Center for
Leadership Education

Master of Science in Engineering Management (MSEM)

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Data-informed Strategy and Visualization – Final Project Proposal

Project Host

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1. **Title**
   Spotify's Music Stream Insights: Popularity Trends & Song Characteristics Correlation

2. **Executive Summary**
   We aim to analyze trends in Spotify music data to identify key insights about artist popularity, genre preferences, trends for changes over time, how some indices influence the music's popularity, and how song characteristics have interconnection with each other. By deeply diving into data on song attributes such as duration, loudness, danceability, and instrumentalness, we will uncover patterns in music consumption across different countries and genres.

3. **Problem Review**
   The music industry keeps evolving, with listener preferences and streaming trends shifting over time. However, understanding the relationships between song characteristics and popularity remains a challenge. This research seeks to bridge that gap by analyzing Spotify data to identify fun facts about Spotify (the most popular artists and genres) while exploring how musical attributes influence a song's success (high popularity).

4. **Targeted Audience**
   a. Spotify's Board of Directors
   b. Spotify's Executive Leadership Team
   c. Spotify Quality Engineering Team
   d. Professionals in Music Industry
   e. Music Fans and Researchers
   f. Artists and Creators

5. **Objectives & Key Takeaways**
   Explore the Trends:
   a. Trend for change in Genre's preference over time - Time Trend
   b. Trends for changes in songs' characteristics over time (Duration, Instrumentalness, Danceability, etc.) - Time Trend
   c. The most popular artist in each country - Geographical Trend
   d. The 3 most popular Genres in each country - Geographical Trend
   Examine the Relationships:
   e. Relationships between the characteristics/ Index of songs (Acousticness, Danceability, Speechiness, Duration, Energy, Loudness, Explicit, Liveness, etc.) and its popularity - To explore how these indices of music would impact the song's stream

f. Loudness vs. Energy Correlation - To examine whether more loudness will lead to higher energy scores
g. Energy vs. Valence Index (the positivity of happiness of the music) Correlation - To examine how the energy of song would influence the happiness index of music

6. **Data list**
[1] https://www.kaggle.com/datasets/asaniczka/top-spotify-songs-in-73-countries-daily-updated
[2] https://www.kaggle.com/datasets/maharshipandya/-spotify-tracks-dataset
[3] https://www.kaggle.com/datasets/yamaerenay/spotify-dataset-1921-2020-160k-tracks
[4] https://www.kaggle.com/datasets/geomack/spotifyclassification

7. **Visualization Frameworks**
a. Mapping or heatmaps: show the artist and genre popularity across different countries
b. Line chart: track the changing trends of songs' characteristics over time and also show the correlation in characteristics vs. popularity, loudness vs. energy, and energy vs. valence.
c. Bar chart: compare popularity in different genres
d. Dashboard and infographic: show an overall picture of music trends on Spotify