Web scraping Tunefind
Featured track order	Ordinal	Moderation	Order rank of songs per episode (start/middle/end)	Web scraping Tunefind
Music popularity	Ratio	DV	Number of playlist additions per day	Chartmetric database

Table 1 Overview variables and measurement

By combining an existing dataset of Chartmetric, a platform that provides data for music industry professionals, with a new dataset of Tunefind, an index of music and songs appearing in television shows, movies, and video games. This research has a total dataset of over 1 million tracks on Spotify and all tracks that made an appearance in a TV show, gathered from Tunefind via web scraping. Both sources have a timeline from 2016 till 2021. This research has chosen TV shows over movies, because with movies the effect is spread out over a longer period of time. Unlike movies, TV shows are mostly not watched many years after their release date. Since this research will be conducted as a quasi-experiment, there are concerns of selection bias. The data structure is designed in a way that the large existing dataset of Chartmetric serves as outcome data for the treatment- and control group. The treatment is activated when a song makes an appearance in a film, and it is assumed that these songs from Tunefind overlap with the data from Chartmetric. This would slice the Chartmetric data into two group, one where songs made an appearance in a film, and one where they did not. This process of creating two group is used to generate the treatment- and control group. Because songs in the treatment- and control group differ on several characteristics, it is likely that differences in the composition could explain difference in behavior (Datta et al., 2017).

This research uses a DID approach to estimate the effect of film soundtracks on music popularity. This is executed by comparing the outcome measures of film soundtracks before and after their treatment with non-film soundtracks. To prove that treatment- and control group are equal, this research will satisfy the parallel trends assumption (both groups are equal pre-treatment) as good as possible (Donald & Lang, 2007). With this method, effects are interpreted as an average treatment effect of film soundtracks on music popularity. Furthermore, propensity score matching will be added to the research design to strengthen causal claims and reduce selection-bias. This model matches each treated unit with a non-treated unit of similar characteristics (Caliendo & Kopeinig, 2005).

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