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A survival analysis of songs on digital music platform

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ABSTRACT

This study explores and compares what factors are critical for music to succeed in download and streaming services. The weekly top 100 songs listed on the Korean music ranking charts for three years were used as the sample, and the factors affecting success on the download and streaming ranking charts were examined using the survival analysis. The results indicate that being the title track is the most critical factor for songs' survival on the charts for both services. While songs released by major labels survived longer on the download chart, major labels are no longer superior to minor labels in streaming services. The results also indicate the impact of the superstar was positive to the survival on the streaming chart, but it was effective only in the interaction with being title track on the download. As expected, piracy showed a negative influence on the survival of songs for both download and streaming service. Theoretical and practical implications for the digital music industry were suggested.

1. Introduction

The success of traditional music industry is determined by the quantity of albums sold, which is then ranked on charts. The appearance and continued presence on the charts influences the awareness, perceptions, and profits of an album (Bradlow and Fader, 2001). Therefore, having an album on the music ranking charts is an important goal for most popular music artists and their record labels (Strobl and Tucker, 2000).

In is no doubt that previous studies have examined the factors affecting the success of music on ranking charts (Asai, 2008; Bhattacharjee et al., 2007; Strobl and Tucker, 2000). Several variables, including debut rank, star effect, or tie in with other media, have consistent results through all studies. Meanwhile, some variables, such as major label, have shown inconsistent results. Although previous studies found the critical determinants of music hits, those studies focused on the physical format such as CD album.

In the changing music industry, while revenue from digital download and streaming consists of more than 75% of the industry revenues, the ratio of physical format sales is only limited to 21 percent. Furthermore, streaming grew from just 9% of the market in 2011 to more than half (51.4%) of total industry revenues in 2016 (RIAA, 2017). Whether the factors affecting the success of physical music sales previously are still effective in the digital music market is questionable.

Thus, this study focuses on figuring out the factors affecting songs' success in digital market. By using the established determinants such as debut rank, superstar, major label, or tie-in, and an additional variable 'title track' exploring the unbundling effect in digital music industry, this study attempts to identify the factors affecting a song's survival time on the download and streaming charts. Furthermore, the effect of piracy threatening the digital music industry is also empirically tested. Since the survival time on the charts symbolizes the popular life of a song, it is the object of our analysis.

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This study conducts a survival analysis of digital music market by analyzing the weekly digital top 100 hit charts in South Korea. Although a relatively small country, with a population of 47 million, South Korea has a highly developed broadband infrastructure and Koreans crave information and communication technology (ICT) services (Choi et al., 2013; Jung et al., 2017). Large-scale digital content supply and consumption are facilitated through diverse digital devices such as smartphones and tablet computers (Jung et al., 2017). In fact, Korea is a leading country for paid music streaming services. The IFPI report (IFPI, 2016a,b) shows that 41 percent of internet users in Korea subscribe to a paid music streaming service as of the end of 2016. This is the largest proportion followed by Sweden, Mexico, Brazil, and the U.S.

Furthermore, the increasing popularity of Korean pop (K-pop) music has yielded the "Korean Wave" (pronounced Hallyu in South Korean), which refers to the popularity of South Korean culture throughout other Asian countries (Ryoo, 2009) and is now extending to Western countries. An example of recent K-pop popularity from a global perspective is the song Gangnam Style by Psy, which was ranked number one in YouTube views, reaching more than 2.5 billion in 2016. BTS, also known as the Bangtan Boys, received worldwide recognition by winning the Top Social Artist Award at the Billboard Music Award and became the first K-pop group to perform at the American Music Awards (Kelly, 2017; Liu, 2017).

As such, South Korean music industry is noteworthy given its highly developed broadband infrastructure and music popularity. As one of the world trendsetters in digital content production and consumption, the findings from the Korean experience might be extrapolated to better understand the nature of digital music survival in other country settings.

2. Literature review

2.1. Survival analysis research

Survival analysis is a branch of statistics for analyzing the expected duration of time until one or more events happen. The event can be death, occurrence of a disease, failure in mechanical systems, divorce, etc. and the time to event or survival time can be measured in days, weeks, or years, etc. It deals with time-to-event data which is complicated not only by the dynamic nature of events occurring in time but also by censoring where some events are not observed directly (Klein et al., 2016).

Historically its origin to classic life table construction begun in the 1600 s and it have been applied to the various field of academia. Although the researchers who are interested in survival analysis deal with time-to-event data, the specific event in which is interested depend on their research area. For example, the lifetime of patients is of interest to medical researchers, while the failure time of manufactured items is the area of interest in engineering studies. Marketing researchers have also focused on inter-purchase time to investigate how often consumers purchase a certain product. Financial researchers predicted financial distress such as bankruptcy or business failure using survival model.

Empirical research has been conducted using survival analysis methods in various fields. For example, Mazzaferri and Jhiang (1994) applied the survival analysis to find the effect of medical and surgical treatment on cancer. Chen and Lee (1993) focused on the failure of oil and gas industry, and Kauffman and Wang (2008) used survival analysis to examine the factors of the Internet business failures. Survival analysis is employed by a number of research fields to analyze the time of events. This study applied the survival analysis method to the music ranking chart and focused on the events that occur in ranking chart over time in the music industry.

2.2. Survival analysis of music industry

Music is a typical experience good in that consumers recognize its value after its consumption (Nelson, 1970). These products require a personal experience, such as sampling or purchase, to evaluate quality. However, sampling or experiencing music requires considerable time and effort (Bhattacharjee et al., 2007). For example, Apple Music had over 40 million songs in 2016 (Apple, 2016), and the number of song is increasing quickly. Consumers cannot afford to listen to every song to determine what they want. Thus, they occasionally depend on predecessors' choices to assess a song's quality.

Music is also a fashion-oriented product because it includes features of social utility that satisfy interpersonal needs (Chen et al., 2008), and the popularization of music represents a phenomenon of fashion. Thus, a consumer's choice of music can be influenced by others. Consumers who are highly involved in fashion may perceive music with higher value when it has social utility (Chen et al., 2008).

A music ranking chart is a definite indicator of music consumers' preferences. Since popular songs are ranked on the music charts, consumers naturally depend on the charts to either reduce their risk of choice or enable them to follow the trends. Although many albums and songs are released every year, only a few of them are ranked on the charts, are lucrative, and achieve great success (Seabrook, 2003). Furthermore, having a song on the chart leads to an information cascade so that songs garner attention and increase current and future sales (Strobl and Tucker, 2000). Thus, having an album or song on the top 100 chart is the primary goal of both artists and their record labels.

Previous studies considered any album on a chart as a "hit," and examined the length of time the album remained on the chart as an object of analysis (Asai, 2008; Bhattacharjee et al., 2007; Strobl and Tucker, 2000). Those studies focused on the physical format such as an entire CD album. However, this study focuses on a song's survival time on the chart because people now can buy one song from an album in the digital music industry. If a song continues to stay on the charts before dropping off, it is regarded as "surviving," and otherwise "dying." This study conducts a survival analysis and compares the factors affecting the survival time between songs on the download and streaming charts.