

Use Case Proposal : Spotify Music Trends & Popularity Analysis

1. Industry Overview

The music streaming industry has become one of the fastest-growing digital markets worldwide. Platforms like Spotify, Apple Music, and Deezer rely heavily on user behavior, algorithms, and data analytics to deliver personalized experiences. With millions of tracks available, consumers expect accurate recommendations and curated playlists that match their tastes.

Data is central to this industry: audio features, listening patterns, trending genres, and artist performance all shape business decisions.

Spotify, as the global market leader, uses Business Intelligence (BI) to understand trends, improve recommendations, support artists, and optimize playlist strategies. Analyzing large datasets allows the platform to detect what makes a song popular and how listener preferences evolve over time.

2. Organization Description (Spotify)

Spotify is a global digital music streaming service that provides access to over 100 million tracks across various genres and eras. The platform serves:

- **Users:** casual listeners, subscribers, premium members
- **Artists:** both emerging and established
- **Music industry partners:** labels, producers, marketers
- **Playlist creators:** internal and third-party

Spotify primarily relies on data analytics to maintain its competitive advantage. The company collects detailed metrics on songs, artists, and user interactions. These insights help Spotify optimize algorithmic playlists (e.g., Discover Weekly), support marketing campaigns, and understand global music trends.

3. Business Problem

Although Spotify has massive amounts of data on tracks, artists, and genres, identifying what truly drives **song popularity** remains challenging. Popularity is influenced by many factors:

- Audio characteristics (energy, tempo, danceability, valence)
- Genre trends
- Release year trends
- Artist recognition

- Listener behavior

For artists, producers, and playlist curators, **there is a need for data-driven insights** to understand:

- Why some songs go viral
- Which audio features correlate with high popularity
- What genres are trending
- How music preferences are evolving
- Which characteristics should be prioritized when creating or promoting new tracks

This BI project aims to provide a clear, analytical view of how audio features, genres, and trends influence music popularity on Spotify.

4. Analytical Questions

1. What audio features are most strongly associated with highly popular songs?
2. How does popularity vary across different music genres ?
3. Which genres have experienced the highest growth or decline over time?
4. How has average song popularity changed over the years?
5. Do high-energy songs tend to be more popular than low-energy ones?
6. Does danceability influence song popularity?
7. What audio characteristics define the most popular songs within each genre?
8. Which artists consistently produce high-popularity tracks?
9. Are there specific tempo ranges associated with higher song success?
10. What is the distribution of song popularity across decades (1990s, 2000s, 2010s, etc.)?
11. Which genres dominate the top 10% of most popular tracks?

5. Key Performance Indicators (KPIs)

1. **Average Popularity Score (Overall)** : mean popularity across all tracks.
2. **Average Popularity by Genre**: mean popularity per genre.
3. **Popularity Trend by Year**: yearly average popularity to track temporal changes.
4. **Energy vs. Popularity Index**: correlation or grouped averages between energy and popularity.

5. **Danceability vs. Popularity Index:** correlation or grouped averages for danceability.
6. **Top Genres Score:** popularity scores for the top 5 genres.
7. **Artist Performance Score:** average popularity per artist to identify consistently successful performers.
8. **Tempo Popularity Index :** average popularity by tempo bucket
9. **Valence–Popularity Score:** correlation between valence (happiness/positivity of track) and popularity.